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NUCLEAR WASTE MANAGEMENT PROGRAM

CONTROLLED COPY NO. 83

Subject:

(See Below)

Approved:

(See Page 2)

TECHNICAL PROCEDURE

Peer Review of Barrier Material Selection Criteria
and Barrier Material Selection

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WM-11 PDC

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2.5.1 PURPOSE

This procedure describes how the peer review process for barrier materials selection criteria and barrier material selection is performed.

2.5.2 SCOPE

This implementing procedure has been written consistent with the requirements established in 033-NWMP-P 2.2, "Peer Review" and is applicable to the following tasks:

Peer review of the barrier materials selection criteria, which is a function of activities E-20-15, "Establishment of Criteria for Metal Barrier Selection" as described in Section 3.2.2 of the Scientific Investigation Plan for the Metal Barrier Selection and Testing Task WBS 1.2.2.3.2, and Z-20-4 "Selection of Single Alternate for ACD Study" as described in the Scientific Investigation Plan for the Alternate Container Materials and Design Task WBS 1.2.2.3.5.

Peer review of the barrier material selection which is a function of activities E-20-19, "Metal Barrier Selection" as described in Section 3.2.2 of the Scientific Investigation Plan for the Metal Barrier Selection and Testing Task WBS 1.2.2.3.2, and Z-20-4 "Selection of Single Alternate for ACD Study" as described in the Scientific Investigation Plan for the Alternate Container Materials and Design Task WBS 1.2.2.3.5.

2.5.3 RESPONSIBILITIES

The Task Leader is responsible for assuring implementation of this procedure. The Task Leader, at his or her discretion, may assign a Principal Investigator to perform the implementation steps described in this procedure. The reasons for calling a peer review are documented by the individual requesting the review. This documentation is sent to the Deputy for QA and made available by the Deputy for QA to the peer review group.

2.5.4 PROCEDURE

The completion of a peer review of barrier material selection criteria or barrier material selection requires six (6) steps:

1. Determination of the Structure of the Peer Review Panel.
2. Identification of Potential Peer Review Panel Members.
3. Selection of the Peer Review Panel Members.
4. Distribution of the Selection Criteria/Selected Material and Associated Background Information to Panel Members.
5. Conducting the Peer Review Meeting.
6. Writing the Peer Review Report.

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2.5.4.1 Structure of the Peer Review Panel

The Peer Review Panel is composed of up to seven (7) scientists/engineers with various backgrounds and areas of expertise in materials science. The panel includes members with expertise in materials science related to material degradation, fabrication, joining, performance assessment, modeling, interaction with waste forms, and industrial and engineering practices. A chairman is designated by the Project Leader to conduct the Peer Review Meeting and to author the Peer Review Report.

2.5.4.1.1 Responsibilities of the Chairperson

The peer review group chairman considers the reasons why the peer review was requested when determining the way in which the peer review will be conducted.

2.5.4.1.2 Responsibilities of the Peer Review Group

The peer review group is responsible for evaluating and reporting:

- a. Validity of assumptions and extrapolations for both the barrier material selection criteria and barrier material selection.
- b. Appropriateness and limitations of methodology and acceptance criteria employed for both the barrier material selection criteria and barrier material selection.
- c. Adequacy of work planned or performed for the barrier material selection.
- d. Supportability of conclusions drawn for the barrier material selection.
- e. Validity of interpretation of results for the barrier material selection.
- f. Other issues as appropriate to fulfill the purpose of the review as defined by the individual requesting the peer review.

Verification of calculations and computer software is not applicable to either barrier selection criteria or barrier material selection.

2.5.4.2 Identification of Potential Peer Review Panel Members

A peer review panel member candidate list is prepared to identify eminent materials scientists/engineers with qualifications and backgrounds in the areas described in 2.5.4.1 as potential candidates for the Peer Review Panel. Suggestions for Peer Review Panel Members are sought from Nuclear Waste Management Program (NWMP) staff members, consultants, and relevant professional materials/engineering societies and organizations. A brief description of the background and areas of technical expertise of each proposed member is prepared by the recommending party.

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2.5.4.3 Selection of the Peer Review Panel Members

The Peer Review Panel is selected by the NNWSI Project Leader from the list of potential members based on the technical backgrounds and availability of the potential peer review panel members. Peer reviewers are selected based upon their professional stature and their independence of the NWMP. Any individual may serve on both the barrier material selection criteria and barrier material selection peer review panels. Differing schools of scientific thought are to be represented. The qualifications of the peer review group chairman and members are verified and documented. Panel members are contracted according to procurement procedures described under Tab: 033-NWMP-P 4.0 and Tab: 033-NWMP-P 7.0 "Procurement Control and Documentation.

2.5.4.4 Distribution of the Selection Criteria/Selected Material and Associated Background Information to the Peer Review Panel

At least two weeks prior to the first scheduled meeting of the peer review panel, a packet of associated background information, prepared by NWMP staff members and consultants, is provided to panel members. This material provides the criteria and/or material selection to be reviewed along with pertinent technical supporting information.

2.5.4.5 Conducting the Peer Review Meeting

The peer review is conducted at Lawrence Livermore National Laboratory. The chairman begins the meeting when a quorum of 2/3 (0.667) of the panel members is present. Minutes and records of the meetings, activities, and deliberations are maintained by the NWMP QA staff representative. The peer review meeting is open to all interested parties, observers from NWMP and other organizations and individuals. Participation of individuals other than panel members in the discussion is limited at the discretion of the chairman.

2.5.4.6 Writing the Peer Review Report

Following the completion of the peer review meeting(s), a final report of the peer review is prepared. The chairman has final responsibility for the completion of this report, but may assign panel members to complete specific chapters or sections. This report includes a section or chapter for dissenting opinions should they exist. The report is signed by all panel members. Panel members opposing the conclusions of the report are required to sign as dissenting members. Dissenting members may elect to write a separate report expressing their views. The report also includes a statement of the qualifications of the peer review group members. Distribution of the peer review report is determined by the individual requesting the peer review and the Project Leader. Revisions to the peer review report must be signed by all panel members. Panel members opposing the revision(s) are required to sign as dissenting members and may elect to write a separate revised report expressing their views.

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2.5.5 RECORDS

The documents resulting from the application of this procedure are quality assurance records. These records are collected, stored, and maintained in accordance with procedures detailed under Tab: 033-NWMP-P 17.0, "Quality Assurance Records." These records include:

1. Documentation of the issues or reasons necessitating the formation of the peer review group.
2. Documentation of the rationale for the technical discipline, composition, and size of the peer review group.
3. Documentation of the individuals whose participation in the peer review process was sought.
4. Procedures developed and/or used by the peer review group.
5. Documentation of materials provided to the peer review group members.
6. Correspondence related to the peer review.
7. Minutes of all peer review group proceedings.
8. The peer review group's report.

2.5.6 REFERENCES

Scientific Investigation Plan for NNWSI, WBS Element 1.2.2.3.2, Metal Barrier Selection and Testing. October 20, 1987. Lawrence Livermore National Laboratory Report UCID 21262.

Scientific Investigation Plan for NNWSI, WBS Element 1.2.2.3.5, Alternate Barrier Selection and Testing. May 1988, Lawrence Livermore National Laboratory Report UCID (in review).

Site Characterization Plan - Consultation Draft, Yucca Mountain Site, Nevada Research and Development Area, Nevada. DOE/RW-0160, January 1988, U.S. DOE Office of Civilian Radioactive Waste Management, Washington, D.C.

Peer Review, Quality Assurance Program Plan, Nuclear Waste Management Program, Lawrence Livermore National Laboratory 033-NWMP-P 2.2.

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TO: <u>J. Kennedy</u> (Name) <u>NRC</u> (Organization)		FROM: <u>John Dronkers</u> (Name) <u>LLNL/NWMP</u> (Organization)	
SUBJECT: NNWSI Quality Assurance Program Plan		NO. OF COPIES 1	COPY NO. 83
ITEM		REV.	DATE
033-NNWSI-P 2.5 Peer Review of Barrier Material Selection Criteria and Barrier Material Selection		0	6/15/88
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