



CHANGE NOTICE

CN No.: 2.2-0-1

Affected Document: QP 2.2 "Peer Review"

Rev. 0

Prepared by: A. N. Kugler/Ronald Schwartz

Approved by: N/A

(Technical Area Leader)

(Date)

Approved by:

*R. W. E. [Signature]*

(YMP QA Manager)

6/7/89

(Date)

Training Required:

Yes  No

Approved by:

*[Signature]*

(YMP Project Leader)

6/7/89

(Date)

Currently Read as Follows:

Changed to Read:

Paragraph following 2.2.5.4 (e)

Peer review reports will not be revised without the approval of the original signatories. Accordingly, peer review reports are not subject to review and revision by LLNL YMP personnel under provisions of QP 3.3, "Review of Technical Publications".

NOTE: THIS CHANGE NOTICE IS TO BE FILED AT THE FRONT OF THE AFFECTED DOCUMENT

NUCLEAR WASTE MANAGEMENT PROGRAM  
 CONTROLLED COPY NO. 0100

Subject:

PEER REVIEW

Approved:

 Approved by: [Signature] 2/12/89  
 YMP Project  
 Leader

 Approved by: [Signature] 1/12/89  
 YMP Quality Assurance  
 Manager

## 2.2.1 PURPOSE

This procedure establishes the process for planning, conducting and documenting Peer Reviews for the Yucca Mountain Project (YMP).

A Peer Review is used when the adequacy of information (e.g., data, interpretations, test results, design assumptions, etc.), or the suitability of procedures and methods essential to showing that the repository system meets or exceeds its performance requirements with respect to safety and waste isolation, cannot otherwise be established through testing, alternate calculations or reference to previously established standards and practices.

The following conditions are indicative of situations in which a Peer Review is warranted:

- a. Critical interpretations or decisions will be made in the face of significant uncertainty, including the planning for data collection, research, or exploratory testing.
- b. Decisions or interpretations having significant impact on performance assessment conclusions will be made.
- c. Novel or beyond the state-of-the-art testing, plans and procedures, or analyses are or will be utilized.
- d. Detailed technical criteria or standard industry procedures do not exist or are being developed.
- e. Results of tests are not reproducible or repeatable.
- f. Data or interpretations are ambiguous.
- g. Data adequacy is questionable (e.g., data may not have been collected in conformance with an established QA program.)

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A Peer Review is also used when the adequacy of a critical body of information can be established by alternate means, but there is disagreement within the cognizant technical community regarding the applicability or appropriateness of the alternate means.

#### 2.2.2 SCOPE

This procedure applies to Peer Reviews conducted by the LLNL-YMP and YMP subcontractors.

#### 2.2.3 DEFINITIONS

Peer - A person having technical expertise in the subject matter to be reviewed (or a critical subset of the matter to be reviewed) to a degree at least equivalent to that needed for the original work.

Peer Review - A documented, critical review performed by peers who are independent of the work being reviewed. The peer's 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 performed, and (b) to the extent practical, has sufficient freedom from funding considerations to assure the work is impartially reviewed. A peer review is an in-depth critique of assumptions, calculations, extrapolations, alternate interpretations, methodology, acceptance criteria employed, or conclusions drawn in the original work.

#### 2.2.4 RESPONSIBILITIES

The YMP Project Leader is responsible for identifying Peer Review Chairmen and for concurring with the selection of Peer Reviewers. These responsibilities cannot be delegated.

YMP Technical Area Leaders are responsible for:

- a. Identifying the need to conduct a Peer Review; and
- b. Collecting and maintaining documentation required by this procedure and submitting it to the YMP Quality Assurance Manager for review and to the Records Management System.

The YMP Quality Assurance Manager is responsible for monitoring the implementation of this procedure, providing a QA Representative to serve as Secretary for each Peer Review, providing a QA Program Indoctrination for Peer Reviewers, and for reviewing the Peer Review documentation before it is submitted to the Records Management System.

The Peer Review Chairman is responsible for:

- a. Identifying Peer Review candidates who meet the requirements specified in this procedure;

- b. Planning and conducting the Peer Review;
- c. Directing the preparation of the Peer Review Report; and
- d. Attesting to the qualifications of the Peer Reviewers.

#### 2.2.5 PROCEDURE

##### 2.2.5.1 Initiation of the Peer Review

The cognizant Technical Area Leader (TAL) notifies the YMP Project Leader and the YMP Quality Assurance Manager by memorandum of the need to conduct a Peer Review. After obtaining the concurrence of the YMP Project Leader for conducting the Peer Review, the TAL opens and maintains a file for the collection of all Peer Review related documents.

The YMP Quality Assurance Manager identifies a QA Representative to serve as Secretary of the Peer Review and notifies the TAL of the selection in writing.

##### 2.2.5.2 Selection of Peer Reviewers

The YMP Project Leader selects the person to serve as Chairman for the Peer Review. The Chairman must meet the same selection criteria as provided in this section of the procedure for the other Peer Reviewers.

The Peer Review Chairman nominates the remaining members of the Peer Review and obtains concurrence of the nominations by the YMP Project Leader. The Peer Review Group meet the following criteria.

- a. The number of peers comprising a Peer Review group varies commensurate with the following:
  - 1. The complexity of the work to be reviewed;
  - 2. Its importance to establishing that safety or waste isolation performance goals are met;
  - 3. The number of technical disciplines involved;
  - 4. The degree to which uncertainties in the data or technical approach exist;
  - 5. The extent to which differing viewpoints are strongly held within the applicable technical and scientific community concerning the issues under review.
- b. The collective technical expertise and qualifications of Peer Review Group members spans the technical issues and areas involved in the work to be reviewed, including any differing bodies of scientific thought. The potential for technical or organizational partiality is minimized by selecting peers to provide a balanced peer review group. Technical areas more central to the work to be reviewed receive proportionally more representation in the Peer Review Group.

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- c. The technical qualification of the peer reviewers, in their review areas, is comparable to that needed for the original work under review. Each peer has recognized and verifiable technical credentials in the technical area that the peer has been selected to review.
- d. Members of the peer review group are independent of the original work to be reviewed. Independence in this case means that the peer was not involved as a participant, supervisor, technical reviewer, or advisor in the work being reviewed, and to the extent practical, has sufficient freedom from funding considerations to assure the work is impartially reviewed. In some cases (i.e., finding considerations) it may be difficult to meet the independence criteria without reducing the technical quality of the peer review. When the independence criteria cannot be met, a documented rationale is included in the Peer Review Report.

Contractual arrangements for obtaining the services of Peer Reviewers are processed in accordance with Procedure 033-YMP-QP 4.0, "Procurement Control and Documentation." Peer Review candidates submit a verifiable resume of educational and professional achievement, including a listing of publications, to the Peer Review Chairman prior to final selection as a Peer Reviewer.

Prior to beginning the Peer Review, the Chairman submits a memorandum to the YMP Project Leader and the TAL attesting to the qualifications of the selected peers and describing the way in which their qualifications and expertise meet the requirements of this procedure.

#### 2.2.5.3 Conducting the Peer Review

The Peer Review Chairman and the TAL develop a plan for conducting the Peer Review. The plan includes:

- a. A description of the work to be reviewed;
- b. The size of the Peer Review Group and the spectrum of Peer Reviewers' qualifications;
- c. A suggested method for accomplishing the Peer Review;
- d. A schedule for completing the review; and
- e. Copies of, or references to materials, reports and publications pertinent to the work to be reviewed.
- f. Provisions for providing the QA Program Indoctrination.

The plan is provided to the Peer Reviewers prior to the start of the review process.

Unless circumstances prohibit, the Peer Review is conducted at one or more group meetings. The TAL coordinates availability of facilities for Peer Review Meetings. When group meetings are impractical, the Peer Review Chairman assures that all Peer Reviewers are cognizant of the comments and recommendations of other Reviewers.

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The Peer Review Group evaluates and reports on:

- a. Validity of assumptions;
- b. Alternate interpretations;
- c. Uncertainty of results and consequences if incorrect;
- d. Appropriateness and limitations of methodology and procedures;
- e. Adequacy of applications;
- f. Accuracy of calculations;
- g. Adequacy of requirements and criteria; and
- h. Validity of conclusions.

The QA Representative and the Peer Review Chairman prepare meeting minutes and other documents that describe the results of meetings, deliberations and other activities of the Peer Review process.

#### 2.2.5.4 Peer Review Report

The Peer Review Chairman prepares a report of the Peer Review activities. As a minimum, the report includes the following:

- a. A description of the work or issue(s) that was Peer Reviewed;
- b. The comments, conclusions and recommendations of the Peer Review group;
- c. Individual statements by Peer Review Group members reflecting dissenting views or additional comments, as appropriate;
- d. A listing of each Peer Reviewer and the technical qualification and evidence of independence for each peer, including potential technical and/or organizational partiality; and
- e. Signatures of the Peer Reviewers indicating their participation in the Peer Review.

Distribution of the Peer Review Report is determined by the TAL who initiated the review.

#### 2.2.5.5

The TAL submits the completed Peer Review documentation to the YMP Quality Assurance Manager for review. The Quality Assurance Manager assures that the document package is complete and in compliance with the requirements of this procedure.

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### 2.2.6 RETAINED DOCUMENTATION

The following documents resulting from the implementation of this procedure are Quality Assurance Records. Upon completion of the Peer Review, these records are collected, stored and maintained in accordance with Procedure 033-YMP-QP 17.0, "Quality Assurance Records."

Quality Assurance Records include the following;

- a. Memoranda requesting and approving the conduct of the Peer Review;
- b. Documentation of the rationale for the technical discipline, composition, and size of the Peer Review Group;
- c. Documentation attesting to the qualifications of the individuals who participated in the Peer Review;
- d. The Peer Review plan and supporting materials;
- e. Correspondence related to the Peer Review;
- f. Minutes of all Peer Review proceedings;
- g. The Peer Review Group's report;
- h. Dispostions and replies to reviewer's comments.