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August 25, 1991

TO: ALL INTERESTED PARTIES

The attached document entitled "Selected NRC Products -- High-Level Waste Program" dated April 1991 is being distributed for your information.

Sincerely,

/s/

Anne Garcia, Licensing Assistant
Repository Licensing and Quality
Assurance Project Directorate
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure:
As stated

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SELECTED NRC PRODUCTS
HIGH-LEVEL WASTE PROGRAM

August 25, 1991

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Selected NRC Products
High-Level Waste Program

August, 1991

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INTRODUCTION

The purpose of this list is to identify selected U.S. Nuclear Regulatory Commission (NRC) high-level waste program products and provide a summary of current and planned documents issued by the NRC staff. The list is not intended to be directive in nature but rather to offer a collection of products generated by the high-level waste (HLW) program in order to provide timely guidance/advice for prelicensing and eventual licensing phases. It is necessary to use a variety of documents to provide such guidance because of: a) variability in the nature of the technical issues in HLW; b) the site-specific nature of many of the issues; c) the evolving nature of issues with time as the exploratory site investigations are carried out; and d) variability in what is an appropriate level of detail that must be addressed in guidance.

Due to the uncertainties in investigative results and changes of priorities and schedules, guidance flexibility is needed. The variety of existing documents and procedural forms allows the staff to take a flexible approach in assuring efficient, timely and complete guidance in the prelicensing and licensing phases. This summary permits interested parties who have limited time and who cannot, practically speaking, follow the great amount of detail that is the subject of the prelicensing guidance process to be informed of how the process is working. This summary offers a listing of generic as well as site-specific products which have been or are being planned. The document will be reviewed and reissued on a periodic basis.

The summary is divided into three major components: Regulations, Licensing Guidance Process; and NRC Review Plans. Copies of the referenced documents can be obtained from the NRC Public Document Room.

I. REGULATIONS

While there are a number of NRC and other Federal agencies rules and regulations which pertain to the prelicensing and licensing actions, this list includes only those products produced by the HLW Program.

10 CFR Part 60--Disposal of High-Level Radioactive Wastes in Geologic Repositories.

| | <u>TITLE</u> | <u>ISSUE DATE</u> |
|---|--|-------------------|
| o | Licensing Procedures for HLW in Geologic Repositories | February 1981 |
| | - Site Characterization and State/Tribal Participation (Final) | July 1986 |

- Negotiated Rulemaking on Submission and Management of Records and Documents (Final) April 1989
- NEPA/EIS Adoption (Final) July 1989
- o Technical Criteria for HLW in Geologic Repositories June 1983
 - Unsaturated Zone July 1985
 - EPA Standard (Proposed) June 1986
 - Repository Operations Criteria (Proposed)* TBD

*Previously titled "Design Basis Accident Dose Limit" in SECY-88-285

10 CFR Part 61 was amended on May 25, 1989 (54 FR 22578) to require geologic repository disposal of greater-than-class-c low-level waste (LLW) unless the Commission has approved an alternative means of disposal.

II. LICENSING GUIDANCE PROCESS

This section is divided into ten areas: Site Characterization Analysis (SCA) and Semi-annual update reviews; Regulatory Guides; Staff Positions and Staff Technical Positions; Documented Technical Meetings; Site Visits, Observations of Department of Energy (DOE) Quality Assurance (QA) Program Audits, Observations of DOE QA Program Surveillances, and NRC Staff Audits; Safety Evaluations; Environmental Assessment Reviews; Contractor Reports (Research and Special Studies); State/Tribal Interactions; and Program Planning and Management Reviews.

A. SITE CHARACTERIZATION ANALYSIS AND SEMI-ANNUAL REPORTS

On December 22, 1987, the President signed into law a bill amending the Nuclear Waste Policy Act (the Nuclear Waste Policy Amendments Act of 1987, Pub. L. No. 100-203). The primary effect of the legislation is to focus DOE's site characterization efforts on the Yucca Mountain in Nevada to determine its suitability as a site for a geologic repository. Accordingly, DOE issued a Consultative Draft Site Characterization Plan (CDSCP) for the Yucca Mountain site on January 8, 1988. A plenary session on the CDSCP was held in Reno, Nevada on January 28-29, 1988. The NRC staff completed its review of the CDSCP and transmitted its draft point papers to DOE on March 7, 1988. Subsequently, DOE conducted consultations with the NRC and State of Nevada to discuss comments on the CDSCP. One such workshop was held in March to discuss NRC's draft comments, and the NRC continued efforts to resolve these comments in a workshop with DOE in April on alternative conceptual models. The NRC transmitted the final point papers to DOE on May 11, 1988. After consideration of the comments received and

workshop discussions, DOE issued the statutory SCP required by the Nuclear Waste Policy Act (NWPA) and 10 CFR Part 60 on December 28, 1988. NRC completed its review of the SCP and transmitted its SCA to DOE on July 31, 1989. The SCA was issued as NUREG-1347 in August 1989. On December 14, 1990, DOE transmitted its responses to the SCA open items; on July 31, 1991, NRC transmitted to DOE the NRC staff evaluation of DOE's response package. Further follow up will be provided by DOE issuing semi-annual progress reports as required under the NWPA (Section 113) which will be commented on by the NRC. On March 2, 1990 the DOE issued its first semi-annual report, covering the period September 15, 1988 through September 30, 1989. The NRC transmitted review comments to DOE on June 25, 1990. Since then, DOE has issued progress reports covering the periods October 1, 1989 through March 31, 1990 and April 1, 1990 through September 30, 1990.

B. REGULATORY GUIDES

Regulatory Guides are drafted by the staff to establish a standard approach to licensing. They are not directives, but reflect acceptable procedures or actions which would be considered acceptable by the staff.

The current plans are to issue standard format and content documents as Regulatory Guides.

| <u>TITLE</u> | <u>DESCRIPTION</u> | <u>ISSUE DATE</u> |
|-----------------------------|---|-------------------|
| Regulatory Guide 4.17 | Standard Format and Content of Site Characterization Plans for High-Level Waste Geologic Repositories | March 1987 |
| Regulatory Guide <u>TBD</u> | Draft Format and Content for a License Application | November 1990* |
| Regulatory Guide <u>TBD</u> | Topical Guidelines for Inclusion of Information in the Licensing Support System (LSS) | TBD |

*Date noticed in the Federal Register.

C. STAFF POSITIONS AND STAFF TECHNICAL POSITIONS

Prior to the passage of the Nuclear Waste Policy Amendments Act of 1987, the Staff Technical Positions (STPs) had been divided into two types: Generic Technical Positions, dealing with issues which relate to licensing activities for repositories independent of the technology or site selected, and Site STPs, which give site specific guidance/advice. Now with the focus on one site, all STPs will be related to the Yucca Mountain site.

STPs provided a format for establishing the staff's positions on site specific issues. Issue-oriented Site Technical Positions (ISTPs) were generated in each technical review area (geology/geophysics, geochemistry, waste package, repository design/rock mechanics, and hydrogeology) for each site. ISTPs constituted what the staff considered to be a systematic and

comprehensive identification of issues which need to be resolved for licensing. The ISTPs were coordinated with DOE/NRC workshops in individual program areas.

The concept of STPs was developed to provide maximum flexibility in completing a series of technical positions that have sufficient formality to record staff positions and to notify the prospective licensee (DOE). STPs will be initiated by the need for documentation of a staff concern or in response to a major question raised by the licensee, and will be issued as appropriate throughout the pre-licensing period. They establish acceptable methods of analysis, minimum information needs, or acceptable methods of data gathering and form the basis for tracking issues over time. In addition, they provide criteria that, when met, would allow staff to conclude that DOE has complied with the applicable regulations.

| <u>TITLE</u> (Final unless otherwise noted) | <u>ISSUE DATE</u> |
|---|-------------------|
| o Documentation of Computer Codes, (NUREG-0856) 48FR31761 | July 1983 |
| o Modeling Strategy Document for HLW Performance Assessment | July 1984 |
| o Licensing Assessment Methodology for HLW Geologic Repositories (Draft) | July 1984 |
| o ISTP for Nevada Nuclear Waste Storage Investigations (NNWSI) (Draft) | September 1984 |
| o Determination of Radionuclide Solubility in Groundwater for Assessment of High-Level Radionuclide Waste Isolation | November 1984 |
| o Waste Package Reliability Analysis | December 1985 |
| o In-Situ Testing During Site Characterization | December 1985 |
| o Design Information Needs in Site Characterization Plans | December 1985 |
| o Borehole and Shaft Seals | February 1986 |
| o Interpretation and Identification of the Disturbed Zone (Draft) | July 1986 |
| o Groundwater Travel Time (Draft) | July 1986 |
| o Determination of Radionuclide Sorption for HLW Repositories | January 1987 |

| <u>TITLE</u> | <u>ISSUE DATE</u> |
|---|-------------------|
| o Qualification of Existing Data for HLW Repositories (NUREG-1298) | February 1988 |
| o Peer Review for HLW Repositories (NUREG-1297) | February 1988 |
| o Guidance for Determination of Anticipated Processes and Events and Unanticipated Processes and Events (Draft) (PLEASE NOTE THAT THIS IS NOW BEING INCORPORATED UNDER THE CONFORMING AMENDMENTS TO THE EPA STANDARD) | February 1988 |
| o Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements (NUREG-1318) | April 1988 |
| o Tectonic Models under 10 CFR Part 60 (Draft) | June 1989 |
| o Postclosure Seals, Barriers, and Drainage System in an Unsaturated Medium (NUREG-1373) | August 1989 |
| o Investigations to Identify Fault Displacement and Hazards at a Geologic Repository (2nd Draft) | April 1991 |
| o Staff Technical Position on Regulatory Considerations in the Design and Construction of the Exploratory Shaft Facility (NUREG-1439) | July 1991 |
| o Geologic Repository Operations Area Underground Facility Design -- Thermal Loads (Draft) | June 1991 |

In addition to STPs, the staff also issues Staff Positions (SPs). They are issued as guidance to the Office of Nuclear Material Safety and Safeguards (NMSS) staff responsible for the review of a license application for the construction and operation of a geologic repository for high-level waste. In an SP, the interpretation of a specific requirement in 10 CFR Part 60. Because the SP is a requirement in 10 CFR Part 60. Because the SP is a staff position, it is not a substitute for the Commission's regulations and is not binding upon other parties to the licensing proceedings. Those SPs issued by the staff are listed below.

| <u>NUMBER</u> | <u>TITLE</u> | <u>ISSUE DATE</u> |
|---------------|--|-------------------|
| SP 60-001 | "Clarification of the 300-1000 Year Period for Substantially Complete Containment (SCC) of High-Level Wastes with the Waste Packages under 10 CFR 60.113(A)(1)(11)(A)" | August 1990 |
| SP 60-002 | "Performance Objectives Relating to Isolation of the Waste" | August 1990 |
| SP 60-003 | "Definition of the Term Performance Objectives as used in 10 CFR 60.133(1)" | August 1990 |

D. DOCUMENTED TECHNICAL MEETINGS

The purpose of the technical meetings is to assure that an information flow is maintained between the NRC and DOE which facilitates the accomplishment by each agency of its responsibilities relative to site investigation and site characterization. Technical meetings are held to review data, review and consult on interpretation of data, identify potential licensing issues, agree on the adequacy of methods and approaches for acquisition of information and data as well as available data. Schedules of activities pertaining to these technical meetings will be made publicly available to all interested parties. A written report agreed to by both NRC and DOE will be prepared for each meeting including agreements reached. The meetings are open to participation by State/Tribal representatives and allow public attendance as observers.

Prior to the passage of the Nuclear Waste Policy Amendments Act of 1987, meetings were listed as either site-specific or generic in nature. Now that all meetings are related to the Yucca Mountain Project, and will be listed as such, BWIP and Salt Workshops and Technical Meetings previously held have been deleted from this document. The Generic Workshops and Technical Meetings are still being included due to their historical nature and since they pertained to the Yucca Mountain Project as well as the others previously considered for the repository.

YUCCA MOUNTAIN PROJECT WORKSHOPS AND TECHNICAL MEETINGS

| <u>MEETING</u> | <u>DATE</u> |
|--|-------------------|
| NWTRB Panel mtg on Transportation and Systems | August 15, 1991 |
| NRC/DOE Interaction/Defense Waste Processing Facility, Aiken, S.C. | August 7-8, 1991 |
| Technical Exchange with DOE regarding Data Management | July 30, 1991 |
| NWTRB on International Waste Management | July 16, 17, 1991 |
| NWTRB Public mtg on ESF Design Status | July 15, 1991 |
| NWTRB Panel mtg on HG&G and SG&G | June 25-27, 1991 |
| NRC/DOE Bi-monthly QA Meeting | June 25, 1991 |
| NRC/DOE Interactions Meeting | May 30, 1991 |
| NWTRB Panel meeting on Performance Assessment with DOE and NRC | May 20-21, 1991 |
| Bi-monthly QA Meeting | April 25, 1991 |
| NWTRB Panel Meeting on Quality Assurance | March 26-27, 1991 |
| NRC/DOE meeting on Radionuclide Retardation Testing and Modeling | March 20-21, 1991 |

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| DOE/EPRI/NWTRB panel meeting on Volcanism | March 1, 1991 |
| Technical Exchange with DOE on Seismic Hazards | February 20, 1991 |
| DOE Software QA Workshop | February 4-7, 1991 |
| Exploratory Shaft Facility Alternative Study | January 29-31, 1991 |
| DOE Software QA Workshop | January 22-23, 1991 |
| NRC/DOE periodic QA meeting | January 18, 1991 |
| NWTRB meeting on Exploratory Shaft Facility | January 17, 1991 |
| Interactions Scheduling Meeting with NRC and DOE | December 13, 1990 |
| NRC/DOE/EPA Interactions Meeting on Performance Assessment | November 27-28, 1990 |
| NWTRB meeting with NRC/DOE on Alternatives Analysis Study for the Exploratory Shaft Facilities | November 19, 1990 |
| NRC/DOE meeting to discuss Quality Assurance | November 8, 1990 |
| NWTRB Quality Assurance Panel Meeting | November 1, 2, 1990 |
| NRC/DOE on Quality Assurance | October 30, 1990 |
| NRC/DOE Licensing and Management Meeting | October 29, 1990 |
| NRC/DOE Technical Exchange/Calico Hills Testing | October 12, 1990 |
| NWTRB meeting on Exploratory Shaft Facility and Surface Base Testing | October 11, 1991 |
| NRC/DOE Technical Exchange/Unsaturated Zone Testing | September 26, 27, 1990 |
| NRC/DOE QA meeting | September 18, 1990 |
| Technical Exchange with DOE On Sorption Testing | September 13, 1990 |
| NRC/DOE Licensing and Management Meeting | September 5, 1990 |
| NWTRB - EBS Panel Meeting | August 28-29, 1990 |

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| NRC/DOE QA Meeting | July 31, 1990 |
| NRC/DOE Interactions Scheduling Meeting | July 31, 1990 |
| NRC/DOE periodic QA meeting | July 19, 1990 |
| NRC/DOE Licensing and Management Meeting | July 19, 1990 |
| Technical Exchange and Field Trip on Significant Faults | June 12, 1990 |
| NRC/DOE QA Meeting | May 23, 1990 |
| Meeting to discuss the proposed QA Workshop | May 22, 1990 |
| NRC/DOE QA Meeting | April 27, 1990 |
| NWTRB - Seismic Design Basis | April 12, 1990 |
| Technical Exchange on Exploratory Shaft Facility | April 7, 1990 |
| NWTRB Meeting on Yucca Mountain Seismic Issues | April 4, 1990 |
| NRC/DOE QA Meeting | March 21, 1990 |
| Interactions Scheduling Meeting | March 20, 1990 |
| NWTRB - Repository Design Process and Performance Assessment | March 19, 1990 |
| Technical Assessment Review of the ESF Anomaly | March 6, 1990 |
| NRC/DOE Bimonthly QA Meeting | February 15, 1990 |
| Technical Exchange on Calcite and Silica | February 6, 1990 |
| Technical Exchange on Data Management | January 9, 1990 |
| Technical Exchange on the Draft Technical Position on Seismic Hazards Evaluation | December 19-20, 1989 |
| NRC/DOE Bimonthly QA Meeting | December 13, 1989 |
| Technical Exchange on Tectonic Models | November 28-29, 1989 |
| Meeting on Interactions Scheduling | November 7, 1989 |

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| Technical Exchange and Site Visit on Tectonics | Oct. 31-Nov. 2, 1989 |
| Technical Exchange on Container Material | October 26, 1989 |
| Technical Exchange on the ESF | October 4, 1989 |
| Technical Exchange on Tectonics | September 26, 1989 |
| NRC/DOE Bimonthly QA Meeting | September 7, 1989 |
| Meeting on Tectonics | August 30-31, 1989 |
| Meeting on Substantially Complete Containment | August 29, 1989 |
| Meeting to Discuss Interactions | July 26, 1989 |
| NRC/DOE Bimonthly QA Meeting | July 11, 1989 |
| Meeting on Design Control Process and DOE's QA Programs | July 6-7, 1989 |
| Meeting on SCP/DAA Preliminary Concerns | May 9-10, 1989 |
| Meeting on Quality Assurance | May 9, 1989 |
| NRC/DOE/NV/CNWRA Meeting on ongoing work | April 25, 1989 |
| Meeting on Quality Assurance | March 22, 1989 |
| Meeting on Quality Assurance | February 23, 1989 |
| Meeting on Air Force Overflights | February 8, 1989 |
| Meeting on QA Issues | January 25, 1989 |
| Meeting on Study Plans | December 15, 1988 |
| Meeting on ESF Design Control | December 8, 1988 |
| Meeting on ESF Design Control | November 23, 1988 |
| Meeting on DOE's QA Program Description | November 18, 1988 |
| Meeting on ESF Design Control | November 3, 1988 |
| Meeting on ESF Open Items | October 19-21, 1988 |
| Meeting on DOE/OCRWM QA Requirements Document | September 28, 1988 |

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| Exploratory Shaft Facility Technical Meeting | July 18-19, 1988 |
| Meeting on OCRWM QA Program | July 7-8, 1988 |
| Alternative Conceptual Models | April 11-14, 1988 |
| Workshop on NRC's Draft Point Papers on the CDSCP | March 21-24, 1988 |
| DOE's QA Program Workshop | March 18, 1988 |
| Seismotectonics Technical Meeting | September 22-23, 1987 |
| Exploratory Shaft Meeting | April 14-15, 1987 |
| Management Meeting | June 12, 1986 |
| Management Meeting | February 19-20, 1986 |
| Exploratory Shaft Design/Construction | August 27-28, 1985 |
| Waste Package | July 23-25, 1985 |
| Management Meeting | March 11, 1985 |
| Sample Acquisition for Topopah Spring Member and Calico Hills Tuff | February 4, 1985 |
| QA Visit | December 13-14, 1984 |
| Geology Data Review | September 17-28, 1984 |
| Hydrology Data Review | July 25-28, 1984 |
| Design/Rock Mechanics Data Review | July 17-20, 1984 |
| Geochemistry | July 10-13, 1984 |
| Waste Package | October 18-19, 1983 |
| Geology | October 4-6, 1983 |
| Hydrology | September 20-21, 1983 |
| Hydrology Data Review | January 27-28, 1983 |
| Conceptual Design | January 24-25, 1983 |
| Hydrology | January 18-19, 1983 |

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| Geochemistry | January 12-13, 1983 |
| Site Technical and Program Review | May 17-19, 1982 |
| Peer Review of NNWSI | August 24-28, 1981 |
| Site Technical and Program Review | February 16-24, 1981 |
| Site Technical and Program Review | September 24-25, 1979 |
| Geochemistry and Hydrogeology | March 2, 1979 |
| Site Technical and Program Review | February 23-24, 1978 |
| Seismic/Geologic Design Criteria for Waste Repository | January 25, 1978 |

GENERIC WORKSHOPS AND TECHNICAL MEETINGS

| <u>MEETING</u> | <u>DATE</u> |
|--|---------------------|
| Issues Hierarchy and Issue Resolution Strategy | October 8-9, 1987 |
| Generic Design Basis Accident Dose Limit | August 26, 1987 |
| Q-List GTP | August 25, 1987 |
| NRC Staff Comments on OGR QA Plan | August 19, 1987 |
| QA Technical Meeting on Peer Review and Qualification of Existing Data GTPs | May 14, 1987 |
| Issues Hierarchy and Issue Resolution Strategy | March 3-4, 1987 |
| DWPF Vitrification Process, Waste Form and Supporting Data Base Technical Meeting | December 9-10, 1986 |
| Waste Acceptance Process Meeting | July 31, 1986 |
| Level of Detail in the SCP | May 7-8, 1986 |
| Pilot Project Demo/Status of NWSA Program | April 29, 1986 |
| EA Site Ranking Methodology Briefing | April 23, 1986 |
| Licensing Support System Coordinating Group | April 22, 1986 |
| Rod Consolidation | December 17, 1985 |

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| Generic QA Meeting | December 4-5, 1985 |
| Generic Seismo-Tectonics Meeting | December 3-4, 1985 |
| Site Characterization Plans--Chapter 8 | October 29-30, 1985 |
| Subsystem Performance Allocation | September 26-27, 1985 |
| DOE Position Paper on Retrievability and Retrieval | July 31, 1985 |
| Exploratory Shaft Facility Design/Construction, Licensing Issues, and the Exploratory Shaft Test Plans | July 18, 1985 |
| Q-11st Methodology | July 1, 1985 |
| Appendix 7 to Site Specific Agreement--On-Site Representatives Activities | June 14, 1985 |
| Management Meeting with DOE | May 30, 1985 |
| Design Information Needs for SCPs | April 18, 1985 |
| Performance Allocation Meeting | April 17, 1985 |
| Review of Report "Recommended Safety, Reliability, QA and Management Techniques with Possible Application by DOE to the HLW Repository Program" | April 11, 1985 |
| Discussion of NRC Comments on DOE's Draft EAs | April 8-9, 1985 |
| DOE Annotated Outline for Site Characterization Plans | February 13, 1985 |
| Development of Licensing Issues and Information Management Systems | February 8, 1985 |
| QA Site Visits Summary Briefing | January 28, 1985 |
| Briefing on NRC Licensing Process | January 28, 1985 |
| NRC's Comments on DOE Draft Mission Plan | December 17, 1984 |
| Preparation for QA Visits to Project Sites | November 30, 1984 |
| Transportation Model Workshop | November 27-28, 1984 |

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|---|--------------------|
| NRC Licensing Process Briefing to DOE Field Offices | November 5-8, 1984 |
| QA Review Plan and Upcoming QA Site Visits | October 24, 1984 |
| QA Site Visits Planning Meetings | October 18, 1984 |
| In-Situ Testing Planning Meeting | August 9, 1984 |
| DOE Siting Guidelines | April 18, 1984 |
| Discussion of the OCRWM Mission Plan | April 11, 1984 |
| NRC Review Plan of QA for Site Characterization | May 12, 1983 |

E. SITE VISITS, OBSERVATIONS OF DOE QA PROGRAM AUDITS, OBSERVATIONS OF DOE QA PROGRAM SURVEILLANCES, AND NRC STAFF AUDITS

The purpose of site visits is for the staff to gain an understanding of ongoing programs. In particular, the staff (1) performs reviews of selected documents; (2) holds discussions with DOE and its contractors; and (3) observes instrument, data collection, and processing activities. Following site visits, the NRC staff issues a short report summarizing the results. (There were site visits prior to 1988, but they were mainly for familiarization with the site and maintaining cognizance of the ongoing programs, versus the site visits by the staff listed below for the purposes stated above.)

The purpose of NRC observations of DOE audits and surveillances is to assess whether DOE is meeting the NRC's quality assurance (QA) program requirements. From the observations, the staff is able to assess the adequacy of DOE's audit and surveillance programs, gain confidence in DOE's technical oversight, and obtain information on the adequacy of the audited (or surveilled) organization's implementation of their QA program. After each observation, a report is issued discussing the results.

The purpose of NRC staff audits is to independently assess the adequacy of the audited organization's implementation of their QA program. During the audit, staff (1) holds discussions with audited organization's staff, (2) compares QA records with QA program requirements, and (3) observes activities in progress with regard to QA program requirements. Following the audit, staff issues a report summarizing the audit and results.

Site Visits

| | |
|---|----------------------|
| USGS Seismic Monitoring Program | Feb 29-March 3, 1988 |
| NRC/DOE/State of Nevada Volcanism Field Visit | May 1-5, 1989 |
| Hydrology Site Visit, Mercury, NV | July 24-28, 1989 |

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| Air Core Drilling Demonstration, Milford, Utah | August 19, 1989 |
| Prototype Drilling and Core Sample Handling (drilling site near Superior, AZ) | March 19-22, 1990 |

Observations of DOE QA Program Audits

| | |
|--|--------------------------|
| Westinghouse | Aug 31-September 4, 1987 |
| Westinghouse | November 9-21, 1987 |
| Fenix & Scisson (F&S) | Feb 22-March 4, 1988 |
| PNL/Materials Characterization Center (MCC) | February 22-25, 1988 |
| Holmes & Narver (H&N) | March 28-April 1, 1988 |
| USGS, Menlo Park, CA | April 26-28, 1988 |
| USGS, Denver, CO | June 8-17, 1988 |
| Sandia National Laboratories (SNL), Albuquerque, NM | July 25-29, 1988 |
| Reynolds Electrical & Engineering Co, Las Vegas, NV (REEco) | Aug 22-26, 1988 |
| Los Alamos National Laboratory (LANL) | October 3-7, 1988 |
| Lawrence Livermore National Laboratory (LLNL) | October 24-27, 1988 |
| H&N (Supplemental) | November 1-4, 1988 |
| F&S (Supplemental) | November 7-10, 1988 |
| F&S | April 10-14, 1989 |
| H&N | April 24-26, 1989 |
| LLNL | June 5-9, 1989 |
| USGS, Denver, CO | August 14-23, 1989 |
| SNL Albuquerque, NM | September 11-15, 1989 |
| REEco | September 25-29, 1989 |
| LANL | November 13-21, 1989 |
| LANL | March 26-30, 1990 |

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| LANL | May 14-18, 1990 |
| USGS, Denver, CO | June 25-29, 1990 |
| H&N | July 31-August 2, 1990 |
| SNL | August 20-24, 1990 |
| F&S | September 25-28, 1990 |
| OCRWM | October 15-19, 1990 |
| YMPO | October 22-26, 1990 |
| SAIC | November 13-16, 1990 |
| KOH | January 7-11, 1990 |
| REEco | February 25-March 1, 1991 |
| LANL | March 25-29, 1991 |
| LLNL | July 31, 1991 |

OBSERVATIONS OF DOE QA PROGRAM SURVEILLANCES

| | |
|--------------------------|----------------------|
| USGS | July 10, 1991 |
| Raytheon | June 24-25, 1991 |
| YMPO | May 5-10, 1991 |
| SNL | May 6-10, 1991 |
| LLNL | May 29, 1991 |
| Raytheon | March 3-6, 1991 |
| LANL | February 25-28, 1991 |
| USGS Software QA Program | February 20-23, 1990 |
| OCRWM | February 4, 1991 |
| USGS Study Plans | April 17-19, 1990 |
| SNL | April 23-26, 1990 |
| YMPO | June 6-11, 1990 |

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|------|---------------------|
| LLNL | August 21, 1990 |
| SNL | September 4-7, 1990 |

NRC Staff Audits

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|--|------------------|
| Los Alamos QA Program (HLW Repository) | June 8-12, 1987 |
| CNWRA | March 3, 1989 |
| CNWRA | June 28, 1990 |
| Savannah River | February 4, 1991 |
| West Valley | June 17-21, 1991 |
| CNWRA | July 23-26, 1991 |

F. SAFETY EVALUATIONS

Safety Evaluations are formal staff evaluations of documents submitted by the DOE. They contain the staff's analysis of DOE's approaches for addressing various aspects of the Commission's regulations and whether these approaches will protect the public health and safety.

| | |
|--------------------------------|-------------------|
| NNWSI QA Plan (88-9) | December 30, 1988 |
| OCRWM QA Program Description | May 2, 1989 |
| OCRWM QA Requirements Document | May 8, 1989 |
| H&N QA Plan | October 3, 1989 |
| REEC Co QA Plan | October 3, 1989 |
| F&S QA Plan | October 24, 1989 |
| SNL QA Plan | October 24, 1989 |
| USGS QA Plan | October 24, 1989 |
| LLNL QA Plan | October 24, 1989 |

LANL QA Plan

November 1, 1989

G. ENVIRONMENTAL ASSESSMENT (EA) REVIEWS

The staff has reviewed and commented on all DOE's draft and final EAs. These reviews were part of the continuing interface between the staffs of the DOE and NRC which will lead to early identification of potential licensing issues. The staff comments identified open items which are relevant to the potential licensing of each site based on information currently available and which will need to be resolved during site characterization.

NRC staff comments on the DOE Draft Environmental Assessments March 20, 1985

NRC staff comments on the DOE Final Environmental Assessments Dec. 22, 1986

H. CONTRACTOR REPORTS

In establishing the basis for guidance, the NRC staff periodically requires assistance from contractors. Reports giving details of the results of such assistance are published as NUREG/CR documents. Some NUREG/CR reports are a reflection of results of experimental programs whereas others are technical evaluations utilizing existing expertise and data. The following lists divide these reports into eight technical review areas and also differentiate reports produced for the Office of NMSS from those produced for the Office of Nuclear Regulatory Research (RES).

1. Performance Assessment

| <u>TITLE</u> | <u>NUMBER</u> | <u>DATE</u> |
|---|---------------|---------------|
| a) <u>NMSS</u> | | |
| o SWIFT Self-Teaching Curriculum | NUREG/CR-1968 | March 1982 |
| o DNET Self-Teaching Curriculum | NUREG/CR-2391 | March 1983 |
| o PATH 1 Self-Teaching Curriculum | NUREG/CR-2394 | October 1982 |
| o NRC Report on Dosimetry and Health Effects Self-Teaching Curriculum | NUREG/CR-2422 | March 1983 |
| o Summary of Repository Siting Models (Final Report) | NUREG/CR-2782 | July 1982 |
| o Repository Site Data Report for Tuff: Yucca Mountain, Nevada | NUREG/CR-2937 | November 1983 |
| o Parameters and Variables Appearing in Repository Siting Models | NUREG/CR-3066 | December 1982 |

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|--|--|--------------------------|
| o Benchmark Problems for Repository Siting Models | NUREG/CR-3097 | December 1982 |
| o Parameters and Variables Appearing in Radiological Assessment Codes | NUREG/CR-3160 | June 1983 |
| o A Summary of Computer Codes for Radiological Assessment | NUREG/CR-3209 | March 1983 |
| o Evaluation of Engineering Aspects of Backfill Placement for HLW Deep Geologic Repositories | NUREG/CR-3218 | May 1984 |
| o Technical Assistance for Regulatory Development: Review and Evaluation of the EPA Standard 40 CFR 191 for Disposal of High-Level Waste | NUREG/CR-3235 | April 1983 |
| o Verification of the Network Flow and Transport/Distributed Velocity Method (NWFT/DVM) Computer Code | NUREG/CR-3378 | June 1984 |
| o A Summary of Repository Design Models | NUREG/CR-3450 | November 1983 |
| o Benchmark Problems for Radiological Assessment Codes | NUREG/CR-3451 | August 1983 |
| o Benchmark Problems for Repository Design Models | NUREG/CR-3636 | February 1984 |
| o A Summary of Computer Codes for Waste Package Performance Assessment | NUREG/CR-3699 | April 1984 |
| o SWIFT II Self-Teaching Curriculum | NUREG/CR-3925 | August 1986 |
| o Techniques for Determining Probabilities of Events and Processes Affecting the Performance of Geologic Repositories | NUREG/CR-3964 Vol. 1 (Literature Review) | June 1989 |
| o Repository Site Data Report for Unsaturated Tuff: Yucca Mt, Nevada | NUREG/CR-4110 | November 1985 |
| o Repository Environmental Parameters and Models Relevant to Assessing the Performance of HLW packages (Basalt, Tuff and Salt) | NUREG/CR-4134 Revision 1 | May 1985 October 1987 |
| o Methodologies for Assessing Long-Term Performance of HLW Packages | NUREG/CR-4477 | January 1986 |

- o Assessing Compliance with the EPA HLW Standard: An Overview NUREG/CR-4510 October 1986
- o TOUGH User's Guide NUREG/CR-4645 August 1987
- o User's Manual for the NEFRAN Computer Code NUREG/CR-4766 September 1987
- o Modeling One-Dimensional Radionuclide Transport Under Time-Varying Fluid Flow Conditions NUREG/CR-5412 November 1989
- o Components of an Overall Performance Assessment Methodology NUREG/CR-5256 February 1990
- o Review of Techniques for Propagating Data and Parameter Uncertainties in HLW Repository Performance Assessment Models NUREG/CR-5393 March 1990
- o Technical Basis for Review of HLW Repository Modeling NUREG/CR-5398 March 1990
- Risk Methodology for Geologic Disposal of Radioactive Waste-Scenario Selection Procedures NUREG/CR-1667 April 1990
- Elicitation and Use of Expert Judgment in Performance Assessment for High-Level Radioactive Waste Repositories NUREG/CR-5411 May 1990
- Use of Performance Assessment in Assessing Compliance with the Containment Requirements in 40 CFR Part 191 NUREG/CR-5521 September 1990
- o Model Feasibility of Radioactive Pathways from Atmosphere to Surface Water NUREG/CR-5475 March 1990
- o Risk Methodology for Geologic Disposal of Radioactive Waste:
 - Sandia Waste Isolation Flow and Transport (SWIFT) Mode NUREG/CR-0424 October 1978
 - The Network Flow and Transport (NWFT) Model NUREG/CR-1190 March 1982
 - Distributed Velocity Method of Solving Convective-Dispersion Equation NUREG/CR-1376 October 1980

| | | |
|--|-------------------------|---------------|
| -- Model Description and User Manual for Pathways Model | NUREG/CR-1636 Vol. 1 | May 1981 |
| -- Sensitivity Analysis of the Environmental Transport | Vol. 2 | May 1981 |
| -- Asymptotic Properties of the Environmental Transport | Vol. 3 | May 1981 |
| -- Effects of Variable Hydrologic Patterns on the Environmental Transport Model | Vol. 4 | April 1982 |
| | | |
| -- Dosimetry and Health Effects | NUREG/CR-2166 | October 1981 |
| -- The DNET Computer Code User's Manual | NUREG/CR-2343 | April 1982 |
| | | |
| -- Final Report | NUREG/CR-2452 | August 1987 |
| | | |
| o User's Manual for the Sandia Waste-Isolation Flow and Transport Model (SWIFT) Release 4.81 | NUREG/CR-2324 | January 1982 |
| | | |
| o Data Input Guide for SWIFT II; The Sandia Waste-Isolation Flow and Transport Model for Fractured Media Release 4.84 | NUREG/CR-3162 | April 1986 |
| | | |
| o Theory and Implementation for SWIFT II; The Sandia Waste-Isolation Flow and Transport Model for Fractured Media Release 4.84 | NUREG/CR-3328 | August 1986 |
| | | |
| o The Role of Geochemical Factors in the Assessment and Regulation of Geologic Disposal of High-Level Radioactive Waste | NUREG/CR-3490 | March 1984 |
| | | |
| o Reliability of Geotechnical, Environmental, and Radiological Instrumentation in Nuclear Waste Repository Studies | NUREG/CR-3494 | November 1983 |
| | | |
| o On the Development of Environmental Radiation Standards for Geologic Disposal of High-Level Radioactive Waste | NUREG/CR-3714 | July 1984 |
| | | |
| o Uncertainties in Long-Term Repository Performance Due to the Effects of Future Geologic Processes | NUREG/CR-3832 | August 1984 |
| | | |
| o Climatic Calibration of Pollen Data | NUREG/CR-3947 | June 1984 |

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|---|---|---|-----------------------------------|
| o | Stress-Corrosion Cracking of Low-Strength Carbon Steels in Candidate HLW Repository Environments | NUREG/CR-3861 | February 1987 |
| o | A Three-Dimensional Computer Model to Simulate Fluid Flow and Containment Transport Thru a Rock Fracture System | NUREG/CR-4042 | January 1985 |
| o | Critical Parameters for a High-Level Waste Repository | NUREG/CR-4161 Vol. 1: Basalt Vol. 2: Tuff Vol. 3: Salt | May 1985 May 1987 July 1987 |
| o | Permeameter Studies of Water Flow Through Cement and Clay Borehole Seals in Granite, Basalt and Tuff | NUREG/CR-4748 | October 1986 |
| o | Demonstration of a Performance Assessment Methodology for HLW Disposal in Basalt Formations | NUREG/CR-4759 | June 1989 |
| o | High-Level Waste Preclosure Systems Safety Analysis--Phase 2, Final Report | NUREG/CR-4846 | June 1987 |
| o | System Performance of HLW Package Components | NUREG/CR-4956 | September 1987 |

2. Hydrology

a) NMSS

- | <u>TITLE</u> | <u>NUMBER</u> | <u>DATE</u> |
|--|---------------|--------------|
| o An Appraisal of Nuclear Waste Isolation in the Vadose Zone in Arid and Semiarid Regions (with Emphasis on the NTS) | NUREG/CR-3158 | October 1983 |
| o Unsaturated Flow and Transport Through Fractured Rock Related to HLW Repositories | NUREG/CR-3206 | March 1983 |
| o Pressure Testing of Fractured Rocks-- A Methodology Employing 3-Dimensional Cross-Hole Tests | NUREG/CR-3213 | July 1983 |
| o Prediction of Far-Field Subsurface Radionuclide Dispersion Coefficients from Hydraulic Conductivity Measurement | NUREG/CR-3612 | March 1984 |

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|--|---------------|------------|
| o Relationship Between the Gas Conductivity and Geometry of a Natural Fracture | NUREG/CR-3680 | April 1984 |
| o Radionuclide Transport as Vapor Through Unsaturated Fractured Rock | NUREG/CR-4654 | July 1987 |
| o Unsaturated Flow and Transport Through Fractured Rock Related to HLW Repositories--Final Report - Phase II | NUREG/CR-4655 | May 1987 |
| o Dating Ground Water and the Evaluation of Repositories for Radioactive Waste | NUREG/CR-4912 | April 1987 |

3. Geochemistry

a) NMSS

| <u>TITLE</u> | <u>NUMBER</u> | <u>DATE</u> |
|--|--|--|
| o Proceedings of the Conference on the Application of Geochemical Models to High-Level Nuclear Waste Repository Assessment | NUREG/CP-0062 | June 1985 |
| o Status of Geochemical Problems Relating to the Burial of High-Level Radioactive Waste, 1982 | NUREG/CR-3062 | March 1983 |
| o Evaluation of Radionuclide Geochemical Information Developed by DOE High-Level Nuclear Waste Repository Site Projects | NUREG/CR-3730 | March 1984 |
| o Progress in Evaluation of Radionuclide Geochemical Information Developed by DOE High-Level Nuclear Waste Repository Site Projects | NUREG/CR-3851 (Oct-Dec 1983) (Jan-Mar 1984) (Apr-Jun 1984) (Jul-Sep 1984) | Sep 1984 Vol 1 Oct 1984 Vol 2 Feb 1985 Vol 3 Oct 1985 Vol 4 |
| o Progress in Evaluation of Radionuclide Geochemical Information Developed by DOE High-Level Nuclear Waste Repository Site Projects Annual Report | NUREG/CR-4236 (Oct-Dec 1984) (Jan-Mar 1985) (Apr-Jun 1985) (Oct 84-Sep 85) | Oct 1985 Vol 1 Dec 1985 Vol 2 Apr 1986 Vol 3 Jul 1986 Vol 4 |
| o Progress in Evaluation of Radionuclide Geochemical Information Developed by DOE High-Level Nuclear Waste Repository Site Projects | NUREG/CR-4708 (Oct 85-Mar 86) (Apr 86-Sep 87) (Oct 87-Jun 89) | Jan 1987 Vol 1 Jul 1988 Vol 2 Aug 1989 Vol 3 |

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|---|----------------------------------|---------------|
| o Progress in Development of a Methodology for Geochemical Sensitivity Analysis for Performance Assessment | NUREG/CR-5085 | August 1989 |
| o Progress in Evaluation of Radionuclide Geochemical Information Developed by DOE High-Level Nuclear Waste Repository Site Projects | NUREG/CR-5236 (Oct 87-Jan 89) | August 1989 |
| o NRC Nuclear Waste Management Geochemistry 1983 | NUREG/CP-0052 | May 1984 |
| o Uncertainties in Geologic Disposal of HLW - Groundwater Transport of Radionuclides and Radiological Consequences | NUREG/CR-2506 | July 1983 |
| o Valence Effects in Absorption: A Preliminary Assessment of the Effects Valence State Control on Sorption | NUREG/CR-2863 | February 1983 |
| o Radionuclide Migration Around Uranium Ore Bodies--Analogue of Radioactive Waste Repositories | NUREG/CR-3941 | October 1984 |
| o Valence Effects on Solubility and Sorption | NUREG/CR-4309 | March 1986 |
| o Temperature Effects on the Solubility and Speciation of Selected Actinides | NUREG/CR-4582 | June 1986 |
| o A Study of Natural Glass Analogues as Applied to Alteration of Nuclear Waste Glass | NUREG/CR-4842 | February 1987 |

4. Design/Rock Mechanics

a) NMSS

- | <u>TITLE</u> | <u>NUMBER</u> | <u>DATE</u> |
|---|----------------------------|-------------|
| o Information Base for Waste Repository Design | NUREG/CR-0495 Vols. 1-7 | March 1979 |
| o Identification of Characteristics Which Influence Repository Design--Tuff | NUREG/CR-2614 | April 1984 |
| o Evaluation of Alternative Shaft Sinking Techniques for HLW Deep Geologic Repositories | NUREG/CR-2854 | March 1983 |

- o Thermal Impact of Waste Emplacement and Surface Cooling Associated with Geologic Disposal of Nuclear Waste NUREG/CR-2910 March 1983
- o Relationship of an In Situ Test Facility to a Deep Geologic Repository for HLW NUREG/CR-2959 March 1983
- o In Situ Test Programs Related to Design and Construction of HLW Deep Geologic Repositories NUREG/CR-3065 Vols. 1 and 2 March 1983
- o Assessment of Retrieval Alternatives for the Geologic Disposal of Nuclear Waste NUREG/CR-3489 May 1984
- o Parameters and Variables Appearing Repository Design Models NUREG/CR-3586 January 1984
- o Stability of Disposal Rooms During Waste Retrieval NUREG/CR-5335 March 1989
- o Sensitivity of the Stability of a Waste Emplacement Drift to Variation in Assumed Rock Joint Parameters in Welded Tuff NUREG/CR-5336 April 1989
- o Analysis of Alternative Waste Isolation Concepts NUREG/CR-5389 June 1989
- o Rock Mass Modification Around a Nuclear Waste Repository in Welded Tuff NUREG/CR-5390 August 1989
- o Basis for In-situ Geomechanical Testing at the Yucca Mountain Site NUREG/CR-5400 July 1989
- o Examination of the Use of Continuum Versus Discontinuum Models for Design and Performance Assessment for the Yucca Mountain Site NUREG/CR-5426 August 1989
- o Analysis of Emplacement Borehole Rock and Liner Behavior for a Repository at Yucca Mountain NUREG/CR-5427 September 1989
- o Variation of Heat Loading for a Repository at Yucca Mountain NUREG/CR-5428 September 1989
- o UDEC (Universal Distinct Element Code) Version ICG1.5 NUREG/CR-5429 September 1989

- o FLAC (Fast Lagrangian Analysis of Continua) Version 2.20 NUREG/CR-5430 October 1989

b) RES

| <u>TITLE</u> | <u>NUMBER</u> | <u>DATE</u> |
|---|---------------|----------------|
| o Rock Mass Sealing--Experimental Assessment of Borehole Plug Performance, Annual Report, 6/82-5/83 | NUREG/CR-3473 | September 1983 |
| o Experimental Assessment of the Sealing Effectiveness of Rock Fracture Grouting | NUREG/CR-4541 | March 1987 |
| o Rock Mass Sealing--Experimental Assessment of Borehole Plug Performance, Annual Report, 6/84-5/85 | NUREG/CR-4642 | June 1986 |
| o Size Influence on the Sealing Performance of Cementitious Borehole Plugs | NUREG/CR-4738 | September 1986 |
| o The Sealing Performance of Bentonite/ Crushed Basalt Borehole Plugs | NUREG/CR-4983 | November 1987 |

5. Waste Package

a) NMSS

| | | |
|--|---|--|
| o Container Assessment--Corrosion Study of HLW Container Materials (Quarterly Progress Reports) | NUREG/CR-2317 | 1981-1982 |
| o Nuclear Waste Management Technical Support in the Development of Nuclear Waste Form Criteria for the Nuclear Regulatory Commission | NUREG/CR-2333 Vols. 1-3 | February 1982 |
| o Review of DOE Waste Package Program -- National Waste Package Program | NUREG/CR-2482 (Parts 1 and 2) (Apr 82-Sep 82) (Oct 82-Mar 83) (Apr 83-Sep 83) (Oct 83-Mar 84) (Apr 84-Sep 84) (Oct 84-Mar 85) (Apr 85-Sep 85) | Feb 1982 Vol 1 Apr 1983 Vol 2 Mar 1983 Vol 3 Sep 1983 Vol 4 Aug 1984 Vol 5 Mar 1985 Vol 6 Mar 1985 Vol 7 Dec 1985 Vol 8 Dec 1985 Vol 9 |
| o Packing Material Testing Required to Demonstrate Compliance with 1000-Year Radionuclide Containment | NUREG/CR-2755 | January 1983 |

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|--|--|--|
| o Review of Waste Package Verification Tests, Semi-Annual Report | NUREG/CR-3091 (Apr 82-Sep 82) (Oct 82-Mar 83) (Apr 83-Sep 83) (Oct 83-Mar 84) (Apr 84-Sep 84) (Oct 84-Mar 85) (Apr 85-Sep 85) | Apr 1983 Vol 1 Aug 1983 Vol 2 Feb 1984 Vol 3 Jul 1985 Vol 4 Jul 1985 Vol 5 Oct 1985 Vol 6 Jan 1986 Vol 7 |
| o Waste Package Performance After Repository Closure -- Post-Emplacement Monitoring | NUREG/CR-3219 Vol. 1 Vol. 2 | July 1983 May 1983 |
| o Waste Package Reliability | NUREG/CR-4509 | February 1986 |
| o Stress Corrosion Cracking Tests on HLW Container Materials in Simulated Tuff Repository Environments | NUREG/CR-4619 | June 1986 |
| o Evaluation and Compilation of DOE Waste Package Test Data | NUREG/CR-4735 (Dec 85-Jul 86) (Aug 86-Jan 87) (Feb 87-Jul 87) (Aug 87-Jan 88) (Feb 88-Jul 88) | Mar 1987 Vol 1 Oct 1987 Vol 2 May 1988 Vol 3 Aug 1988 Vol 4 Oct 1989 Vol 5 |
| b) <u>RES</u> | | |
| o Long-Term Performance of Materials Used for HLW Packaging (Annual Report) | NUREG/CR-3427 (Apr 83-Jun 83) (Jul 83-Sep 83) (Oct 83-Dec 83) (Apr 83-Apr 84) | Aug 1983 Vol 1 Dec 1983 Vol 2 Mar 1984 Vol 3 Jun 1984 Vol 4 |
| o Long-Term Performance of Materials Used for HLW Packaging (Annual Report) | NUREG/CR-3900 (Apr 84-Jun 84) (Jul 84-Sep 84) (Oct 84-Dec 84) (Apr 84-Apr 85) | Sep 1984 Vol 1 Jan 1985 Vol 2 May 1985 Vol 3 Jul 1985 Vol 4 |
| o Long-Term Performance of Materials Used for HLW Packaging (Annual Report) | NUREG/CR-4379 (Apr 85-Jun 85) (Jul 85-Sep 85) (Oct 85-Dec 85) (Apr 85-Mar 86) | Sep 1985 Vol 1 Jan 1986 Vol 2 Mar 1986 Vol 3 Jun 1986 Vol 4 |
| o Fracture in Glass/HLW Canister | NUREG/CR-4198 | May 1985 |
| o Investigation of the Stability of Clay/Basalt Packing Materials | NUREG/CR-4585 | March 1986 |

| <u>TITLE</u> | <u>NUMBER</u> | <u>DATE</u> |
|--|--------------------------------|----------------|
| o Long-Term Performance of High-Level Glass Waste Forms | NUREG/CR-4795 | November 1987 |
| o Long-Term Performance of Spent Fuel Waste Forms | NUREG/CR-4954 | September 1987 |
| o Long-Term Performance of Container Materials for High-Level Waste | NUREG/CR-4955 | November 1987 |
| o Effects of Manufacturing Variables on Performance of HLW Low Carbon Steel Containers | NUREG/CR-5001 | April 1990 |
| 6. <u>Geology/Geophysics</u> | | |
| a) <u>NMSS</u> | | |
| o Information Needs for Characterization of High-Level Waste Repository Sites in Six Geologic Media | NUREG/CR-2663 Vols. 1 and 2 | July 1985 |
| o Effects of Earthquakes on Underground Facilities: Literature Review and Discussion | NUREG/CR-4609 | June 1986 |
| o Survey of Geophysical Techniques for Site Characterization in Basalt, Salt and Tuff | NUREG/CR-4957 | July 1987 |
| b) <u>RES</u> | | |
| o Indirect Rock Mass Investigations for Optimizing Borehole Drilling Programs | NUREG/CR-3143 | |
| --Executive Summary | Vol. 1 | October 1983 |
| --Summary of Wave Propagation Geophysical Techniques | Vol. 2 | November 1983 |
| --Ray Optic Geotomography | Vol. 3 | October 1983 |
| --Wave Diffusion Geotomography | Vol. 4 | October 1983 |
| o Geomorphic Controls on the Management of Nuclear Waste | NUREG/CR-3276 | October 1983 |
| o Crosshole Geophysical Methods Used to Investigate the Near Vicinity of High Level Waste Repositories | NUREG/CR-3758 | August 1984 |

7. Quality Assurancea) NMSS

| <u>TITLE</u> | <u>NUMBER</u> | <u>DATE</u> |
|--|---------------|--------------|
| o Recommended Safety, Reliability, QA and Management Aerospace Techniques with Possible Application by DOE to the HLW Repository Program | NUREG/CR-4271 | July 1985 |
| o QA Plan for Computer Software Supporting the U.S. NRC's HLW Management Program | NUREG/CR-4369 | January 1986 |

8. Regulatory and Othersa) NMSS

| | | |
|---|--------------|---------------|
| o Analysis of Regulatory Uncertainties Related to the Site Characterization Plan and the Exploratory Shaft Facility | CNWRA 89-002 | April 1989 |
| o Analysis and Evaluation of Regulatory Uncertainties in 10CFR60 Subparts B & E | CNWRA 89-003 | May 1989 |
| o Identification and Evaluation of Regulatory and Institutional Uncertainties in 10 CFR Part 60 | CNWRA 90-003 | February 1990 |

I. STATE/TRIBAL INTERACTIONS

Nuclear Waste Policy Act (NWPA) Section 117(a) states that NRC must provide the states and Indian tribes timely and complete information regarding its determinations or plans made regarding siting, development, or design for licensing, construction, operation, regulation, or decommissioning. In a continuing effort to keep the states and tribes involved, NRC staff has made numerous presentations to the states and tribes on current NRC activities in the NWPA process.

Due to the Nuclear Waste Policy Amendments Act of 1987, which focuses DOE's site characterization efforts on the Yucca Mountain site in Nevada, the NRC is now limiting the routine distribution of significant NRC high-level waste documents to parties associated with the Yucca Mountain site. They also receive a weekly notice of NRC/DOE upcoming meetings, both tentative and firmly established. These upcoming meetings are also announced on a toll-free telephone recording for use by the general public. Notices of availability of significant HLW documents are sent to several hundred parties who have expressed an interest in keeping abreast of the HLW program.

The State of Nevada and local representatives are recognized as participants in all NRC/DOE meetings related to the Yucca Mountain site.

J. PROGRAM PLANNING AND MANAGEMENT REVIEWS

| <u>TITLE</u> | <u>ISSUE DATE</u> |
|---|-------------------|
| NRC comments on the DOE draft report to the President, An Evaluation of Commercial Repository Capacity for Disposal of Defense High-Level Waste | Oct. 5, 1984 |
| SECY-84-449, Recommendations of the DOE Panel on Alternative Means of Financing and Managing Radioactive Wastes (AMFM) | Nov. 26, 1984 |
| Staff comments to the Chairman on DOE AMFM | Mar. 8, 1985 |
| NRC comments on the Draft DOE Project Decision Schedule | Oct. 24, 1985 |
| NRC comments on level of detail in Section 8.3 of the DOE Site Characterization Plan | Dec. 12, 1985 |
| Report on Section 10 of draft Project Decision Schedule transmitted from NMSS to DOE | Dec. 16, 1985 |
| NRC comments on DOE Monitored Retrievable Storage (MRS) Facility | Feb. 5, 1986 |
| SECY-86-66, Status of Activities Under the Nuclear Waste Policy Act of 1982, to Commission | Feb. 26, 1986 |
| Joint NRC/DOE Notice of Technical Assistance issued | Apr. 3, 1986 |
| 10 CFR Part 72 revisions concerning licensing of the MRS published in the <u>Federal Register</u> | May 23, 1986 |
| SECY-86-92, Proposed Revisions to 10 CFR Part 60 to Conform to EPA Standards | June 19, 1986 |
| SECY-87-137, First Quarterly Progress Report on the Pre-licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | June 8, 1987 |
| SECY-87-267, Second Quarterly Progress Report on the Pre-licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Oct. 26, 1987 |

| <u>TITLE</u> | <u>ISSUE DATE</u> |
|--|-------------------|
| SECY-88-39, Third Quarterly Progress Report on the Pre-licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Feb. 9, 1988 |
| SECY-88-39A, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | May 10, 1988 |
| SECY-88-39B, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Aug. 9, 1988 |
| SECY-88-285, Regulatory Strategy and Schedules for the High-Level Waste Repository Program | Oct. 5, 1988 |
| SECY-88-39C, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Nov. 16, 1988 |
| SECY-89-037, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Feb. 3, 1989 |
| SECY-89-037A, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | May 12, 1989 |
| SECY-89-037B, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Sep. 27, 1989 |
| SECY-90-032, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Jan. 29, 1990 |
| SECY-90-032A, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Apr. 27, 1990 |
| SECY 90-187, Topical Guidelines for the Licensing Support System | May 1990 |
| SECY-90-207, First Update of the Regulatory Strategy and Schedules for the High-Level Waste Repository Program | Jun. 7, 1990 |
| SECY-90-032B, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program | Aug. 3, 1990 |

| <u>TITLE</u> | <u>ISSUE DATE</u> |
|---|-------------------|
| SECY-90-032C, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program. | November 6, 1990 |
| SECY-91-058, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program. | March 1, 1991 |
| SECY-91-125, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste | May 8, 1991 |
| SECY-91-222, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Program | July 24, 1991 |
| SECY-91-225, Second Update of the Regulatory Strategy and Schedules for the High-Level Waste Repository Program. | July 29, 1991 |

III. NRC REVIEW PLANS

Review Plans document the procedure which will be used by the staff in reviewing major documents submitted by the DOE. They identify the questions that will be asked and the independent analysis that will be performed by the staff. The primary purpose of review plans is to standardize and organize the staff's review of licensing documents. They provide, indirectly, guidance to the licensee in terms of the kinds of data and information that is expected in documents such as the SCP. They also provide useful information to interested parties about how NRC is doing its job. Review plans for SCPs and Quality Assurance programs have been written. Other review plans, such as the License Application Review Plan, will be prepared as needed.

| <u>TITLE</u> | <u>ISSUE DATE</u> |
|---|-------------------|
| Standard Review Plan for Site Characterization Plans (Draft) (Superseded by the December 1987 Plans) | August 1983 |
| Standard Review Plan for Draft Environmental Assessments | January 1985 |
| Standard Review Plan for Final Environmental Assessments | March 1986 |
| Administrative Plan and Procedures for NRC Staff Review of DOE's Consultation Draft Site Characterization Plans | December 1987 |
| Draft Technical Review Plan for NRC Staff Review of DOE's Site Characterization Plans | December 1987 |
| Draft Review Plan for NRC Staff Review of DOE Study Plans and Procedures | December 1987 |
| Administrative Plan and Procedures for NRC Staff Review of DOE's Site Characterization Plan | December 1988 |

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|---|---------------|
| Revised Technical Review Plan for NRC Staff Review of DOE's Site Characterization Plans | December 1988 |
| Supplement to the Site Characterization Plan Review Plan | February 1989 |
| Review Plan for High-Level Waste Repository Quality Assurance Program Descriptions (Revision 2) | March 1989 |
| Review Plan for NRC Staff Review of DOE Site Characterization Plan Progress Reports | August 1990 |

AVAILABILITY OF INFORMATION

- HLW documentation, including NUREG/CR reports, received by the Division of High-Level Waste Management (DHLWM) and generated by HLWM and its contractors is routinely sent to NRC's Public Document Room (PDR), 2120 L Street, NW, Lower Level, Washington, DC, 20555. Telephone 202/634-3273. Contact the PDR for information and copies of NRC's HLW correspondence.
- Copies of NUREGs and NUREG/CRs can be obtained by contacting the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082. Copies are also available from the National Technical Information Service, Springfield, VA 22161.

FOR ADDITIONAL INFORMATION, CONTACT:

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