

**Selected NRC Products
High-Level Waste Program**

July 12, 1993

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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 AND POLICY DOCUMENTS

A. 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.

TITLE

ISSUE DATE

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

- 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
 - **Design Basis Event for the Geologic Repository Operations Area* (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.

B. Agreements

Procedural Agreement Between the Nuclear Regulatory Commission and the U.S. Department of Energy Identifying Guiding Principles for Interface During Geologic Site Investigation and Site Characterization

Agreement Between the U. S. Department of Energy Office of Civilian Radioactive Waste Management and the Nuclear Regulatory Commission Division of High-Level Waste Management During Site Characterization Programs and Prior to the Submittal of an Application for Authorization to Construct a Repository

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 (NWSA) 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. Follow up will be provided by DOE issuing semi-annual progress reports which will be commented on by the NRC as required under the NWSA (Section 113). 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. On December 14, 1990, DOE transmitted its responses to NRC concerns expressed in the SCA. Following a review, on July 31, 1991, NRC staff provided DOE with comments on those responses and, on the basis of information provided by DOE, closed 59 of the concerns stated in the SCA. In addition, on March 2, 1992, the staff closed SCA Objections 2 related to the lack of an acceptable DOE quality assurance QA program.

Since issuance of the SCP, DOE has provided NRC with site characterization study plans for its review. DOE has transmitted 51 new and 17 revised study

plans to NRC. NRC has found that, on the basis of information provided in the study plans, it is acceptable for work proposed under 39 new and 5 revised study plans to be initiated. The staff concluded that revisions to 5 study plans were so minor that no additional review of those study plans was necessary. Reviews of 8 new and 3 revised study plans were deferred because the study plan lacked complete information or because activities proposed in the study plan were based on an out-of-date exploratory studies facility design. The staff is continuing its review of the remaining study plans.

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
DG-3003	Draft Format and Content for a License Application	November 1990*
Regulatory Guide <u>IBD</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 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 Determination of Radionuclide Sorption for HLW Repositories	January 1987
o Qualification of Existing Data for HLW Repositories	February 1988

(NUREG-1298)

- o Peer Review for HLW Repositories (NUREG-1297) 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 Final staff Technical Position on Regulatory Considerations in the Design and Construction of the Exploratory Shaft Facility (NUREG-1439) July 1991
- o Final Staff Technical Position on Investigations to Identify Fault Displacement Hazards and Seismic Hazards at a Geologic Repository (NUREG-1451) July 1992
- o Final Staff Technical Position on Geologic Repository Operations Area Underground Facility Design -- Thermal Loads (NUREG-1466) December 1992
- o Staff Technical Position on Consideration of Fault Displacement Hazards in Geologic Repository Design (Draft) March, 1993

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)(ii)(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(i)"	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>
NRC/DOE Technical Exchange on Volcanism Studies	June 9, 1993
NRC/DOE Technical Exchange on on Geophysical Integration	June 8, 1993
NRC/DOE Interactions Scheduling Mtg for Jul-Dec 1993	June 7, 1993
Technical Exchange between NRC and DOE on Topical Report Review Plan	May 3, 1993
NRC/DOE QA Mtg	April 15, 1993

Exploratory Studies Facility (ESF) Activities Discussion	March 31-April 1, 1993
NRC/DOE QA Mtg	January 26, 1993
NRC/DOE Technical Exchange on Performance Assessment	December 14-15, 1992
NRC/DOE Meeting at Vitreous State Labs	December 9, 1992
NRC/DOE Interactions Scheduling Meeting	November 24, 1992
NWTRB on Structural Geology/Geoengineering	November 4-5, 1992
NRC/DOE Technical Exchange at the CNWRA	October 29, 1992
NRC/DOE QA Meeting on QARD	October 28, 1992
Technical Exchange between CNWRA/NRC	September 29, 1992
NRC/DOE Quality Assurance Meeting	September 17, 1992
Meeting on Monitored Retrievable Storage	August 27, 1992
Volcanism-NRC Comments on Study Plans on Magmatic Probabilities	August 25, 1992
Agreement on Format and Content of DOE Yucca Mountain Study Plan	July 23, 1992
Technical Exchange on "Three Bucket Approach"	July 22, 1992
NRC/DOE Quality Assurance Meeting	July 7-8, 1992
NWTRB Meeting on Site Suitability at Yucca Mt.	July 7-8, 1992
NRC/DOE Meeting on Repository Annotated Outline	June 3, 1992
NRC/DOE Procedural Agreement Meeting	June 2, 1992
Technical Exchange on DOE's Topical Report on Erosion	May 27, 1992
Interactions Scheduling Mtg - NRC/DOE	May 19, 1992
NWTRB Engineered Barrier System Panel Mtg	May 13, 1992
NWTRB Engineered Barrier System Panel Mtg	May 11, 1992
DOE Meeting to discuss Early Site Suitability Evaluation	May 7, 1992
NRC/DOE QA Meeting	April 30, 1992

NRC/DOE Technical Exchange on Complementary Cumulative Distribution Function	April 28-29, 1992
NWTRB and DOE to meet on Progress at Proposed Yucca Mt. Site	April 7-8, 1992
DOE/NRC Technical Exchange	March 17-18, 1992
NWTRB Panel Meeting Transportation and Systems with DOE	March 10-11, 1992
NRC/DOE Technical Exchange at Pacific Northwest Labs and Hanford on Spent Fuel Research	February 25-26, 1992
NRC/DOE QA Meeting	February 18, 1992
NWTRB on Engineered Barrier System (EBS) (OCRWM Presentation on EBS)	February 10, 1992
NWTRB on Structural Geology and Geoengineering	January 22-23, 1992
Commission briefing by DOE (OCRWM)	June 7-8, 1992
Commission Briefing by DOE (OCRWM)	December 17, 1991
Regulatory Strategy Meeting with NRC/DOE	November 20, 1991
Interactions Scheduling Meeting with DOE/NRC	November 20, 1991
Performance Assessment Technical Exchange	November 19-20, 1991
DOE/NRC Quality Assurance Meeting	November 14, 1991
NWTRB Meeting on Structural Geology and Geoengineering	November 12-13, 1991
Procedural Agreement Meeting with NRC/DOE	October 28, 1991
Performance Assessment Technical Exchange	October 29-30, 1991
NWTRB meeting on Effects of Thermal Loading on Repository Design	October 8-10, 1991
NWTRB/DOE meeting on Transportation NS Systems	September 25-26, 1991
NRC/DOE meeting on ESF Design	September 16-17, 1991
NRC/DOE Procedural Agreement Meeting	September 12, 1991
Meeting with DOE and State of Nevada on items of interest regarding QA	August 29, 1991

NWTRB Panel mtg on Transportation and Systems	August 15, 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
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, 1991
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
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
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
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 NWP 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
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-list 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

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
Air Core Drilling Demonstration, Milford, Utah	August 19, 1989

Prototype Drilling and Core Sample Handling (drilling site near Superior, AZ)	March 19-22, 1990
Visit NTS after ASQC Mtg	May 7, 1992
Attend mtg with On-site Reps to discuss data bases in Las Vegas, NV	July 14, 1992
Visit to CER Corp. to review CAR Trending, etc.	July 21, 1992
Observe 90% Independent Technical Review of ESF Package 1A	July 27-31, 1992

Observations of DOE OA 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
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, 1991
REEco	Feb. 25-March 1, 1991
LANL	March 25-29, 1991
USGS	May 20-24, 1991
LLNL	June 3-7, 1991
SAIC	June 17-20, 1991
RSN	July 29, 1991
SNL	August 19-23, 1991
EM	August 26-30, 1991
OCRWM	October 15-18, 1991
YMPO	October 28-Nov 1, 1991
REECo	November 18-20, 1991
LLNL	December 3-5, 1991
RSN	December 16-18, 1991
YMPO	February 2, 1992
SNL	February 10, 1992
ORNL	February 24, 1992

LANL	March 17, 1992
USGS	April 1, 1992
YMPO	May 4, 1992
SAIC	May 18, 1992
CNWR	June 1-5, 1992
RSN	June 22-26, 1992
EM-343	July 20-24, 1992
West Valley	July 26-31, 1992
LLNL	August 10-14, 1992
SNL	August 24-28, 1992
Savannah River	September 14-18, 1992
YMPO	Sep. 28 - Oct. 2, 1992
USGS	October 19-23, 1992
LANL	November 2-6, 1992
OCRWM	Nov. 30-Dec. 12, 1992
EM-343	Jan. 11-15, 1993
USGS	Jan. 13-15, 1993
SAIC/T&MSS	Feb. 1-5, 1993
TRW	Feb. 1-5, 1993
WVDP by EM-343	Feb 22-26, 1993
TRW/M&O	Mar. 1-5, 1993
TRW/M&O	Mar. 22-26, 1993
YMPO	Apr. 5-9, 1993
SR DWPF	May 3-7, 1993
CNWR	May 4-7, 1993
OCRWM	May 10-13, 1993
ReeCo	June 21-25, 1993

EM-343

June 22-24, 1993

M&O LV

June 28-July 2, 1993

OBSERVATIONS OF DOE OA PROGRAM SURVEILLANCES

USGS

February 20-23, 1990

USGS

April 17-19, 1990

SNL

April 23-26, 1990

YMPO

June 6-11, 1990

LLNL

August 6-9, 1990

SNL

Sept 4-7, 1990

USGS

Sept 10-14, 1990

YMPO

Nov 29-Dec 5, 1990

OCRWM

February 2-4, 1991

LANL

February 25-28, 1991

Raytheon

March 4-6, 1991

LLNL

April 8-10, 1991

SNL

May 5-10, 1991

T&MSS

May 5-8, 1991

YMPO

May 5-10, 1991

Raytheon

June 24-25, 1991

USGS

June 12-13, 1991

RSN

June 1991

SAIC

September 1991

RSN

September 18-20, 1991

ORNL

Aug. 26-29, 1992

M&O

Sept. 9-10, 1992

NRC Staff Audits

Los Alamos QA Program (HLW Repository)	June 8-12, 1987
CNRA	March 3, 1989
CNRA	June 28, 1990
Savannah River	February 4, 1991
West Valley	June 17-21, 1991
CNRA	July 23-26, 1991
USGS	September, 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
REECOA QA Plan	October 3, 1989
F&S QA Plan	Oct. 24, 1989
SNL QA Plan	Oct. 1989
USGS QA Plan	Oct. 24, 1989
LLNL QA Plan	Oct. 24, 1989
LANL QA Plan	Nov. 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
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

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|--|--|--------------------------|
| 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 NEFTRAN 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
o Risk Methodology for Geologic Disposal of Radioactive Waste-Scenario Selection Procedures	NUREG/CR-1667	April 1990
o Elicitation and Use of Expert Judgment in Performance Assessment for High-Level Radioactive Waste Repositories	NUREG/CR-5411	May 1990
o 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

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|---|---------------|----------------|
| 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

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|--|---------------|--------------|
| 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 |
| 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

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|--|---------------|-----------|
| o Proceedings of the Conference on the Application of Geochemical Models to High-Level Nuclear Waste Repository Assessment | NUREG/CP-0062 | June 1985 |
|--|---------------|-----------|

-- 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-3847	June 1984
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

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| 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 |
| 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 on 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
- 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

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|--|----------------------------|----------------|
| 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) <u>RES</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. <u>Waste Package</u> | | |
| a) <u>NMSS</u> | | |
| 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 |

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|--|---|--|
| 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 |
| 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 |

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|---|---|--|
| o Long-Term Performance of Materials
Used for HLW Packaging | 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 |
| (Annual Report) | | |
| 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 |
| 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 Assurance

a) 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 Others

a) 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 (NWP) 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 NWP 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
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 89-298, Applicability of the Resource Conservation and Recovery Act to a Geologic Repository Licensed Under 10 CFR Part 60	Sept. 22, 1989
SECY-89-319, Implementation of the U.S. Environmental Protection Agency's High-Level Waste Disposal Standards	Oct. 17, 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-90-051, Staff Reponse to Outstanding Questions on the Applicability of the Resource Conversation and Recovery Act to a Geologic Repository Licensed Under 10 CFR Part 60	Feb. 15, 1990
SECY 90-187, Topical Guidelines for the Licensing Support System	May 24, 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

SECY-90-032C, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program.	Nov. 6, 1990
SECY-90-082, Analysis and Recommendations Regarding the Issues and Suggestions Raised by the U.S. DOE in its December 20, 1989 Presentation to the Commission on the Civilian Radioactive Waste Management Program	Mar. 9, 1990
SECY-91-040, Interactions with EPA Related to EPA's Remanded High-Level Waste Standards	Feb. 12, 1991
SECY-91-058, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste Management Program.	Mar. 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	Jul. 24, 1991
SECY-91-225, Second Update of the Regulatory Strategy and Schedules for the High-Level Waste Repository Program	Jul. 29, 1991
SECY-91-343, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste	Oct. 24, 1991
SECY-92-034, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste	Jan. 30, 1992
SECY-92-167, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste	May 7, 1992
SECY-92-275, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste	August 6, 1992
SECY-92-392, Quarterly Progress Report on the Pre-Licensing Phase of DOE's Civilian High-Level Radioactive Waste	Nov. 19, 1992
SECY-93-013, Analysis of Energy Policy Act of 1992 Issues Related to High-Level Waste Disposal Standards	Jan. 25, 1993
SECY-93-052, Quarterly Progress Report on the Pre-Licensing Phase of the DOE's Civilian High-Level Radioactive Waste	March 3, 1993

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
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 Program Reports	August 1990
Review Plan for Report of Early Site Suitability Evaluation of the Potential Repository Site at Yucca Mountain, Nevada	April 1992
Review Plan for NRC Staff Review of DOE Study Plans (Revision 2)	March 10, 1992
Draft Topical Report Review Plan (Revision 2)	March 1993

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, MS-SSOP Washington, DC 20402-9328. Copies are also available from the National Technical Information Service, Springfield, VA 22161.

FOR ADDITIONAL INFORMATION, CONTACT:

Ms. Anne Garcia
Division of High-Level Waste Management
U.S. Nuclear Regulatory Commission
Mail Stop 4-H-3
Washington, DC 20555-0001
Telephone 1/800/368-5642, or
(301) 504-2438 for Washington, DC area callers.