

DOE/NV/11037-2

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

NARRATIVE REPORT

JULY 1, 1991 - SEPTEMBER 30, 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

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.

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.

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

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.

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.

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

#### PLANNING DIVISION MEETINGS

- Meeting with Affected Local Governments to Coordinate Plans/Activities (SLGPG)  
(July 17, 1991 in Reno)
- REMI Users Group Meeting  
(July 25, 1991 in Las Vegas)
- UNR Transportation Meeting  
(August 1, 1991 in Carson City)
- Socioeconomic Database Meetings and Working Session  
(August 5-6, 1991 in Carson City)
- Clark County Steering Committee  
(August 8, 1991 in Las Vegas)
- Nuclear Waste Technical Review Board  
(August 15, 1991 in Denver)
- DOE/Affected Parties Meeting  
(August 21, 1991 in Las Vegas)
- Clark County Steering Committee  
(August 29, 1991 in Las Vegas)
- Grants Equal to Taxes Meeting  
(August 30, 1991 in Reno)
- State Technical Review Committee Meeting  
(September 5-6, 1991 in Alexandria, VA)
- Clark County Peer Review Committee Meeting  
(September 7-8, 1991 in Alexandria, VA)
- Nuclear Waste Technical Review Board Transportation Panel  
(September 18, 1991 in Washington, DC)
- Hearings on DOE's Application for State Water Allocation  
(September 24-30, 1991 in Las Vegas)

### TECHNICAL DIVISION MEETINGS

- NWTRB Meeting on ESF Status and Surface-Based Testing Prioritization Study  
(July 15-17, 1991 in Arlington, VA)
- NRC/DOE Meeting on Glass-Waste Form  
(August 7-8, 1991 in Savannah River, SC)
- DOE ESF South Portal Design Review Meeting  
(August 12-16, 1991 in Las Vegas)
- NRC-ACNW Meeting on Site Characterization Plan Comments  
(August 28-29, 1991 in Washington, D.C.)
- NRC/DOE Meeting on ESF Design Control  
(September 16, 1991 in Washington, D.C.)
- NWTRB Meeting on ESF Design  
(September 18-19, 1991 in Las Vegas)
- EPRI Conference on EPA 40 CFR Part 191 Criteria  
(September 24-26, 1991 in Arlington, VA)
- Nevada State Water Engineer Hearing on DOE Water Appropriation Application  
(September 24-30, 1991 in Las Vegas)

During the reporting period, the Office participated in Quality Assurance Audits/Surveillances of Sandia National Laboratory and U.S. Geological Survey. 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.

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 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 "Probability of Magmatic Disruption of the Repository" (Study Plan 8.3.1.8.1.1). 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 "Unsaturated Zone Gaseous-Phase Movement", "Paleoenvironmental History of Yucca Mountain", "Meteorology for Regional Hydrology", "Hydrochemical Characterization of the Unsaturated Zone", and "Meteorological Data Collection at the Yucca Mountain Site".

Activities of the Water Resources Center, Desert Research Institute focused on reviews of DOE Study Plans and completion of analyses and reports relative to isotopic modeling of the regional groundwater flow system and paleoclimate studies. A draft report titled "A Carbon-14 Calibrated Discrete-State Compartment Model of the Groundwater Flow System, Yucca Mountain and Vicinity, Nevada-California" by R.M. Byer, Jr., was submitted to the Office for technical review. The final report on the paleoclimate project is in preparation, following completion of sample analysis. On the climate change project, revisions are underway on a report on plant

response to varying levels of water and temperature. In addition, DRI and Kent State University were invited by the Chapman Conference on Continental Isotopic Indicators of Climate to present a paper on their Great Basin climate change research. A paper titled "High Resolution Computation of the Terrestrial Recycling of Meteoric Water Along an Atmospheric Trajectory" by N.L. Ingraham and R.G. Craig is in preparation.

Activities of Mifflin and Associates focused on Study Plan reviews, literature review of environmental effects on glass hydration rates, and completion of reports on Geochemistry-related projects. A paper titled "Element Redistribution in a Yucca Mountain Radioactive Waste Repository Produced by Evaporation and Condensation of Water in a Thermal Field" by J.D. Rimstidt, M.A. Williamson, and W.D. Newcomb was presented at the FOCUS '91 Conference in Las Vegas. The paper summarizes the research by Virginia Polytechnic Institute and State University on mass transport in a thermal gradient (a simulation of conditions in the near field environment after emplacement of nuclear waste canisters). Plan preparation was initiated to continue stable isotope studies of calcite/silica vein deposits in FY 1992.

Relative to the University of Nevada, Las Vegas Volcanism Studies, work during the reporting period focused on major and trace-element chemical analysis of samples collected from Petroglyph Wash, Reveille Range, and Malpais Flattop. The geochemical database was updated with the new chemical data. Subcontract negotiations were initiated with the University of Iowa and University of Kansas for geochemical analysis support in 1992.

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

As part of the tectonics task, S.J. Caskey completed a draft report titled "Mesozoic and Cenozoic Structural Geology of the CP Hills, Nevada Test Site, Nye County, Nevada; and Regional Implications" and submitted the report to the Office for technical review. The report documents a structural study of the geochemistry of Mesozoic structure and prevolcanic normal faulting on the Nevada Test Site. When considered in conjunction with other published structural maps in the region, this study provides important constraints for the deep subsurface structure of Yucca Mountain. Specifically the study suggests that faults at depth beneath Yucca Mountain have

very different characteristics than faults exposed at the surface.

Researchers with the mineral resources project met several times with DOE's Sample Oversight Committee relative to the request for selected core samples from the Sample Management Facility. Additional meetings are scheduled during the next reporting period.

Environmental Science Associates completed a comprehensive review of the DOE's Environmental Program Plans. It was determined that 17 documents comprise the sum total of DOE's Environmental Program.

During the reporting period, technical resources were expended by Desert Research Institute, Mifflin and Associates, L. Lehman and Associates, and the Office professional staff gathering evidence, conducting analyses, and preparing reports to support the State of Nevada's case in the hearing before the State Water Engineer relative to the DOE's application for an appropriation of water from Well J-13. The hearing was scheduled for September 24 - October 4, 1991. Some of the State's technical experts provided evidentiary testimony at the hearing.

## 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 which serves as a steering committee for the State effort. Nye County, Clark County and Lincoln County (the three officially designated "affected" jurisdictions) 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.

State socioeconomic activities were underway during the period in the following areas:

Project Description. A draft report was prepared and reviewed on the Project Description Development System, including a computerized database and program for developing scenarios. Work is being done by Planning Information Corporation of Denver.

Economic Modeling. Continued refinement of the REMI model and the installation and maintenance of the model at the State Department of Employment Security Research Division, the entity selected to house the model for the NWPO. Work is being done jointly by the State ESD and Coopers and Lybrand of Las Vegas and Phoenix.

Social-Cultural Studies. A draft report analyzing data collected on rural and urban populations, especially variables that help explain differential risk perceptions, was prepared and reviewed. Also, a project to examine how trust operates to influence people's responses to risk and to the repository was ongoing. Work is being carried out by Arizona State University, Utah State University and the University of Nevada Las Vegas. Seven draft case study reports examining socioeconomic impacts of analogous nuclear or hazardous facilities/incidents on surrounding communities were prepared and submitted for review.

Native American Studies. A draft report analyzing data on Native American communities in Nevada affected by the repository project was prepared and reviewed. Work is done by the University of Nevada, Reno.

Risk Assessment, Risk Perception/Behavior Studies. Work continued on analysis of risk effects, including the evaluation of data from prior survey research on tourism, migration, and convention attendance. A series of draft summary reports were prepared and reviewed. Work is being done by Decision Research of Eugene, Oregon, The Wharton School, University of Pennsylvania, Clark University and Coopers and Lybrand.

Database Development and Maintenance. The Monitoring Reference Data Base (MRDB) was maintained and updated. Work is done by Decision Research and Coopers and Lybrand.

During the period, the Technical Review Committee met to review socioeconomic study activities, products and findings and made recommendations for future work. Funding shortages continue to hamper the State's socioeconomic efforts and have resulted in the truncating and revising of many research activities originally planned as part of the State efforts.

### 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 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.

Work ongoing during the period includes the following tasks:

- Preparation of a draft report on full-scale shipping cask crash and fire tests;
- Education of the status of commercially available dry storage systems for spent fuel, with special attention to the certification of dual purpose (storage/transport) casks;
- Analysis of severe highway/rail accidents which may expose casks to conditions exceeding those specified in NRC's cask performance standards;
- Evaluation of DOE's responses to comments on the GA 4/9 and BR 100 shipping cask preliminary design reports; and
- Ongoing review of the Hazardous Materials Transportation Uniform Safety Act and the implications for HLW risk management.

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

Negotiations continued with the University of Nevada, Reno, College of Engineering regarding the scope of work and work plans for the Center for Infrastructure Studies' transportation-related activities to be 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 project and the State of Nevada's oversight role in it. NWPO staff continued to prepare and disseminate information to the public and the media and assisted the Nevada Nuclear Waste Task Force, the principal NWPO public information contractor, in the preparation of

public information newsletters. The staff also coordinated the release of information regarding the repository program with the Governor's Office, the Nevada Commission on Nuclear Projects, and the Task Force.

The staff continued to develop and maintain print and electronic files of media coverage of the repository program and nuclear waste, and monitored public hearings, forums, and other meetings.

The staff assisted media organizations in arranging interviews and gathering background information about the project, as well as assisting in public presentations by NWPO officials, members of the Commission, and the Task Force.

Daily the staff fielded phone solicitations for information and other requests for NWPO-produced materials, such as newsletters, maps, fact sheets, overviews, videotapes, and various technical, socioeconomic, and transportation documents. The staff also continued to manage and evaluate the performance and accomplishments of contractors in the public information field.

#### **B. OFFICE ORGANIZATION TO MEET OBJECTIVES**

The NWPO continued to operate with a central office staff, supplemented by contractual services for needed technical and specialized expertise, in order to provide high-quality oversight and monitoring of federal HLW activities and to plan and conduct independent State studies. At the close of the report period, NWPO staff consisted of the following:

##### **Executive Director**

Accountant

Accounting Clerk III

Management Assistant III

Management Assistant II

Management Assistant I

Administrative Aide II (clerical)

- currently vacant due to congressional budget cuts

Micro-Computer Specialist III

##### **Quality Assurance Manager**

Administrator of Technical Programs

Technical Coordinator

- currently vacant due to congressional budget cuts

Environmental Scientist (contract employee)

Radiation Physicist (contract employee)

Repository Engineer (contract employee)

- currently vacant due to congressional budget cuts

Technical Policy Coordinator (contract employee)

Administrator of Planning

Planner/Research Analyst

Transportation Advisor (contract employee)

Public Affairs Manager

Deputy Attorney General

Senior Legal Secretary II (clerical)

**C. PLANS FOR THE BALANCE OF THE GRANT PERIOD**

During the remainder of the current grant period, and into the next, the NWPO will be engaged in the following activities in order to meet established objectives:

1. Monitor all DOE activities relative to the federal high-level nuclear waste repository proposed for Nevada;
2. Coordinate State and local responses and reviews of DOE technical and planning documents and proposals, and assure that all affected State, local and tribal governmental agencies are appropriately involved in State and federal repository activities;
3. Coordinate review of hydrological, geological, engineering and other technical aspects of the proposed federal repository activities;
4. Conduct studies in areas of socioeconomic, transportation, and others as needed;
5. Consult and coordinate with other appropriate State agencies for input and guidance regarding the design of the State program, for review and comment relative to federal document, and for identifying potential impacts

of the federal program and formulating mitigation strategies;

6. Identify health, safety and environmental issues which are of concern to the State and develop State responses and strategies for addressing these issues;
7. Provide timely and accurate information to the Governor, the Commission on Nuclear Projects, the State Legislature, local governments, and the public on all aspects of the federal program;
8. Identify major legal issues arising out of the proposed repository project and develop strategies for effectively addressing such issues to the benefit of the State and affected local communities; and
9. Represent Nevada's interests at the national and regional level, including participation in Nuclear Regulatory Commission deliberations and rulemaking activities concerning licensing of a waste repository; coordinate Nevada's activities with those of other affected states; participate in task forces created by the National Governor's Association, the National Conference of State Legislatures, and the National Association of Attorneys General for reviewing federal nuclear waste storage activities; and cooperate in evaluations and assessments of impacts and associated consequences of repository siting, construction, operation, and closure.

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