



Department of Energy
Washington, DC 20585

HQO.871030.0021

OCT 30 1987

Mr. Lando W. Zech, Jr., Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Chairman:

At the June 11, 1987, meeting of the Nuclear Regulatory Commission (NRC) with the Director of the Department of Energy's (DOE) Office of Civilian Radioactive Waste Management, DOE agreed to review NRC staff suggestions concerning the determination of site parameters by surface-based testing and to consider the scheduling of such testing to enable early evaluation of site disqualifying factors.

Our current plans relative to surface-based testing are summarized in the enclosed discussion.

Although a separate review of results from surface-based site characterization testing prior to underground testing is not a part of the Nuclear Waste Policy Act siting process or of the 10 CFR Part 60 licensing procedure, DOE, in exercising its programmatic responsibility to consider program schedule and the associated overall program costs, is re-studying the use of surface-based testing to facilitate some important early site evaluations. Specifically, we are reviewing currently planned tests to see how they might be rescheduled to facilitate certain early evaluations and are looking at technical procedures for these evaluations. This study is scheduled to be completed before the end of this calendar year. It will provide necessary information for the programmatic decisions on site characterization test scheduling. We will keep the NRC informed of our deliberations on these matters.

As you know, DOE plans to issue consultative drafts of the Site Characterization Plans in early January 1988. These will discuss the testing in detail. Through workshops with States, Indian Tribes, and NRC staff, we plan to review the testing and will be in a position to take appropriate action on all comments received.

If you would like any additional information, please do not hesitate to contact me.

Sincerely,

Charles E. Kay, Deputy Director
Office of Civilian Radioactive
Waste Management

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Enclosure



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**Resolution of Major Issues Using Surface-based and/or
Laboratory Testing vs. Underground Testing and/or Shaft Sinking**

The basic question raised by Secy-87-137 is the time sequencing of surface-based vs. underground testing.* The NRC staff appears to suggest that specific surface-based testing should be completed at all sites before starting exploratory shaft construction and underground testing. Two reasons are cited, related to (a) the effects of shaft construction on other testing, and (b) obtaining information needed to evaluate site suitability using less-costly surface-based testing.

The DOE agrees that reason (a) can be a valid technical reason to defer exploratory shaft construction because of the effects such construction may have on tests that need to be conducted from the surface. Obtaining accurate site data will be critical to selecting a site and the subsequent licensing of the site.

Reason (b) could also be a valid programmatic reason to defer shaft construction, if there are significant concerns about the suitability of a site that can be addressed by surface testing. There is a strong incentive to find out, with the least possible cost (such as surface-based testing), the potential for the existence of disqualifying conditions.

A countervailing consideration is that in some cases, a complete definition of these concerns and the time for testing needed to resolve the concerns will be available only after gaining access to the underground and starting the testing. This would suggest that such testing should begin as soon as possible, so that the uncertainties related to the concerns are sufficiently reduced and so that additional testing that may be necessary will have a minimum (or no) impact on the schedule for site selection and licensing, and on the overall program costs associated with the schedule for site selection and licensing.

The DOE is making the evaluation of surface-based vs. underground testing on a site-specific basis, since there are important differences in the evaluation for the three candidate sites. A preliminary assessment of the sequencing of underground vs. surface-based testing is provided below.

* Underground testing refers to testing in and from exploratory shafts or underground drifts.

Hanford Site

The DOE agrees that there are a number of technical concerns for the Hanford site that can be addressed initially by predominantly surface-based testing; and that the concern of repository constructability and the effects of high in situ stress needs to be evaluated through predominantly underground testing.

An important concern to be addressed by surface-based testing is the characterization of the ground-water flow system at the site. The timing of such surface-based testing relative to the start of exploratory shaft construction has been the subject of recent interactions between DOE staff and staff from the NRC, States, Indian Tribes, and the public. The specific concern is that essential information about the hydrologic baseline needs to be obtained before shaft construction, because that baseline could be altered by construction activities and the data could not be obtained later. Because of the potential effects of shaft construction on surface-based test results, the DOE has decided to delay the start of shaft construction to allow completion of key boreholes and hydrologic testing in the boreholes. The impact of this rescheduling is reflected in the Mission Plan Amendment.

Yucca Mountain Site

The DOE agrees that, as with the Hanford site, there are a number of technical concerns at the Yucca Mountain site that can be addressed through predominantly surface-based testing. However, one of the most important technical concerns, that of developing a sound understanding of the ground-water flow system in the unsaturated zone, requires information from underground testing. For the Yucca Mountain site, surface-based testing and underground testing can be conducted relatively independent of one another, and therefore there is no reason to defer shaft construction out of concerns for its effect on testing. In order to allow as much time as may be needed for underground testing and to allow for potential unforeseen testing needs, the DOE believes that shaft construction and underground testing should not be deferred in favor of surface-based testing.

Deaf Smith County Site

As with the other two sites, the DOE agrees that there are important technical concerns to be resolved through predominantly surface-based testing, and others to be resolved through predominantly underground testing. Surface-based testing and underground testing can proceed relatively independent of one another and there is no reason to defer shaft construction out of concerns for its effect on testing. However, there is information that can be obtained from surface-based testing that would be used to confirm confidence in the exploratory shaft design and construction procedures. Shaft construction is currently scheduled to begin after completion of a number of such surface-based activities.

Conclusions

Based on the above considerations, the DOE's current plans for the relative timing of surface-based testing vs. exploratory shaft construction are site-specific. For the Hanford site and the Deaf Smith County site, a number of surface-based testing activities are planned to be conducted before exploratory shaft construction. For the Yucca Mountain site, exploratory shaft construction is planned to proceed in parallel with surface-based testing.

The details of these tests will be discussed in the consultative draft Site Characterization Plans which are scheduled for issuance in January 1988. The tests and schedules presented in the Mission Plan Amendment are based on the conclusions presented in this letter.

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