

Dr. John Bartlett, Director
 Office of Civilian Radioactive
 Waste Management
 U.S. Department of Energy
 1000 Independence Avenue, SW
 Washington D.C. 20585

Dear Dr. Bartlett:

SUBJECT: NRC STAFF COMMENTS ON DOE PROGRESS REPORT ON SITE CHARACTERIZATION:
 YUCCA MOUNTAIN, NEVADA, NUMBER 5, FOR PERIOD APRIL 1, 1991, THROUGH
 SEPTEMBER 30, 1991

On June 4, 1992, the U.S. Department of Energy (DOE) transmitted the "Progress Report on Site Characterization: Yucca Mountain, Nevada, Number 5" (PR), for the period April 1 through September 30, 1991, to the U.S. Nuclear Regulatory Commission. The NRC staff conducted its review of the PR in accordance with the guidance delineated in the "Review Plan for NRC Staff Review of DOE Site Characterization Plan Progress Reports," issued August 10, 1990. As a result of the NRC staff review, we have identified no objections, comments or questions as defined in the PR Review Plan. However, the staff has identified several observations and recommendations that are discussed later in this letter.

In my July 31, 1989, letter transmitting the NRC staff's Site Characterization Analysis (SCA), and in the June 25, 1990, letter transmitting the NRC staff's comments on the PR for the period September 15, 1988 - September 30, 1989, it was requested that DOE address progress on SCA concerns in PR's. One component of the NRC staff review was whether or not this PR was responsive to the previous NRC staff PR concerns as stated in my June 25, 1990, letter to you. The NRC staff finds that although DOE has made an effort to address these concerns, this PR still does not provide a clear picture of the status and results of site characterization activities. The following are observations and recommendations that resulted from the NRC staff review:

- (1) Based on information provided in the PR, the NRC staff is unable to determine how DOE proposes to address many of the NRC SCA and study plan open items. Table 2.1 of the PR lists NRC open items and includes a key identifying proposed methods of resolution. The NRC staff recommends that, where available, specific references be provided to identify draft and final reports intended to resolve open items. The NRC staff also recommends that activities responding to SCA and study plan concerns include a reference to the concern in the summary and a brief statement about any progress toward its resolution.

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- (2) Site characterization activities appear to be proceeding in the absence of approved study plans. For example, Study Plan 8.3.1.9.2.1 (Natural Resource Assessment of Yucca Mountain) is noted as being in the comment resolution stage of development (page 2-71 of the PR), but the development of several data compilations and a geophysical assessment of natural resources are also noted. These activities appear to be outside of the normal bounds of background preparation for study plan development.
- (3) In all areas of the report, it is still unclear how work in various studies is being integrated. An example is Activity 8.3.1.4.1.2 (Integration of Geophysical Activities, page 2-56 of the PR) where the PR indicates that the progress for this integration effort is listed under the activities in which the work is being performed. This approach defeats the purpose of the integration activity and makes it difficult for the NRC staff to evaluate progress in this area.
- (4) Investigations are comprised of a group of studies related to a main topic and as such could provide one means of program integration. The PR does not summarize results at the investigation level. The NRC staff recommends that future PR's include brief summaries of investigations as well as studies and activities. DOE should state the objective of the work at each level and summarize the progress toward meeting these objectives. In addition, each summary should begin with an estimate of "percent complete." Inclusion of this information would be an effective means of communicating progress in this complex program.
- (5) Under several studies and activities, no progress was reported because the work occurs in out-years. It would be helpful if estimates of when such activities are expected to be performed are provided.
- (6) The PR would be more effective if the progress in one study was cross-referenced with related study plans. For example, DOE has indicated that most of the data collection activities resulting in the annotated outline for the topical report on extreme erosion were collected under Study Plan 8.3.1.5.1.4 (page 2-62 of the PR), rather than study plans that were described in the Site Characterization Plan (SCP) to specifically address the extreme erosion potentially adverse condition (PAC). DOE has indicated in the PR that, based on data collected under Study Plan 8.3.1.5.1.4, those study plans (8.3.1.8.5.1 and 8.3.1.16.1.1) specifically designed to address the extreme erosion PAC may not be needed. However, neither the study plans or PR sections address whether erosion was being conducted as part of another study.

- (7) There does not appear to be an indication of status of the qualification of existing geologic data. A significant number of study plans now refer to yet-to-be qualified data to be used in licensing, yet there is no indication in the PR of progress or intentions to qualify this existing data.
- (8) The PR is informative to the readers on particular work completed and on the progress on waste package design (Section 2.6). However, there is inadequate information on the significance of the results and how the results could help resolve the issues resulting from the NRC staff SCA review.
- (9) The list of references in the PR is not complete. For example, the document, "Three-Dimensional Analysis of G-tunnel High-Pressure Flatjack Development Test" was mentioned in Design Activity 1.11.3.1, and the document "Assessment of the Potential Effect of Creep Deformation of the Tuff Upon the Exploratory Shaft Liner" was mentioned in Design Activity 8.3.2.4.1.1. These references are not listed in the reference section of this report. The reference for the software development discussed in the above observation is not provided either.
- (10) The PR does not discuss proposed changes to study plans or design activities. For example, three study plans proposed in the SCP Section 8.3.1.14 have been combined into a single study plan. It is unclear whether any changes to the original study plans were made. The ESF shaft design has been changed to the ramp design. The Design Activity 8.3.2.4.1.1 (Verify Access and Drift Usability) does not discuss whether any new study plans will be necessary to accommodate the change from the shaft to the ramp design.
- (11) Conflicting statements are made in the PR with respect to whether DOE has committed to an iterative program of total performance assessments. On page 2-134, the first paragraph in Section 2.7.6.6 states, "Although the final set of complementary cumulative distribution functions (CCDF) will not be constructed for several years, the DOE has begun a process of iteratively producing CCDFs that use available information to estimate the total-system performance of a potential repository." The first paragraph on page 2-135, of the same section states for total-system analyses, "The analyses can be considered the first of a series of preliminary total-system evaluations if the DOE elects to produce such studies periodically." The NRC staff reiterates its position that the use of performance assessments by DOE should begin at an early time and continue in an iterative fashion throughout site characterization.

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This letter is intended to transmit information for DOE's use in preparation for future PR's. A response to the above NRC observations is not necessary.

We are available to meet with you and your staff as needed. Please contact me or Mr. Joe Holonich of my staff if there are any questions regarding this letter. I can be reached at (301) 504-3352, or Mr. Holonich can be reached at (301) 504-3391.

Sincerely,

Robert M. Bernero, Director
Office of Nuclear Material Safety
and Safeguards

cc's: See next page

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- (12) The PR (Section 1.0) states that it is "not the mechanism for controlling and documenting technical or policy changes in schedules or the testing program." Although the NRC staff recognizes that DOE's mechanism for changes are the Change-Control Procedures, 10 CFR 60.18 clearly states that the purpose of the PR is to report or document progress and changes to DOE's site characterization program. By providing the information cited in 10 CFR 60.18(g), DOE can keep NRC apprised of changes and progress in its program during the pre-licensing consultation phase.

This letter is intended to transmit information for DOE's use in preparation for future PR's. If you have any concerns with these observations, we are available to meet with you and your staff as needed. Please contact me or Mr. Joseph Holonich of my staff if there are any questions regarding this letter. I can be reached at (301) 504-3352, or Mr. Holonich can be reached at (301) 504-3387.

Sincerely, **Original signed by**
Robert M. Bernero
 Robert M. Bernero, Director
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* See previous concurrence:

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