

May 6, 1996

Mr. Ronald A. Milner, Director  
for Program Management and Integration  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy, RW 30  
1000 Independence Avenue, S.W.  
Washington, D.C. 20585

SUBJECT: MINUTES OF THE JANUARY 19, 1996, QUARTERLY MANAGEMENT MEETING

Dear Mr. Milner:

Enclosed are the minutes of the January 19, 1996, quarterly management meeting between the staff of the U. S. Nuclear Regulatory Commission and representatives of the U.S. Department of Energy (DOE) which was held at DOE headquarters in Washington, D.C. The meeting was also attended by representatives of Nye County, Nevada, Clark County, Nevada, and the United States Nuclear Waste Technical Review Board.

If you have any questions regarding this letter, please contact Sandra L. Wastler of my staff. Ms. Wastler can be reached at (301) 415-6724.

Sincerely,

[Original signed by:]

John H. Austin, Chief  
Performance Assessment and HLW  
Integration Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

cc: See attached list

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LIST FOR LETTER TO R. MILNER DATED May 6, 1996

- cc:
- R. Loux, State of Nevada
  - B. Price, Nevada Legislative Committee
  - J. Meder, Nevada Legislative Counsel Bureau
  - W. Barnes, YMPO
  - C. Einberg, DOE/Washington, DC
  - M. Murphy, Nye County, NV
  - M. Baughman, Lincoln County, NV
  - D. Bechtel, Clark County, NV
  - D. Weigel, GAO
  - P. Niedzielski-Eichner, Nye County, NV
  - B. Mettam, Inyo County, CA
  - V. Poe, Mineral County, NV
  - W. Cameron, White Pine County, NV
  - R. Williams, Lander County, NV
  - L. Fiorenzi, Eureka County, NV
  - J. Hoffman, Esmeralda County, NV
  - C. Schank, Churchill County, NV
  - L. Bradshaw, Nye County, NV
  - W. Barnard, NWTRB
  - R. Holden, NCAI
  - A. Melendez, NIEC
  - S. Brocoum, YMPO
  - R. Arnold, Pahrump, NV
  - M. Stellavato, Nye County, NV
  - J. Lyznicki, AMA

*Rec'd with Kelly 5/6/96*  
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**NRC/DOE MANAGEMENT MEETING AGENDA**  
January 19, 1996

11:30 EST

- **OPENING REMARKS** ALL
- **PROGRAM STATUS - FY96** NRC/DOE
  - Commission Briefing-Heads up for the January DOE briefing to the Commission NRC/DOE
  - Management overview of budget and program status/ legislative update DOE
  - Status of layoffs and programmatic impacts DOE
  - Approach to Repository Licensing DOE
  - NRC's role in the DOE viability assessment
  - Update on NRC interactions with EPA on development of standard NRC
  - Management Meetings as interactions NRC
- **OPEN ISSUES FROM THE KTI TECHNICAL EXCHANGE** ALL
  - Discuss agreement on key issues
  - Status of Tectonics Program (Tim Sullivan) DOE
  - Prelicensing approach for issue resolution NRC
- **OPEN ITEMS FROM PREVIOUS MANAGEMENT MEETINGS** ALL
  - Revision to Procedural Agreement
  - Verification/Materials Control and Accountability DOE
- **STATUS OF SUBMITTALS AND SCHEDULE FOR PROGRAM DOCUMENTS** DOE
- **CLOSING REMARKS** ALL

5:00 EST Adjourn

Attachment 1

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MINUTES  
U.S. NUCLEAR REGULATORY COMMISSION/U.S. DEPARTMENT OF ENERGY  
QUARTERLY MANAGEMENT MEETING

JANUARY 19, 1996

On January 19, 1996, staff from the U.S. Nuclear Regulatory Commission, Division of Waste Management met with representatives of the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM) for a quarterly management meeting. The meeting was held at DOE headquarters in Washington, D.C. with a video conference connection to the Yucca Mountain Site Characterization Office in Las Vegas, Nevada. Other attendees represented the State of Nevada; Nye County, Nevada; Clark, County, Nevada; the United States Nuclear Waste Technical Review Board; the Center for Nuclear Waste Regulatory Analysis and DOE contractors. Attachment 1 provides the meeting agenda and Attachment 2 lists the attendees.

**Opening Remarks:**

The meeting was opened with comments by Margaret Federline, Acting Director, Division of Waste Management, U.S. Nuclear Regulatory Commission. The NRC acknowledged the difficulty DOE faces with scaling back site characterization scientific programs given budget reductions. She explained that the NRC is experiencing a similar situation and, therefore, is sensitive to current budget constraints. In that regard the NRC streamlined program is focusing on issue resolution. NRC's mission remains, however, the protection of public health and safety and the environment which is ultimately carried out through licensing of the repository. Additional opening remarks by Lake Barrett agreed that the focus of both NRC and DOE programs was safety.

**Program Status:**

- o Commission Briefing - Heads up for the January DOE briefing to the Commission

DOE indicated that Dr. Dreyfus's presentation to the Commission on January 30, 1996 would be similar to that presented to the Technical Review Board (See attachment 3). However, no final decision on the presentation had been made at the time of the meeting.

o Management overview of budget and program status/legislative update

DOE indicated that legislative action currently resides with Congress, therefore, DOE was waiting for information.

o Status of layoffs and programmatic impacts

DOE indicated that it has released approximately 1000 people to date as a result of the current budget constraints. At the present time, DOE's program is focused on a viability assessment in 1998, which includes the following critical emphases: Tunnel Boring Machine progress and underground characterization, Heater Alcove, and core science.

o Approach to Repository Licensing

Dr. Stephan Brocoum presented DOE's approach or paradigm for repository licensing at the management meeting. The slides are provided as Attachment 4. DOE's approach has elements that the NRC finds acceptable, for example, the need to assure that all interactions between NRC and DOE have a clearly defined objective to facilitate the resolution of issues identified as potential candidates for resolution prior to each interaction. DOE is defining the technical products and deliverables to enable a viability assessment to be made in 1998. Prior to that time DOE will apprise NRC of activities and plans during meetings with the NRC's On Site Representatives and interactions with the staff and provide our technical products to NRC for their information. Any comments NRC wishes to offer on these products will be helpful if they bear upon adequacy and sufficiency for licensing. Should the viability assessment be favorable, DOE will then be in a position to prepare a License Application for construction.

NRC's mission is the protection of public health and safety and the environment which is ultimately carried out through licensing of the repository. Therefore, the decision as to the adequacy of the information used by DOE to support their demonstration of compliance with NRC's regulations is the legislative responsibility of the NRC.

o NRC's role in the DOE's viability assessment

Since NRC's mission is licensing of a repository, staff comments on the information collected by DOE will focus on the adequacy of the data collected for the viability assessment and identification of

additional information that must be provided in the future for licensing a repository. NRC offers that this information can contribute to DOE's estimation for the cost of licensing a repository.

o Management meetings as interactions

In recent discussions, DOE has indicated that they would limit interactions with NRC to 12 interactions each year, including quarterly management and exploratory studies facility meetings. NRC indicated that such a limit might negatively constrain interactions. Therefore, NRC recommended that DOE not fix the number of meetings or interactions in advance, but to remain as flexible as limited budgets allow in identifying topics for interactions that are amenable to DOE's schedule for producing the products needed for the viability assessment.

**Open Issues from the KTI Technical Exchange:**

o Discuss Agreement on Key Issues

NRC indicated that since the last management meeting several interactions had been successfully completed; including the KTI and Data Qualification Technical Exchanges and the Appendix 7 visit on Geophysics; the receipt of geophysical data is more complete and timely; and, the conference call on extreme erosion successfully aired approaches. As a result of the KTI Technical Exchange, two areas of disagreement were noted between NRC and DOE. First, DOE had indicated a preference to continue discussions only in the areas where common agreement had been reached so demonstrable progress could be shown during the pre-licensing period. NRC believes discussion in areas of non-agreement is important to at least identify areas of factual and interpretive differences and hopefully a path to resolution. By only focusing on areas of agreement in pre-licensing, the significant areas of disagreement may delay actual licensing. Second, DOE expressed a concern that decomposing issues into subissues would place DOE in the position of needing to resolve them in a manner similar to the NRC's open items on the Site Characterization Analysis, study plans, or the Site Characterization Progress Report.

o Status of Volcanism Program

Tim Sullivan presented a status of the volcanism program and a copy of his slides is provided as Attachment 5.

o Prelicensing Approach to Issue Resolution

NRC presented its proposed approach to issue resolution for DOE consideration and comment. The NRC approach for issue resolution is described in the slides and enclosures to Attachment 6. The NRC has developed interim procedures to implement the issue resolution approach, which NRC believes will be a benefit to the program. NRC suggested in their presentation that a task force (2-3 staff from each agency) be develop to review the issue resolution procedures. Although some concerns were voiced regarding the proposed approach, DOE agreed to return with a proposal to NRC for a suitable subject area to consider in a pilot program preferably before any written process or procedure was further developed. NRC indicated that an internal written procedure was needed due to the size of the program, but the procedure could be revised based on the results of the pilot program. With regard to the Procedural Agreement, DOE stated that it would consider further revisions to the Procedural Agreement beyond those provided (See attachment 6). DOE indicated that it was encouraged so long as the subject matter and timing for topics considered for issue resolution were either brought forward by DOE or that they are compatible with DOE's budget and schedule to prepare the technical products needed for the viability assessment. NRC stated that it was not the intent of NRC's program to drive DOE to collect data according to NRC's schedule. DOE will collect data and conduct analysis based on a schedule it believes is most appropriate to support its viability assessment. NRC, however, will obtain data for key technical issue resolution procedure based on DOE's schedule.

o Nye County Perspective on Key Technical Issues

Nye County made a brief presentation on its view of the priorities of the ten NRC Key Technical Issues. Attachment 7 contains the slides used by Nye County.

**Open Issues from Previous Management Meetings:**

o Revisions to the Procedural Agreement

DOE provided a draft revision to the NRC/DOE Procedural Agreement for NRC review and comment (See attachment 8). There was no discussion of this draft revision at the meeting.

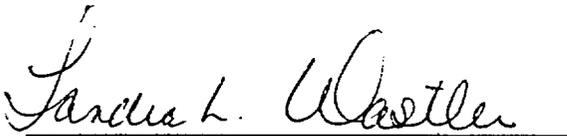
o Verification/Material Control and Accounting

**Status of Submittals and Schedule for Program Documents**

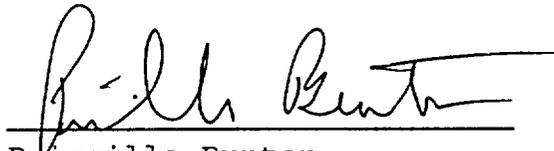
NRC and DOE exchanged information on submittals and schedules for documents. DOE presented information on their current on-going priorities and future products (Attachment 8). NRC presented information on activities since the last management meeting (Attachment 9) and documents expected to be issued within the next six months (Attachment 10).

**Closing Remarks**

As a closing remark Clark County thanked DOE for its efforts to involve the county in its meetings and videoconferences. With funding so limited, County participation will only be by telephone or videoconferences. After noting that the next bi-monthly management meeting will be at NRC headquarters in March, the meeting was adjourned.



Sandra L. Wastler  
Performance Assessment and HLW  
Integration Branch  
Division of Waste Management  
Office of Nuclear Material  
Safety and Safeguards  
U.S. Nuclear Regulatory Commission



Priscilla Bunton  
Regulatory Integration  
Division  
Office of Civilian  
Radioactive Waste Management  
U.S. Department of Energy

**NRC-DOE MANAGEMENT MEETING ATTENDANCE LIST**

January 19, 1996

DOE DC/Forestal - Las Vegas/YMSCO

Videoconference DOE Forestal

Washington, D.C.

PRINTED NAME	ORGANIZATION/COMPANY	PHONE
Priscilla Bunton	DOE	202-586-8365
Richard Goffi	Roy F. Weston	202-696-6743
Stephen Brocoum	DOE	702-295-9611
Alan Brownstein	DOE	202-586-4973
Jean Younker	DOE	702-794-7650
Jane Summerson	DOE/YMP	702-295-9610
John Fomous	Roy F. Weston	202-646-6724
Robert Gamble	M&O/WCFS	703-204-8520
John Austin	NRC/NMSS/DWM	301-415-7252
Bill Reamer	NRC	301-415-1640
David Brooks	NRC	301-415-7282
Colin Heath	M&O/TRW	703-204-8563
John L. Russell	CNRA	301-881-0281
Rick Weller	NRC	301-415-7287
Sam Rouse	DOE	202-586-6046
Jenny Weil	Exchange Monitor	202-296-2814
Steve Goldberg	DOE	202-586-5616
Steve Frishman	NV/NWPO	702-687-3744
Judy Treichel	NV/NW Task Force	702-248-1127
John O. Thoma	NRC	301-415-7293
Keith I. McConnell	NRC	301-415-7289
Michael Bell	NRC/NMSS/DWM	301-415-7286
Margaret Federline	NRC/NMSS/DWM	301-415-6708
Robert L. Johnson	NRC/NMSS/DWM	301-415-7282
Chris Einberg	DOE	202-586-8869
Andrew Campbell	NRC/ACNW	301-415-6897

**NRC-DOE MANAGEMENT MEETING ATTENDANCE LIST**

January 19, 1996

DOE DC/Forestal - Las Vegas/YMSCO

Videoconference DOE Forestal

Washington, D.C.

PRINTED NAME	ORGANIZATION/COMPANY	PHONE
Stephen H. Hanauer	DOE/RW	202-586-3547
Dave Fenster	M&O/WCFS	703-204-8866
Susan Rives	DOE	702-794-7905
Leon Reiter	NWTRB	703-236-4490
William Russo	EPA	202-233-3215
William Floyd	DOE	
S.E. LeRoy	M&O/Regulatory Office	702-295-5563
April Gil	DOE/AMSL	702-794-7622
Tim Sullivan	DOE/AMSL	702-794-7915
Martha Pendleton	M&O/WCFS	702-295-5550
Mike Lugo	M&O/TRW	702-794-7830
Stan Sims	Nye County	703-727-7727
Nick Stellavato	Nye County	702-295-6412
Chad Glenn	NRC/OR	702-388-6125
E. Von Tiesenhausen	Clark County	702-455-5175
Bill Belke	NRC/OR	702-388-6125
Ali Haghi	M&O/Regulatory Office	702-295-4873
Thomas Bjerstedt	DOE/YMSCO	702-794-7590
Jeane Saltsman	DOE	202-586-8875
Nancy J. Chappell	DOE	702-794-1928

**Remarks by  
Daniel A. Dreyfus, Director  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy**

**Program Status and Outlook**

**Presented at the  
Nuclear Waste Technical Review Board  
1996 Winter Meeting  
January 10, 1996**

Introduction

Thank you for the opportunity to speak to the Board again about the status of the program and the outlook. You will be hearing from several members of our staff on topics you have asked us to address at this meeting. Since my last meeting with you in October, there have been some important policy developments. I will use my time to address them.

Current Status

I appreciated the Board's letter to Congress last month highlighting our progress at Yucca Mountain. We are continuing to make progress despite the draconian budget cuts in the fiscal year 1996 appropriation.

The tunnel boring machine continues to operate well ahead of schedule. As of January 8, 1996, it has excavated 12,154.8 feet (3674.3 meters) into Yucca Mountain, more than 4692 feet (1430

January 10, 1996

meters) ahead of schedule. Ground conditions at the repository level have been good in recent months. Our hypothesis that little or no water is moving at the proposed repository horizon has been strengthened. Direct observations at the repository horizon have not revealed any potential disqualifying conditions. We have reached the planned location of the access point for the underground thermal test alcove and preparations are being made to commence the tests later this year. The thermal testing alcove design and the planned tests will be discussed later today.

Later this month, we anticipate that the tunnel boring machine will also reach the first planned access point to the Ghost Dance Fault. I expect important results from the exploration of the fault at repository depths.

### Program Outlook

When I spoke to you in October, we were operating under a continuing resolution that limited the program to \$400 million. We had taken action in September 1995 in anticipation of reduced funding, to eliminate approximately 875 contractor positions, primarily at the Yucca Mountain Project. These reductions affected the program's management and operating contractor and its teammates, the US Geological Survey and other program participants.

Shortly after your October meeting, the Conference committee adopted the Senate's recommendation that \$400 million be made available to the program in fiscal year 1996.

January 10, 1996

However, the Conference committee inserted language in the Appropriations Bill that stated that \$85 million of the funds appropriated shall be available only for an interim storage facility and only upon the enactment of specific statutory authority. This language effectively left the program with \$315 million to conduct program activities in fiscal year 1996.

In managing this additional 20 percent cut, we have tried to avoid further impacts on the Yucca Mountain Project. An additional 200 positions in the areas of quality assurance, program integration, program management and waste acceptance were eliminated. We terminated most of our waste acceptance, canister development, and transportation work. We will stop work on the multi-purpose canister system after the design phase is completed in the spring of 1996.

Development and certification of legal-weight truck casks for transportation of spent fuel will cease. Our cooperative agreements will be funded at substantially reduced levels.

The Conference Report directed that the repository program be reduced to focus on the core scientific activities and recognized that preparation and submittal of a license application would be deferred. As a result, of the reduced funding, our program target dates for constructing the repository and emplacing waste also have been indefinitely deferred.

As Congress directed, and as I proposed at your October meeting, we will concentrate our work on the unanswered technical questions regarding the conceptual design of the repository and its expected performance. The objectives will be to conclude whether the technologies are in hand to

construct a repository at the Yucca Mountain site and to evaluate its probable performance based upon the wealth of data we already have, or will have by 1998.

We have defined a new milestone for the Yucca Mountain Project in the form of specific work products that will contribute to a "viability assessment," which will be completed in 1998. As I described to you last October, the specific work products are:

- First, more specific design work on the critical elements of the repository and the waste package. Our plan for fiscal year 1996 is to document the current conceptual level of detail for the repository and waste package design. For the viability assessment, only those aspects of the repository and waste package design that are critical to performance, cost, and technical feasibility will be advanced beyond the conceptual stage.
- Second, a total system performance assessment, based upon this design concept and the characterization data available to us which will describe the probable behavior of the repository.
- Third, a plan and cost estimate for the remaining work required to complete a license application.
- And finally, an estimate of the costs to construct and operate the repository.

This viability assessment is not the same as the technical site suitability evaluation contemplated in the previous Program Approach. The viability assessment is intended to clarify the most uncertain aspects of geologic disposal at Yucca Mountain. The components of the assessment will make important contributions toward the development of a Secretarial recommendation to the President and preparation of a license application to the Nuclear Regulatory Commission; but they will not be sufficient for either of these formal actions.

Although repository licensing activities are indefinitely deferred because of the 1996 appropriation, the long-range goal of submitting a successful license application to the Nuclear Regulatory Commission remains central to the Program's mission. We believe that the program should include a plan and target date for the submittal of a license application. It is apparent from recent developments, however, that any such plan that depends upon funding levels beyond reasonable expectations would constitute a *de facto* decision to abandon the repository initiative prior to the license application.

### Prospects for Licensing

As you may recall, the new Program Approach we adopted in fiscal year 1995 reduced the projected cost of licensing the Yucca Mountain Project by about one billion dollars. The program plan we were pursuing in fiscal year 1995, however, still contemplated the expenditure of an additional \$3.2 billion on Yucca Mountain from fiscal year 1996 through the license application in

2001. We are now expecting to spend about \$1 billion through fiscal year 1998, which will contribute to the work needed for an application.

The implication of these numbers is that, based upon the 1995 program approach, the completion of a license application would entail an additional \$2.5 billion of expenditures after 1998, if the cost of extending the schedule is considered. It is clear to me that the Congress will be reluctant to provide those resources, even if the outlook from the viability assessment is promising.

Several years ago Chairman Cantlon noted to the Nuclear Regulatory Commission that the repository program's premature focus on demonstrating compliance with the details of the regulations contributed to the program's excessive cost and schedule. This is one aspect of the problem. It should be possible to move directly and efficiently from the viability assessment to a license application, if we find that a repository at Yucca Mountain is indeed viable. The objective should be to design a repository that is compatible with the geologic setting and to develop a safety case to support a proposal to construct that repository. The licensing process should then focus on examining the safety case to determine if public health and safety and the environment are adequately protected.

I believe that it is both possible and necessary to revisit the regulatory basis that has given rise to our earlier work plans. Most of the scientific factors central to those work plans have, or will have, been addressed by 1998. Testing related to long term performance can be done through the

performance confirmation program during construction and operations prior to closure of the repository. Much of the subsequent cost is associated with the documentation and presentation and defense of the results. In my view, that cost can be significantly reduced if the focus of the presentation and the licensing review is on the predictive performance of the repository and on the safety case made for a specific repository design, rather than on a comprehensive discourse on site characterization.

In the former case, those factors that are critical to the waste isolation strategy and to the other vital engineering, safety, and environmental considerations, such as criticality, will be thoroughly presented and supported. Those factors that prove to be less relevant can be bounded and put in perspective with still rigorous but much less elegant trappings for documentation and review.

If this approach retains the essential requirements of a licensing process that concentrates on the adequacy of a specific proposed facility, I believe that we can aspire to reestablish a target date for a license application soon after the year 2000 at a sustainable level of funding. I believe this is the only way the program can command the resources needed to retain geologic disposal as a national strategy.

We intend to explore this approach and we are considering the revisions to our regulations that would be needed to clarify our intentions. We intend to keep the Nuclear Regulatory

Commission, the Environmental Protection Agency, our other regulators, the Congress, and stakeholders, and, of course, the Board advised of our evaluation.

### Beyond Fiscal Year 1996

The Administration remains committed to geologic disposal. The new targets for a repository that are practicable will depend upon the policy and regulatory framework within which the program will operate and upon our expectations for future funding. In planning this program, however, given the current environment, I am reluctant to assume that we will receive future funding levels that are very much greater than the current fiscal year.

Meanwhile, the Congress is still considering bills that would initiate an immediate start on interim storage and potentially free the \$85 million frozen by the fiscal year 1996 Appropriation Act. The House has not yet brought H.R. 1020, a comprehensive authorization bill, to the floor. S. 1271, a comparable bill, has been introduced in the Senate and a hearing was held in December.

Testifying at that hearing, Secretary O'Leary expressed the Administration's opposition to the Senate measure. The Administration is concerned that an immediate interim storage initiative, in the face of probable budgetary constraints, would place the repository program in jeopardy and reduce the policy commitment to the long term strategy of geologic disposal. The President has also expressed his opposition to the peremptory designation of Nevada as a site for an interim

storage facility. The Secretary proposed that the following principles guide consideration of legislation:

- **First, we must maintain the momentum which has been attained in the repository investigation. This can be done by funding the program at a level that is adequate to resolve the major remaining technical uncertainties to support a viability assessment by 1998. Such funding will allow us to make an assessment of the viability of licensing and constructing a repository at the Yucca Mountain site. If Yucca Mountain is a viable site for a repository, we would expect to prepare the environmental impact statement, a formal recommendation to the President, and license application.**
- **Second, we must revise the regulatory structure that guides the licensing of the repository. Such revisions should reflect the experience of the past decade, the policy changes already adopted, and the realities of budgetary constraints while maintaining necessary health and safety constraints.**
- **Third, the selection of a site for interim storage should be based upon objective criteria. The consideration of Nevada as a candidate site, or the determination of the need to consider other candidate sites should await the results of the 1998 viability assessment of the Yucca Mountain repository.**

- Fourth, the program should be authorized and directed to initiate generic interim storage activities using the \$85 million already appropriated and reserved for that purpose. This would include requests for proposals to develop the nationwide transportation effort needed to transfer spent nuclear fuel from reactors to an interim storage facility, wherever it is located. The generic activities could also include non-site-specific engineering work that would assist in beginning the licensing process.
- And most importantly, we must maintain standards and procedures that will assure that the health and safety of the public and workers and the environment will be protected.

### Closing

Certainly the past year has been an eventful one for this program. As I have often found to be the situation, a great deal of policy has already been made by indirection, without the enactment of a policy measure by the Congress and a Presidential approval. The FY 1996 budget cycle and the debate in the Congress has already set some new constraints on the Program. The responses we have already made will shape its future.

If we receive even modest future funding, I am confident that the direction we are now taking will, by 1998, answer the important outstanding technical questions regarding the feasibility of building the repository. If there is an aspect of the geologic setting that seriously contradicts our

hypotheses and that will require substantial additional data collection, analyses, and modeling, we are likely to discover it by 1998. If there are shortcomings in the available technologies or in our engineering ability to implement the design concepts they will have become evident.

As the results of that work, society's ability to evaluate the feasibility of geologic disposal should become much less philosophical and much more practical. It will become very clear how the geologic disposal option compares to alternatives. That result is worth the resources needed and the only responsible course of action.

Thank you for your attention, and we look forward to a productive meeting with the Board.

# YUCCA MOUNTAIN PROJECT

Studies

## Repository Licensing Approach

Presented to:  
DOE/NRC Management Meeting

Presented by:  
Dr. Stephan J. Brocoum  
Assistant Manager, Suitability and Licensing  
Yucca Mountain Site Characterization Office

January 19, 1996



U.S. Department of Energy  
Office of Civilian Radioactive  
Waste Management

# Outline

- **Background**
- **Licensing Approach**
- **Current Situation**
- **Viability Assessment**
- **Near-term interactions with NRC**
- **Summary**

# Background

- **Nuclear Waste Policy Act (NWPA) required NRC to establish criteria for approving or disapproving construction, operation, and closure of repositories**
  - **Required NRC to comment on DOE's Site Characterization Plan**
  - **Requires DOE to report to NRC semi-annually on the progress of site characterization**
  - **Requires NRC to provide preliminary comments on the sufficiency of site characterization and design information for inclusion in a license application prior to site recommendation by DOE**
  - **Requires NRC to act on DOE's license application and to approve or disapprove construction within 3 years (1 year extension, if justified)**
  - **Requires NRC to adopt DOE's EIS to the extent practicable**

# Background

(Continued)

- **The "reactor model," leads to expectations that detailed regulatory requirements and guidance are necessary and can be developed now**
  - **". . . unlike a reactor, which is largely a manufactured product, the predominant aspects of repository design and its relationship to the geologic setting cannot be determined in advance of information gained from site characterization, testing, and analyses" \***
- **". . . development of a first-of-a-kind geologic repository cannot be undertaken in the same manner as the siting and construction of a nuclear reactor" \***
  - **The regulatory framework for nuclear reactors is based on over 40 years of operational experience and the precedents of over 100 licensing proceedings**
  - **We do not have, nor can we reasonably expect to develop, the precedents to establish such a framework for a repository**

*\*OCRWM Director, Statement of Record for the Commission, 6/9/95*

# Licensing Approach

- **It is incumbent upon us to define our program and to develop the information we believe is needed to address issues in a manner that meets rational cost and schedule expectations**
  - **We will describe what can be done within the constraints imposed on us and then decide if it is good enough**
- **The repository evaluation and design process is heuristic**
  - **Knowledge and understanding will be developed over time and cannot be specified in detail in advance**
  - **We are not yet at the point where we can confidently set forth a credible compliance argument**

# Licensing Approach

(Continued)

- **In our license application, we will demonstrate, consistent with the NRC's reasonable assurance standard, that our repository design and its geologic setting will protect public health and safety and the environment**
- **NRC, as the regulator, should provide feedback to DOE in a timely manner regarding the regulatory sufficiency of information we provide in the context of NRC licensing requirements**

# Licensing Approach

(Continued)

- **NRC comments and actions should not create expectations regarding the level of proof required for licensing that cannot be satisfied**
  - **This is a first-of-a-kind facility**
  - **Uncertainties will be associated with demonstrating waste isolation performance over thousands of years**
  - **“For such long-term objectives and criteria, what is required is reasonable assurance, making allowance for the time period, hazards, and uncertainties involved, that the outcome will be in conformance with those objectives and criteria.” [10 CFR 60.101(a)(2)]**

# Current Situation

- **Message from Congress**
  - The OCRWM Program will not be funded at the level assumed in the Program Plan
  - For FY 1996:           630M vs 315 M (Program)  
                                  474M vs 250M (YMP)
- **Funding targets for Yucca Mountain will not support concurrent development of suitability, NEPA, and licensing products**
- **Yucca Mountain Project has changed its focus to support a viability assessment by 1999**

# Viability Assessment

- **Viability assessment mission: Complete a repository disposal system design sufficient for evaluation of performance and cost of development**
- **Key elements of viability assessment:**
  - **Aspects of repository and waste package design critical to performance, cost, and technical feasibility advanced beyond conceptual design**
  - **Total system performance assessment based on this design concept and site data available**
  - **Plan and cost estimate to complete a license application**
  - **MGDS Total System Life Cycle Cost**

# **Viability Assessment**

(Continued)

- **DOE will ensure that actions do not preclude ability to prepare an adequate license application**
- **The long-range plan of submitting a successful license application to NRC remains critical to the Program's mission**
- **NRC's role: Provide feedback regarding regulatory sufficiency of the technical products supporting the viability assessment**
  - **Technical synthesis reports**
  - **Design products**
  - **TSPA**

# **Viability Assessment**

(Continued)

- **Under the current Program direction and funding, DOE will be unable to provide:**
  - **Additional revisions to the LA AO beyond Revision 0**
  - **Additional topical report submittals**
  - **Additional submittals to obtain SCA open item closure**
  - **High level of support for Vertical Slice activities, even for those items we recognize as important**

# **Viability Assessment**

(Continued)

- **DOE will not develop:**
  - **Technical Basis Reports**
  - **Guideline Compliance Assessments/Higher-Level Findings**
  - **Technical Site Suitability Evaluation**

# Near-Term Interactions with NRC

- **DOE will provide technical products to the NRC as they are developed**
- **With limited resources, we need to ensure that:**
  - **Future interactions are focused on resolving issues**
  - **We concentrate on those issues that are most important**
  - **We can demonstrate progress is being made**

# Near-Term Interactions with NRC

(Continued)

- **In FY 1996, DOE will:**
  - **Produce Semi-annual Site Characterization Progress Reports**
  - **Submit Chapter 10 of the LA AO for NRC review (January 1996)**
  - **Submit a response to NRC staff questions on Seismic Topical Report I (January 1996)**
  - **Submit a response to NRC comments on Disposal Criticality Topical Report Annotated Outline (January 1996)**
  - **Submit a supplemental response for the Erosion Topical Report regarding Be-10 sample dating (April 1996)**
  - **Conduct quarterly DOE-NRC Technical Meetings on ESF, Management Meetings, and a limited number of focused Technical Exchanges**

# Summary

- **The Yucca Mountain Project is now focused on supporting a viability assessment**
- **Activities supporting LA and EIS are deferred**
- **Because interactions with NRC will be minimal, interactions need to be focused on resolving important issues**
- **Therefore, DOE will have to make sure we focus our collective resources on a consistent set of priorities**

Draft 01/17/96

1  
2 **PROCEDURAL AGREEMENT BETWEEN THE NUCLEAR REGULATORY COMMISSION AND THE U.S.**  
3 **DEPARTMENT OF ENERGY IDENTIFYING GUIDING PRINCIPLES FOR INTERFACE DURING**  
4 **GEOLOGIC SITE INVESTIGATION AND SITE CHARACTERIZATION**  
5

6 This Procedural Agreement outlines procedures for staff consultation and  
7 exchange of information which the Nuclear Regulatory Commission (NRC) and the  
8 U.S. Department of Energy (DOE) and its designated contractors will observe in  
9 connection with the characterization of sites for a geologic repository under  
10 the Nuclear Waste Policy Act of 1982, as amended (NWPA). The purpose of these  
11 procedures is to assure that an information flow is maintained between the two  
12 agencies which will facilitate the accomplishment by each agency of its  
13 responsibilities relative to site investigation and characterization under the  
14 NWPA. The agreement is to assure that NRC receives adequate information on a  
15 timely basis to enable NRC to review, evaluate, and comment on those DOE  
16 activities of regulatory interest in accordance with DOE's project decision  
17 schedule and thereby facilitate early identification of potential licensing  
18 issues for timely resolution. The agreement is to assure that DOE has prompt  
19 access to NRC for discussions and explanations relative to the intent, meaning  
20 and purpose of NRC comments and evaluations of DOE activities and so that DOE  
21 can be aware, on a current basis, of the status of NRC actions relative to DOE  
22 activities.  
23

24 This Procedural Agreement shall be subject to the provisions of any project  
25 decision schedule, or any schedules specifically related thereto, that may  
26 hereafter be established by DOE, and any regulations that may hereafter be  
27 adopted by NRC, pursuant to law. In particular, nothing herein shall be  
28 construed to limit the authority of the Commission to require the submission  
29 of information as part of a general plan for site characterization activities  
30 to be conducted at a candidate site or the submission of reports on the nature  
31 and extent of site characterization activities at a candidate site and the  
32 information developed from such activities. In accordance with 10 CFR  
33 60.18(1), no action taken pursuant to this agreement shall be deemed to  
34 constitute a commitment to issue any authorization or license, or in any way  
35 affect the authority of the Commission, its officers, and staff, in any  
36 licensing proceeding.  
37

38 **1. NRC On-Site Representatives**  
39

40 As early as practicable following area phase field work, NRC on-site  
41 representatives will be stationed at any site undergoing investigation  
42 principally to serve as a point of prompt informational exchange and  
43 consultation and to preliminarily identify concerns about such  
44 investigations relating to potential licensing issues.  
45

46 **2. Interactions**  
47

48 From the time this agreement is entered into, and for so long as site  
49 characterization activities are being planned or are in progress, DOE and  
50 NRC will schedule and hold interactions periodically as provided in this  
51 section. Interactions are classified as technical meetings, technical

- 103 d. Licensing and management meetings will be held whenever necessary, but  
104 at least semi-annually, to review the summary results of the technical  
105 interactions; to review the status of outstanding concerns and issues;  
106 to discuss plans for resolution of outstanding items and issues; to  
107 update the schedule of technical meetings and other actions needed for  
108 staff resolution of open items regarding site characterization  
109 programs; and to consult on what guidance is advisable and necessary  
110 for NRC to prepare. Unresolved management issues will be promptly  
111 elevated to upper management for resolution. Licensing and management  
112 meetings are conducted to discuss major nontechnical issues related to  
113 program policy, schedules, scope, and major commitment of resources.  
114 ~~Any commitments that are made during the meeting will be documented~~  
115 ~~into formal correspondence by the party(ies) making the commitments.~~  
116 Any commitments that are made will be documented in the approved  
117 minutes of the meeting.  
118
- 119 ~~e. Early interactions will be scheduled as needed to discuss written NRC~~  
120 ~~comments on DOE documents such as Study Plans, DOE's semi-annual~~  
121 ~~progress reports, and technical reports to foster a mutual~~  
122 ~~understanding of comments and the information or activities needed for~~  
123 ~~staff resolution of the comments.~~  
124
- 125 e. Closed management meetings may be conducted in accordance with the  
126 "Commission Policy Statement on Staff Meetings Open to the Public,"  
127 (59 FR 48340) They may be proposed by either agency and are intended  
128 for discussions of budget, schedule, or resource loading issues that  
129 could affect their operations or planning assumptions. They will be  
130 announced.  
131
- 132 ~~f. In formulating plans for activities which DOE will undertake to~~  
133 ~~develop information needed for staff resolution of potential licensing~~  
134 ~~issues, DOE will meet with NRC to provide an overview of the plans so~~  
135 ~~that NRC can comment on their sufficiency. These discussions will be~~  
136 ~~held sufficiently early so that any changes that NRC comments may~~  
137 ~~entail can be duly considered by DOE in a manner not to delay DOE~~  
138 ~~activities.~~  
139
- 140 f. Interactions between NRC and DOE offices other than the Office of  
141 Civilian Radioactive Waste Management concerning matters relevant to  
142 the licensing of sites for a geologic repository and/or for interim  
143 storage facilities under the NWRPA shall be conducted in accordance  
144 with the provisions of this agreement. Such interactions will be  
145 coordinated for DOE by the Office of Civilian Radioactive Waste  
146 Management.  
147
- 148 g. In-field verifications will be conducted by NRC to:  
149  
150 TEXT TO BE PROVIDED BY NRC.  
151
- 152 h. Informal technical discussions among NRC and DOE technical staff  
153 personnel may be conducted in accordance with the following

205 5. Agency Use of Information

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It is understood that information made available to either agency under this agreement may be used at that agency's option in carrying out its responsibilities.

211 6. Project Specific Agreements

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Specific agreements will be developed for each project and site under investigation.

216 7. Consultations

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Nothing in this agreement shall be construed as limiting forms of informal consultation not mentioned in this agreement (for example, telephone conversation or exchanges of reports). These other consultations will be documented in a timely manner.

223 8. QA Audits and Surveillances

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~~NRC staff, and consistent with security access and safety rules, as well as~~ representatives from affected units of State, local governments, and Indian Tribes, will be permitted, consistent with security access and safety rules, to observe DOE QA audits and surveillances. In addition, the NRC may perform audits of DOE and participant QA programs.

232  
233 Signature Blocks

234  
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236  
237  
238  
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241 \_\_\_\_\_  
242 Dr. Daniel A. Dreyfus, Director  
243 Office of Civilian Radioactive  
244 Waste Management  
245 U.S. Department of Energy

241 \_\_\_\_\_  
242 Carl J. Paperiello, Director  
243 Office of Nuclear Material Safety  
244 and Safeguards  
245 U.S. Nuclear Regulatory Commission

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Date: \_\_\_\_\_

Date: \_\_\_\_\_

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252

253

Appendix 1

254

255

Informal Communications: Points of Contact

256

257

258

TO BE DEVELOPED

259 AGREEMENT BETWEEN THE U.S. DEPARTMENT OF ENERGY OFFICE OF CIVILIAN RADIOACTIVE  
260 WASTE MANAGEMENT AND THE NUCLEAR REGULATORY COMMISSION DIVISION OF HIGH-LEVEL  
261 WASTE MANAGEMENT DURING SITE CHARACTERIZATION PROGRAMS AND PRIOR TO THE  
262 SUBMITTAL OF AN APPLICATION FOR AUTHORIZATION TO CONSTRUCT A REPOSITORY  
263  
264

265 This agreement implements, on a repository project-specific basis, the  
266 "Procedural Agreement Between the Nuclear Regulatory Commission and the U.S.  
267 Department of Energy Identifying Guiding Principles for Interface During  
268 Geologic Site Investigation and Site Characterization" (hereafter referred to  
269 as the Procedural Agreement) made between the U.S. Nuclear Regulatory  
270 Commission (NRC) and the U.S. Department of Energy (DOE), and supersedes all  
271 previous project-specific agreement(s) between NRC's Division of ~~High Level~~  
272 Waste Management (~~HLW~~W) and DOE's Office of Civilian Radioactive Waste  
273 Management (OCRWM) regarding information exchange and consultation for  
274 potential repository sites. This agreement implements Section 6 of the  
275 Procedural Agreement which requires that project-specific agreements, tailored  
276 to the specific project and reflecting differences in sites and project  
277 organizations be negotiated to implement the principles established in the  
278 Procedural Agreement. Because this repository project level agreement is  
279 drawn to implement the principles set forth in the Procedural Agreement,  
280 appendices detailing repository project-specific items will be developed as  
281 necessary. These appendices will be updated, added to, or changed as  
282 required. Nothing in this agreement shall be construed either to modify the  
283 Procedural Agreement in any way or to confer rights on any party other than  
284 the parties to these agreements.  
285

286 1. NRC On-Site Representatives (ORs)  
287

288 At such time as the NRC ORs are stationed at the site, they are to be  
289 provided with office space that is near the DOE project office and site  
290 activities. Where such office space can be provided, DOE is to provide  
291 such space near the site activities and the NRC is to provide space that  
292 can be visited by the public.  
293

294 The NRC OR shall be afforded access to personnel, project records and  
295 facilities at the respective site, research facilities and other  
296 contractor and subcontractor areas. Access will be subject to  
297 applicable requirements for proper identification and compliance with  
298 applicable access control measures for security, radiological  
299 protection and personnel safety. DOE will identify, at the time it  
300 makes information available to NRC, any records which it considers  
301 exempt from public disclosure under the Freedom of Information Act.  
302 NRC, following consultation with DOE, will withhold such information  
303 from public disclosure to the extent stated in 10 CFR Part 9. Records  
304 as used above are defined as all records that would be generally  
305 relevant to a potential licensing decision by the Commission.  
306 Included in this category are records kept by DOE and DOE contractors  
307 and subcontractors accessible to DOE.  
308

309 Project-specific conditions are discussed in the appendices.

361 minutes should be the list of attendees. In the body, the minutes  
362 should describe the presentations made and the discussions held during  
363 the interaction. The report will document any commitments that are  
364 made by either party at the meeting. Information presented in the  
365 minutes will only report the events that took place during the  
366 interaction. Copies of presentation materials should be included as  
367 attachments to the minutes. Copies of materials such as preliminary  
368 data, maps, logs, and laboratory books discussed at site visits are  
369 not prepared as documentation of the interaction. Documentation may  
370 be provided, upon request, to a participant on a site visit in  
371 accordance with Section 3a of the Procedural Agreement. Following  
372 preparation of the minutes and an informal review within DOE and NRC  
373 to assure accuracy, NRC and DOE lead representatives will sign the  
374 minutes. An opportunity will be provided for representatives from the  
375 State, affected units of local government, and affected Indian Tribes  
376 to include in the summary any positions they had taken in the  
377 interaction. DOE and NRC will issue interaction reports within 30  
378 days after the interaction. If a jointly approved NRC/DOE interaction  
379 report is not issued within 30 days, NRC and DOE may elect to issue an  
380 independent record of events of the interaction. Interaction reports  
381 will be provided to the State, affected units of local government,  
382 affected Indian Tribes, and the NRC and DOE PDRs. NRC will provide  
383 the joint reports. If DOE and NRC issue separate reports, each agency  
384 will be responsible for providing only its own report.  
385

386 3. Timely Release of Information

387  
388 A. Report Inventory

389 Each agency will develop as soon as practicable and thereafter  
390 maintain and exchange an inventory of reports, plans, procedures, and  
391 technical positions (products) both completed and in process. This  
392 inventory will include descriptions of product scope and purpose as  
393 well as the scheduled dates for completion of draft and final  
394 products. The inventories will be updated and exchanged at least  
395 semi-annually. This will allow each agency to request products from  
396 the other.  
397

398  
399 B. Points of Contact

400 Respective points of contact for DOE and NRC are defined in  
401 appropriate appendices. Either agency may change their points of  
402 contact unilaterally with prior prompt notification to the other party.  
403 Other organizations within NRC working on the high-level waste  
404 repository will use these designated points of contact within NRC's  
405 HLW for interactions with DOE's OCRWM. Details of the information  
406 exchange will be determined by DOE requirements and defined in  
407 appendices as appropriate.  
408

409  
410 Telephonic communications covered under Item c in Appendix 1 are  
411 intended solely for the exchange of information and ideas by NRC and

463 ~~bases become available on line to the participants, the NRC will be~~  
464 ~~allowed on line, read only\* computer access to these systems provided~~  
465 ~~that all questions of security, and comparable access to the State~~  
466 ~~and the public can be resolved in a manner that protects the integrity~~  
467 ~~of the system.~~

468  
469 ~~Because of the preliminary nature of these data, all such data placed~~  
470 ~~in the PDR will carry the following caveat: "QA checks on data~~  
471 ~~contained here have only been performed to determine that the data~~  
472 ~~have been obtained and documented properly. DOE cautions that any~~  
473 ~~information is incomplete and preliminary. This information is~~  
474 ~~subject to change as a more representative data base is accumulated.~~  
475 ~~Any analyses and interpretations should be made accordingly."~~

476  
477 Because of the evolving nature of site characteristics data, the  
478 following caveat will accompany all data provided by the Project  
479 Office: "CAUTION, this is the best available data to date, however,  
480 interpretations based on these data are subject to change as more data  
481 is acquired or developed."

482  
483 NRC will also notify DOE of NRC's schedule (and those of its  
484 contractors) of planned field and laboratory testing conducted at or  
485 with samples from the potential repository site and will establish,  
486 maintain, update, and provide to DOE an inventory of, and access to,  
487 data as described in the preceding paragraphs.

488  
489 Upon request by NRC or DOE, either party will provide the other a  
490 controlled copy(ies) of any specially developed or modified computer  
491 programs (including programming within commercially available software  
492 and associated linking programs or programs passing data) used in  
493 conducting site characterization analyses, performance  
494 assessments, design analyses, and design drawings, subject to  
495 resolution of proprietary, privileged, or licensing concerns. Such  
496 programs will be available to NRC or DOE upon citation in a  
497 programmatic document (i.e., documents published by either party).  
498 Each party must maintain this software under its own appropriate  
499 software configuration management controls. Such programs will be  
500 provided in a mutually agreed upon electronic medium. Each party will  
501 provide relevant specifications for use of requested software;  
502 however, each party will be responsible for acquisition and  
503 maintenance of the commercially available software and/or hardware  
504 needed to run the programs requested. Each party will pay for any  
505 respective licensing and maintenance costs associated with such  
506 hardware and/or software.

---

<sup>1</sup> "read-only" means that the data file can be read, copied, and down-  
loaded (i.e., the copied portion of the file can be electronically transmitted  
to another file for the reader's use), but that no manipulation or changes to  
the original master data file can be performed by the reader.



Appendix 1

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE (YMSCPO)

Points of contact between NRC and DOE projects concerning Yucca Mountain site characterization.

- a. 10 CFR Part 60 Level Communications (e.g., Site Characterization Plan (SCP); Site Characterization Analysis; SCP Progress Reports, ~~comments on these documents~~; Annotated Outline for a License Application.

Director, NRC Office of Nuclear Material Safety and Safeguards to and from Director, DOE Office of Civilian Radioactive Waste Management

DOE

NRC

Director  
Office of Civilian  
Radioactive Waste  
Management  
U.S. Department of Energy  
Washington, D.C. 20585

Director  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Mail Stop 6-E-6  
Washington, D.C. 20555

- b. Formal Communications on Waste Acceptance, Storage, and Transportation Issues and Policy Issues Affecting Yucca Mountain Site Characterization

DOE

NRC

Director  
Program Management and  
Integration  
Office of Civilian Radioactive  
Waste Management  
U.S. Department of Energy  
Washington, D.C. 20585

Branch Chief  
High-Level Waste and Uranium  
Recovery Projects Branch  
Division of Waste Management  
U.S. Nuclear Regulatory Commission  
Mail Stop 4-H-3  
Washington, D.C. 20555

- bc. Other Formal Communications Specifically Related to Yucca Mountain Site Characterization

DOE YMSCO Assistant Manager for Suitability and Licensing to and from NRC Branch Chief, High-Level Waste and Uranium Recovery Projects Branch

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655

Exploratory Studies Facility	Geotechnical Engineering Section Leader or designee	<del>Chief, Exploratory Studies Facility Branch</del> <u>AMEFO Team Leader, Construction: Team Leader, ESF/SBTF/GSF</u>
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656

Geology	Geology-Geophysics Section Leader or designee	<del>Chief, Site Investigations Branch</del> <u>AMSP Team Leader, Geology</u>
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657

Hydrology	Hydrologic Transport Section Leader or designee	<del>Chief, Site Investigations Branch</del> <u>AMSP Hydrology Team Leader</u>
-----------	---	--

658

Geochemistry	Hydrologic Transport Section Leader or designee	<del>Chief, Site Investigations Branch</del> <u>AMSP Team Leader, Geochemistry</u>
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660

AREA	NRC	DOE
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661

<u>Scientific Integration</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSP Team Leader, Scientific Integration</u>
-------------------------------	---	---

662

<u>Performance Assessment</u>	<u>Repository Performance Assessment Section Leader or designee</u>	<u>AMSL Team Leader, Technical Synthesis</u>
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663

<u>Site Suitability</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Site Suitability</u>
-------------------------	---	---

664

<u>Licensing</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Licensing</u>
------------------	---	--

665  
666

<u>Information Systems/ Data Transfer</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Technical Synthesis</u>
---	---	--

667  
668

<u>Systems and Requirements</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Systems and Requirements</u>
-------------------------------------	---	---

669  
670

Acronyms:

671  
672

AMEFO - Assistant Manager for Engineering and Field Operations

673  
674

AMSL - Assistant Manager for Suitability and Licensing

675  
676  
677

AMSP - Assistant Manager for Scientific Programs

Appendix 2

ACQUISITION OF SAMPLES DURING SITE  
CHARACTERIZATION ACTIVITIES BY NRC CONTRACTORS

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689  
690 Requests for collection of samples (e.g., geologic, simulated glass, concrete,  
691 steel, water, air, plants, animals, etc.), with NRC-supplied specifications  
692 and for which a process of acquisition is not specified in a Yucca Mountain  
693 ~~Project Site Characterization Office (YMSCPO) Administrative or Branch~~  
694 ~~Technical Procedure~~, are recognized by DOE as legitimate. Upon review and  
695 acceptance of the request, DOE will arrange for NRC to receive such requested  
696 materials in response to a written request. DOE may request NRC, on a case-  
697 by-case basis, to reevaluate the amount of sample material requested in light  
698 of the needs of the site characterization program and the availability of  
699 samples. DOE will prepare NRC-specified samples for transport.

700  
701 Controlled copies of all applicable YMSCPO ~~S~~samples ~~A~~acquisition and ~~H~~handling  
702 ~~P~~procedures will be provided to the NRC's Director, Repository Licensing and  
703 Quality Assurance Project Directorate, Division of High-Level Waste Management  
704 or designee. The NRC will use these procedures to request samples from DOE,  
705 which are being obtained as part of the site characterization program.  
706

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10 the Nuclear Waste Policy Act of 1982, as amended (NWPA). The purpose of these  
11 procedures is to assure that an information flow is maintained between the two  
12 agencies which will facilitate the accomplishment by each agency of its  
13 responsibilities relative to site investigation and characterization under the  
14 NWPA. The agreement is to assure that NRC receives adequate information on a  
15 timely basis to enable NRC to review, evaluate, and comment on those DOE  
16 activities of regulatory interest in accordance with DOE's project decision  
17 schedule and thereby facilitate early identification of potential licensing  
18 issues for timely resolution. The agreement is to assure that DOE has prompt  
19 access to NRC for discussions and explanations relative to the intent, meaning  
20 and purpose of NRC comments and evaluations of DOE activities and so that DOE  
21 can be aware, on a current basis, of the status of NRC actions relative to DOE  
22 activities.  
23

24 This Procedural Agreement shall be subject to the provisions of any project  
25 decision schedule, or any schedules specifically related thereto, that may  
26 hereafter be established by DOE, and any regulations that may hereafter be  
27 adopted by NRC, pursuant to law. In particular, nothing herein shall be  
28 construed to limit the authority of the Commission to require the submission  
29 of information as part of a general plan for site characterization activities  
30 to be conducted at a candidate site or the submission of reports on the nature  
31 and extent of site characterization activities at a candidate site and the  
32 information developed from such activities. In accordance with 10 CFR  
33 60.18(1), no action taken pursuant to this agreement shall be deemed to  
34 constitute a commitment to issue any authorization or license, or in any way  
35 affect the authority of the Commission, its officers, and staff, in any  
36 licensing proceeding.  
37

38 **1. NRC On-Site Representatives**  
39

40 As early as practicable following area phase field work, NRC on-site  
41 representatives will be stationed at any site undergoing investigation  
42 principally to serve as a point of prompt informational exchange and  
43 consultation and to preliminarily identify concerns about such  
44 investigations relating to potential licensing issues.  
45

46 **2. Interactions**  
47

48 From the time this agreement is entered into, and for so long as site  
49 characterization activities are being planned or are in progress, DOE and  
50 NRC will schedule and hold interactions periodically as provided in this  
51 section. Interactions are classified as technical meetings, technical

52 exchanges, site visits, or licensing and management meetings. A written  
53 report agreed to by both DOE and NRC will be prepared for each  
54 interaction.  
55

- 56 a. Technical meetings will be held between DOE and NRC technical/  
57 licensing staff to: review and consult on interpretations of data;  
58 discuss written NRC comments on DOE documents; identify potential  
59 licensing issues; agree upon the sufficiency of available information  
60 and data; and agree upon methods and approaches for the acquisition of  
61 additional information and data as needed to facilitate NRC reviews  
62 and evaluations and for staff resolution of such potential licensing  
63 issues. Technical meetings may be a forum for the expression of  
64 technical/regulatory policy, negotiation of commitments and an  
65 agreement on the acceptability of actions on the part of both  
66 agencies. Any commitments that are made will be documented in the  
67 approved minutes of the meeting.  
68
- 69 b. Technical exchanges will be held between DOE and NRC technical/  
70 licensing staff to: discuss a specific technical and/or regulatory  
71 topic within their areas of expertise (e.g., geology, hydrology,  
72 seismology, waste package design, repository design). The primary  
73 purpose of a technical exchange is to promote a better mutual  
74 understanding of the topic prior to an officially established  
75 technical or regulatory position. For example, a discussion of the  
76 mechanism of a process, the occurrence of a particular event, or the  
77 technical aspects of regulatory interpretations is appropriate for  
78 discussion during a technical exchange. Technical exchanges will not  
79 be used as a forum to officially establish or change technical and/or  
80 regulatory positions, or extract commitments, or agree to courses of  
81 action.  
82
- 83 c. Site visits will be held between DOE and NRC technical staff to:  
84 explain technical information related to ongoing field or laboratory  
85 site characterization activities; and visit locations at the site for  
86 field briefings and discussions of preliminary data and interpretation  
87 derived from ongoing work. The primary purpose of a site visit is for  
88 both agencies to benefit from discussion of technical topics in the  
89 field. The itinerary for site visits will be developed and noticed  
90 similar to a technical exchange agenda. The documentation  
91 requirements for the proceedings of site visits are not the same as  
92 for technical exchanges, due to the formative nature of preliminary  
93 data and interpretations. Site visits will not be used as a forum to  
94 officially establish or change technical and/or regulatory positions,  
95 establish commitments, nor agree to courses of action. Proceedings  
96 covered by Appendix 7 of the "Agreement Between the U.S. Department of  
97 Energy Office of Civilian Radioactive Waste Management and the Nuclear  
98 Regulatory Commission Division of High-Level Waste Management During  
99 Site Characterization Programs and Prior to the Submittal of an  
100 Application for Authorization to Construct a Repository" (hereafter  
101 referred to as the Repository Project-Specific Agreement) do not apply  
102 to site visits.

- 103 d. Licensing and management meetings will be held whenever necessary, but  
104 at least semi-annually, to review the summary results of the technical  
105 interactions; to review the status of outstanding concerns and issues;  
106 to discuss plans for resolution of outstanding items and issues; to  
107 update the schedule of technical meetings and other actions needed for  
108 staff resolution of open items regarding site characterization  
109 programs; and to consult on what guidance is advisable and necessary  
110 for NRC to prepare. Unresolved management issues will be promptly  
111 elevated to upper management for resolution. Licensing and management  
112 meetings are conducted to discuss major nontechnical issues related to  
113 program policy, schedules, scope, and major commitment of resources.  
114 ~~Any commitments that are made during the meeting will be documented~~  
115 ~~into formal correspondence by the party(ies) making the commitments.~~  
116 Any commitments that are made will be documented in the approved  
117 minutes of the meeting.  
118
- 119 ~~e. Early interactions will be scheduled as needed to discuss written NRC~~  
120 ~~comments on DOE documents such as Study Plans, DOE's semi-annual~~  
121 ~~progress reports, and technical reports to foster a mutual~~  
122 ~~understanding of comments and the information or activities needed for~~  
123 ~~staff resolution of the comments.~~  
124
- 125 e. Closed management meetings may be conducted in accordance with the  
126 "Commission Policy Statement on Staff Meetings Open to the Public."  
127 (59 FR 48340) They may be proposed by either agency and are intended  
128 for discussions of budget, schedule, or resource loading issues that  
129 could affect their operations or planning assumptions. They will be  
130 announced.  
131
- 132 ~~f. In formulating plans for activities which DOE will undertake to~~  
133 ~~develop information needed for staff resolution of potential licensing~~  
134 ~~issues, DOE will meet with NRC to provide an overview of the plans so~~  
135 ~~that NRC can comment on their sufficiency. These discussions will be~~  
136 ~~held sufficiently early so that any changes that NRC comments may~~  
137 ~~entail can be duly considered by DOE in a manner not to delay DOE~~  
138 ~~activities.~~  
139
- 140 f. Interactions between NRC and DOE offices other than the Office of  
141 Civilian Radioactive Waste Management concerning matters relevant to  
142 the licensing of sites for a geologic repository and/or for interim  
143 storage facilities under the NHPA shall be conducted in accordance  
144 with the provisions of this agreement. Such interactions will be  
145 coordinated for DOE by the Office of Civilian Radioactive Waste  
146 Management.  
147
- 148 g. In-field verifications will be conducted by NRC to:  
149  
150 TEXT TO BE PROVIDED BY NRC.  
151
- 152 h. Informal technical discussions among NRC and DOE technical staff  
153 personnel may be conducted in accordance with the following

154 guidelines. The discussions are to be strictly technical. Initial  
155 contacts among NRC and DOE staff (and/or contractors) are to be  
156 preceded by communications between the points of contact for  
157 informal technical communications (e.g., telephone calls) listed in  
158 Appendix 1 of this Procedural Agreement (to be developed). Durings  
159 the discussions, no positions may be taken by either side; no  
160 direction of work may be provided by either side; and no  
161 modification of work is to be the immediate result of the informal  
162 technical discussions.

- 163  
164 ei. Schedules of activities pertaining to interactions will be made  
165 publicly available. Potential host States, affected units of local  
166 government, and affected Indian Tribes will be notified and invited to  
167 attend interactions covered in this section (Section 2, Interactions).  
168 The notification will be given on a timely basis by NRC 10 working  
169 days prior to the interaction, ~~wherewhen~~ whenever possible. These  
170 interactions will be open, with members of the public being permitted  
171 to attend as observers.  
172

173 3. Timely Release of Information

- 174  
175 a. Data collected during site investigations will be made available upon  
176 request to from NRC ~~on a current, continuing basis after DOE (or a DOE~~  
177 ~~contractor) performs internal checks that are inherent in are~~  
178 performed to determining that the data were obtained and documented  
179 properly in accordance with applicable quality assurance requirements  
180 and procedures.  
181  
182 b. DOE's analyses and evaluations of data will be made available to NRC  
183 ~~in a timely manner~~ on a mutually agreed upon schedule.  
184  
185 c. DOE will provide, ~~in a timely manner to NRC,~~ controlled copies of any  
186 specially developed computer programs used ~~in making to conduct~~ site  
187 characterization analyses, performance assessments, or design analyses  
188 to the NRC on a mutually agreed upon schedule.  
189  
190 d. NRC will provide to the DOE acknowledgement of and response to formal  
191 DOE requests for comments on study plans, reports, and other  
192 submittals on a mutually agreed upon schedule.

193  
194 4. Samples

195  
196 In accordance with Appendix 2, "Acquisition of Samples During Site  
197 Characterization Activities by NRC Contractors," of the Repository  
198 Project-Specific Agreement and applicable DOE controlled administrative  
199 procedures, DOE will provide NRC with samples to be used by NRC for  
200 independent analysis and evaluation. Controlled copies of the applicable  
201 procedures shall be provided to the NRC's Director, ~~Repository Licensing~~  
202 ~~and Quality Assurance Project Directorate~~ Branch Chief, Division of Waste  
203 Management, High-Level Waste and Uranium Recovery Projects Branch or  
204 designee.

205 5. Agency Use of Information

206  
207 It is understood that information made available to either agency under  
208 this agreement may be used at that agency's option in carrying out its  
209 responsibilities.  
210

211 6. Project Specific Agreements

212  
213 Specific agreements will be developed for each project and site under  
214 investigation.  
215

216 7. Consultations

217  
218 Nothing in this agreement shall be construed as limiting forms of  
219 informal consultation not mentioned in this agreement (for example,  
220 telephone conversation or exchanges of reports). These other  
221 consultations will be documented in a timely manner.  
222

223 8. QA Audits and Surveillances

224  
225 NRC staff, ~~and consistent with security access and safety rules, as~~  
226 well as representatives from affected units of State, local  
227 governments, and Indian Tribes, will be permitted, consistent with  
228 security access and safety rules, to observe DOE QA audits and  
229 surveillances. In addition, the NRC may perform audits of DOE and  
230 participant QA programs.  
231

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233 Signature Blocks  
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240

241 \_\_\_\_\_  
242 Dr. Daniel A. Dreyfus, Director  
243 Office of Civilian Radioactive  
244 Waste Management  
245 U.S. Department of Energy  
246  
247  
248

241 \_\_\_\_\_  
242 Carl J. Paperiello, Director  
243 Office of Nuclear Material Safety  
244 and Safeguards  
245 U.S. Nuclear Regulatory Commission  
246  
247  
248

249 Date: \_\_\_\_\_

249 Date: \_\_\_\_\_

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Appendix 1

Informal Communications: Points of Contact

TO BE DEVELOPED

259 AGREEMENT BETWEEN THE U.S. DEPARTMENT OF ENERGY OFFICE OF CIVILIAN RADIOACTIVE  
260 WASTE MANAGEMENT AND THE NUCLEAR REGULATORY COMMISSION DIVISION OF HIGH-LEVEL  
261 WASTE MANAGEMENT DURING SITE CHARACTERIZATION PROGRAMS AND PRIOR TO THE  
262 SUBMITTAL OF AN APPLICATION FOR AUTHORIZATION TO CONSTRUCT A REPOSITORY  
263  
264

265 This agreement implements, on a repository project-specific basis, the  
266 "Procedural Agreement Between the Nuclear Regulatory Commission and the U.S.  
267 Department of Energy Identifying Guiding Principles for Interface During  
268 Geologic Site Investigation and Site Characterization" (hereafter referred to  
269 as the Procedural Agreement) made between the U.S. Nuclear Regulatory  
270 Commission (NRC) and the U.S. Department of Energy (DOE), and supersedes all  
271 previous project-specific agreement(s) between NRC's Division of ~~High-Level~~  
272 Waste Management (~~HLDWM~~) and DOE's Office of Civilian Radioactive Waste  
273 Management (OCRWM) regarding information exchange and consultation for  
274 potential repository sites. This agreement implements Section 6 of the  
275 Procedural Agreement which requires that project-specific agreements, tailored  
276 to the specific project and reflecting differences in sites and project  
277 organizations be negotiated to implement the principles established in the  
278 Procedural Agreement. Because this repository project level agreement is  
279 drawn to implement the principles set forth in the Procedural Agreement,  
280 appendices detailing repository project-specific items will be developed as  
281 necessary. These appendices will be updated, added to, or changed as  
282 required. Nothing in this agreement shall be construed either to modify the  
283 Procedural Agreement in any way or to confer rights on any party other than  
284 the parties to these agreements.  
285

286 1. NRC On-Site Representatives (ORs)  
287

288 At such time as the NRC ORs are stationed at the site, they are to be  
289 provided with office space that is near the DOE project office and site  
290 activities. Where such office space can be provided, DOE is to provide  
291 such space near the site activities and the NRC is to provide space that  
292 can be visited by the public.  
293

294 The NRC OR shall be afforded access to personnel, project records and  
295 facilities at the respective site, research facilities and other  
296 contractor and subcontractor areas. Access will be subject to  
297 applicable requirements for proper identification and compliance with  
298 applicable access control measures for security, radiological  
299 protection and personnel safety. DOE will identify, at the time it  
300 makes information available to NRC, any records which it considers  
301 exempt from public disclosure under the Freedom of Information Act.  
302 NRC, following consultation with DOE, will withhold such information  
303 from public disclosure to the extent stated in 10 CFR Part 9. Records  
304 as used above are defined as all records that would be generally  
305 relevant to a potential licensing decision by the Commission.  
306 Included in this category are records kept by DOE and DOE contractors  
307 and subcontractors accessible to DOE.  
308

309 Project-specific conditions are discussed in the appendices.

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## 2. Interactions

### A. Interactions

Schedules agreed on, pursuant to Section 2g.i of the Procedural Agreement, for future interactions covering approximately a six month period will be updated at least bi-weekly and made available in the NRC local and headquarters public document rooms (PDRs) of both NRC and DOE. In addition, toll-free telephone services will be operated by ~~DOE headquarters and NRC~~ to announce the meeting schedules. ~~A description of this process for making the schedule of upcoming interactions publicly available will be provided by a DOE annual Federal Register Notice.~~ Representatives from the affected State, units of local governments, and Indian Tribes will be given the opportunity to participate at the interactions. These interactions will be open, with members of the public being permitted to attend as observers, consistent with security access and safety rules.

Dates for major interactions will be agreed to as far in advance as is practicable, with a time frame of six months in advance as the goal. Final agreement as to agenda and participants will both be reached normally a minimum of 10 working days prior to the scheduled date for the meeting and be made available in the PDRs. Deviations from the agreed to agenda will be discussed among all organizations that participate in developing the agenda. Changes will be agreed upon by DOE and NRC. Although both agencies will use their best efforts to provide the indicated lead times, nothing in this section shall be construed as preventing the scheduling of interactions with shorter lead times by mutual agency agreement.

### B. Licensing and Management Meetings

As part of the discussion during licensing and management meetings held under Section 2c of the Procedural Agreement, issues related to policy, budget, program scope, commitment of resources and program schedules may be included as appropriate. The procedures established in Section 2A above regarding dissemination of schedules and agendas for the technical interactions will also be used to disseminate schedules and agendas for the licensing and management meetings. ~~Any commitments that are made during the meeting will be documented into formal correspondence by the party(ies) making the commitments.~~ Any commitments that are made will be documented in the approved written report of the meeting.

### C. Interaction Reports

The format of the interaction report should include a short introductory paragraph stating the date of the interaction, the organizations that participated, and the purpose. Attached to the

361 minutes should be the list of attendees. In the body, the minutes  
362 should describe the presentations made and the discussions held during  
363 the interaction. The report will document any commitments that are  
364 made by either party at the meeting. Information presented in the  
365 minutes will only report the events that took place during the  
366 interaction. Copies of presentation materials should be included as  
367 attachments to the minutes. Copies of materials such as preliminary  
368 data, maps, logs, and laboratory books discussed at site visits are  
369 not prepared as documentation of the interaction. Documentation may  
370 be provided, upon request, to a participant on a site visit in  
371 accordance with Section 3a of the Procedural Agreement. Following  
372 preparation of the minutes and an informal review within DOE and NRC  
373 to assure accuracy, NRC and DOE lead representatives will sign the  
374 minutes. An opportunity will be provided for representatives from the  
375 State, affected units of local government, and affected Indian Tribes  
376 to include in the summary any positions they had taken in the  
377 interaction. DOE and NRC will issue interaction reports within 30  
378 days after the interaction. If a jointly approved NRC/DOE interaction  
379 report is not issued within 30 days, NRC and DOE may elect to issue an  
380 independent record of events of the interaction. Interaction reports  
381 will be provided to the State, affected units of local government,  
382 affected Indian Tribes, and the NRC and DOE PDRs. NRC will provide  
383 the joint reports. If DOE and NRC issue separate reports, each agency  
384 will be responsible for providing only its own report.  
385

386 3. Timely Release of Information

387  
388 A. Report Inventory

389  
390 Each agency will develop as soon as practicable and thereafter  
391 maintain and exchange an inventory of reports, plans, procedures, and  
392 technical positions (products) both completed and in process. This  
393 inventory will include descriptions of product scope and purpose as  
394 well as the scheduled dates for completion of draft and final  
395 products. The inventories will be updated and exchanged at least  
396 semi-annually. This will allow each agency to request products from  
397 the other.  
398

399 B. Points of Contact

400  
401 Respective points of contact for DOE and NRC are defined in  
402 appropriate appendices. Either agency may change their points of  
403 contact unilaterally with prior prompt notification to the other party.  
404 Other organizations within NRC working on the high-level waste  
405 repository will use these designated points of contact within NRC's  
406 HLDWM for interactions with DOE's OCRWM. Details of the information  
407 exchange will be determined by DOE requirements and defined in  
408 appendices as appropriate.  
409

410 Telephonic communications covered under Item c in Appendix 1 are  
411 intended solely for the exchange of information and ideas by NRC and

412 DOE personnel involved in the various technical areas relating to the  
413 site information program for the potential repository site.

414 Individuals participating in such communications have no authority to  
415 present official NRC or DOE positions, or to make official policy  
416 statements on behalf of either NRC or DOE.

417  
418 C. Site Characterization Data for the Potential Repository Site.  
419

420 To keep the NRC on-site representative informed regarding what data  
421 will be forthcoming and when, DOE will notify the on-site  
422 representative of the schedule of planned field and laboratory testing  
423 covering as long a period as practicable. The representative will  
424 also be notified of changes to the test schedule.  
425

426 DOE will develop, ~~as soon as practicable, and thereafter maintain~~ a  
427 catalog of all site characterization and other related technical data,  
428 except those excluded by law. The information pertaining to the  
429 technical data entered in the catalog will include a description of  
430 the data, when the data were acquired or developed (the qualification  
431 status of the data), and the location where the data is stored. This  
432 catalog will be maintained in a computerized data base, available for  
433 read-only<sup>1</sup> access by NRC. In addition, DOE will revise and publish a  
434 hard copy of the catalog on a quarterly basis. Descriptions of data  
435 in the catalog will include: time, place, and method of acquisition,  
436 an indication of the scope of the information, and the location where  
437 they may be examined. This catalog will be maintained in a computer  
438 data base, readily available for read only access by the NRC, as soon  
439 as possible, in a mutually agreed upon electronic format by NRC and  
440 DOE. The data catalog will be updated in accordance with DOE  
441 procedures. When developed and implemented, revisions to the  
442 documentation for access to the data catalog will be provided to NRC  
443 as they are made. DOE will revise the data catalog on a quarterly  
444 basis and provide NRC with a hard copy or a mutually agreeable  
445 electronic format and medium until computer access is available.  
446

447 Upon NRC's request and at a location ~~selected~~chosen by DOE, DOE will  
448 make preliminary data available to NRC for examination. After the  
449 ~~quality assurance~~ checks specified in Section 3a of the Procedural  
450 Agreement have been completed and the data have been submitted to DOE,  
451 NRC may request that data in hard copy or electronic format. DOE  
452 maintains a computerized data base of technical data submitted to the  
453 Project Office by the project's participants. NRC will be allowed on-  
454 line read only access to the technical data; however, in order to  
455 ensure the use of the most up-to-date, qualified data in support of  
456 critical analyses and evaluations, DOE officially sanctioned technical  
457 data will be provided upon letter request, (which will normally be  
458 within 45 days from data acquisition either in the laboratory or in  
459 the field), data will be provided to NRC in hard copy format, or in a  
460 mutually agreeable electronic format and medium upon request. As site  
461 characterization proceeds, DOE may find it advantageous to maintain  
462 electronic data bases containing basic processed data. As these data

463 ~~bases become available on line to the participants, the NRC will be~~  
464 ~~allowed on line, read only\* computer access to these systems provided~~  
465 ~~that all questions of security, and comparable access to the State~~  
466 ~~and the public can be resolved in a manner that protects the integrity~~  
467 ~~of the system.~~

468  
469 ~~Because of the preliminary nature of these data, all such data placed~~  
470 ~~in the PDR will carry the following caveat: "QA checks on data~~  
471 ~~contained here have only been performed to determine that the data~~  
472 ~~have been obtained and documented properly. DOE cautions that any~~  
473 ~~information is incomplete and preliminary. This information is~~  
474 ~~subject to change as a more representative data base is accumulated.~~  
475 ~~Any analyses and interpretations should be made accordingly."~~

476  
477 Because of the evolving nature of site characteristics data, the  
478 following caveat will accompany all data provided by the Project  
479 Office: "CAUTION, this is the best available data to date, however,  
480 interpretations based on these data are subject to change as more data  
481 is acquired or developed."

482  
483 NRC will also notify DOE of NRC's schedule (and those of its  
484 contractors) of planned field and laboratory testing conducted at or  
485 with samples from the potential repository site and will establish,  
486 maintain, update, and provide to DOE an inventory of, and access to,  
487 data as described in the preceding paragraphs.

488  
489 Upon request by NRC or DOE, either party will provide the other a  
490 controlled copy(ies) of any specially developed or modified computer  
491 programs ~~(including programming within commercially available software~~  
492 ~~and associated linking programs or programs passing data) used in~~  
493 conductingmaking site characterization analyses, performance  
494 assessments, design analyses, and ~~design~~ drawings, subject to  
495 resolution of proprietary, privileged, or licensing concerns. Such  
496 programs will be available to NRC or DOE upon citation in a  
497 programmatic document (i.e., documents published by either party).  
498 Each party must maintain this software under its own appropriate  
499 software configuration management controls. Such programs will be  
500 provided in a mutually agreed upon electronic medium. Each party will  
501 provide relevant specifications for use of requested software;  
502 however, each party will be responsible for acquisition and  
503 maintenance of the commercially available software and/or hardware  
504 needed to run the programs requested. Each party will pay for any  
505 respective licensing and maintenance costs associated with such  
506 hardware and/or software.

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<sup>1</sup> "read-only" means that the data file can be read, copied, and down-  
loaded (ie., the copied portion of the file can be electronically transmitted  
to another file for the reader's use), but that no manipulation or changes to  
the original master data file can be performed by the reader.

508 4. Samples

509 In accordance with Appendix 2, DOE will provide NRC with samples.  
510  
511

512 5. Terms of Agreement

513 The terms of this agreement may be amended at any time by mutual consent,  
514 in writing.  
515

516 6. Effective Date

517 This agreement shall enter into force on the latter date of signature by  
518 the parties.  
519  
520  
521

522 Signature Blocks  
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531  
532 Ronald A. Milner, Acting Director,  
533 Program Management and Integration,  
534 Office of Civilian Radioactive  
535 Waste Management  
536 U.S. Department of Energy

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546 Joseph J. Holonich, Branch  
547 Chief, Division of Waste  
548 Management, High-Level  
549 Radioactive Waste (HLW) and  
550 Uranium Recovery Projects  
551 Branch  
U.S. Nuclear Regulatory  
Commission

546 Wesley E. Barnes, Project Manager,  
547 Yucca Mountain Site Characterization  
548 Office  
549 Office of Civilian Radioactive  
550 Waste Management  
551 U.S. Department of Energy



Appendix 1

YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT OFFICE (YMSCPO)

Points of contact between NRC and DOE projects concerning Yucca Mountain site characterization.

- a. 10 CFR Part 60 Level Communications (e.g., Site Characterization Plan (SCP); Site Characterization Analysis; SCP Progress Reports, ~~comments on these documents~~; Annotated Outline for a License Application.

Director, NRC Office of Nuclear Material Safety and Safeguards to and from Director, DOE Office of Civilian Radioactive Waste Management

DOE

NRC

Director  
Office of Civilian  
Radioactive Waste  
Management  
U.S. Department of Energy  
Washington, D.C. 20585

Director  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Mail Stop 6-E-6  
Washington, D.C. 20555

- b. Formal Communications on Waste Acceptance, Storage, and Transportation Issues and Policy Issues Affecting Yucca Mountain Site Characterization

DOE

NRC

Director  
Program Management and  
Integration  
Office of Civilian Radioactive  
Waste Management  
U.S. Department of Energy  
Washington, D.C. 20585

Branch Chief  
High-Level Waste and Uranium  
Recovery Projects Branch  
Division of Waste Management  
U.S. Nuclear Regulatory Commission  
Mail Stop 4-H-3  
Washington, D.C. 20555

- bc. Other Formal Communications Specifically Related to Yucca Mountain Site Characterization

DOE YMSCO Assistant Manager for Suitability and Licensing to and  
from NRC Branch Chief, High-Level Waste and Uranium Recovery  
Projects Branch

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DOE

NRC

Assistant Manager for  
Suitability and Licensing  
Yucca Mountain Site  
Characterization Office  
Office of Civilian Radioactive  
Waste Management  
U.S. Department of Energy  
Washington, D.C. 20585

Branch Chief  
High-Level Waste and Uranium  
Recovery Projects Branch  
Division of Waste Management  
U.S. Nuclear Regulatory Commission  
Mail Stop 4-H-3  
Washington, D.C. 20555

ed. Telephonic Communications

Formal transmittal of technical information to the NRC shall be through the YMSCO Assistant Manager for Suitability and Licensing Office of Systems and Compliance. The points of contact for informal, technical communications (eg., telephone calls and electronic mail) are listed below; informal telephonic interactions will not be used as a forum to officially establish or change technical and/or regulatory positions, establish commitments, nor agree to courses of action. Individuals in these positions will be identified in telephone lists supplied upon request. These points of contact are listed for information and reference. Informal technical communication on specific issues may take place between other DOE staff, NRC staff, and contractor staff individuals.

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AREA	NRC	DOE
Quality Assurance	Quality Assurance Section Leader or designee	<del>Director</del> <u>Manager, Yucca Mountain Project Quality Assurance Division Office</u>
<del>Performance Assessment</del>	<del>Repository Performance Assessment Section Leader or designee</del>	<del>Chief, Technical Analysis Branch</del>
Waste Package	Materials Engineering Section Leader or designee	<del>Chief, Field Engineering Branch</del> <u>AMEFO Team Leader, Repository/Waste Package</u>
Geologic Repository Operations Area	Geotechnical Engineering Section Leader or designee	<del>Chief, Field Engineering Branch</del> <u>AMEFO Team Leader, Repository/Waste Package</u>

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Exploratory Studies Facility	Geotechnical Engineering Section Leader or designee	<del>Chief, Exploratory Studies Facility Branch</del> <u>AMEFO Team Leader, Construction; Team Leader, ESF/SBTF/GSF</u>
Geology	Geology-Geophysics Section Leader or designee	<del>Chief, Site Investigations Branch</del> <u>AMSP Team Leader, Geology</u>
Hydrology	Hydrologic Transport Section Leader or designee	<del>Chief, Site Investigations Branch</del> <u>AMSP Hydrology Team Leader</u>
Geochemistry	Hydrologic Transport Section Leader or designee	<del>Chief, Site Investigations Branch</del> <u>AMSP Team Leader, Geochemistry</u>
AREA	NRC	DOE
<u>Scientific Integration</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSP Team Leader, Scientific Integration</u>
<u>Performance Assessment</u>	<u>Repository Performance Assessment Section Leader or designee</u>	<u>AMSL Team Leader, Technical Synthesis</u>
<u>Site Suitability</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Site Suitability</u>
<u>Licensing</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Licensing</u>
<u>Information Systems/ Data Transfer</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Technical Synthesis</u>
<u>Systems and Requirements</u>	<u>Yucca Mountain Project Manager</u>	<u>AMSL Team Leader, Systems and Requirements</u>

Acronyms:

AMEFO - Assistant Manager for Engineering and Field Operations

AMSL - Assistant Manager for Suitability and Licensing

AMSP - Assistant Manager for Scientific Programs

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678 de. NRC On-site Representative (OR)

679

680           Communications and interactions between the NRC OR and DOE are  
681           discussed in Appendix 7.

682

683 NOTE: NRC SHOULD PROVIDE AND/OR UPDATE THEIR POINT OF CONTACT INFORMATION.

Appendix 2

**ACQUISITION OF SAMPLES DURING SITE  
CHARACTERIZATION ACTIVITIES BY NRC CONTRACTORS**

684  
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690 Requests for collection of samples (e.g., geologic, simulated glass, concrete,  
691 steel, water, air, plants, animals, etc.), with NRC-supplied specifications  
692 and for which a process of acquisition is not specified in a Yucca Mountain  
693 Project Site Characterization Office (YMSCPO) Administrative or Branch  
694 Technical Procedure, are recognized by DOE as legitimate. Upon review and  
695 acceptance of the request, DOE will arrange for NRC to receive such requested  
696 materials in response to a written request. DOE may request NRC, on a case-  
697 by-case basis, to reevaluate the amount of sample material requested in light  
698 of the needs of the site characterization program and the availability of  
699 samples. DOE will prepare NRC-specified samples for transport.

700  
701 Controlled copies of all applicable YMSCPO ~~S~~samples ~~A~~acquisition and ~~H~~handling  
702 ~~P~~procedures will be provided to the NRC's Director, Repository Licensing and  
703 Quality Assurance Project Directorate, Division of High-Level Waste Management  
704 or designee. The NRC will use these procedures to request samples from DOE,  
705 which are being obtained as part of the site characterization program.  
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Appendices 3 - 6 Reserved

Appendix 7

**AGREEMENT CONCERNING THE NUCLEAR REGULATORY COMMISSION ON-SITE REPRESENTATIVE FOR THE REPOSITORY PROJECTS DURING SITE CHARACTERIZATION**

The purpose and objective of the on-site representative (OR), as identified in Section 1 of the Procedural Agreement, is to serve as a point of prompt informational exchange and consultation and to preliminarily identify concerns about investigations relating to potential licensing issues.

This appendix is intended to supplement the base agreement and to detail the guidelines which will govern interaction between the NRC OR, including any NRC personnel assigned to the OR, and DOE contractor personnel (prime and sub) through the project's ~~Regulatory Interactions Branch of the Regulatory and Site Evaluation Division~~ Assistant Manager for Suitability and Licensing, Licensing Team. Any interactions between the OR and DOE, its contractors, or subcontractors identified in this appendix will not constitute interactions within the intent of Section 2 of the Procedural Agreement and therefore will not require the preparation of written reports and will not be subject to State/Tribal and public notification and participation or schedule requirements of Section 2 of the Procedural Agreement. The interactions of the OR with DOE and its contractors and subcontractors are not intended to interfere with or replace other channels of NRC/DOE communications and procedures for information release identified in Sections 2, 3A, and 3B of the this agreement and Sections 2, 3, 7, and 8 of the Procedural Agreement.

The following points are agreed to:

1. The OR can attend any meetings on-site or off-site dealing with technical questions or issues related to work required as part of site characterization (e.g., any items to be covered in Site Characterization Plans under the Nuclear Waste Policy Act, as amended) following notification of the cognizant DOE project representative responsible for the meeting as discussed below. Such notification shall be by memorandum, telephone or personal contact and will be given at least 24 hours in advance where DOE has provided adequate prior notification to the OR. The meetings may involve solely DOE or solely DOE's contractors (prime and sub), or any combination of DOE with their contractors.

If objections to the OR attendance are voiced for any reason, the reason should be specified. Such objections will be infrequent and will be exceptions to the rule. If the OR does not agree with DOE objections, it will be raised to a higher management level for resolution. If resolution cannot be achieved, the OR will not attend the meeting in question.

2. The OR may communicate orally (in person or by phone) with persons employed by DOE, DOE's prime contractors or the prime's subcontractor, (on-site or off-site), providing that the following procedures are followed. If practicable, the OR will arrange for all individual sessions with prime contractor and subcontractor staff by contacting the DOE YMSCPO

767 ~~Regulatory Interactions Branch Chief~~ Assistant Manager for Suitability and  
768 Licensing, or designated DOE staff member Licensing Team Leader, or  
769 designee. If they cannot be contacted, the OR will attempt to contact the  
770 proper prime contractor, section, or department manager. As a minimum,  
771 the OR will give timely notification of all such sessions to DOE and the  
772 affected contractor or participant(s) management as soon as possible. The  
773 OR will avoid discussions with personnel when it would appear to disrupt  
774 important duties and will seek to schedule meetings at a mutually  
775 convenient time. It is at the option of DOE, in consultation with  
776 participant management, as to whether or not a staff member, supervisor,  
777 or third party is to be present. No record of such discussions is  
778 required; however, questions that are raised or other issues that arise as  
779 a result of these interactions will be reported by the participant to the  
780 ~~YMSCPO Regulatory Interactions Branch Chief~~ Assistant Manager for  
781 Suitability and Licensing, Licensing Team Leader, or the NRC Branch Chief,  
782 High-Level Waste and Uranium Recovery Projects Branch Repository Licensing  
783 and Quality Assurance Project Directorate, as appropriate.  
784

785 When members of NRC headquarters staff ~~is~~ are temporarily assigned to the  
786 OR office, the NRC Branch Chief, High-Level Waste and Uranium Recovery  
787 Projects Branch ~~Director, Repository Licensing and Quality Assurance~~  
788 ~~Project Directorate, or designee, will notify DOE's Chief of the~~  
789 ~~Regulatory Integration Branch~~ Assistant Manager for Suitability and  
790 Licensing, Licensing Team Leader of the reassignment at least one week  
791 prior to the reassignment.  
792

- 793 3. The DOE project office, DOE prime contractors, and their subcontractors  
794 will provide the OR access to records which would be generally relevant to  
795 a potential licensing decision by the Commission as follows. Upon request  
796 by the OR, DOE or the DOE contractor or subcontractor shall notify the  
797 Licensing Team Leader, AMSL organization of the request. The Licensing  
798 Team Leader will provide: 1) copies of any records of data; 2) records  
799 which document the analyses, evaluations, or reduction of data; or 3)  
800 records which contain information deduced by reason. These records will  
801 be made available to the OR, after the documentation has been reviewed and  
802 approved in accordance with the appropriate project office administrative  
803 procedure. Records that have not been reviewed and approved by the  
804 project office shall be made available for viewing, but not to copy or to  
805 retain, at any stage of completion. Requests by the OR for release of  
806 such records shall be made through and authorized by the ~~YMSCPO Regulatory~~  
807 ~~Interactions Branch Chief or staff~~ Assistant Manager for Suitability and  
808 Licensing or the Licensing Team Leader.  
809

810 NRC DWM staff requests for written information are to be made by the NRC  
811 Project Manager to the YMSCO Licensing Team Leader, AMSL organization,  
812

813 NRC On-site Representative requests for written information may be routed  
814 directly to the AMSL Licensing Team Leader,  
815

- 816 4. Copies of pre-decisional and preliminary drafts of documents required by  
817 the Nuclear Waste Policy Act of 1982 as amended, or related to

818 prelicensing activities, which have not been approved by DOE, will not be  
819 provided to the OR without DOE approval. Documents of this type may be  
820 made available by authorized DOE personnel, for review in DOE or DOE  
821 contractor offices. Such documents may not be authorized as available by  
822 a DOE contractor alone. Any such documents made available are for the use  
823 of the OR and shall not be placed in any NRC public document room.  
824

825 5. The OR does not have the authority to direct DOE, its contractors or  
826 subcontractors to perform any work. Any formal identification of  
827 questions or issues for investigation by DOE that could result in  
828 contractor or subcontractor work must be formally presented to DOE through  
829 the NRC High-Level Waste and Uranium Recovery Projects Branch in writing.  
830

831 6. The OR will attend on-site meetings upon request by the DOE project office  
832 or prime contractor on-site whenever possible. The OR will provide any  
833 records which would normally be available under 10 CFR Part 2.790 of the  
834 Commission's regulations to project participants upon request to copy. If  
835 convenient, copies of such records will be provided by the OR.  
836

837 7. The OR shall be afforded access to the site, research facilities, and  
838 other contractor and subcontractor areas to observe testing or other data  
839 gathering activities, in progress, as part of site characterization  
840 subject to compliance with the applicable requirements for identification,  
841 and applicable access control measures for security, radiological  
842 protection and personnel safety, provided that such access shall not  
843 interfere with the activities being conducted by DOE or its contractors  
844 and that any discussions conducted during such access shall comply with  
845 Point 2 above.  
846

847 Such access shall be allowed as rapidly as it is for DOE or DOE contractor  
848 employees upon display of an appropriate access identification badge, or,  
849 if badging is not possible for national security reasons, upon prior  
850 notification to DOE or cognizant contractor supervisory personnel (by  
851 memorandum, telephone, or personal contact). When an access  
852 identification badge is available to DOE or DOE's contractors and  
853 subcontractors on a routine basis, it shall be made available to the OR  
854 upon completion of the required security clearances and appropriate  
855 radiological and personnel safety training. DOE will ensure that any  
856 training required is provided to the OR. Access to certain areas such as  
857 the Exploratory Studies Facility (ESF) is limited by personnel safety and  
858 health regulations; ORs should notify the AMSL organization of their  
859 desire to enter such areas prior to arrival on-site.  
860

861 8. NRC can videotape or photograph any inanimate objects or geologic features  
862 associated with site characterization activities at the Yucca Mountain  
863 Site consistent with Nevada test site security. For personnel safety and  
864 health reasons and to minimize interruption to site characterization  
865 activities, the NRC is requested to notify the Licensing Team Leader,  
866 AMSL, prior to conducting photographic or videotaping activities.  
867 Additionally, upon request from the OR, DOE will provide NRC videotape  
868 footage of personnel performing site characterization activities. If

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869 requested, the OR and other NRC staff will be permitted to accompany DOE  
870 during the videotaping.

871  
872 9. DOE YMSCPO may provide, to the NRC OR, the information required to execute  
873 DOE responsibilities under Appendix 7 of this agreement by informal note,  
874 by telephone, or by personal contact. Such communications shall adhere to  
875 the procedures for communication and information release specified  
876 elsewhere in the Procedural Agreement and this agreement.

# YUCCA MOUNTAIN PROJECT

Studies

## Volcanism Igneous Activity

Presented to:  
DOE-NRC Bimonthly Management Meeting

Presented by:  
Tim Sullivan  
Geology Team Leader  
Yucca Mountain Site Characterization Office

January 19, 1996



U.S. Department of Energy  
Office of Civilian Radioactive  
Waste Management

# **NRC has Prioritized KTI -- Igneous Activity because**

- **Significant to NRC Iterative Performance Assessment modelling results**
- **Disruption probability not bounded**
- **Data sets not integrated**

# **DOE Regards KTI -- Igneous Activity as Lower Priority because**

- **DOE performance assessment results (TSPA-91, TSPA-93) are not sensitive to magmatic intrusion because disruption probability is low (~10<sup>-8</sup>/year)**
- **Disruption probability is stable - different models yield similar results (Volcanism status Report)**
- **Modelling of the effects of eruption and magmatic intrusion (dikes and sills) indicates little effect on site performance (FY 95 report)**
- **Preliminary PVHA results are consistent with the results of previous studies (disruption probability ~ 10<sup>-8</sup>/year)**

# Status of Current Activities

- **Volcanism status report and appendices (data tracking tables) complete**
- **Probabilistic Volcanic Hazards Assessment (PVHA) final workshop 12/5 - 12/6; final report Spring 1996**
- **Study Plan 8.3.1.8.1.1, Rev. 3 *Probability of Magmatic Disruption of the Repository*, is being revised.**

# Future Plans

- **Transmit PVHA report to NRC**
  - Identify SCA open items addressed in the report
  - Present report results in TE in spring 96
- **Complete Volcanism Synthesis Report**
- **Facilitate vertical slice**
  - Provided data tracking table
  - Make primary data available to NRC
  - Continue geophysics integration

# DOE Expectations

- **NRC letter response to open item closure based on PVHA report in FY96**
- **NRC preliminary evaluation on Igneous activity in FY97 based on:**
  - **PVHA report**
  - **TE - PVHA**
  - **Volcanism synthesis report**
  - **Other geophysics and tectonics reports**
  - **NRC vertical slice**

**NYE COUNTY PERSPECTIVE ON  
KEY TECHNICAL ISSUES**

**BI-MONTHLY MANAGEMENT MEETING**

**JANUARY 17, 1996**

## **ASSUMPTIONS**

- ◆ **ATTENTION TO THE REGULATORY PROCESS AND LICENSING REQUIREMENTS IS STILL A HIGH PRIORITY.**
- ◆ **AFTER CURTAILED PROGRAM OF SITE CHARACTERIZATION A DECISION ON YM SUITABILITY WILL BE MADE.**
- ◆ **A LICENSE APPLICATION FOR SOME FORM OF REPOSITORY OR LONG TERM UNDERGROUND STORAGE FACILITY WILL BE SUBMITTED SOMETIME AFTER THE YEAR 2000.**
- ◆ **SUPPORT FOR REVISION OF EPA STANDARDS AND 10 CFR PART 60, WHILE A VERY HIGH PRIORITY, ARE NOT MERELY TECHNICAL ISSUES, SINCE AT THIS POINT THEY INVOLVE SIGNIFICANT POLICY CHOICES.**

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**PRIORITY 1**

**SIGNIFICANT  
10<sup>4</sup>**

**SIGNIFICANT  
10<sup>6</sup>**

UNSATURATED AND  
SATURATED FLOW

Y

Y

THERMAL EFFECTS  
ON FLOW ( INCLUDING  
REDISTRIBUTION OF  
MOISTURE)

Y

Y

NEAR-FIELD ENVIRONMENT

Y

Y

STRUCTURAL FEATURES  
AFFECTING WATER AND  
VAPOR MOVEMENT

Y

Y

**PRIORITY 1 (CONT'D)**

**10<sup>4</sup>**

**10<sup>6</sup>**

TSPA AND TECHNICAL  
INTEGRATION

Y

Y

REVISION OF EPA STANDARD  
AND 10 CFR PART 60

Y

Y

**PRIORITY 2**

CONTAINER LIFE AND  
SOURCE TERM

Y

Y

RADIONUCLIDE TRANSPORT

Y

Y

**PRIORITY 2 (CONT'D)**

**10<sup>4</sup>**

**10<sup>6</sup>**

COUPLED PROCESSES

Y

Y

REPOSITORY DESIGN

Y

Y

**PRIORITY 3**

IGNEOUS ACTIVITY

N

Y

STRUCTURAL DEFORMATION  
AND SEISMICITY

N

Y

# YUCCA MOUNTAIN PROJECT

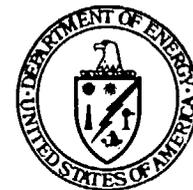
Studies

## DOE Priorities and Products

Presented to:  
DOE-NRC Bimonthly Management Meeting

Presented by:  
April V. Gil  
Licensing Team Leader  
Yucca Mountain Site Characterization Office

January 19, 1996



U.S. Department of Energy  
Office of Civilian Radioactive  
Waste Management

Attachment 8

# DOE Priorities

- **Proposed rule change to 10 CFR 60 on Potentially Adverse Conditions (DOE comments provided October 1993)**
- **Proposed rule change to 10 CFR 60 on Design Basis Events (DOE comments provided June 1993)**
- **Proposed rule change to 10 CFR 60, 72, 73, and 75 on Safeguards Requirements ( DOE comments provided November 1995)**
- **Erosion Topical Report supplemental response (provided April 1995)**

# DOE Priorities

(continued)

- **Response to comments on Study Plan 8.3.1.17.3.6, “Probabilistic Seismic Hazards Analyses” (provided December 1995)**
- **Response to comments on Study Plan 8.3.1.8.5.1, “Characteristics of Volcanic Features” (provided July 1995)**
- **Response to comments on Study Plan 8.3.1.8.1.2, “Physical Processes of Magmatism and Effects on the Potential Repository” (provided August 1995)**

# **DOE Priorities**

(continued)

- **Seismic Topical Report II (provided November 1995)**
- **Feedback on the resolution of issues resulting from the NRC geophysics/volcanism meeting on December 7, 1995**

# Future DOE Products

- **Response to NRC comments on Seismic Topical Report I (January 1996)**
- **Response to NRC comments on Disposal Criticality Topical Report Annotated Outline (January 1996)**
- **Chapter 10 of the LA AO (January 1996)**
- **Semi-annual Site Characterization Report No. 13 (March 1996)**
- **Response to NRC comments on Erosion Topical Report regarding Be-10 sample dating (April 1996)**

# Future DOE Products

(continued)

- **MGDS Revised Advanced Conceptual Design Report (July 1996)**
- **FY 1996 Thermal Loading System Study (September 1996)**
- **Backfill System Study Report (September 1996)**
- **Technical Synthesis Reports (late 1996 & 1997)**
- **Waste Isolation Strategy (TBD)**
- **Study Plan 8.3.1.8.1.1, Revision 3, Probability of Magmatic Disruption of the Repository (May 1996)**

## NRC ACTIVITIES SINCE SEPT 6, 1995

- September 6-15, 1995: Observation of DOE QA audit of USGS (NRC report dated 11/2/95)
- September 13, 1995: NRC/DOE meeting on Exploratory Studies Facility (ESF)
- September 19, 1995: NRC letter (Holonich to Milner) transmitting a Commission Staff Requirements Memorandum on proposed amendments to Part 60 (requested at the last NRC/DOE management meeting)
- September 22, 1995 Letter to DOE (Bell to Brocoum) requesting additional information on Seismic Hazards Assessment Methodology Topic Report (TR#1)
- September 27, 1995: NRC/DOE technical exchange on data qualification
- October 10, 1995: NRC/DOE technical exchange on criticality control
- October 11, 1995: NRC letter (Paperiello to Dreyfus) on alleged harassment and intimidation issues
- October 17, 1995: NRC/DOE meeting on excess weapons plutonium disposition in commercial repository (This meeting was with the DOE Office of Fissile Material Disposition. There have been other meetings on this subject but this particular meeting focused on the repository option)
- October 18, 1995: NRC/DOE meeting on quality assurance
- October 23-27, 1995: Observation of DOE QA audit of USGS (NRC report dated 11/15/95)
- October 25, 1995: NRC Products List updated
- November 17, 1995: NRC letter (Holonich to Dixon) providing NRC comment on scope of DOE planned activities to support an EIS for Yucca mountain
- November 17, 1995: NRC/DOE technical exchange on key technical issues
- November 29, 1995: NRC letter (Gillen to Milner) transmitting minutes of bi-monthly management meeting
- December, 1995: LARP, Revision 1
- December 1, 1995: Letter to DOE (Bell to Brocoum) accepting TR#1 (Seismic Design Methodology Report)

- December 14, 1995: Letter to DOE (Bell to Brocoum) commenting on DOE's Regulatory Compliance Review Report, concluding that design requirements for package 2C are acceptable.
- December 26, 1995: Letter to DOE (Gillen to Milner) transmitting summary of data qualification technical exchange

**NRC DOCUMENTS EXPECTED TO BE ISSUED IN NEXT 6 MONTHS**

STP on Expert Elicitation

Commission Paper on Draft Comments on EPA's Proposed Yucca Mountain Standard

Commission Paper on Revised High-Level Waste Program

Commission Paper on Conceptual Framework for NRC's Yucca Mtn Rule and Guidance

Auxiliary Analyses of Implementation Aspects of NAS Recommendations

ORNL Report on the Potential Migration and Concentration of SNM to Form a Critical Mass at a Near Surface Disposal Site

Audit Review of TSPA 1995

Pre-licensing Evaluation Report on Igneous Activity, Extreme Erosion, Shafts and Ramps; and General Information

Meeting Minutes on QA Quarterly Meeting

Meeting Minutes on KTI Technical Exchange

Meeting Minutes on Data Qualification Meeting

Key Technical Issues Implementation Plans

Final DBE rule

Comments on ESF design package #8A

SER on Seismic Hazard Assessment TR (TR#1)

Letter Report on the Identification and Critical Review of Type II Faults in the Yucca Mountain Region

Ground Magnetic Survey of the Little Cones, Crater Flat, Nevada

Assessment of Coupled Faulting and Magmatic Dike Intrusion Processes

Letter Report on Status of GIS Database Supporting NRC's 3-D Geologic Framework Model

NRC's Seismic Hazard Analysis Code: Selection, Capabilities, Preliminary Results