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AUDIT OF THE DEPARTMENT OF ENERGY CARLSBAD AREA OFFICE PEER REVIEW PROCESS

U. S. ENVIRONMENTAL PROTECTION AGENCY
Office of Radiation and Indoor Air
Center for the Waste Isolation Pilot Plant
401 M. Street, S. W.
Washington, DC 20460

OCTOBER, 1997

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1.0 EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency's (EPA) Office of Radiation and Indoor Air (ORIA) conducted an audit of the Peer Reviews conducted by the U.S. Department of Energy (DOE) Carlsbad Area Office (CAO) from February 10-12, 1997. Peer Reviews are documented, critical reviews performed by peers who are independent of the work being reviewed. The review shall include (as appropriate) an in-depth analysis and evaluation of assumptions, calculations, extrapolations, alternate interpretations, methodology and acceptance criteria employed, and conclusions drawn in the original work. Audit of the Peer Review process was conducted based on a recommendation from the CAO QA program audit, which recommends that EPA conduct a separate audit of the Peer Review process to assure compliance with 40 CFR 194.22(b). The purpose of the audit was to verify appropriate execution of the requirements of 40 CFR 194.22(b) and 40 CFR 194.27. 40 CFR 194.22(b) requires that data and information collected prior to the implementation of a quality control program be qualified by alternate methodologies, which employs methods including Peer Reviews conducted in a manner that is compatible with NUREG-1297, "Peer Review for High-Level Nuclear Waste Repositories". 40 CFR 194.27 requires that Peer Reviews are conducted for Conceptual Models, Waste Characterization and Engineered Barriers, and that the Peer Reviews are conducted in a manner compatible with NUREG-1297.

CAO contracted Informatics, Inc and Waste-management Education Research Consortium (WERC) to facilitate the Peer Review process. Engineered Alternatives was peer reviewed under the management of WERC. The remaining Peer Reviews were facilitated by Informatics, Inc.

The audit team determined that the Peer Reviews adequately addressed the requirements of 40 CFR 194.22(b) and 40 CFR 194.27. Team members agreed that the Peer Reviews were conducted in a manner compatible with NUREG-1297.

The audit team developed seven findings, nine observations, three concerns, and two recommendations during the audit. During the interviews and post-audit meeting, several solutions to the findings and observations were discussed by CAO and the audit team.

2.0 PURPOSE

EPA promulgated criteria in 40 CFR Part 194 to determine if the WIPP will comply with EPA's environmental radiation protection standards for the disposal of transuranic wastes. In accordance with 40 CFR 194.22(e), the EPA Administrator will verify the appropriate execution of the quality assurance programs associated with the operation of the WIPP, as well as the generators who will dispose of waste at the WIPP, "through inspections, record reviews and record keeping requirements, which may include, but may not be limited to, surveillance, audits and management systems reviews."

EPA's ORIA conducted an audit of the CAO quality assurance program from December 9-13, 1996. The results of that audit included a recommendation to conduct a separate audit of the Peer Review process to assure compliance with 40 CFR 194.22(b). The purpose of this audit was to verify the appropriate execution of the requirements of 40 CFR 194.22(b) and 40 CFR 194.27. This audit also served to assure that the Peer Reviews were conducted in a manner compatible with NUREG-1297.

3.0 SCOPE

The scope of this audit covered all aspects of the Peer Review process, including, but not limited to, the Peer Review reports, the management and team procedures (MPs and TPs), support documentation for Peer Review panel selection, determination of independence, conflicts of interest, panel members qualifications and training, reports from previous audits, surveillance reports, and corrective action reports (CARs). The audit team assessed the compliance of the Peer Review process, in accordance with the requirements of 40 CFR 194.22(b) and 40 CFR 194.27.

4.0 DEFINITIONS

Finding: A determination that a specific activity does not meet a Nuclear Quality Assurance (NQA) requirement or the CAO Quality Assurance Program Document, or that this activity failed to properly implement a procedural requirement. A finding requires a response.

Observation: A judgment that is not a finding, but is of enough concern to require a response.

Concern: An unfavorable comment based on an auditor's judgment that does not require a response.

Recommendation: An endorsement of a proposed action that will further support the implementation of a quality assurance management program. A recommendation is based on an auditor's judgment and does not require a response.

5.0 AUDIT TEAM, OBSERVERS, AND PARTICIPANTS

The audit team consisted of two representatives of the EPA Administrator and three ORIA support contractors.

Audit Team Member	Position	Affiliation
Scott Monroe	Audit Team Leader	EPA ORIA
Agnes Ortiz	Auditor	EPA ORIA
Angela Jones	Lead Auditor	A.T. Kearney, Inc.
Greg Starkebaum	Auditor	A.T. Kearney, Inc.
Ray Wood	Auditor	Trinity Engineering Associates

Numerous CAO personnel, including both staff and contractors, participated in the audit during the pre- and post-audit meetings, held on February 10, 1997 and February 12, 1997 respectively. In addition, the audit team interviewed, or requested information from, a number of CAO individuals involved in the Peer Review process. Mr. Marc Italiano, CAO Quality Assurance Engineer, served as the audit team's point of contact with the CAO. A list of the CAO personnel who participated in the audit is provided in Attachment 1 of this report.

6.0 PERFORMANCE OF THE AUDIT

The audit team conducted personnel interviews and document reviews to verify compliance of the Peer Review process with the requirements of 40 CFR 194.22(b) and 40 CFR 194.27. The audit team was particularly concerned that the documentation supporting the Peer Review process demonstrated compatibility with guidelines established by NUREG-1297. Therefore, personnel with the facilitators of the Peer Review process were interviewed to evaluate CAO's commitment to the Peer Review guidelines established by NUREG-1297.

The audit team reviewed Peer Review reports and support documentation for Conceptual Models, Waste Characterization, Engineered Barriers, Waste Form/Disposal Room Data Qualification, Engineered Systems Data Qualifications and Natural Barriers Data Qualifications to determine if there were any conflicts with the philosophy and requirements of NUREG-1297. In addition, as required by NUREG-1297, the audit team reviewed CARs, surveillance reports, and audit reports to ensure that the procedures conform to the guidance of NUREG-1297.

This audit sought to assure compliance with the requirements of 40 CFR 194.22(b) and 40 CFR 194.27, and the compatibility of the Peer Review process with NUREG-1297; a checklist was developed based on the guidance of NUREG-1297. NUREG-1297 states that to implement the guidance of the document, procedures should be developed for the Peer Review process. Therefore, CAO's TP 10.5 Revisions 0 and 1 requirements are included in the checklist. A copy of the checklist is provided in Attachment 2 of this report. A portion of the audit report is organized around the requirements of NUREG-1297 and CAO's TP 10.5 Revisions 0 and 1.

The following discussion presents the audit team's assessment of the Peer Review process. The findings, observations, concerns, and recommendations developed during the performance of the audit are detailed in Section 7.0 of this report.

6.1 NUREG- 1297 and TP 10.5 Section 3.1-Selection of Peer Review Panel Members

CAO TP 10.5 Section 3.1.3a requires that the selection committee have knowledge of the Peer Review process and of potentially qualified Peer Review candidates. The Selection Committee shall also be impartial and have no organizational conflict of interest. The audit team agreed that both Peer Review Managers are knowledgeable of the Peer Review process and potentially qualified Peer Review candidates. The managers selected qualified and knowledgeable persons to serve on the Peer Review Selection Committee. However, the audit team identified potential partiality and organizational conflict of interests.

- The CAO Technical Assistance Contractor (CTAC) was tasked by CAO to contract for the management of the Peer Review process. Informatics, Inc. was selected. John Thies, executive Vice President of Informatics and Peer Review Manager, selected Leif Errikson of CTAC to serve on the selection committee. Mr Thies also selected Informatics employees as Peer Reviewers.

- Dr. Abbas Ghassemi, manager of Peer Review for Engineered Alternatives and Director of Special Programs for WERC, selected Dr. Ron Bhada, Administrative Director of WERC, to serve as Peer Review panel leader.

NUREG-1297 has two requirements for the acceptability of Peer Review Panel members: technical qualifications and independence, both of which should be satisfied. All of the Peer Review Panel members were technically qualified to review the work from their respective panels. In those cases where total independence can not be met, NUREG-1297 requires a documented rationale as to why someone of equivalent technical qualification and greater independence was not selected. In addition, NUREG-1297 states that Peer Reviewers should have sufficient freedom from funding considerations to assure the work is impartially reviewed. Therefore, CAO included conflict of interest forms which require financial disclosure if a conflict exists. The following deviations from the requirements were identified:

- The Peer Review members for Engineered Alternatives Peer Review completed a Determination of Independence (DOI) form. Several of the panel members disclosed current or previous affiliation with DOE; however, a documented rationale as to why someone of equivalent technical qualification and greater independence was not selected was not included with the support documents.

- A Non-Selection Justification form was provided for the remaining Peer Reviews, however, from the form it appears that persons of equivalent technical qualification and greater independence were available and not selected. Therefore, this form does not provided the documented rationale required by NUREG-1297.

- Two members of the Waste Characterization Peer Review panel indicated conflicts of interest, but, did not provide the required disclosure forms.

- Many of the DOI and COI forms were incomplete. The audit team suggests including guidance for completing forms when transmitting these forms to potential panel members.

Section 3.1.3c of CAO TP 10.5 requires that Peer Review Panel Members be selected from a predetermined list of personnel. However, Section 5.4, the responsibilities section of this procedure, states that the Peer Review Selection Committee shall generate a list of qualified Peer Reviewers using its knowledge of university contacts, professional organizations and qualified industry professionals. The list shall include the names of potential Peer Reviewers, highest degree awarded, field of study, and anticipated technical emphasis if selected to serve on a Peer Review Panel. The selection committee is required to document the rationale for selection of Peer Review Panel Members on a Peer Review Panel Selection, Size and Composition Justification/Decision Form.

- The support documents for Engineered Alternatives contained a generated list of Peer Review candidates. The list included all of the required information listed above. Interviews with Informatics personnel indicated that an informal list of Peer Review candidates was generated from "Who's Who", but it was not included in the support documents. A conflict exists within the procedure and the audit team is unclear as to whether the selection committee selected Peer Review members from a predetermined list or generated a list.

- With the exception of Engineered Alternatives, a Peer Review Panel Selection, Size and Composition Justification/Decision Form was completed for each Peer Review; however, the form only repeats the regulations and does not provide rationale for selection of Peer Review panel members. The Peer Review Panel Members on a Peer Review Panel Selection, Size and Composition Justification/Decision Form does not address how relevant technical disciplines are represented on the individual qualifications of each member.

NUREG-1297 and TP 10.5 Section 3.1.3 b states that the Peer Review Panel should represent the major schools of scientific thought and the potential of technical or organizational partiality should be minimized by selecting peers that provide a balanced Peer Review Panel. Numerous technical discipline were represented on the Peer Review panels and technical impartiality was achieved. NUREG-1297 states that organizational partiality is when all of the reviewers are from the same university, agency , state organization, etc. From the six Peer Reviews audited during the audit, the following statistics were generated:

- The Peer Review panels had a total of 31 members; 28 members or 90% of the members are currently or previously employed by DOE or DOE contractors.

- Of the six Peer Reviews audited by the audit team, three Peer Review panels had 100% of the members currently or previously affiliated with DOE, one panel has 88% affiliation , one had 75% affiliation and one had 50% of the members affiliated with DOE.

Therefore, organizational partiality was not minimized.

6.2 TP 10.5 Section 3.2-Training of Peer Review Panel Members

CAO procedure TP 10.5 requires that each Peer Review Panel Member have adequate training prior to performing their assigned work. At a minimum, the training shall include reading 40 CFR Part 191 and Part 194, NUREG-1297, CAO Quality Assurance Program Description (CAO QAPD), applicable Peer Review Plans, and TP 10.5. Records indicate that two members of the Natural Barriers Peer Review panel started the Peer Review process before completing the necessary training.

6.3 NUREG-1297 and TP 10.5 Section 3.4-Peer Review Process

NUREG-1297 states that to implement the guidance and staff positions of the document, procedures should be developed for the Peer Review process. The audit team recognizes that developing procedures for a "first-of-its-kind" project was an arduous task and commends the CAO for its efforts.

TP 10.5 Section 3.4.2 requires an approved Peer Review Plan for each Peer Review, prior to the performance of the Peer Review. The minimum requirements of the Peer Review Plan include the scope of the Peer Review, description of the work to be reviewed, intended use of the work in performance assessment, size and composition of the Peer Review panel, suggested methods for documenting observations, comments and conclusions, and a schedule for the Peer Review Report. The audit team identified the following observations and concerns:

- The Conceptual Models Peer Review Panel was reopened three times. The Conceptual Models Peer Review Plan was not amended each time the Peer Review was reopened. Therefore, the plan did not indicate the specific technical reasons for reopening the Peer Review or provide a new schedule for completion of work.

- The chronology of the relationship between the Natural Barriers Peer Review and the Waste Form/Disposal Room Peer Review is not clearly documented. The Peer Review Plan for the Natural Barriers Peer Review does not include changes to incorporate the Waste Form/Disposal Room Peer Review.

- The Peer Review Plan for Natural Barriers lists climate change as a technical topic. However, no climatology expertise was included on the panel.

- Engineered Alternatives Peer Review was conducted by WERC. The other five Peer Reviews reviewed were conducted by Informatics, Inc. Documented rationale of why Engineered Alternatives was conducted by a different contractor is not in the files. Further, a management plan was generated for the Peer Reviews conducted by Informatics, Inc., and not by WERC. Surveillance Report S-96-29 issued in May 1996 recommended that the management plan include any Peer Review conducted by CAO. However, no response or resolution to this concern was found in the files reviewed.

Section 3.4.2 of TP 10.5 requires that all Peer Review Panel Members receive an orientation prior to the start of the Peer Review process. After completion of the orientation, the Peer Review Panel Coordinator shall complete a Peer Review Orientation Form. At a minimum, the orientation shall cover subjects or documents related to the Peer Review process, including administrative requirements, the applicable Peer Review Plan, a brief summary of the Peer Review technical subject matter, an overview of the requirements of TP 10.5 and any other appropriate topic. The audit team identified the following deviations from the requirements:

- Records indicate that one member of the Natural Barriers Peer Review Panel did not receive administrative orientation on April 29, 1996, prior to the start of work.

- The minutes from the January 22 and 23,1997 meetings of the reconvened Conceptual Models Peer Review Panel indicate that members received reorientation. However, one member of the Conceptual Models Peer Review Panel was not listed as attending the meetings. Therefore, there is evidence that one member of the Conceptual Models Peer Review Panel received no orientation when the panel reconvened in January.

NUREG-1297 and TP 10.5 Sections 3.4.4 and 3.4.5 requires minutes for all meetings, activities, deliberations, caucuses and orientations. The following deviations from the requirements were identified:

- Minutes of the orientation meeting for the Natural Barriers Peer Review were not included in the files reviewed.

- The Waste Form/Disposal Room Peer Review Panel was convened for 3-4 weeks. However, only one day of minutes was included in the file.

- Distinction between meetings and caucuses were not evident in practices of recording the minutes. Members approved minutes erratically. Attendance lists sometimes did not match the minutes approval list.

The guidelines of NUREG-1297 end with the completion of the Peer Review report and does not prescribe guidelines for the process of reopening Peer Reviews. However, TP 10.5 Section 3.4.7

allows for Peer Review panels to be reconvened if issues/concerns which affect the defined purpose of the Peer Review are identified in the Peer Review Report. The panel may reconvene to review supplementary information which could resolve such issues. Currently, the procedure allows for a Peer Review to proceed indefinitely. The procedure should be revised to indicate a point of closure of Peer Reviews. Additionally, the procedure should prescribe the documentation of the specific technical reasons for reopening a Peer Review.

7.0 SUMMARY OF FINDINGS, OBSERVATIONS, CONCERNS, AND RECOMMENDATIONS

The audit team identified several issues during the audit of the Peer Review process, including seven findings, nine observations, three concerns, and two recommendations. A post-audit meeting was held on February 12, 1997 to notify CAO personnel of these issues. Attachment 1 identifies the individuals who attended this meeting.

7.1 Findings

The audit team identified seven findings during the audit of the Peer Review process. As defined in Section 4.0, an audit finding requires a response from the CAO. Documentation of the audit findings is presented in Attachment 3 of this report.

7.1.1 Finding No. 1

NUREG-1297 states that Peer Reviewers should have sufficient freedom from funding considerations to assure the work is impartially reviewed. Therefore, CAO included conflict of interest forms which require financial disclosure if a conflict exists. Mr. Evaristo Bonano and Ms. Patricia Robinson, members of the Waste Characterization Peer Review, checked that they had conflicts of interest but did not complete the required disclosure form.

7.1.2 Finding No. 2

NUREG-1297 requires that in those cases where total independence cannot be met, a documented rationale as to why someone of equivalent technical qualifications and greater independence was not selected should be placed in the Peer Review report. A Non-Selection Justification form (form) was included for Waste Characterization Peer Review. Ms. Patricia Robinson, a Nuclear Engineer with a Master of Science pending was selected for the Waste Characterization Peer Review Panel. Ms. Robinson is currently employed by a DOE contractor. The form lists Dr. Peter K. Mast, a Nuclear Engineer with a Ph.D., and notes that other equally or more qualified individuals are available. From the form, it appears that persons of equivalent technical qualification were available but not selected. Therefore, the Non-Selection Justification form does not document the rationale as to why someone of equivalent technical qualifications and greater independence (i.e, Dr. Mast) was not selected.

7.1.3 Finding No. 3

Team Procedure TP 10.5 (Rev. 1), Section 3.1.3(c), requires Peer Review Panel Members be selected from a predetermined list of personnel. However, Section 5.4, the responsibilities section of this procedure, states that the Peer Review Selection Committee shall generate a list of qualified Peer Reviewers using its knowledge of university contacts, professional organizations and qualified industry professionals. A conflict exists within the procedure and should be revised. Additionally, with the exception of Engineered Alternatives, neither a predetermined list nor a list generated from university contacts, professional organizations and qualified industry professionals was located in the files reviewed.

7.1.4 Finding No. 4

Team Procedure TP 10.5 (Rev. 1), Section 5.7 requires Peer Review Panel Members to complete and document the necessary training prior to the start of the Peer Review process. Training forms for Mr. Chuan-Mian Zhang and Mr. Paul Cloke, members of the Natural Barriers Peer Review Panel, are dated May 15, 1996, while the meeting minutes of May 14, 1996 show them already in attendance.

7.1.5 Finding No. 5

Team Procedure TP 10.5 (Rev. 1), Section 3.4.2 requires that all Peer Review Panel Members receive an orientation prior to the start of the Peer Review process. At a minimum, the orientation shall cover subjects or documents related to the Peer Review process, including administrative requirements, the applicable Peer Review Plan, a brief summary of the Peer Review technical subject matter, an overview of the requirements of TP 10.5 and any other appropriate topic. Records indicate that Mr. David Sommers did not receive administrative orientation on April 29, 1996, prior to the start of the Peer Review process.

7.1.6 Finding No. 6

Team Procedure TP 10.5 (Rev. 1), Secton 3.4.2 requires that all Peer Review Panel Members receive an orientation prior to the start of the Peer Review process. There is no evidence that Mr. Florie Caporuscio received orientation when the Conceptual Models Peer Review Panel reconvened in January 1997.

7.1.7 Finding No. 7

Team Procedure TP 10.5 (Rev. 1) Section 3.4.4 requires minutes for all meetings, activities, and deliberations. Minutes for the Natural Barriers Orientation Meeting conducted on May 14, 1996 were not included in the Peer Review file.

7.2 Observations

The audit team identified nine observations during the audit of the Peer Review process. As defined in Section 4.0, an observation requires a response from the CAO.

7.2.1 Observation No. 1

Team Procedure TP 10.5 (Rev. 1) Section 3.1.3a requires that the Selection Committee shall be impartial and have no organizational conflict of interest. The appearance of a conflict of interest exist for both Peer Review Managers. The CAO Technical Assistance Contractor (CTAC) was tasked by CAO to contract for the management of the Peer Review process. Informatics, Inc. was selected. Mr. John Thies, executive Vice President of Informatics and Peer Review Manager, selected Mr. Leif Errikson of CTAC to serve on the selection committee. Mr Thies also selected Informatics employees as Peer Reviewers.

Dr. Abbas Ghassemi, manager of Peer Review for Engineered Alternatives and Director of Special Programs for WERC, selected Dr. Ron Bhada, Administrative Director of WERC, to serve as Peer Review panel leader.

7.2.2 Observation No. 2

NUREG-1297 requires a documented rationale as to why someone of equivalent technical qualification and greater independence was not selected. The Peer Review members for Engineered Alternatives Peer Review completed a Determination of Independence (DOI) form. Several of the panel members disclosed current or previous affiliation with DOE; however, a documented rationale as to why someone of equivalent technical qualification and greater independence was not selected was not included with the support documents.

7.2.3 Observation No. 3

The Peer Review Selection Committee is required to document the rationale for selection of Peer Review Panel Members on a Peer Review Panel Selection, Size and Composition Justification/Decision Form. A form was completed for each Peer Review; however, the form only repeats the regulations and does not provide rationale for selection of Peer Review panel members.

7.2.4 Observation No. 4

The Peer Review Panel Selection, Size and Composition Justification/Decision Form for Waste Form/Disposal Room Peer Review lists eight panel members; however, only two panel members signed the Peer Review report.

7.2.5 Observation No. 5

The Conceptual Models Peer Review Panel was reopened three times. The Conceptual Models Peer Review Plan was not amended each time the Peer Review was reopened. Therefore, the plan did not indicate the specific technical reasons for reopening the Peer Review or provide a new schedule for completion of work.

7.2.6 Observation No. 6

The chronology of the relationship between the Natural Barriers Peer Review and the Waste Form/Disposal Room Peer Review is not clearly documented. The Peer Review Plan for the Natural Barriers Peer Review does not include changes to incorporate the Waste Form/Disposal Room Peer Review.

7.2.7 Observation No. 7

Engineered Alternatives Peer Review was conducted WERC. The other five Peer Reviews audited were conducted by Informatics, Inc. Documented rationale of why Engineered Alternatives was conducted by a different contractor is not in the files.

7.2.8 Observation No. 8

Team Procedure TP 10.5 (Rev. 1) Section 3.4.4 requires minutes for all meetings, activities, and deliberations. The Waste Form/ Disposal Room Peer Review Panel was convened for 3-4 weeks. However, only one day of meeting minutes was included in the file.

7.2.9 Observation No. 9

The resume of Mr. Darrell Dunn, Natural Barriers Peer Review Panel Member, does not state his employment as of the start of the peer review process. The last employer on his resume was ASI, a DOE contractor. Mr. Dunn's COI form claims no present conflict of interest.

Mr. Charles Wilson did not check whether he is currently employed by a DOE/DOE contractor. His resume indicates that he works for a firm with DOE projects. It is unclear if a conflict of interest exists for Mr. Wilson.

Mr.Glen Sjoblom's employment form and resume do not represent his current employment.

7.3 Concerns

The audit team identified three concerns during the audit. As defined in Section 4.0, an audit concern does not require a response from the CAO.

7.3.1 Concern No. 1

NUREG suggest that organizational partiality should be minimized to provide a balanced review group. Of the six Peer Reviews audited, 90% of the panel members were affiliated with DOE. It is the concern of the audit team that organizational partiality was not minimized.

7.3.2 Concern No. 2

The Peer Review Plan for Natural Barriers lists climate change as a technical topic. However, no climatology expertise was included on the panel.

7.3.3 Concern No. 3

Distinction between meetings and caucuses were not evident in practices of recording the minutes. Members approved minutes erratically. Attendance lists sometimes did not match the minutes approval list. Many of the minutes reviewed were brief and vague.

7.4 RECOMMENDATIONS

The audit team identified two recommendations during the audit of the Peer Review process. As defined in Section 4.0, an audit recommendation does not require a response from the CAO.

7.4.1 Recommendation No. 1

The guidelines of NUREG-1297 end with the completion of the Peer Review report and does not prescribe guidelines for the process of reopening Peer Reviews. However, TP 10.5 Section 3.4.7 allows for Peer Review panels to be reconvened if issues/concerns which affect the defined purpose of the Peer Review are identified in the Peer Review Report. The panel may reconvene to review supplementary information which could resolve such issues. Currently, the CAO procedure allows for a Peer Review to proceed indefinitely.

The audit team recommends that TP 10.5 Section 3.4.7 be revised to indicated a point of closure of the Peer Reviews. Also, the procedure should provide for documentation of specific technical reasons for reconvening a Peer Review panel.

7.4.2 Recommendation No. 2

The audit team recommends including guidance for completing forms (e.g., COI forms) when transmitting these forms to potential panel members.

8.0 RECORDS REVIEWED

The documents reviewed by the audit team are listed in Attachment 4 of this report.

ATTACHMENT 1

CAO PERSONNEL PARTICIPATING IN AUDIT

ATTACHMENT 1

CAO PERSONNEL PARTICIPATING IN AUDIT

Name	Title or Area of Responsibility	Pre-Audit Meeting	Audit Interview	Post-Audit Meeting
D. Brown	Quality Assurance Manager			✗
C. Edson	CTAC File Technician	✗		
L. Errikson	CTAC Project Manager	✗		✗
A. Hakl	CTAC Program Manager			✗
M. Italiano	Quality Assurance Engineer	✗		✗
R. Lark	R&D Program Manager	✗	✗	✗
J. Reese	National TRU Program Quality Assurance, Acting			✗
R. Stoneking	DOE EM-36/BDM	✗		✗
J. Thies	Informatics, Peer Review Manager	✗	✗	
S. Wagoner	Westinghouse, Peer Review Manager		✗	

ATTACHMENT 2

AUDIT CHECKLIST

PEER REVIEW AUDIT CHECKLIST

PEER REVIEW TITLE_____

40 CFR194.27 REQUIREMENTS		
REQUIREMENT	YES/NO	COMMENTS
Is there documentation to support that the selection committee has knowledge of the peer review process?		
Is there documentation to support that the selection committee has knowledge of potentially qualified Peer Review candidates?		
Is there documentation to support that the selection committee is impartial and has no organizational conflict of interest?		
Is there a predetermined list of PR candidates who meet requirements of independence and qualifications?		
Is there a Peer Review Panel Selection, Size and Composition Justification /Decision Form?		
Does the PR Panel Decision Form document the rationale for selection of Peer Review Panel Members?		
Is the structure of the PR panel documented (e.g. chairperson)?		
Was technical impartiality achieved?		
Was organizational impartiality achieved?		

PEER REVIEW AUDIT CHECKLIST

PEER REVIEW TITLE_____

40 CFR194.27 REQUIREMENTS		
REQUIREMENT	YES/NO	COMMENTS
Is PR Panel Member Verification of Education/Employment Form complete for each panel member?		
Is there a curricula vitae/resume for each panel member?		
Is there a Determination of Independence (DOI) for each panel member?		
If panel member not independent, is there documented rationale as to why someone of equivalent technical qualifications and greater independence was not selected?		
Is there a Conflict of Interest (COI) Form for each panel member?		
If COI indicated, is there an adequate disclosure or representation statement from panel member?		
Was each panel member trained prior to performing their assigned peer review?		

PEER REVIEW AUDIT CHECKLIST

PEER REVIEW TITLE_____

40 CFR194.27 REQUIREMENTS		
REQUIREMENT	YES/NO	COMMENTS
Is there documentation to support that each panel member read: 40CFR Part 191 40CFR Part 194 NUREG-1297 CAO QAPD Applicable Peer Review Plans CAO TP 10.5		
Is there a Peer Review Plan?		
Does the Peer Review Plan contain the following: Scope of Peer Review Description of work to be reviewed Intended use of work in the PA Size and composition of the PR Panel Suggested methods Schedule to arrive at PR Report		
Did each PR member receive an orientation prior to the start of the PR process?		
Did the orientation cover the following: The PR process, including administrative requirements The PR Plan A summary of the PR technical subject An overview of CAO TP 10.5		

PEER REVIEW AUDIT CHECKLIST

PEER REVIEW TITLE_____

40 CFR194.27 REQUIREMENTS		
REQUIREMENT	YES/NO	COMMENTS
Are there written minutes of all PR meetings, deliberations, and activities?		
Were PR daily caucuses conducted?		
Are there written minutes of the daily caucuses?		
Is there documentation of the PR Panels conclusions, including dissenting views?		
Is there documentation of "Peer Reviewers Consideration of Response"?		
Is there documentation of any change in plans, procedures, panel membership or panel leadership?		
Was this peer review audited or surveilled?		
Was there any corrective action associated with this peer review?		

ATTACHMENT 3

DOCUMENTS SUPPORTING AUDIT FINDINGS

FINDING 1

Evaristo Bonano and Patricia Robinson's Certification Regarding Organizational Conflicts of Interest.

CERTIFICATION REGARDING ORGANIZATIONAL CONFLICTS OF INTEREST

(Complete and return if there are no known interests relevant to possible organizational conflicts of interest)

I certify to my best knowledge and belief that no facts exist concerning any past, present, or currently planned interests (financial, contractual, organizational, or otherwise) relating to the work to be performed pursuant to this solicitation and bearing on a possible organizational conflict of interest.

Solicitation No. N/A

Date of Offer 6/26/96

Name of Offeror: E.J. Bonano/Beta

Signature [signature]

Date Signed: 7/11/96

Typed name Evaristo J. Bonano, Ph.D.

3. SUPPLEMENTAL INFORMATION

(a) As supplemental information to the organizational conflicts of interest Disclosure or Representation, the Offeror shall provide answers to the following questions (provide a complete explanation for each answer):

(i) Does the Offeror have any involvement with or interests in technologies which may be subjects of the subcontract or which are substitutable for such technologies? This involvement or interest could take any form, including interest in relevant proprietary processes or in patents; interests in energy consuming or producing industries (utilities) or ancillary industries (oil drilling, railroads) which could be affected by the technologies; and interests in energy resources (coal, timber, natural gas, geothermal sites). ( ) Yes (X) No

(ii) Does the Offeror depend upon industries or firms, which could be affected by actions resulting from the subcontract, for a significant portion of its business, or have a relationship (financial, organizational, contractual or otherwise) with such industries or firms? ( ) Yes (X) No

(iii) Where work in support of DOE's regulatory activities is contemplated, could any impact result from these regulatory activities directly to the Offeror, or to its business clients? ( ) Yes ( ) No (X) N/A

(iv) Will Offeror perform any self evaluation or inspection of a service or product, or evaluation or inspection of another with whom a relation-ship exists, including evaluation or inspection of goods or services which compete commercially with the performer's goods or services? ( ) Yes (X) No

(v) Will any of the Offeror's chief executives, directors, or entities which they own or represent, or any of the Offeror's affiliates be involved in the performance of the subcontract? (X) Yes ( ) No

(If "yes" provide an adequate disclosure or representation statement from each such executive, director, entity or affiliate.)

(b) The Offeror shall also provide a description of its experience pertinent to the proposed effort, and resumes of key personnel, a current annual report, and a current 10K statement (if filed by the Offeror).

CERTIFICATION REGARDING ORGANIZATIONAL CONFLICTS OF INTEREST

(Complete and return if there are no known interests relevant to possible organizational conflicts of interest)

I certify to my best knowledge and belief that no facts exist concerning any past, present, or currently planned interests (financial, contractual, organizational, or otherwise) relating to the work to be performed pursuant to this solicitation and bearing on a possible organizational conflict of interest.

Solicitation No._____ Date of Offer 6/26/96

Name of Offeror:_____ Signature Patricia J. Robinson

Date Signed: 6/26/96 Typed name Patricia J. Robinson

3. SUPPLEMENTAL INFORMATION

(a) As supplemental information to the organizational conflicts of interest Disclosure or Representation, the Offeror shall provide answers to the following questions (provide a complete explanation for each answer):

(i) Does the Offeror have any involvement with or interests in technologies which may be subjects of the subcontract or which are substitutable for such technologies? This involvement or interest could take any form, including interest in relevant proprietary processes or in patents; interests in energy consuming or producing industries (utilities) or ancillary industries (oil drilling, railroads) which could be affected by the technologies; and interests in energy resources (coal, timber, natural gas, geothermal sites). ( ) Yes (X) No

(ii) Does the Offeror depend upon industries or firms, which could be affected by actions resulting from the subcontract, for a significant portion of its business, or have a relationship (financial, organizational, contractual or otherwise) with such industries or firms? ( ) Yes (X) No

(iii) Where work in support of DOE's regulatory activities is contemplated, could any impact result from these regulatory activities directly to the Offeror, or to its business clients? ( ) Yes (X) No ( ) N/A

(iv) Will Offeror perform any self evaluation or inspection of a service or product, or evaluation or inspection of another with whom a relation-ship exists, including evaluation or inspection of goods or services which compete commercially with the performer's goods or services? ( ) Yes (X) No

(v) Will any of the Offeror's chief executives, directors, or entities which they own or represent, or any of the Offeror's affiliates be involved in the performance of the subcontract? (X) Yes ( ) No

(If "yes" provide an adequate disclosure or representation statement from each such executive, director, entity or affiliate.)

(b) The Offeror shall also provide a description of its experience pertinent to the proposed effort, and resumes of key personnel, a current annual report, and a current 10K statement (if filed by the Offeror).

FINDING 2

Non-Selection Justification Form for Waste Characterization Analysis

Name	Deg	Concentration	CM	Data	Tech Area	Notes
Adamson, Martyn	PhD	Physical Chemistry			WC	Not Available
Alcorn, Stephen R.	PhD	Geology (Geochemistry)		X	WF&DR	Potential Conflict of Interest
Apps, John A.	PhD	Geology		X	WF&DR	Equally or More Qualified Individuals Available
Apted, Michael J.	PhD	Geochemistry		X	WF&DR	Equally or More Qualified Individuals Available
Blanks, John H.	PhD	Physics		X	WF&DR, WC	Equally or More Qualified Individuals Available
Blauvelt, Dick	MS	Nuclear Engineering			WC	Equally or More Qualified Individuals Available
Bonnano, Evaristo J.	PhD	Chemical Engineering			WC	Selected For Peer Panel
Bresson, James F.	MPH	Public Health			WC	Selected For Peer Panel
Catlett, Dwayne					WC	Not Available
Chesnut, Dwayne	PhD	Physical Chemistry			WC	Not Available
Christianson, Dean	MS	Management			WC	Not Available
Cloke, Paul L.	PhD	Geological Sciences		X	F&T, WC	Not Available
Divine, James R.	PhD	Chemical Engineering	X	X	WF&DR, PICS, WC	Not Available
Gnirk, Paul	PhD	Rock Mechanics			WF&DR, PICS	Not Available
Higley, Kathryn A.	PhD	Radiological Health Sciences			PICS, WC	Not Available
Hrncir, Duane C.	PhD	Inorganic Chemistry		X	WF&DR, WC	Selected For Peer Panel
Johnson, Kathryn O.	PhD	Geology (Hydrology)		X	F&T, WC	Not Available
Knecht, Robert D.	PhD	Metallurgical Engineering		X	WF&DR, WC	Not Available
Mast, Peter K.	PhD	Nuclear Engineering		X	WF&DR, WC	Equally or More Qualified Individuals Available
Parshall, George W.	PhD	Organic Chemistry			WC	Not Available
Peil, Kelly	PhD	Environmental Engineering			WC	Not Available
Pigford, Tom	Sc.D.	Chemical Engineering	X	X	WF&DR	Conflict (PR Panel on SNL PA), faxing info
Porter, Darrell D.	PhD	Mineral Engineering		X	ES, WF&DR	Not Available
Rivera, Michael A.	BS	Biology			WC	Equally or More Qualified Individuals Available
Robinson, Patricia	BS	Nuclear Engineering			WC	Selected For Peer Panel (MS Pending)
Salter, Patricia F.	MS	Oceanography	X	X	WF&DR	Not Available
Sjoblom, Glen L.	MS	Chemical Engineering	X	X	WF&DR, WC	Equally or More Qualified Individuals Available
Strum, Michael M.	BS	Safety Management			WC	Equally or More Qualified Individuals Available
Williams, Allan K.	BA	Physical Science			WC	Equally or More Qualified Individuals Available
Wood, Bernard J.	PhD	Geology	X	X	WF&DR	Not Available
Wymer, Ray	PhD	Chemical Engineering			WC	Not Available
Yong, Ray	PhD	Soil & Applied Physics			WF&DR	Not Available

7/19/96

FINDING 3

Team Procedure TP 10.5 Rev 1, Sections 3.1.3 c and 5.4

3.1.2 Independence Requirements

a. Members of the Peer Review Panel shall be independent of the original work to be reviewed. Independence in this case 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 ensure that the work is impartially reviewed.

b. Because of Department of Energy's (DOE) pervasive effort in the waste management area, the lack or unavailability of other technical expertise in certain areas, and the possibility of reducing the technical qualifications of the reviewers in order that independence is maintained, it may not be possible to exclude all DOE or DOE contractor personnel from participating in a peer review. In those cases where independence requirements cannot be met, a documented rationale as to why someone of equivalent technical qualifications and greater independence, if applicable, was not selected shall be documented in a memo to file.

c. The Peer Review Panel Member shall document the rationale for independence on a Determination of Peer Review Panel Member Independence Form, Attachment II. The documented rationale shall be reviewed, verified, and approved by the Peer Review Manager. The form shall be maintained as a QA record in accordance with Section 6.0 of this procedure.

3.1.3 Peer Review Panel Selection, Size and Composition

a. Peer Review Panel size and composition shall be determined by a Selection Committee consisting of the Peer Review Manager and two members selected by the Peer Review Manager. The Committee may utilize technical advisors to assist in the selection process. The Selection Committee shall: a) have knowledge of the Peer Review process; b) have knowledge of the potentially qualified Peer Review candidates; and c) be impartial and have no organizational conflict of interest.

b. The number of peers comprising a Peer Review Panel varies with the complexity of the work to be reviewed; its importance for establishing that safety or waste isolation performance goals are met; the number of technical disciplines involved; the degree to which uncertainties in the data or technical approach exist; and the extent to which differing viewpoints are strongly held within the applicable technical and scientific community concerning the issues under review. The collective technical expertise and qualifications of Peer Review Panel Members shall span the issues and areas involved in the work to be reviewed, including any differing bodies of scientific thought. Technical areas more central to the work to be reviewed shall receive proportionally more representation on the Peer Review Panel. The Peer Review Panel should represent the major schools of scientific thought and the potential for technical or organizational partiality should be minimized by selecting peers to provide a balanced Peer Review Panel.

c. The Selection Committee shall select Peer Review Panel Members from a predetermined list of personnel who meet the requirements of 3.1.1, 3.1.2, and 3.1.3(b).

d. The Peer Review Manager and Selection Committee members shall document the rationale for selection of Peer Review Panel Members on a Peer Review Panel Selection, Size and Composition Justification/Decision Form, Attachment III. This form shall be maintained as a QA Record in accordance with Section 6.0 of this procedure.

- Appoint members of the Peer Reviewer Selection Committee, serve as chairperson of the Committee, and establish the make-up and size of the Peer Review Panel
- Ensure that all required forms and documentation are completed as necessary prior to the start of the Peer Review process
- Appoint the Peer Review Panel Coordinators
- Select, with the assistance of the Peer Review Panel Coordinator, and appoint a Peer Review Panel Technical Leader (Chairperson) for each Peer Review Panel
- Be responsible for training and for the administrative orientation and documentation of the Peer Review Panel Members
- Ensure that the Peer Review implementation is accomplished and documented in accordance with approved technical and QA requirements and in an effective and timely manner
- Ensure that adequate resources are provided in compliance with contractual requirements and in a timely manner
- Provide the required coordination between the Peer Review Panels and the ORC Peer Review Coordinator to ensure that an effective and responsive flow of information and logistic/technical support are provided
- Provide the ORC Peer Review Coordinator with periodic progress reports on the status of Peer Review progress against prescribed schedules
- Retain QA records until completion of the Peer Review process in accordance with the requirements of NQA-1-1989. Upon completion of the Peer Review process, the QA records shall be delivered to Project Records Services (PRS) for retention

5.4 **PEER REVIEW SELECTION COMMITTEE shall:**

- Be composed of the Peer Review Manager and two other members selected by the Peer Review Manager
- Generate a list of qualified Peer Reviewers using its knowledge of university contacts, professional organizations, and qualified industry professionals. The list shall include the names of potential Peer Reviewers, highest degree awarded, field of study, and anticipated technical emphasis if selected to serve on a Peer Review Panel
- Ensure that selection of Peer Review Panel Members is based on their documented technical expertise, their ability to review the technical requirements as defined in the Peer Review technical requirements documents, and their independence as described in Section 3.1.2 of this procedure
- Eliminate potential Peer Review Panel Members from consideration based on information provided on the list and the following criteria: 1) equally or more qualified individuals are available; 2) candidate is not available; and/or 3) candidate has a potential or perceived organizational conflict of interest. The Committee shall document this rationale for nonselection of peer reviewer candidates and submit to records in accordance with Section 6.0 of this procedure

FINDING 4

Minutes from Natural Barriers Meeting held May 14, 1996. Meeting Attendance Sheet for May 14, 1996. Peer Review Panel Member Training Form for Chuan-Mian Zhang and Paul Cloke

1 of 3

Natural Barriers
Tuesday, May 14, 1996
Minutes

8:00
Attendance

Jim Teak (Panel - Coordinator)
Darrel Dunn (Panel)
Florie Caporuscio (Panel)
Charlie Wilson (Panel)
David Sommers (Panel)
Paul Cloke (Panel)
Chuan-Mian Zhang (Panel)
Belinda Gallegos (Admin.)

Announcements and administrative issues

- Discussed Conference Room schedule, Reference list and IRT results.
- Castile packages will be distributed today.
- The electronic format for the report will be finished today.
- There will be a presentation on the Castile packages either today or tomorrow.
- A question was raised as to whether panel members can request specific IRT packages, and if so, is it necessary to fill out data request forms for these? If the packages are available, yes a data request form needs to be completed. The panel will get an answer this afternoon to the question of availability.
- HDR # 3 is approximately 1500 pages and is split into sections, a table of contents has been made available to help determine what information is needed.
- The panel has decided to expand Section 4 into Sections 4, 5, and 6 to address the three subsystems. The panel also decided to keep hard copies, as well as electronic copies of reports. If anyone has more than one version of their draft, each version needs to be documented to that effect.
- Introduction of new panel members - Paul Cloke and Chuan-Mian Zhang.
- Discussed schedule. Prospective completion date is mid-June.
- Some panel members have not been receiving requested material in a timely manner.

- Panel members are finding missing links that are making it difficult to determine how results were calculated. Written requests for answers from the PIs have been submitted.

- Some panel members have been receiving verbal answers from PIs and expressed concern as to the best way to document such information. Processing issues have been the common concern and is a verbal response acceptable? The panel agreed that there are no real clear cut answers for this concern. They also agreed that at the last minute, they may have to accept a verbal answer, but will clearly document verbal conversation.

- It was suggested that a list of things that each panel member needs might be helpful.

- Bottom line - if the panel member does not believe the package will stand up to scrutiny, don't sign off on it.

Reviewed 5.14.96 Minutes:

Florie Caporuscio

Darrel Dunn

David Sommers

Jim Teak

Charlie Wilson

Paul Cloke

Chuan-Mian Zhang

Peer Review
Meeting Attendance Sheet

Panel: Natural Barriers **Date:** 5/14/96 (mm/dd/yy) **Time:** 8:00

Printed Name	Affiliation	Signature
Flavio Capocruscio	Informatics	Flavio Capocruscio
DAVID SOMMERS	self	David G Sommers
Darrel Dunn	Self	Darrel E Dunn
Charlie Wilson	self	C Wilson
Paul Cloke	Self	Paul L. Cloke
Chuan-Mian Zhang	WCFS	
Jim Teak	CTAC/ASF	James W. Teak

Usage: Take attendance at each meeting (morning, afternoon, caucus, etc.) and attach this sheet to the back of the final minutes.

ATTACHMENT 7.6

Peer Review Panel Member Training Form

1681

I, Chuan-mian Zhang have read and understand the below listed documents:

a. 40 CFR Part 191, as amended on December 20, 1993

b. 40 CFR Part 194, dated February 9, 1996

c. NUREG-1297, Peer Review for High-Level Nuclear Waste Repositories, published February, 1988

d. DOE CAO Quality Assurance Program Description (QAPD) CAO-94-1012

e. CAO ORC Team Procedure MP 10.5, Peer Review

f. Informatics Desk Instruction IDI-1.0, Peer Review Process

g. Applicable Peer Review Plan

Print Name: CHUAN-MIAN ZHANG

Signature: [signature]

Date: 5/15/96

Peer Review Manager: [signature] Date: 5/15/96

John A. Thies

ATTACHMENT 7.6

Peer Review Panel Member Training Form

I, Paul L. Cloke, have read and understand the below listed documents:

a. 40 CFR Part 191, as amended on December 20, 1993

b. 40 CFR Part 194, dated February 9, 1996

c. NUREG-1297, Peer Review for High-Level Nuclear Waste Repositories, published February, 1988

d. DOE CAO Quality Assurance Program Description (QAPD) CAO-94-1012

e. CAO ORC Team Procedure MP 10.5, Peer Review

f. Informatics Desk Instruction IDI-1.0, Peer Review Process

g. Applicable Peer Review Plan

Print Name: Paul L. Cloke

Signature: Paul L. Cloke

Date: May 15, 1996

Peer Review Manager: John A. Thies Date: 5/15/96

John A. Thies

FINDING 5

Minutes from Natural Barriers and Engineered Systems Administrative Orientation conducted April 29, 1996.

Natural Barriers and Engineered Systems Administrative Orientation
Monday, April 29, 1996
Minutes

1 of 168

8:40
Attendance

Florie Caporuscio
John Thies
Eli Maestas
Jim Teak
Tamara Crockett
Mitch McKee
Charlie Wilson
Kim Farley
Linda Lehman
Dermot Ross-Brown
John F. Schatz
Darrel Dunn

8:50
Presentations

Eli started the orientation briefing (Atch 1).

- Informatics Desk Instruction 1.0 - peer review process. John Thies iterated that TP 10.5 is the governing procedure that manages this process. Your coordinators will help you adhere to this (10.5 and the desk instruction), but please point out if we don't adhere to these instructions.

Jim Teak briefed on WIPP Peer Review Panel Operational Requirements

- John Thies discussed observer protocol. Typically, we've had DOE, EPA, and EEG. If they ask for documentation, refer them to the coordinator so we can log it. If they make the request to you, give it to the coordinator to log and you'll get it back.

- Engineered Systems Schedule
  - orientation - 4/29/96
  - peer review - 5/1-6/7/96
  - draft - 6/7/96
  - final - 6/14/96

- Natural Barriers Schedule
  - orientation - 4/29/96
  - peer review - 5/1-6/7/96

- draft - 6/7/96
- final - 6/21/96

- Tamara discussed information coordination and the location of support personnel:
  - 3338 - peer reviewers.
  - 3333 - Karen (Sandia records), Joanne (QA files)
  - 3328 - Victor - Peer Coordinator
  - Rick - secretarial area (copy, FAX, typing, etc.)
  - Give information request forms to your panel coordinator, administrative assistant, or Rick. After the coordinator, Rick is the 1st point of contact, then the request goes to Karen.

Reviewed 4.29.96 Minutes

Tamara Crockett _____

1 Attachment
Presentation Viewgraphs

FINDING 6

Minutes from Conceptual Models Peer Review Meeting conducted January 22, 1997. Minutes from Conceptual Models Peer Review Meeting conducted January 23, 1997.

Conceptual Models Peer Review Panel Meeting
Wednesday, January 22, 1997

1093

Attendance

Glen Sjoblom (Panel)
Charlie Wilson (Panel)
Eric Oswald (Panel)
Steve Frankiewicz (panel coordinator)
John Gibbons (Panel)
Dick Lark (DOE)
Chuck Byrum (EPA)
Darrell Porter (Panel)

8:00 Panel Re-orientation

Steve Frankiewicz presented a briefing for the purpose of re-orienting the Panel. Briefing charts are attached. All Panel members present indicated there was no change to their employer status and no change to their independence status.

8:15 Panel Caucus

Glen Sjoblom asked if the Spallings Release Position Paper was an official DOE document. Dick Lark said the paper was approved by DOE.

The Panel agreed to adjourn the caucus without discussion of the Spallings issues until after the SNL/DOE briefings.

9:00 SNL Briefings

See attached briefing charts.

The Panel adjourned at 12:00 pm.

Reviewed 1.22.97
Steve Frankiewicz SF

Finding # +

Conceptual Models Peer Review Panel Meeting
Thursday, January 23, 1997

1st 24

Attendance

Glen Sjoblom (Panel)	Matthew Silva (EEG)	G.K. Froehlich (SNL)
John Gibbons (Panel)	M.K. Knowles (SNL)	Frank Hansen (SNL)
Victor Harper-Slaboszewicz (SNL)	Chuck Byrum (EPA)	John Thies (CTAC)
Darrell Porter (Panel)	Don Galbraith (DOE)	Dick Lark (DOE)
Charlie Wilson (Panel)	John McLennan (TerraTek)	Tom Peake (EPA)
Steve Frankiewicz (panel coordinator)	J.F. Schatz (consultant)	Eric Oswald (Panel)
Bill Thompson (CTAC)	Frank Marcinowski (EPA)	

8:00 Panel Caucus No Caporuscio

Discussion of issues:
(1) Ways of representing the volume of spalling, the gradient-driven spall and erosion-driven spall (channels).
(2) Report format and methodology for response.

9:10 Panel Meeting with F. Hansen

F. Hansen discussed with the Panel the 4 issues presented by the Panel to SNL on 1/22/97.

(1) Model conservatism not expected to be resolved.
(2) Pressure gradient analysis is underway.
(3) Geometry of annulus to determine delivery of spallings, cuttings, and cavings to surface calculations are underway.
(4) Calculate value of cohesion that would prevent spalling.

Hansen said he would strive to have SNL presentations ready by 3pm today, but that he would let the Panel know if there was any reason to change to a later time by noon.

9:30 Panel Caucus

Panel discuss writing assignments. The Panel indicated that the Spallings Position Paper provided some useful information on the issues raised in the December 1996 Panel Supplementary Report, but that more information was required.

3:00 Follow-up SNL Presentations

Informal presentation for the Panel's questions. SNL will submit formal package of information for the panel and the record tomorrow.

4:30 Panel Caucus

Summary of days deliberation on Spallings.
The meeting adjourned at 5:30 pm.

Reviewed 1.23.97
John Thies

FINDING 7

Team Procedure TP 10.5 (Rev. 1) Section 3.4.4 requires minutes for all meetings, activities, and deliberations. Minutes for the Natural Barriers Orientation Meeting conducted on May 14, 1996 were not included in the peer review file.

ATTACHMENT 4

RECORDS REVIEWED

ATTACHMENT 4

RECORDS REVIEWED

1. DOE Carlsbad Area Office. Project files for Peer Review No. 1, Conceptual Models Peer Review, located at the Day and Zimmerman Records Storage Facility.

2. DOE Carlsbad Area Office. Project files for Peer Review No. 2, Supplementary Information Regarding Conceptual Models Peer Review, located at the Day and Zimmerman Records Storage Facility.

3. DOE Carlsbad Area Office. Project files for Peer Review No. 3, Waste Characterization Analysis Peer Review, located at the Day and Zimmerman Records Storage Facility.

4. DOE Carlsbad Area Office. Project files for Peer Review No. 4, Engineered Alternatives Cost/Benefit Study Peer Review, located at the Day and Zimmerman Records Storage Facility.

5. DOE Carlsbad Area Office. Project files for Peer Review No. 5, Engineered Systems Data Qualifications Peer Review, located at the Day and Zimmerman Records Storage Facility.

6. DOE Carlsbad Area Office. Project files for Peer Review No. 6, Waste Form and Disposal Room Data Qualifications Peer Review, located at the Day and Zimmerman Records Storage Facility.

7. DOE Carlsbad Area Office. Project files for Peer Review No. 7, Natural Barriers Data Qualifications Peer Review, located at the Day and Zimmerman Records Storage Facility.

8. DOE Carlsbad Area Office. CAO Team Procedure 10.5, Revisions 0 and 1.

9. DOE Carlsbad Area Office. CAO Management Procedure for Peer Review, Revision 1, Document No. CAO-96-1187.

10. DOE Carlsbad Area Office. CAO file for Surveillance Report S-96-29.

11. DOE Carlsbad Area Office. CAO file for Surveillance Report S-96-46.

12. DOE Carlsbad Area Office. CAO file for Surveillance Report S-97-16.

13. DOE Carlsbad Area Office. CAO file for Corrective Action Report 96-050.

14. DOE Carlsbad Area Office. CAO file for Corrective Action Report 96-051.

15. Memo to File for Engineered Alternatives Cost Benefit Study Peer Review, June 10, 1996, Subject: Response to possible conflict of interest for Panel Member Dr. Ron Bhada.