



Department of Energy  
Washington, DC 20585

MAR 09 1993

Mr. Joseph J. Holonich, Director  
Repository Licensing & Quality Assurance  
Project Directorate  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

References: (1) Ltr, Roberts to Holonich, dtd 4/22/92  
(2) Ltr, Loux to Bartlett, dtd 6/16/92

Dear Mr. Holonich:

Enclosed for review by the U.S. Nuclear Regulatory Commission (NRC) is the U.S. Department of Energy (DOE) approved topical report, "Evaluation of the Potentially Adverse Condition of Extreme Erosion During the Quaternary Period at Yucca Mountain, Nevada," (enclosure 1). The report provides the necessary technical basis to show that the potentially adverse condition is not present at Yucca Mountain, Nevada. The purpose and scope for the report was modified significantly from the annotated outline provided to the NRC (Reference 1) based on the staff's verbal comments at the May 27, 1992 technical exchange and on DOE's internal review of the draft document that was conducted using Quality Assurance Procedure (QAP) 6.2.

As stated in Enclosure 2, topical reports are a means by which DOE will be submitting documentation to the NRC staff regarding aspects of compliance with 10 Code of Federal Regulations Part 60. Topical reports will be incorporated into a potential license application by reference, if the Yucca Mountain site is found suitable.

As stated in Enclosure 3, DOE anticipates that the NRC will provide a review of this topical report in a Safety Evaluation Report or analogous document suited to the pre-licensing period for the high-level waste program.

A package containing all references cited in the report for which copyright clearances have been obtained will be transmitted under separate cover. A small package containing references for which copyright clearances are still in process will be sent as soon as clearances have been obtained. A technical assessment was performed to qualify existing data that provides the technical basis for this report, per the guidance provided in NUREG-1298. This documentation package will be transmitted under separate

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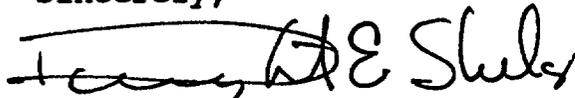
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cover. The QAP 6.2 review records package will be entered into the Yucca Mountain Site Characterization Project office's (YMPO) records system according to the time frame specified in the procedure.

Documentation to fulfill the State of Nevada's request for erosion data (Reference 2) is being prepared and will be sent to the State under separate cover from YMPO.

If you have any questions, please contact Mr. Chris Einberg of my office at 202-586-8869.

Sincerely,



Dwight E. Shelor  
Associate Director for  
Systems and Compliance  
Office of Civilian Radioactive  
Waste Management

Enclosures *on the shelf.*

1. DOE Topical Report, (YMP 92-41)
2. Ltr, 11/9/92, Roberts to Holonich
3. Ltr, 1/8/93, Bartlett to Bernero  
w/encl

cc: w\ enclosures  
C. Gertz, YMPO (w\o enclosures)  
T. J. Hickey, Nevada Legislative Committee  
R. Loux, State of Nevada  
C. Abrams, NRC  
D. Bechtel, Las Vegas, NV  
Eureka County, NV  
Lander County, Battle Mountain, NV  
P. Niedzielski-Eichner, Nye County, NV  
W. Offutt, Nye County, NV  
C. Schank, Churchill County, NV  
F. Mariani, White Pine County, NV  
V. Poe, Mineral County, NV  
J. Pitts, Lincoln County, NV  
J. Hayes, Esmeralda County, NV  
B. Mettam, Inyo County, CA



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Repository Licensing and Quality Assurance  
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Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Holonich:

As discussed during the U.S. Nuclear Regulatory Commission/U.S. Department of Energy (NRC/DOE) Management meeting on February 6, 1992, and again at the Technical Exchange on the Erosion Topical Report on May 27, 1992, the NRC staff requested that DOE provide a statement of the purpose and scope of topical reports. Clarification of the use of the topical reports and their relationship to the DOE issue resolution process is provided below.

Issue resolution is the process of interactions or negotiations between the DOE and the NRC staff regarding technical or programmatic concerns involving the implementation of regulatory requirements. Resolution during the pre-licensing phase is only a mutual understanding between the DOE and NRC staffs on an issue. Legal closure does not occur until the license is issued.

Topical reports are one of the many ways by which the DOE can present its position or conclusions on specific regulatory or technical issues to the NRC staff for early review and for purposes of resolution. This is consistent with the intent of the topical report program the NRC has had in place for years for the reactor industry (see NUREG-0390).

Topical reports can serve several purposes: (1) in cases where enough data are available, the report can document how DOE has demonstrated compliance with some portion of the regulations, (2) the report can document a methodology or approach the DOE plans to use in demonstrating compliance in the future, or (3) a combination of the two.

DOE views the use of topical reports in the issue resolution process, as follows.

- a. The DOE internally develops the scope of the issue in detail. This includes development of the scope of the topical report.

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ENCLOSURE 2

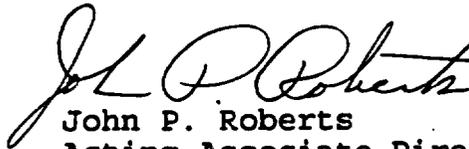
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- b. The DOE prepares an annotated outline of the topical report and compiles existing information and data to develop the technical basis for the position or conclusions. The annotated outline may be submitted to the NRC for informational purposes prior to the actual submittal of the topical report. Concurrently, an internal DOE preliminary draft report may be prepared.
- c. The DOE can meet with the NRC staff to discuss the technical basis for the position or conclusions to obtain some early feedback prior to finalizing the topical report.
- d. The DOE will prepare the topical report on the issue and submit it to the NRC staff for review.
- e. Following the NRC staff review of the topical report, NRC may provide comments to the DOE or accept the report. If comments are provided, a meeting may be held to discuss the comments and then the topical report would be revised, as needed, and resubmitted to the NRC staff.
- f. Once the NRC staff is satisfied with the DOE position in the topical report, it can accept the report, which could later be incorporated by reference in a license application. In the interim, the DOE will incorporate the accepted topical report in the annotated outline of the potential license application. Historically, the NRC staff has accepted topical reports in several ways, four of which are identified below.
  1. Safety Evaluation Report (SER) - This report has been used by the NRC staff in the past for documenting NRC's review and acceptance of topical reports in the reactor industry. After issuance of an SER, DOE will publish an approved version of the topical report which will include a copy of the staff evaluation transmittal letter and its enclosed evaluation report.
  2. NUREG - The NRC staff could incorporate the DOE topical report in a staff technical position, which would be issued as a NUREG document.
  3. Regulatory Guide - The topical report could also be incorporated in a regulatory guide.
  4. Rulemaking - If the DOE position or conclusions requires a change in the NRC regulations, a rulemaking could be initiated in accordance with 10 CFR Part 2.

In summary, DOE believes that the process outlined above is consistent with NRC's past practices regarding the review and acceptance of topical reports. NRC's acceptance of a DOE topical report will serve two purposes: 1) it will provide DOE with the regulatory perspective needed to guide and provide a better focus

for programmatic decisions regarding site characterization, and 2) it will provide a mechanism by which information can be incorporated by reference in a potential license application, consistent with the provisions in 10 CFR 60.23. We hope this letter provides the clarification you requested. If you have any questions, please contact Chris Einberg of my staff at (202) 586-8869.

Sincerely,



John P. Roberts  
Acting Associate Director for  
Systems and Compliance  
Office of Civilian Radioactive  
Waste Management

cc:

C. Gertz, YMPO  
K. Hooks, NRC  
R. Loux, State of Nevada  
T. Hickey, Nevada Legislative Commission  
M. Baughman, Lincoln County, NV  
J. Bingham, Clark County, NV  
G. Derby, Lander County, NV  
B. Raper, Nye County, NV  
P. Niedzielski-Eichner, Nye County, NV  
P. Goicoechea, Eureka, NV  
C. Schank, Churchill County, NV  
F. Mariani, White Pine County, NV  
E. Wright, Lincoln County, NV  
V. Poe, Mineral County, NV  
J. Pitts, Lincoln County, NV  
R. Williams, Lander County, NV  
J. Hayes, Esmeralda County, NV  
M. Hayes, Esmeralda County, NV  
B. Mettam, Inyo County, CA  
C. Abrams, NRC



Department of Energy  
Washington, DC 20585

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January 8, 1993

Mr. Robert M. Bernero  
Director  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington D.C. 20555

Dear Mr. Bernero: *Bob*

I appreciate your letter of November 18, 1992, and your recognition of the events that have led to significant progress in the high-level waste repository program during the past year. Progress on the technical front has included initiation by the Department of Energy (DOE) of a major new drilling program to characterize water movement in the unsaturated zone, and extensive trenching and other surface-based activities to evaluate the potential for disruption due to volcanism and tectonic activity. In addition, on November 30, 1992, we achieved a major program milestone with the start of activities for construction of the exploratory studies facility (ESF) that is needed for underground exploration and in situ testing.

Progress has been made possible, in part, through interactions with the Nuclear Regulatory Commission (NRC) staff to resolve the NRC's objections to DOE's Site Characterization Plan related to quality assurance and the ESF, as well as an additional 66 of the remaining 196 concerns identified in the NRC's Site Characterization Analysis (SCA). I agree wholeheartedly with your suggestion that we need to continually examine the interactions between our agencies to ensure that they are effective and appropriately focused on resolving issues in an open and timely manner. I regard these interactions as an essential part of the pre-licensing consultations we must have on activities and issues of mutual interest in order to move the repository program forward.

I have taken this opportunity to respond to the points you raised in your letter and highlight the actions we have taken to address them (see enclosure). These points included the four issues that were identified in your July 31, 1989, letter transmitting the NRC's SCA as being of particular importance in site characterization, and six additional and somewhat interrelated issues. I believe that your points are of such relevance that I made them a major focus of my statement to the Commission for the December 18, 1992, briefing.

The coming year is going to be a very busy year for the repository program. We will expand our surface-based testing

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ENCLOSURE 3

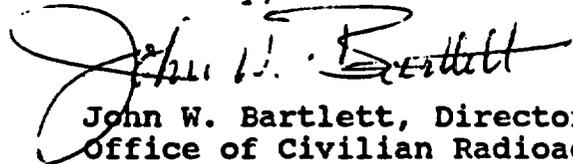
activities at Yucca Mountain, and we will initiate construction for the access ramp to the Exploratory Studies Facility. This will include excavation of a 200-foot-long launch chamber for the large-diameter tunnel boring machine that will be procured during the coming year. We will continue our work on Advanced Conceptual Design activities for the repository, waste package, and engineered barrier system. We will continue our efforts to deploy InfoSTREAMS and work with the staff on the development of the Licensing Support System.

We will, of course, continue to interact extensively with the staff and the Advisory Committee on Nuclear Waste to inform them of our activities and to seek resolution of open issues. I believe that in the past year these interactions have become more focused and more productive, and we are going to continue working with the staff to make them even more effective in resolving open SCA concerns. In January, in connection with our Issue Resolution Initiative activities, we will submit to the staff the first of our topical reports on regulatory issues. We will request formal reviews and development by the staff of Safety Evaluation Reports (SERs) on these documents. These SERs should provide documentation for resolutions reached with the staff and would be referenced in a license application, should the site be found suitable and approved for development as a repository. The first topical reports will deal with the issues of erosion and the origin of the calcite-silica deposits. In June, we will submit for review a topical report on volcanic hazards. In addition, in mid-year 1993, we plan to submit to the staff Revision 2 of the Mined Geologic Disposal System Annotated Outline. We look forward to receiving the NRC staff's response to these submittals.

Finally, we look forward during 1993 to interactions on a number of matters that are relevant to the progress of the repository program. These include the Topical Report Review Plan, DOE's program planning and integration, Office of Civilian Radioactive Waste Management technical baseline documents, and volcanism. Future interactions may focus on issues such as the proposed 10 CFR Part 60 rulemaking on accident dose limit, the License Application Review Plan, and the staff's plans for using regulatory analysis.

I am encouraged by what we have accomplished during the past year, and I am optimistic about our ability to complete the task that is before us. I appreciate the views and positive approach reflected in your letter and believe they will contribute to our continuing progress.

Sincerely,



John W. Bartlett, Director  
Office of Civilian Radioactive  
Waste Management

Enclosure: As Stated

cc:

C. Gertz, YMPO  
T. J. Hickey, Nevada Legislative Committee  
R. Loux, State of Nevada  
M. Baughman, Lincoln County, NV  
J. Bingham, Clark County, NV  
B. Raper, Nye County, NV  
P. Niedzielski-Eichner, Nye County, NV  
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B. Mettam, Inyo County, CA

Response to Points Made in Letter from R. Bernero to J. Bartlett  
November 18, 1992

The following reflects actions by the Department of Energy (DOE) in response to the issues identified in the July 1989 letter from the Nuclear Regulatory Commission (NRC) staff transmitting their Site Characterization Analysis (SCA) and referenced in the November 1992 letter:

- Need to Conduct Periodic Total System Performance Assessments

The DOE agrees that iterative assessments should be performed to provide early and ongoing evaluation of the adequacy of the site-related data being obtained and the ability of the site to meet the performance objectives of 10 CFR Part 60. In July of this year, we completed the first iteration of our Total System Performance Assessment (TSPA) and, during the week of December 14, the results were discussed with the NRC staff and with the Advisory Committee on Nuclear Waste (ACNW) in separate meetings. Our second iteration of the TSPA is underway and is focused on evaluation of parameter sensitivity, uncertainty analysis, and the comparison of simplified and complex flow models. We intend to perform such assessments on an iterative basis, consistent with the availability of the information required, to make them meaningful.

- Need to Understand Tectonic Phenomena

The DOE agrees that there is a need to understand tectonic phenomena and to consider a full range of appropriate tectonic models. Following the June 29, 1992, earthquake at Little Skull Mountain, and based on our existing plans for characterizing seismicity and faulting in the site area, we developed a Seismic Action Plan for the assessment of the seismic hazard at Yucca Mountain. We will implement this plan as an expedited, integral part of our overall efforts to characterize and determine the suitability of the Yucca Mountain site. We will report and discuss the results we obtain with the NRC staff and the ACNW as they become available. We have also conducted significant new trenching, mapping, age-dating, and other activities to characterize the potential for volcanism and other igneous activity in the site area, and are developing a topical report on this issue for submittal to the staff for review in mid-1993.

- Need to Improve Technical Integration of the Site Characterization Program and
- Need to Systematically Integrate Studies

Efforts to establish testing priorities in our Integrated Test Evaluation Task have progressed to the point where we will be using task results in making decisions about the testing to be conducted in F 1993 and later years. The focus of the tests will be on the investigation of site characteristics that are of priority importance in determining whether or not the Yucca Mountain site is suitable and in developing scientific confidence in such a determination. The results from iterations of the TSPA effort, as well as from the technical evaluations conducted as part of the Early Site Suitability Evaluation task and future iterations related to the evaluation of site suitability, will be considered in making these decisions.

Over the last 2 years, the Department has established, through the Yucca Mountain Site Characterization Project Office, hydrology and geochemistry integration groups. Senior technical staff representing various geotechnical disciplines, design, and Performance Assessment, have been brought together in these groups in an effort to better integrate data acquisition and analysis activities. We have also recently formed a geophysical integration group, which we discussed with the ACNW in October 1992.

In addition, the Department has charged the Civilian Radioactive Waste Management System Management & Operating Contractor (M&O) with the responsibility for technical integration of the overall site characterization program and for the systematic integration of all studies. The ongoing effort is comprehensive and includes the following:

- horizontal integration across the project of the activities of all project participants from technical, cost, and schedule standpoints
- integration of all surface-based testing activities, and coordination and integration of those tests with the subsurface tests that are to be carried out
- integration of design, construction, and site characterization activities to ensure that they do not compromise waste isolation or lead to test-to-test or construction-to-test interference
- integration of the development of project-level requirements documents to ensure their internal consistency, and their consistency with program-level documents being developed by others

- integration of the work of the many project participants and of the organizations within the M&O involved in carrying out systems studies on repository thermal loading, emplacement mode, and waste-package-lifetime performance-allocation.

The following reflects DOE's actions related to the additional issues that were identified in the November 1992 letter:

- Need to Resolve Open SCA Concerns in an Open and Timely Manner

DOE agrees with the NRC staff and the ACNW that resolving open SCA concerns is important and worthy of serious attention. We are now actively involved in actions to achieve that end. For each open concern, we are identifying the relevant work that has been done to date, the additional work, if any, required to resolve the concern, and the individual who should be responsible for development of the documentation needed to provide the basis for resolution of the concern. We believe that additional design, analysis, or testing will probably be required to resolve many of the remaining 128 concerns. The resolution of some concerns may require the development of study plans for new data-gathering and analysis activities, whereas resolution of others can be based on existing information.

All of the SCA concerns are being treated as "issues," consistent with the definition we discussed with the staff at our technical exchange on the Issue Resolution Initiative on November 20, 1991. We have, therefore, assigned the responsibility for coordinating the resolution of these concerns to our Issues Resolution Steering Group and look forward to significant progress in FY 1993, consistent with the availability of resources. Where appropriate, we hope to be able to address some of the staff's SCA concerns in the topical reports that are currently under development.

- Need to Better Focus DOE/NRC Interactions on Resolution of Existing Issues and Communications Regarding Planning for Program Activities

We share the NRC staff's concern regarding the need for interactions to be focused on the resolution of issues of mutual interest and benefit. We also understand the need for improved communications regarding the plans for technical and programmatic activities so that DOE and NRC staff have the opportunity, respectively, to seek and provide more timely and meaningful guidance. We have been working to improve our efforts in both these areas.

We meet regularly with the staff to plan our interactions 6 months in advance. These meetings should be viewed as part of our continuing efforts to work together to set a schedule and agenda for our interactions, and to ensure that issues are discussed when appropriate and that there is agreement on the purpose and objectives for each interaction.

We also communicate and interact with the ACNW frequently. These interactions are important and have been effective. I believe, however, that we need to find a better way to plan and facilitate more effective interactions with the ACNW, perhaps through meetings comparable to our interaction planning meetings with the NRC staff. Such interactions should enhance the ACNW's ability to advise the Commission and provide guidance to the staff.

- Content and Timely Availability of Site Characterization Progress Reports

This issue has been a matter of concern for some time, and I have directed that actions be taken to resolve it to meet the needs of the NRC staff, the Commission, the State, and other interested and affected parties. These actions include standardizing the format, adding a "forecasting" section in which we will provide information on future activities, and adding an "epilogue" that will include information on key events and decisions that occurred subsequent to the close of the reporting period. Inclusion of the "epilogue" should resolve one aspect of the timeliness issue.

We are also working to shorten the time required for the preparation and publication of the report by exploring ways and means of expediting release. Progress Report No. 6, covering the period ending March 31, 1992, was issued on December 9, 1992. Progress Report No. 7, covering the period ending September 30, 1992, is the first of our reports to include the "epilogue," and its formal distribution is planned for January 15, 1993. An informal information copy was provided to NRC staff on December 31, 1992. In the future, we will make every effort to have these reports distributed within 4 months of the close of the reporting period.

- Identification of the Need for NRC Guidance

The staff is correct in noting that the iterative development of the Annotated Outline (AO) serves as a mechanism for the staff to provide to DOE guidance on the interpretation and implementation of NRC regulations. I want to reiterate the DOE's view, expressed in John Roberts' letter of July 20, 1992, to Joseph Holonich of your staff,

that the semiannual progress reports and the MGDS AO serve very different purposes. The semiannual progress reports provide descriptions of activities, accomplishments, and changes that together report and update the status of site characterization. The MGDS AO, on the other hand, is focused on the parallel presentation of site characterization information and the integration of this information to satisfy the NRC's requirements for a potential license application based, in part, on NRC guidance. The AO is also a mechanism that facilitates DOE's evaluation of the extent to which information obtained satisfies NRC requirements.

The iterative AO process provides a basis for improvements in the quality of the AO and changes in NRC's draft Format and Content Regulatory Guide (FCRG) (DG-3003) for preparing a license application for a repository. The staff's comments have focused our attention on the information we need to provide to satisfy the intent of the FCRG. In addition, our experience in developing the AO may lead us to suggest changes that would improve the FCRG, consistent with the original intent of the staff in suggesting development of an AO. If we are convinced that this is appropriate, we will submit those suggestions to you for your consideration in FY 1993.

We are pleased that you have encouraged us to identify specific areas where we believe NRC should provide guidance or modify existing regulations. We fully intend to do so and, in fact, we have begun this effort. In 1990, we petitioned the Commission to amend 10 CFR Part 60 to include an accident dose-limit and to revise the definition of "important to safety." In May 1992, the staff briefed the ACNW on its proposed 10 CFR Part 60 rulemaking, which would, in part, address the substance of our petition and provide guidance for implementation. We look forward to the completion of this rulemaking and will consider the submittal of other petitions to amend Commission rules, as appropriate.

• Need to Ensure the Timely Development of the Licensing Support System (LSS)

DOE agrees with the staff that we need to work together to ensure the timely development of the LSS and we are continuing to do so. Implementation of such a system will be critical to the timely review by the staff of the DOE's license application and to the efficient conduct of the adjudicatory process. In October 1992, we met to examine the feasibility of revising the cost estimates for the LSS using DOE's InfoSTREAMS as the basis for the system. We committed to providing the estimates for the three options requested, each involving progressively increasing use of

InfoSTREAMS. We provided the estimates to the LSS Administrator on December 11, 1992, and look forward to participating with the staff in the evaluation of the implications of these options.

- Process for Developing the New EPA Standard

DOE fully agrees with the NRC staff's position that the schedule for developing the new Environmental Protection Agency standard mandated in the Energy Policy Act of 1992 will not adversely affect our near-term site characterization efforts. Section 801 of this Act provides for the development of a solid scientific basis for a health-based standard and NRC's implementing regulations. We believe such basis is essential, support its development, and will participate in this effort to the fullest extent appropriate.