

Waste Isolation Pilot Plant
Compliance Certification Application
Reference 206

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CAO MANAGEMENT PLAN
Carlsbad Area Office

Title: PEER REVIEW

009

(Assistant Manager, Office of Regulatory Compliance, Carlsbad Area Office)

6/25/96

Date:

1. INTRODUCTION

This Peer Review Management Plan (PRMP) describes the management processes which the U.S. Department of Energy (DOE), Carlsbad Area Office (CAO) will use to control the planning, implementation, and documentation of peer reviews (PR) to be conducted by the CAO-Office of Regulatory Compliance (ORC), as prescribed in 40 CFR Part 194, and as deemed necessary by the ORC to meet the criteria described in this rule. These PRs include conceptual models, waste characterization sensitivity analyses [as prescribed in 40 CFR Part 194 section 27(a)(1&2)], qualification of existing data [as prescribed in 40 CFR Part 194 section 22(b)], and confirmation of the Passive Institutional Controls (PICs) analyses and design document (40 CFR Part 194 section 43).

1.1 BACKGROUND

In accordance with the regulatory requirements specified in 40 CFR Part 191 and the criteria for the implementation of those requirements, as specified in 40 CFR Part 194, DOE is to conduct a series of PRs to *determine if (Rev. 1) various information and/or data are qualified (Rev. 1) for use in supporting the Waste Isolation Pilot Plant (WIPP) compliance certification application.* 40 CFR Part 194 provides further criteria for the utilization of PRs for the confirmation and/or determination of completeness and accuracy of data and other information.

1.2 PURPOSE

The purpose of this PRMP is to identify and initiate activities necessary to *determine if (Rev. 1) data and other WIPP-related information not obtained in accordance with an appropriate quality assurance program are qualified to be used to demonstrate compliance with 40 CFR Part 191 and 40 CFR Part 194 (Rev. 1).* The requirement for conducting PRs is specified in the CAO Quality Assurance Program Description (QAPD). The purpose of the PRs conducted by ORC is to meet the requirements of 40 CFR Part 194 section 27(a)(1) and (2), to qualify existing unqualified data [as prescribed in section 22(b)], and to confirm the results

of the Passive Institutional Controls design analyses and report according to 40 CFR Part 194 section 43.

A PR is a documented, critical review performed by peers who are independent of the work being reviewed. The peers' independence from the work being reviewed means that the peer: a) was not involved as a participant, supervisor, technical reviewer or advisor in the work being reviewed; and b) to the extent practical, has sufficient freedom from funding considerations to assure the work is impartially reviewed.

1.3 SCOPE

This PRMP defines the management approach, resources, schedule, and technical requirements for using PRs to *determine if (Rev. 1) data and/or information are qualified to be (Rev. 1) utilized to support the WIPP compliance certification application.* This PRMP further defines the requirements for using the PR process to ensure that individuals participating as peer reviewers are independent of the work they have been tasked to review and that they are technically qualified to review the work. The scope of each subject matter PR shall be defined in a related subject matter PR plan.

The PR Schedule is included as Attachment A of this document and Estimated PR Resource Requirements are included as Attachment B. The process for PRs is detailed in CAO Team Procedure (TP) 10.5, "PEER REVIEW".

2. PEER REVIEWS

The CAO will facilitate the conduct of a series of PRs to meet the PR process requirements as specified in 40 CFR Part 194, which also stipulates that peer reviews be conducted in accordance with the requirements of NUREG-1297. The CAO will retain a private contractor to conduct the PRs and to ensure that the independence requirements specified in the CAO QAPD and in the CAO TP 10.5 are met. The CAO TP 10.5 outlines that a PR review is a documented critical review performed by peers who are independent of the work being reviewed. It is, furthermore, an in-depth critique of assumptions, calculations, extrapolations, alternate interpretations, methodology, and acceptance criteria employed, and of conclusions drawn in the original work. These PRs will confirm the adequacy of the work done and that the conceptual models reasonably represent possible future states of the disposal system. Adequacy and reasonable are defined as follows:

adequate: sufficient, suitable to the case or occasion, equal to what is required.

reasonable: fair, proper, suitable under the circumstances, fit and appropriate to the end in view.

2.1 APPROACH

This PRMP documents the approach to conducting the PR process and shall be prepared and approved by CAO prior to the commencement of any PR. There shall be a specific PR Plan for each of the following six (6) peer reviews to be conducted:

- Conceptual Models Developed and Selected by DOE for Use in Performance Assessment (PA);
- Waste Characterization Analyses;
- Passive Institutional Controls Report and Analyses;
- Data Qualification - Waste Form and Disposal Room;
- Data Qualification - Engineered Barriers (Rock Mechanics and Seals); and
- Data Qualification - Natural Barriers (Salado and Non-Salado Flow and Transport).

Each PR will be technically based on the descriptions and details outlined in a PR plan and will be conducted in accordance with the technical and quality assurance (QA) requirements outlined in the applicable CAO procedure. *Contingent upon the amount and type of information requiring review under each PR plan, peer reviewers may serve on more than one PR panel and PR panels may be combined to better utilize available resources. The PR shall, however, be conducted in compliance with the respective PR Plan. (Rev. 1).*

The CAO-ORC is responsible for the preparation and approval of this PRMP, individual PR plans, and the PR procedure (CAO TP 10.5). The CAO TP 10.5 ensures that the PRs are documented and that critical reviews are performed by qualified peers independent of the work being reviewed. Additional instructions, procedures, and plans that are required to control the process will be prepared by the PR Manager.

SNL is responsible for the preparation and implementation of a procedure for the assembly and timely transmittal of data and information to the PR Manager which provide the technical basis for the following PRs:

- Conceptual Models

Sections 194.27(a)(1) and 194.23(a)(3)(v) of 40 CFR Part 194 require that any compliance certification application shall include documentation that conceptual models developed and selected by the DOE reasonably represent possible future states of the disposal system. The SNL data and information assembly procedure will provide guidance for the assembly of pertinent data and other information which will form the technical basis for this peer review.

- Data Qualification

Section 194.22(b) of 40 CFR Part 194 specifies that all data be qualified for use in the demonstration of compliance and that existing data, as defined by 40 CFR Part 194, be qualified. The DOE has determined that the most effective methodology to qualify the here-to-fore unqualified existing data is through the use of peer reviews. As part of the parameterization and establishment of parameter values, SNL has prepared data packages that establish the source of data that will be utilized, through a "scale-up" process, to define these values. These data packages are formatted to contain the source of the data (i.e., from experimental activities developed, or not developed, under a qualified quality assurance program, documented qualified data sources, or assumed/allocated/elicited/etc.). Those data that must be qualified through the implementation of a peer process will be clearly designated and will form the technical basis for qualification through a PR. SNL is responsible for the identification of these unqualified data and, through its data assembly procedure, assemble the required data and other information to support the data qualification PR process.

- Waste Characterization Sensitivity

Section 27(a)(2) of 40 CFR Part 194 requires that any compliance application shall include documentation that a PR has been conducted of the waste characterization analyses as required in 40 CFR section 194.24. SNL is responsible for conducting a sensitivity analyses of parameters related to transuranic waste characteristics. This analysis will be conducted as part of the PA and will form the technical basis of the waste characterization PR. SNL is further responsible for providing documentation of the waste characterization analysis which will form the technical basis of the waste characterization PR.

- Passive Institutional Controls

Section 43 of 40 CFR Part 194 states that any designs and other information which the DOE intends to utilize to preserve the knowledge about the location, design, and contents of the Passive Institutional Controls (PICs) system should be incorporated into the compliance certification application. This information will be utilized to develop a function to be used in the WIPP PA to express the efficacy of the PICs in reducing the likelihood of human intrusion for the post-closure of the disposal system. The CAO will conduct a PR of the PICS report and resulting function(s) to provide confirmation that they reasonably present the design, constructability, and survivability of markers which identify the controlled area, have reasonably represented conditions which may be present during the projected life of the controls, and can retain their effectiveness for the maximum allowed period of effectiveness.

2.2 PEER REVIEW QUALITY ASSURANCE PROCEDURES

The PRs shall be conducted in accordance with the requirements of the CAO QAPD and applicable implementing procedures.

2.3 PEER REVIEW LOGISTICS AND MANAGEMENT

Not all data and information necessary to support the PRs are currently available. Therefore, it is necessary to conduct the PRs in a phased manner. The phasing of the schedule depends on data and information availability and shall be consistent with the conduct of the containment system PA. The CAO, working closely with SNL, has developed a preliminary schedule that provides the necessary data and information on an "as available" basis.

2.4 PEER REVIEWERS

Each PR panel will be composed of individuals who have been determined to be independent of the work being conducted and possess technical expertise in the subject matter to be reviewed to a degree at least equivalent to that needed for the original work reviewed, as defined by NUREG-1297. Each peer reviewer will be selected based on the criteria defined in ORC Team Procedure 10.5. The size of the PR panel is dependent upon the sufficiency in representing the appropriate spectrum of knowledge and experiences in the subject(s) to be reviewed and will vary based on the subject matter and importance of the subject matter to safety and waste isolation. Through a formal orientation process, each peer reviewer will become appropriately familiarized with the WIPP containment system and the basis of the conceptual models which describe the containment system. Additional orientation subject matter will be dependent upon the particular work they are asked to review. Each peer reviewer will be selected, oriented, and trained in accordance with approved procedures. *Peer reviewers may serve on more than one panel contingent upon fulfilling the required independence and expertise requirements defined in the respective PR plan (Rev. 1).*

2.5 ADEQUACY/QUALIFICATION CRITERIA

Adequacy and qualification criteria shall be established for each of the peer reviews in subsequent peer review plans. The components for adequacy/qualification may include:

- Sources of the data and parameter values are known (e.g., professional judgment, published material, field test, laboratory experimentation, etc.);
- The processes used to produce the parameters from data are understood and were appropriate for the intended use of the data; and
- The assumptions, calculations, extrapolations, interpretations, methods, and conclusions pertinent to the data are appropriate for the development of parameters used as input to the WIPP PA.

2.6 SCHEDULE

The baseline schedule for the PRs is included as Attachment A of this document. If it is necessary to revise this schedule and the proposed revision extends the delivery of the draft and/or final Peer Review Reports (i.e., it can not be demonstrated that schedule "off-sets" can be implemented to eliminate the delivery date delay), the change must be approved by the ORC. Revisions to the PR baseline schedule may not require revisions to this PRMP, but may be attached to the plan by reference.

2.7 DELIVERABLES

The main deliverables of the PRs are draft and final reports for which the tentative due dates for these deliverables are shown on Attachment A. Because of the restrictive timing of the PRs, it is essential that all phases and responsibilities associated with identification and assembly of data and other information be started and completed in a manner which is timely to the PR process.

3. ORGANIZATION

CAO-ORC is responsible for the PRs described in this PRMP. To conduct the PRs, CAO has provided funding to its technical support contractor, Carlsbad Technical Assistance Contractor (CTAC), to procure the services of an independent PR contractor (PR Manager) responsible for managing and coordinating the PR process. An Organization Chart is included in Attachment C. This contractor will function as the PR Manager and will be responsible for reporting to the CTAC Group Manager for Compliance and Experimental Programs. The independent PR contractor is responsible for ensuring that the PR process is conducted consistent with the requirements contained in NUREG-1297 and specific requirements of this PRMP, the CAO TP 10.5, and the PR plans. For this reason, the PR Manager is responsible for maintaining close coordination with the SNL PR Manager to ensure delivery of needed information.

The PR Manager is responsible for providing a monthly activity report which will include the identification and assembly of data, development and planning of implementation documents, identification and selection of peer review personnel, orientation/training of PR personnel, and the progress of the PRs. The monthly activity reports will be simultaneously submitted to the ORC PR Manager and to the CTAC Group Manager for Compliance and Experimental Programs. Monthly status reports addressing the overall PR progress and identification of problems and solutions will be simultaneously provided to the ORC and CTAC as indicated above. It is recognized that the availability of information and time in which to conduct the required PRs is limited. It is vital to the success of this program that effective interfaces be established and implemented.

4. RESOURCE REQUIREMENTS

An estimate of resource requirements for the planning, management, and implementation of the six PRs are provided in Attachment B. This estimate provides an approximation of management and technical requirements with the final resource requirements defined during the Scope of Work contract negotiations. Revisions to the attached management and technical baseline resource estimate will be made as additional information becomes available. These revisions will be amended to the PRMP and will not require a revision of the plan. This resource schedule is intended to provide a "rough order of magnitude" estimate of resource requirements and is not intended to portray a contractual obligation."

5. RECORDS MANAGEMENT

Records generated as a result of activities outlined in this PRMP and subsequent PRs will be evaluated to determine if they are QA records. The requirements for QA records are identified in the PR procedure and the PR plans. Records identified as QA records will be handled in accordance with applicable QA requirements, as defined in the DOE-CAO records management procedure(s).

6. DOCUMENT CONTROL

Plans, procedures, and other documents which require document control will be handled in accordance with applicable DOE-CAO and SNL controlled document procedures.

ATTACHMENT A

PEER REVIEW SCHEDULE

<u>ACTIVITY</u>	<u>DRAFT</u>	<u>FINAL</u>
PR Manager assigned	NA	2/26
DOE-CAO PR organization established	NA	2/28
PR Statement of Work Approved	3/4	3/11
DOE-CAO PR Procedure	3/4	3/18
PR Management Plan (PRMP)	3/4	3/29
SNL Data Assembly Procedure	3/6	3/15
PR Desk Instruction	3/20	3/29
CTAC PR Resources Allocated	NA	3/8
Conceptual Model Peer Review (CMPR)		
CMPR Plan	3/8	3/29
PR Panel Assigned	NA	3/29
Conceptual Data Package to PR Manager	3/15	4/2
Initiate CMPR	NA	4/2
Complete CMPR	NA	6/28
Submit CMPR Report	6/21	7/1
Engineered Systems [Rock Mechanics & Shaft/Borehole Seals] Peer Review (ESPR)		
ESPR Plan drafted	3/11	3/29
PR Panel Assigned	NA	4/12
ES Data Package to PR Manager	4/5	4/12
Initiate ESPR	NA	4/22
Complete ESPR	NA	5/31
Submit ESPR Report	6/7	6/14
Waste Form & Disposal Room (WFDR) Peer Review		
WFDR Plan	3/11	3/29
PR Panel Assigned	NA	4/29
WFDR Data Package to PR Manager	4/22	4/29
Initiate WFDR	NA	5/6
Complete WFDR	NA	6/14
Submit WFDR Report	6/14	6/28
Natural Barriers [Salado and Non-Salado Flow and Transport] Peer Review (NBPR)		
NBPR Plan	3/11	3/29
PR Panel Assigned	NA	4/29
NBPR Data Package to PR Manager	4/22	4/29
Initiate NBPR	NA	5/6
Complete NBPR	NA	6/14
Submit NBPR Report	6/14	6/28

ATTACHMENT A

PEER REVIEW SCHEDULE
(CONTINUED)

<u>ACTIVITY</u>	<u>DRAFT</u>	<u>FINAL</u>
Passive Institutional Controls Peer Review (PICPR)		
PICPR Plan	4/12	4/19
PR Panel Assigned	NA	4/19
PIC Document Package to PR Manager	4/19	4/26
Initiate PICPR	NA	5/6
Complete PICPR	NA	6/7
Submit PICPR Report	6/7	6/21
Waste Characterization Sensitivity Peer Review (WCSPR)		
WCSPR Plan	6/28	7/5
PR Panel Assigned	NA	7/5
WCS Document Package to PR Manager	7/5	7/12
Initiate WCSPR	NA	7/15
Complete WCSPR	NA	8/9
Submit WCSPR Report	8/9	8/16

ATTACHMENT B

ESTIMATED PEER REVIEW RESOURCE REQUIREMENTS

BASE SUPPORT**SUPPORT LEVEL (hours)**

Management	1040
Scheduling & Administrative support	1040
Quality Assurance support	208
SNL Data & Records interface	1040
Report Coordinator	520
Clerk/Typist	1040

Conceptual Models PR support

Subject matter experts	1800
Technical Coordinator	300
Clerical Support	300

Rock Mechanics/seals PR support

Subject matter experts	1200
Technical Coordinator	300
Clerical Support	300

Disposal Room/Chemistry PR support

Subject matter experts	1200
Technical Coordinator	300
Clerical Support	300

Flow and Transport PR support

Subject matter experts	1200
Technical Coordinator	300
Clerical Support	300

Passive Institutional Controls

Subject matter experts	1200
Technical Coordinator	300
Clerical Support	300

Waste Characterization Sensitivity

Subject matter experts	1200
Technical Coordinator	300
Clerical Support	300

ATTACHMENT C

PEER REVIEW ORGANIZATION CHART

