OCS

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

TRIP REPORT

SUBJECT: First Meeting of National Research Council Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion (20-5702-441)

DATE/PLACE: July 19, 1995 through July 21, 1995, at Holiday Inn Crown Plaza, Las Vegas, Nevada.

AUTHORS: Michael P. Miklas, Jr. and Brittain E. Hill.

PERSONS PRESENT: Michael P. Miklas, Jr., Brittain E. Hill, Michael Bell and Chad Glenn (NRC) and others from DOE, M&O, and contractors, and Carl Johnson, State of Nevada. Approximately 30 other attendees too numerous to mention individually.

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PERSONS PRESENT: Michael P. Miklas, Jr., Brittain E. Hill, Michael Bell and Chad Glenn (NRC) and others from DOE, M&O, and contractors, and Carl Johnson, State of Nevada. Approximately 30 other attendees too numerous to mention individually.

BACKGROUND:

The Peer Review Committee (PRC) was formed by the National Research Council Board of Radioactive Waste Management at the request of the DOE to review the Technical Basis Report for Surface Characteristics, Preclosure Hydrology, and Erosion (TBR). The PRC is comprised of eight members with expertise in the general areas of hydrology, geomorphology, geochronology, and geochemistry. The main purpose of the first meeting of the team was to gather information concerning the development of the DOE TBR. Attachment 1 is the facsimile transmittal of the announcement of the meeting including the liaisons to the PRC, a message to the liaisons, a list of the members of the PRC, and a Draft Agenda for the first meeting in Las Vegas, NV.

DISCUSSION OF ACTIVITIES AT MEETING:

A Statement of Task (see Attachment 2) was provided to the participants and attendees. The PRC is charged with performing a scientific and technical review of the April 1995 TBR. The PRC is to assess the validity of the data and interpretations and the adequacy of the treatment of uncertainties in describing the current state of understanding. The PRC will review only the technical and scientific analyses and will not address regulatory compliance or the suitability of the proposed Yucca Mountain repository site as a high-level radioactive waste repository. A written report on its findings will be provided to OCRWM and to interested members of the public.

The PRC announced that any written information received by the PRC is available for release to the public. Attachment 3 discusses the means by which interested parties can acquire the information.

The PRC meeting was opened by Dr. Ernest T. Smerdon, Chair (University of Arizona—Hydrology) who noted that the PRC is designated YMPR 1. Dr. Smerdon explained that the PRC expected to have three meetings. The first and second meetings would be for information gathering and the third meeting would be for deliberations. He emphatically stated that it is the National Research Council's (NatRC) procedure to have no interim discussions of progress but to defer all information on PRC actions to the release of

the Final Report of the PRC. Each member of the PRC was provided a compilation of information by DOE. The compilation include but was not limited to i) a copy of the DOE TBR, ii) a copy of the Topical Report on Extreme Erosion (TR), iii) Nuclear Regulatory Commission (NRC) comments on the TR, and iv) CNWRA report to the NRC on the TR.

After introduction and some additional remarks on the means by which the PRC was appointed by Dr. Kevin Crowley (NatRC), Dr. Smerdon opened the meeting to questions from the PRC members. Dr. Leonard Lane (Agricultural Research Service/USDA—Geomorphology) asked whether GIS database information for the site was available as he believed there was a dearth of maps in the TBR and he required more visual information in order to understand the site. He was informed by Dr. Jane Summerson (DOE) that arrangements to tour the DOE GIS facilities could be arranged and that a project site atlas would be made available to the PRC. Dr. Lane said that a preliminary review indicated that climate, soils, and vegetation were not discussed in the TBR but should be discussed. He asked if any records of channel changes in Fortymile Wash relative to floods in the late 1960's were available. No DOE staffer could respond but later in the meeting it was pointed out that severe rainfall and flooding in the Fortymile Wash was extensively documented in 1995. Dr. Lane pointed out that the location of the maximum flood level at the north portal could not be ascertained on the map provided in the TBR, he was assured by the DOE that a more comprehensive map would be provided to him.

After some general comment by other members regarding the paucity of data in the report it was noted by Dr. Crowley that the PRC will ask for more information and should go through him to acquire such information. Dr. Jean Bahr, Vice-Chair (University of Wisconsin—Hydrogeology) asked how DOE decided to selectively delete or include competing hypotheses from the report. The DOE responded that the major decision of what went into the report was "What did DOE need to know?" The TBR presents DOE's current understanding of the situation at Yucca Mountain. During the review of the TBR DOE resolved 300-400 comments which dealt primarily with what the document should look like. The DOE internal review of the TBR uncovered no significant technical concerns.

The PRC asked if the report could be revisited and updated with PRC input after the PRC provides their comments and the DOE responded that "several weeks" were allowed in the schedule for that activity. DOE noted, however, that DOE management may not accept the PRC recommendations. A PRC member asked for a clarification of the difference between a low-level and a high-level finding. The difference was explained on the basis of the likelihood of additional data changing the conclusions of the finding. A low-level finding might be changed by additional data while a high-level finding is not expected to be changed by acquisition of more data.

Tim Sullivan (DOE) noted that the erosion portion of the document had been reviewed by NRC and that technical disagreements with the DOE had resulted from the review. The PRC questioned Dr. Michael Bell (NRC) and Dr. Britt Hill (CNWRA) on the written discussion of NRC/CNWRA comments and concerns. The questions focused on technical comments and concerns with the varnish cation-ratio (VCR) dating technique which forms the basis of much of the Extreme Erosion Topical Report. Dr. Hill pointed out that the CNWRA position is discussed in the document provided to the PRC. Dr. John Stuckless (USGS) noted that the DOE TBR is on erosion not extreme erosion which is a different issue than is discussed in the TR on Extreme Erosion and 10 CFR Part 60.

Carl Johnson (Nevada Nuclear Waste Project Office) discussed his interest in this peer review and pointed out some additional sources of information which have been funded by the state: i) A paleohydrologic study of Fortymile Wash utilizing packrat middens as indicators by Dr. Jeff Spaulding, ii) A study by

Roger Morrison of the Tecopa Lake area which redefines the Quaternary history of Tecopa Lake Basin and iii) the work of Peterson and others on the sediments of the Crater Flat area. Mr. Johnson emphasized that state-selected experts should be given appropriate documentation at the same time as the NatRC PRC receives such information from the DOE. He noted that many competing interpretations of geology, erosion rates, etc. are not provided in the TBR. He believes that the TBR should look at past interpretations and present interpretations and, if they are different, the means of resolution of the differences should be discussed.

Dr. Chuck Harrington (LANL) spoke about the VCR dating of boulder deposits on Yucca Mountain and nearby. He stated that although the technique was controversial he was confident with the ages and conclusions he and Dr. Whitney (USGS) had reached using the VCR technique. He noted the DOE was collecting more reliable calibration dates using isotopes ^{26}Al and ^{10}Be in a cosmogenic dating method which he expected to corroborate the VCR dates on the boulder deposits. The PRC, particularly, Dr. Mark D. Kurz (Woods Hole Oceanographic Institute) questioned the selection of ^{10}Be as the isotope of choice. Dr. Harrington said that ^{10}Be was selected because of the geologic timeframe of a million plus years which was to be assessed and because the DOE wanted to have data available before the PRC finishes its evaluation of the TBR. He noted that the first set of field samples are "in the machine." Dr. Harrington noted that he does not expect the cosmogenic dating study to be completed this fiscal year as has been suggested by DOE in the past. When questioned directly by Dr. Susan L. Brantly (Pennsylvania State University) on why he threw out some of the VCR analyses he stated that he discarded no more than 1 or 2 analyses. This is in direct conflict with the numbers of analyses which were discarded during the establishment of the VCR dates on his calibration curves based on data provided by DOE from LANL QA records. When questioned on the nature of his review of the TBR, Dr. Harrington noted that he had only about an hour to look it over during the review process.

The PRC was interested in how long the compilation of the TBR took and was told by the M&O compiler Mr. August Matthoson that it was about two months culminating in December, 1994. The PRC commented that they believe that they are being unduly burdened by being required to go back to original referenced documents to find the supporting data for the TBR. They noted that the maps in the TBR are inferior or non-existent.

Dr. Stuckless (USGS) discussed some aspects of the hydrology of the site, particularly, the presence of perched water which Dr. William Jury (University of California-Riverside - Soils and Unsaturated Zone Hydrology) and Dr. Bahr (University of Wisconsin) seemed very interested in. Dr. Stuckless noted that 4 holes on or near the site have perched water which has been found below the repository horizon. He noted traces of tritium at UZ16 at 1472 feet below the ground surface. The tritium levels are significantly above expected background levels so are thought to be the result of atmospheric and underground nuclear weapons testing at the NTS. Dr. Stuckless opined that the tritium had probably moved by fracture flow. The PRC wondered whether there was anything in writing on the perched water and was told by DOE that some presentations had been made to ACNW and NWTRB and that the overheads would be made available to them. The PRC wondered why perched water had been found only below the repository horizon and the DOE answered that was the only places where perched water had been detected.

Dr. Stuckless pointed out that preliminary evaluations of the perched water indicated that the water was meteoric. He noted wells UZ-1, UZ-14, and SD-7 encountered perched water. A new well at SD-12 is being advanced and the DOE expects to encounter perched water at similar depths below the repository as the other wells.

On the second day of the meeting Dr. Stuckless (USGS) noted that the TBR had been only cursorily reviewed by the USGS staff because appropriate staff were not available for timely review and comment. He noted that there had been an apparent disconnect between the data-gatherers and the M&O compilers of the TBR document because information existed on thermoluminescence (TL) dating, U-series dating, geochemistry of perched water, and unsaturated zone hydrology which was not in the TBR. He noted that 3 or 4 Lundstrom et al. surficial geology maps are expected to be available by December 1, 1995. Dr. Stuckless noted that the TBR is a "snapshot" of ongoing activities and that additional pertinent information is expected to come from numerous ongoing studies and analyses. He pointed out that there was no "official" erosion study because it became quite apparent during the VCR work in a climatology-related study that enough data was "in hand" to allow the resolution of the "extreme erosion" problem. He noted that although there was some disagreement between LANL and USGS staff on the precision and accuracy of the VCR technique that he believed the conclusion that there was no extreme erosion to be a correct one and that sufficient information exists to describe erosion at the Yucca Mountain proposed repository site. Dr. Stuckless said that all the conclusions of the TBR are accurate and appropriate in his mind.

The PRC responded that multiple dating techniques should be employed and Dr. Stuckless responded that there was not enough available funding to employ the multiple techniques that an academician might use.

Dr. Stuckless mentioned the lack of Holocene deposits at Yucca Mountain. He noted that sand ramps (Busted Butte and elsewhere) are being dated at c. 60,000 years before present, which demonstrates relative lack of erosion since the sand ramps are non-indurated and easily eroded. He also noted that the alluvial fill (Fortymile Wash and elsewhere) has considerable antiquity. Trenching and drilling in alluvial fill in various valleys shows about a meter or so "cap" of late Pleistocene deposits.

Dr. Leo Reiter (NWTRB Staff) discussed the concept of NWTRB oversight of the high-level waste management program and informed the PRC that the NWTRB would not routinely accomplish a task similar to that assigned to the PRC. He explained that NWTRB will comment on issues as they deem appropriate and that they in fact had comments on the TR to the effect that the report relied too heavily on the controversial VCR dating of boulder deposits.

Mr. Englebrecht Von Tiesenhausen of Clark County noted that the TBR was too much of a summary. He pointed to the discussion of the use of MODFE, a note that additional corroborative work was in progress, and the use of references such as Burger and Scofield (also in progress) as examples of incomplete presentation by the DOE. He mentioned the statement that the rates of tectonic activity were low in the TBR as requiring additional explanation such as low relative to what, where are the rates low, what is the supporting information, etc. He explained that he had many other "nits" with the TBR. He asked that the PRC incorporate the oversight entities, such as Clark County, in their deliberations as much as possible.

Mr. Hal Rogers, a member of the interested public, suggested that science should try to do important studies... desert varnish does not seem important to the public. He suggested that anything that is accomplished should be done on a sound basis. He believes that the 15,000 member organization which he represents wants to know the effect of a repository on themselves and their families. He believes that the reaction to the report should be considered when the report is finalized. Mr. Tom McGowan also spoke and suggested that the public should be shown more than a summary of information. He believes that the supporting evidence and conclusions should all be a part of the package presented to the public.

The PRC spent a portion of the last day planning their next meeting which will include a field trip in southwest Nevada and a visit to the NTS and Yucca Mountain. Carl Johnson expressed an interest in having some input into the trip stops so that the state's interests would be represented during the trip. The field trip is scheduled to begin on Sunday, August 27, with the journey from Las Vegas to Beatty. The DOE has been asked by the PRC to have information on hydrology ready for presentation at a public meeting in Beatty on Sunday afternoon. On Monday, August 28, the plan is to visit stops on the NTS including the crest of Yucca Mountain with return to Beatty at the end of the day. On Tuesday, August 29, the PRC will return to Las Vegas via stops at Crater Flat and elsewhere with a final day's work scheduled for Wednesday, August 30 in Las Vegas.

CONCLUSIONS:

The PRC was concerned with the lack of data in the TBR and expressed same to the DOE. DOE had very few hydrologists (if any) involved in the field studies of hydrology at the PRC meeting and as a result was unable to respond to many questions of the PRC. The DOE could not respond, at this time, to a PRC statement that the TBR did not treat erosion in a regional context and that a study of extreme erosion which looked at only a relatively few events on Yucca Mountain did not demonstrate that extreme erosion was not occurring in the region during the Quaternary Period. The DOE contended that the TBR was a "snapshot" of current knowledge and that information would be forthcoming to resolve debate and settle controversies like the adequacy and precision of the VCR dating method. The PRC responded by noting that they were contracted to review the TBR and that information contained in places other than the TBR or its references would not be a part of its overall evaluation of the quality of the scientific data and uncertainty in the TBR information and conclusions. The PRC was very interested in the presence and characterization of perched water at the site as they believed this to be of critical significance to the evaluation of the pre-closure hydrology.

PENDING ACTIONS:

PRC has planned another meeting associated with a field trip to Yucca Mountain, NTS, and southwestern Nevada for August 27, 1995 through August 30,1995. Subsequent to the first meeting, Dr. Hill was contacted by the PRC and asked to provide a copy of the CNWRA review of dating techniques (CNWRA 93-018) to the PRC. The PRC also had no specific commitment from the DOE to provide the basic data on the VCR study of boulder deposits at Yucca Mountain and nearby. These VCR data were requested by the PRC and sent with the copy of CNWRA 93-018 on July 24, 1995.

RECOMMENDATIONS:

NRC should plan on attending the next NRC PRC meeting and field trip.

PROBLEMS ENCOUNTERED:

None.

REFERENCES:

None.

SIGNATURES:

Michael P. Miklas, Jr.
Senior Research Scientist

08/01/95
Date

Brittain E. Hill
Research Scientist

8/1/95
Date

H. Lawrence McKague
Manager, Geology/Geophysics Element

8/2/95
Date

Budhi Sagar
Technical Director

8/2/95
Date

/ec

ATTACHMENT 1

FACSIMILE TRANSMITTAL

NATIONAL ACADEMY OF SCIENCES

BOARD ON RADIOACTIVE WASTE MANAGEMENT

FAX (202) 334-3077

OFFICE (202) 334-3066

FROM: Kevin Crowley

SENT BY: Rebecca Burka

TO: Liaisons to the National Research Council Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion

William Barnard, NWTRB
Dennis Bechtel & E. von Tiesenhausen, Clark Cty Dept of Comprch Planning
Lee W. Bradshaw, NYE Ct NWPO
Margaret Federline, US NRC
Sandi Green, Eureka Ct YMPO
Larry Hayes, USGS-Denver
Juanita Hoffman, Esmeralda Ct NWP
Robert Loux, NV NWPO
Tammy Manzini, Lander Ct BOC
Florindo Mariani, White Pine Ct
Brad Mettam, Independence CA & YM Repository Assess. Office
Phil Niedzielski-Eichner, NYE Ct NWPO
Jason Pitts, Lincoln Ct NWPO
Jon Price, NV Bur Mines & Geology
Harold Rogers, The Study Committee
John Rosenthal, CRWMS M&O/TRW
Cyril Schank, Churchill Cty
Jane Summerson, DOE/YMSCO
Judy Treichel, NV NW Task Force
Larry Wienstock, US EPA

cc: Samantha Richardson, DOE/YMSCO

COMMENTS: The following transmittal includes a NAS/NRC memorandum from Kevin Crowley, the roster for the Board on Radioactive Waste Management's Yucca Mountain Peer Review Committee, and a draft agenda for first committee meeting scheduled for July 19-21, 1995 at the Holiday Inn Crowne Plaza.

If you have any questions, please call.

NUMBER OF PAGES, INCLUDING COVER SHEET: 6
DATE: 7 July 1995

NATIONAL RESEARCH COUNCIL

COMMISSION ON GEOSCIENCES, ENVIRONMENT, AND RESOURCES

2101 Constitution Avenue Washington, D.C. 20418

BOARD ON
RADIOACTIVE WASTE MANAGEMENT
(202) 334-3066 Fax 334-3077

Office Location:
Milton Harris Building
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3301 Wisconsin Avenue, N.W. 20007

July 7, 1995

MEMORANDUM

TO: Liaisons to the National Research Council *Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion*

FROM: Kevin Crowley, Study Director Kevin Crowley

SUBJECT: Committee Roster and Draft Agenda for First Committee Meeting

The Board on Radioactive Waste Management of the National Research Council/National Academy of Sciences (NAS/NRC) is pleased to provide you with the attached roster of members of the *Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion*. This committee was appointed by the Chairman of the National Research Council. It comprises eight members with expertise in the general areas of hydrology, geomorphology, geochronology and geochemistry.

The first meeting of the committee will be held on July 19-21 1995 at the Holiday Inn Crowne Plaza, which is located at 4255 South Paradise Road in Las Vegas. The first two days of the meeting (July 19-20) are open to the public. The main purpose of the open sessions is to gather information concerning the development of the DOE Technical Basis Report on Surface Characteristics, Preclosure Hydrology, and Erosion. The committee will receive briefings from the Department of Energy's Office of Civilian Radioactive Waste Management, which is sponsoring this NAS/NRC study, and other federal/state agencies and groups. Time will also be made available during both days for comments from members of the public.

A draft agenda for the meeting is enclosed for your review and comment. If your name appears on the agenda, I would appreciate it if you would take a few moments to check the adequacy of the title and time allotted for your presentation. If your organization does not appear on the agenda but would like to, or if you would like to suggest other organizations or individuals who should be contacted to make presentations, I would be pleased to hear from you. You can send your corrections and suggestions to me by phone (202-334-3066), fax (202-334-3077) or Internet (kcrowley@nas.edu). I would like to receive your changes and suggestions by the end of the day on Thursday, July 13 so I can distribute a final agenda before the meeting. Thank you.

I look forward to seeing you at the meeting.

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Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion

Committee Roster

Ernest T. Smerdon, Chair
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Tucson, AZ
Hydrology

Jean M. Bahr, Vice-Chair
University of Wisconsin
Madison, WI
Hydrogeology

Victor R. Baker
University of Arizona
Tucson, AZ
Geomorphology and Surface Water Hydrology

Susan L. Brantley
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William A. Jury
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Riverside, CA
Soils and Unsaturated Zone Hydrology

Mark D. Kurz
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Geochronology

Leonard J. Lane
Agricultural Research Service/USDA
Tucson, AZ
Geomorphology

Karen L. Prestegaard
University of Maryland
College Park, MD
Surface Water Hydrology

NRC Staff:
Kevin D. Crowley, Study Director
Carl A. Anderson, BRWM Director
Rebecca Burka, Senior Project Assistant
Scott A. Hassell, Intern

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DRAFT AGENDA

COMMITTEE FOR YUCCA MOUNTAIN PEER REVIEW: SURFACE CHARACTERISTICS, PRECLOSURE HYDROLOGY, AND EROSION

Holiday Inn Crowne Plaza
4255 South Paradise Road
Las Vegas, Nevada 89109
Ballroom

Meeting #1
July 19-21, 1995

Wednesday, July 19, 1995

OPEN SESSION

8:30 - 8:45 am	Welcome and Introductions *Ernest T. Smerdon, Chair* *Kevin D. Crowley, Study Director* · Purpose of and plan for the meeting · Introduction of committee members and staff · Approval of agenda
8:45 - 9:30 am	Project Background; NAS Procedures and Policies *Ernest T. Smerdon, Chair* *Kevin D. Crowley, Study Director* · Charge to the committee · Review of the NAS study process · General operating procedures for this project · Project schedule · NAS policies regarding public access and confidentiality · Policies regarding audio and video recording
9:30 - 10:30 am	Development of Technical Basis Reports and the Committee's Task *Jane Summerson, DOE/YMSCO*

10:30 - 11:00 am	**BREAK**
11:00 - 11:45 am	U.S. NRC Perspectives on the Technical Basis Report *Mike Bell, U.S. NRC*
11:45 - 12:00 pm	Questions and Discussion *Committee and Presenters*
12:00 - 1:30 pm	**LUNCH**
1:30 - 2:00 pm	State of Nevada Perspectives on the Technical Basis Report *Carl Johnson, Nevada Nuclear Waste Project Office*
2:00 - 2:30 pm	Public Trust and the Nuclear Waste Program *Judy Treichel, Nevada Nuclear Waste Task Force, Inc.*
2:30 - 3:30 pm	Presentations by other Affected Units of Government *TBD*
3:30 - 4:00 pm	**BREAK**
4:00 - 5:30 pm	Opportunity for Public Comment

Thursday, July 20, 1995

OPEN SESSION

8:30 - 8:40 am	Summary of yesterday's activities and plan for the day *Ernest T. Smerdon, Chair*
8:40 - 9:30 am	USGS Perspectives on the Technical Basis Report *Larry Hayes, USGS*
9:30 - 10:15 am	(Tentative) NWTRB Perspectives on the Technical Basis Report *TBD*
10:15 - 10:45 am	**BREAK**
10:45 - 12:00 pm	Additional Presentations by Affected Units of Government and Opportunity for Public Comment

Committee for Yucca Mountain Peer Review
Meeting #1 Agenda, Continued

12:00 - 1:30 pm	**LUNCH**
1:30 - 2:30 pm	Questions and Discussion *Committee and Presenters*
2:30 - 3:00 pm	Preliminary Discussion of Schedule and Assignments *Committee*
3:00 - 3:30 pm	**BREAK**
3:30 - 4:00 pm	Preliminary Discussion of Plans for the Next Meeting, Including Field Trip *Committee*
4:00 - 5:30 pm	Opportunity for Public Comment on Presentations and Future Plans

Friday, July 21, 1995

EXECUTIVE SESSION

Attendance at this session is limited to NAS/NRC committee and staff members.

ATTACHMENT 2

NATIONAL RESEARCH COUNCIL
COMMISSION ON GEOSCIENCES, ENVIRONMENT, AND RESOURCES
2101 Constitution Avenue Washington, D.C. 20418

BOARD ON
RADIOACTIVE WASTE MANAGEMENT
(202) 334-3066 Fax: 334-3077

Yucca Mountain Peer Review Committee

Office Location:
Milton Harris Building
Room 456
2001 Wisconsin Avenue, N.W. 20007

Statement of Task

The committee will perform a scientific and technical review of the April 1995 Yucca Mountain Site Characterization Project *Technical Basis Report for Surface Characteristics, Preclosure Hydrology, and Erosion*.

The committee will evaluate this report to assess the validity of the data and interpretations and the adequacy of the treatment of uncertainties in describing the current state of understanding. The committee will review only the technical and scientific analyses. The committee will not address regulatory compliance, nor will it address the suitability of the Yucca Mountain site as a high-level radioactive waste repository. The committee will prepare a written report of its findings for distribution to OCRWM and interested members of the public.

The review will address (but will not be limited to) the following questions:

a. Have the data been collected and analyzed in a technically acceptable manner?
b. Do the data, given the associated error and analytical and technical uncertainties, support the technical interpretations and conclusions made within the technical basis report?
c. Are there credible alternative interpretations that would significantly alter the conclusions reached?
d. What testing, if any, would discriminate among alternative technical interpretations?
e. If such testing is recommended, how effective would it be at reducing significant uncertainties?

The committee will attempt to distinguish between recommendations for further technical work to reduce uncertainty, and any recommendations pertaining to DOE policy or management.

ATTACHMENT 3

Attachment 3

NATIONAL RESEARCH COUNCIL
COMMISSION ON GEOSCIENCES, ENVIRONMENT, AND RESOURCES
2101 Constitution Avenue Washington, D.C. 20418

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Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion

Availability of Written Information Submitted to the Committee

Written information received by the *Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion* from outside organizations and individuals is available for release to the public. A list of available documents can be obtained by contacting Ms. Rebecca Burka at the Board on Radioactive Waste Management (BRWM) of the National Research Council (phone: 202-334-3066; fax: 202-334-3077; internet: rburka@nas.edu). The BRWM has made arrangements with the DOE Management and Operating Contractor to copy and distribute these documents. Copies of documents can be obtained by contacting:

Mr. John Fisher
Civilian Radioactive Waste Management System
Management & Operating Contractor
101 Convention Center Drive
Mail Stop 423
Las Vegas, Nevada 89109

phone: 702-794-7167