

REVIEW PLAN FOR
NRC STAFF REVIEW OF DOE
SITE CHARACTERIZATION PLAN PROGRESS REPORTS

AUGUST 10, 1990

DIVISION OF HIGH-LEVEL WASTE MANAGEMENT
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

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1.0 INTRODUCTION

The Department of Energy (DOE) is responsible under the Nuclear Waste Policy Act of 1982 (NWSA) for carrying out a comprehensive national program that has as its goal the eventual construction of one or more geologic repositories for the permanent disposal of high-level nuclear waste. The program has advanced to the site characterization stage, during which DOE is to conduct activities intended to collect the information necessary to support a license application for a geologic repository. The DOE has developed a site characterization plan (SCP) for the Yucca Mountain, Nevada proposed geological repository site which describes in broad detail how it intends to obtain the needed information. Programs, such as the geology program, and investigations, which consist of one study or a set of related studies, are presented in the SCP, in accord with agreements reached in the May 7-8, 1986 NRC-DOE Level of Detail for Site Characterization Plans and Study Plans Meeting. The finer level of detail about DOE's plans is presented in study plans that are being issued subsequent to issuance of the SCP.

While DOE conducts its site characterization activities, it is required by the NWSA, Section 113(b)(3), and the U.S. Nuclear Regulatory Commission's (NRC's) regulation in 10 CFR 60.18(g) to prepare reports at a minimum of six-month intervals discussing the progress and results of its site characterization activities, as well as changes to DOE's site characterization program resulting from the information obtained. The SCP Progress Reports (SCPPRs) are to cover progress, results, and changes related to the entire site characterization program, including site investigations, repository and waste package designs, and performance assessments. Appendix A to this document provides the exact language of NWSA and Part 60 pertaining to the requirements for the progress reports.

It is important to recognize that reporting of progress and results means that DOE should not merely state that some particular work has been completed, but should also include significant results, at least in summary form. In addition, references to where details of the results, including data developed, analyses done using those data, and conclusions reached, should be cited in the progress reports.

The SCPPRs document DOE's progress in carrying out the site characterization program DOE has designed to resolve the issues related to regulatory requirements that DOE identified in the SCP. The NRC staff's independent evaluation of DOE's program to resolve these issues will give guidance to DOE that is intended to result in DOE submitting a complete and high quality License Application. This in turn will help assure that the NRC staff will be able to make a decision regarding construction authorization within the three-year statutory licensing time period.

NRC concerns, i.e., objections, comments, or questions (as these terms are defined on p. 186 of the Review Plan for NRC Staff Review of DOE's Site Characterization Plan [hereafter SCP Review Plan]) and related recommendations

that the staff develops in its written review of an SCPPR will be entered in the same Open Item Tracking System (OITS) that is being used to track the progress toward resolution of the objections, comments, and questions presented by the staff in its Site Characterization Analysis (SCA) of DOE's SCP and in written reviews of DOE's study plans. The new concerns identified during the review of a given SCPPR have the same significance and are to be tracked just as the SCP- and study plan-related concerns. Furthermore, the staff review of a particular SCPPR may result in resolution of some NRC concerns.

This Review Plan for NRC Staff Review of DOE Site Characterization Plan Progress Reports (hereafter SCPPR Review Plan) provides the technical and programmatic guidance for the NRC staff to assure the quality and consistency of review of any progress report submitted by DOE and thereby fulfills the internal quality assurance function for review of major DOE high-level waste (HLW) documents mandated in the Division of High-Level Waste Management (DHLWM) IQA Plan. This plan also serves as documentation for later reference during the licensing process of the way in which the NRC staff reviewed SCPPRs.

2.0 PURPOSE, OBJECTIVES, AND SCOPE

2.1 Purpose

The NRC has a two-fold purpose for reviewing the SCPPRs: (1) to fulfill its mandated responsibilities under NWPA and 10 CFR Part 60 to review the SCPPRs; and (2) to continue the effort of the past eight years since the passage of the NWPA toward early identification and resolution of potential licensing issues during the pre-license application part of DOE's HLW program.

2.2 Objectives

To accomplish the purpose of the NRC staff review of the SCPPRs, the following specific objectives must be achieved:

1. Evaluate the progress, results, and changes DOE has made in its site characterization program;
2. Identify new concerns related to the progress, results, and changes DOE has made in the site characterization program;
3. Evaluate material related to potential resolution of existing NRC concerns being tracked in the OITS;
4. Identify any other observations or recommendations regarding the technical or programmatic information in the SCPPRs that could provide regulatory guidance to DOE;

5. Document review results in a review package for transmittal to DOE;
6. Enter new concerns and progress toward resolution of existing concerns into the OITS.

2.3 Scope

Progress, results, and changes to the SCP and study plans reported in the SCPPRs and supporting references are in scope if they are related to 10 CFR Part 60. Information related solely to 10 CFR Part 960 (DOE's Siting Guidelines) is out of scope. SCPPR information related to decontamination and decommissioning is also out of scope.

3.0 TECHNICAL REVIEW

3.1 General Approach

An outline of the contents that the NRC staff expects to be included in the SCPPRs is presented in Appendix B. That outline generally parallels the Table of Contents for chapter 8 of the SCP. The approach to the technical review of SCPPRs presented herein is predicated upon receipt of SCPPRs that provide the expected material.

The technical review of the SCPPRs will be conducted considering the purpose, objectives, and scope in sections 2.1, 2.2, and 2.3 of this review plan and the general and detailed review guides or subsequent modifications thereto in sections 3.2 and 3.3 of the SCP Review Plan. An explanation of the structure and content of the review guides is provided on pp. 9-10 of the SCP Review Plan.

As the technical review is being conducted, the NRC staff will be evaluating whether the progress and results reported are consistent with the activities as described in the SCP and available study plans. In addition, the staff will be considering the SCPPR in the context of whether the SCP and study plans have been changed and whether the changes, if any, represent improvements or introduce new concerns. As well, the staff will consider as another frame of reference the SCA concerns and the other NRC concerns being tracked by OITS.

With regard to the timing of the SCPPR reviews, the NRC staff expects to receive an SCPPR every six months, as required by NWPA and 10 CFR Part 60. So that DOE will have an opportunity to factor NRC review results into the next SCPPR, the NRC staff review package is to be transmitted to DOE within three months of NRC's receipt of an SCPPR.

3.2 Specific Approach

The focus of the NRC staff review is on three key aspects of the SCPPRs: the progress and results reported in carrying out site characterization activities; significant changes to the site characterization program; and information

addressing or resolving NRC's SCA concerns, study plan concerns, and other NRC concerns resulting from past NRC-DOE interactions or from NRC reviews of DOE documents. In addition to evaluation of these three key aspects of the progress reports, the staff may identify observations or recommendations resulting from evaluation of the technical or programmatic information in the SCPPR that could provide regulatory guidance to DOE.

3.2.1 Evaluation of Progress Reported

The SCPPRs may report progress and results as (1) resolution of DOE issues, namely, those in DOE's Issues Hierarchy; (2) work completed; and (3) ongoing work. With respect to progress reported on resolution of DOE issues, NRC staff reaction is necessary only if the staff disagrees with DOE's assertions of progress toward resolution. Likewise, for work that has been completed or is being done, reaction is necessary only if the staff notes a significant deviation from the SCP or study plans that DOE did not report as such or if the staff has technical or regulatory concerns about the the work completed or ongoing.

3.2.2 Evaluation of Changes to SCP and Study Plans

If significant changes have been made to parts of the SCP or study plans where NRC had no previous concern, NRC staff reaction is necessary only if a concern has been generated by the change. If significant changes have been made to parts of the SCP or study plans where NRC did have previous concerns, NRC staff reaction is needed if the previous concern has been resolved or exacerbated or if a new concern has been generated.

3.2.3 Evaluation of Resolution of NRC Concerns

Although the SCPPR and its references should serve as one mechanism for resolution of NRC concerns, DOE may choose as well to resolve NRC concerns by other mechanisms such as NRC-DOE technical meetings or technical or issue resolution documents submitted for NRC review. Documentation of resolution by those mechanisms consists of an NRC-DOE agreement in meeting notes or a letter from NRC expressing agreement that a particular concern has been resolved. If NRC concerns have been resolved by other mechanisms during the six month period covered by a particular SCPPR, those resolutions, how they were accomplished, and where they are documented should be reported in the SCPPR. No NRC staff reaction is necessary unless NRC disagrees that those concerns were resolved.

If DOE chooses to propose resolution of any NRC concerns on the basis of a particular SCPPR and its references, it should so indicate in its letter transmitting that SCPPR to NRC. The NRC staff is to review the material presented to support resolution and needs to indicate (a) agreement on closure (certified by signature of the appropriate Section Leader and Branch Chief); or (b) agreement on partial closure and where the material provided for closure is insufficient; or (c) disagreement on closure and why the material provided for closure is inadequate. If the material supporting the proposed resolution of

any NRC concern is not yet available, the NRC staff is to indicate nonagreement with closure pending the opportunity to review the needed material. The NRC response to the proposed resolution of NRC concerns is recorded in OITS.

3.2.4 General Programmatic and Technical Aspects

In addition to the three key aspects of SCPPRs that are the focus of the NRC staff review, there may be regulatory matters of a programmatic or technical nature on which the NRC staff wishes to provide guidance in the form of observations or recommendations. This guidance is distinguished from the concerns (objections, comments, questions) and the responses to DOE's proposed closure of NRC open items in that it is not intended to be tracked in OITS but is provided to DOE for regulatory guidance as it continues its site characterization program.

3.3 Activities/Products

The technical review of the SCPPRs is to consist of the following steps:

1. Thirty days prior to the expected date of receipt of a particular SCPPR, the project manager (PM) and technical leads for review of a particular SCPPR are assigned by appropriate supervisors in the Division of High-Level Waste Management (DHLWM).
2. Section Leaders identify any staff (including themselves if applicable) who were not involved in the SCP review or subsequent SCPPR reviews so that, prior to receipt of the particular SCPPR, they can undertake review preparation activities like those done by staff which participated in the earlier reviews (see, for example, section 4.1.1 on p. 179 of the SCP Review Plan). The PM verifies that this step has been completed before the review begins.
3. The PM and technical leads briefly scan the SCPPR to determine whether there are obvious major concerns that need to be called to the attention of DHLWM management. In addition, they ascertain, based upon the amount, substance, and complexity of the material provided in the SCPPR and its supporting references, whether it will be necessary to seek assistance from other parts of the NRC (e.g., Office of Research) or from the Center for Nuclear Waste Regulatory Analyses (CNWRA), and recommend to DHLWM management a schedule for completion of the review. The PM arranges through appropriate channels for whatever outside assistance is deemed necessary.
4. NRC staff reviews the SCPPR:
 - a. Reviewers in each technical section prepare concerns (objections, comments, and questions), responses to DOE's proposed resolution of NRC open items, and other regulatory observations and recommendations that the reviewers wish to

propose for inclusion in the review package. Concerns are to be prepared using the format of the SCA objections, comments, and questions (as defined in the SCP Review Plan, p. 186).

- b. Technical lead prepares a Section draft of review results (as discussed in 4.a. above) for review by the Section Leader.
- c. Section Leader reviews the Section draft and coordinates with the technical lead the completion of a revised Section draft.
- d. PM coordinates technical integration of staff review as needed, both while reviewers are developing their review results and while the Section drafts are being revised.
- e. Section Leaders send drafts to the appropriate Branch Chief or, in the case of the Quality Assurance Section, the Project Director, for review.
- f. Branch Chiefs coordinate preparation of Branch drafts, which are transmitted to the Project Director, with copies sent to the PM.
- g. PM prepares the Division draft and transmittal letter for concurrence by the Branch Chiefs, review by the Project Director, and transmittal to the Division Director.
- h. Division Director transmits the Division package to the Director, Nuclear Material Safety and Safeguards (NMSS), for review and signature.
- i. Director, NMSS transmits the review package to DOE.
- j. Director, NMSS transmits the review package to the State of Nevada Governor and Legislature, Indian Tribes, and counties to invite comments within 60 days.
- k. PM prepares a Federal Register notice of review package availability and of a 60 day public comment period.
- l. PM places the review package and transmittal letters in the Public Document Room.
- m. PM updates the OITS by arranging for entry of the new concerns and recording of progress toward resolution of the existing concerns.

4.0 INTERNAL QUALITY ASSURANCE (IQA) REQUIREMENTS/RESPONSIBILITIES/RECORDS FOR SCPPR REVIEWS

4.1 IQA Requirements

In accord with the IQA plan for DHLWM, IQA requirements for reviewing SCPPRs are as follows:

1. Before the SCPPR review begins, conduct one or more indoctrination/training sessions in how the SCPPR Review Plan is to be implemented in reviewing DOE's SCPPR. Maintain attendance lists to document participation by the staff members who are to be involved in the SCPPR review.
2. Conduct the staff technical review and develop the review package and drafts leading up to the review package consistent with the SCPPR Review Plan.
3. Conduct IQA reviews of the review package and drafts using the following review criteria:
 - a. Technically defensible;
 - b. Accurately represents information in the SCPPR and its references;
 - c. Consistent with appropriate sections of the SCPPR Review Plan;
 - d. For new concerns, consistent with the description of objections, comments, and questions given in the SCP Review Plan (p. 186);
 - e. Technically consistent within a discipline and across disciplines;
 - f. Consistent with 10 CFR Part 60;
 - g. Written in a clear, concise, complete, and specific manner with clear and adequate support given for concerns, responses addressing proposed resolution of concerns, and other observations and recommendations;
 - h. Written in an objective and factual tone;
 - i. Written in a grammatically correct manner and with editorial consistency throughout;

- j. Products transmitted by the Branch Chiefs to the Project Director and by the Project Director to the Division Director reflect internal resolution of significant comments;
 - k. Entries into OITS accurately reflect the results of the SCPPR review with respect to new NRC concerns and to progress toward resolution of existing NRC concerns.
4. Document that the requirements above have been satisfactorily completed. The signatures of the Section Leaders on Section drafts transmitted to the Branch Chiefs, signatures of Branch Chiefs on Branch drafts transmitted to the Project Director, and the signature of the Project Director on the review package transmitted to the Division Director constitute the documentation that the requirements above have been met.

4.2 Responsibilities

Within the DHLWM, the technical leads and other technical reviewers, the Section Leaders, Branch Chiefs, Project Director, the PM, and the DHLWM IQA coordinator are jointly responsible for assuring that the IQA criteria in Section 4.1 are met. In particular, the technical reviewers are responsible for following the SCPPR Review Plan, conducting the technical review of the SCPPR in their technical areas, and providing input to the technical lead, who has the responsibility for incorporating the input of the technical reviewers and preparing the Section draft. Each Section Leader is responsible for assuring that: (1) his staff follow this Review Plan; and (2) his staff's products are of technically high quality. Each Section Leader is specifically responsible for the IQA review of the respective Section draft. The Branch Chiefs and Project Director are responsible for assuring that all significant internal comments are resolved in the Division draft submitted to the Division Director. Each Branch Chief is specifically responsible for the IQA review of the respective Branch draft, and the Project Director is responsible for the IQA review of the Division draft. The PM is responsible for overall project management of the review, and especially for: (1) coordinating the efforts of the review team members in the different disciplines; (2) preparing a letter from the Director, NMSS, to DOE that preserves the technical quality of the products transmitted by the Branch Chiefs and Project Director and that is written in an objective and factual tone; (3) arranging for entry into the OITS of information relative to new and existing NRC concerns that accurately reflects the results of the SCPPR review; (4) compiling the IQA record of the SCPPR review; and (5) keeping the IQA coordinator informed throughout the review process about ongoing review activities. The DHLWM IQA coordinator monitors the ongoing review, audits the review process to whatever extent he deems necessary, and is available for consultation with the other individuals responsible for assuring that the IQA requirements in section 4.1 are met. At the end of the SCPPR review, he verifies that those IQA requirements have been satisfactorily completed.

4.3 Records

The IQA record contains those documents judged necessary to document the SCPPR review. All other documents not identified as part of the IQA record are unnecessary to retain and should be discarded. The following documents comprise the IQA record:

1. SCPPR Review Plan;
2. Signed Section drafts transmitted by Section Leaders to their supervisors;
3. Review package transmitted by the Director, NMSS, to DOE.

Examples of documents that are not part of the IQA record and therefore should not be retained include:

1. Early technical reviewer drafts and Section drafts leading to the final Section drafts;
2. Various drafts between the drafts designated above for retention;
3. Mark-ups of drafts;
4. Personal notes.

The DHLWM IQA coordinator is available during the SCPPR review to provide assistance in determining whether there is an IQA rationale for retaining particular documents.

APPENDIX A

SECTIONS OF NWPA AND PART 60 RELATED TO THE CONTENT OF SCP PROGRESS REPORTS

NWPA, Section 113(b)(3):

During the conduct of site characterization activities at a candidate site, the Secretary shall report not less than once every 6 months to the Commission and to either the Governor and legislature of the State in which such candidate site is located, or the governing body of the affected Indian tribe where such candidate site is located, as the case may be, on the nature and extent of such activities and the information developed from such activities.

10 CFR 60.18(g):

During the conduct of site characterization activities, DOE shall report not less than once every six months to the Commission on the nature and extent of such activities and the information that has been developed, and on the progress of waste form and waste package research and development. The semiannual reports shall include the results of site characterization studies, the identification of new issues, plans for additional studies to resolve new issues, elimination of planned studies no longer necessary, identification of decision points reached and modifications to schedules where appropriate. DOE shall also report its progress in developing the design of a geologic repository operations area appropriate for the area being characterized, noting when key design parameters or features which depend upon the results of site characterization will be established. Other topics related to site characterization shall also be covered if requested by the Director.

APPENDIX B

CONTENTS OF A

DOE SEMIANNUAL SCP PROGRESS REPORT (SCPPR)

Appendix B comprises an outline of the information that would logically appear in an SCPPR based upon (1) the structure and contents of Chapter eight of the SCP; and (2) the NWPA and 10 CFR Part 60 regulatory requirements for SCPPRs quoted in Appendix A. Appendix B does not constitute and should not be construed as an NRC format and content guide for SCPPRs. Rather, it is intended as a guide to the NRC staff with respect to the information falling within the NRC purview that the staff should expect to review in the SCPPRs.

The outline suggests a possible ordering for information to be included in an SCPPR. As indicated in the outline, the same information could logically be presented in more than one location in an SCPPR; the staff clearly does not expect nor seek such redundancy in the document.

CONTENTS OF A DOE SEMIANNUAL SCP PROGRESS REPORT (SCPPR)

I. Issue Resolution Strategy (IRS)

A. Changes in the IRS

B. Issues

1. Summary of progress toward resolution for each issue
2. Changes in issues
3. Changes in resolution strategies for issues

C. Performance Allocation

1. Changes in performance allocation
2. Changes in information needs identified by performance allocation

D. Progress toward resolution of NRC concerns on IRS/performance allocation/information needs

II. Site Characterization Programs

A. Site Programs

1. Hydrology Program

a. Overall Program

- i. Summary of progress toward obtaining geohydrologic characteristics required by the performance and design issues
- ii. Significant changes in overall hydrology program
- iii. Progress toward resolution of NRC concerns

b. Individual Investigations/Studies/Activities

i. Progress

--Work in progress/completed towards meeting the objectives of each investigation, study, and activity, including summary of information developed and references to technical reports (if not covered in 1.a.i.)

--Decision points reached

--Progress toward resolution of NRC concerns

ii. Changes

--Investigations/studies/activities added, changed,
or eliminated

--Schedule/sequence changes

2.	Geochemistry Program	Same contents as for the
3.	Rock Characteristics Program	Hydrology Program
4.	Climate Program	"
5.	Erosion Program	"
6.	Rock Dissolution Program	"
7.	Postclosure Tectonics Program	"
8.	Human Interference Program	"
9.	Population Density and Distribution Program	"
10.	Land Ownership and Mineral Rights Program	"
11.	Meteorology Program	"
12.	Offsite Installations and Operations Program	"
13.	Surface Characteristics Program	"
14.	Thermal and Mechanical Rock Properties Program	"
15.	Preclosure Hydrology Program	"
16.	Preclosure Tectonics Program	"

B. Repository Program

1. Overall Program

- a. Summary of progress in verification or measurement of host-rock environment, coupled interaction tests, design improvement activities and tests, and repository modeling
- b. Significant changes in program
- c. Progress toward resolution of NRC concerns

2. Individual Issues/Information Needs/Design Activities

- a. Progress
 - i. Issues resolved
 - ii. Work in progress/completed
 - iii. Decision points reached
 - iv. Progress toward resolution of NRC concerns
- b. Changes
 - i. Issues/Information Needs/Design Activities added, changed, or eliminated
 - ii. Schedule/sequence changes

C. Seals Program

1. Overall Program

- a. Summary of progress in seal environment, components, designs, and modeling
- b. Significant changes
- c. Progress toward resolution of NRC concerns

2. Individual Issues/Information Needs/Studies/Activities/Design Activities

a. Progress

- i. Issues resolved
- ii. Work in progress/completed
- iii. Decision points reached
- iv. Progress toward resolution of NRC concerns

b. Changes

- i. Issues/Information Needs/Studies/Activities/Design Activities added, changed, or eliminated
- ii. Schedule/sequence changes

D. Waste Package Program

1. Overall Program

- a. Summary of progress in waste package environment, components, design, and modeling
- b. Significant changes
- c. Progress toward resolution of NRC concerns

2. Individual Issues/Information Needs/Studies/Activities/Design Activities

a. Progress

- i. Issues resolved
- ii. Work in progress/completed
- iii. Decision points reached
- iv. Progress toward resolution of NRC concerns

b. Changes

- i. Issues/Information Needs/Studies/Activities/
Design Activities added, changed, or eliminated
- ii. Schedule/sequence changes

E. Performance Assessment Program

1. Preclosure Performance Assessment

a. Overall Program

- i. Progress
- ii. Changes (strategy, approach, etc.)
- iii. Progress toward resolution of NRC concerns

b. Individual Issues/Information Needs/Activities

i. Progress

- Issues resolved
- Work in progress/completed
- Decision points reached
- Progress toward resolution of NRC concerns

ii. Changes

- Issues/Information Needs/Activities added,
changed, or eliminated
- Schedule/sequence changes

2. Postclosure Performance Assessment

a. Overall Program

- i. Progress
- ii. Changes (strategy, approach, etc.)
- iii. Progress toward resolution of NRC concerns
on overall program

b. Individual Issues/Information Needs/Activities

- i. Issues resolved
- ii. Work in progress/completed, including preliminary performance assessments and related iterative activities
- iii. Decision points reached
- iv. Progress toward resolution of NRC concerns

III. Quality Assurance (QA) Program

- A. Progress
- B. Changes
- C. Progress toward resolution of NRC concerns

IV. ESF Design and Construction Program

- A. Progress
 1. Design process
 2. Design
 3. Construction
 4. Progress toward resolution of NRC concerns

V. Integrated Schedules

REB ISSUES DRAFT SCPPRRP

- 1 -

MEMORANDUM TO: DHLWM Staff

FROM: Robert E. Browning, Director
Division of High-Level Waste Management

SUBJECT: ISSUANCE OF SCP PROGRESS REPORT REVIEW PLAN

Enclosed is the SCP Progress Report Review Plan (SCPPR Review Plan) for your use in reviewing DOE's semi-annual SCP progress reports. This Review Plan was developed in coordination with HLPD, HLGP, and HLEN. All the comments and suggestions provided by reviewers of earlier drafts were carefully considered, and this Review Plan reflects resolution of all significant internal review comments.

Robert E. Browning, Director
Division of High-Level Waste Management

Enclosure: As stated

cc: R. Bernero
G. Arlotto

DISTRIBUTION

Central File	B.J. Youngblood	R.E. Browning	J. Bunting
LSS	J. Linehan	R. Ballard	On-Site Reps
CNWRA	NMSS R/F	HLPD R/F	K. Stablein
LPDR	ACNW	PDR	

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