



PDR 0/24/88

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

May 11, 1988

Mr. Victor Stello, Jr.
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Stello:

SUBJECT: NRC STAFF COMMENTS ON CONSULTATION DRAFT SITE CHARACTERIZATION
PLAN

Enclosed is a report of the ACRS Subcommittee on Waste Management relative to the NRC Staff comments on the Department of Energy's Consultation Draft Site Characterization Plan for the Wucca Mountain, Nevada site. This report was provided to the ACRS during its 337th meeting, May 5-7, 1988.

The ACRS members hope you will find it useful.

Sincerely,

Raymond F. Fraley
Executive Director

Enclosure:

Report dated May 5, 1988 of the Meeting of the ACRS Subcommittee on Waste Management on April 28, 1988

cc, w/encl.
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Dated: May 5, 1988

REPORT OF MEETING OF ACRS SUBCOMMITTEE
ON WASTE MANAGEMENT
April 28, 1988

I. INTRODUCTION

During a meeting on April 28, 1988, the Waste Management Subcommittee of the Advisory Committee on Reactor Safeguards reviewed the comments prepared by the NRC Staff based on their technical review of the Consultation Draft Site Characterization Plan (CDSCP) for the Yucca Mountain, Nevada Site as issued by the U. S. Department of Energy (DOE). Members of the Subcommittee participating in this meeting were Dade W. Moeller, Paul G. Shewmon, and Martin J. Steindler. Attending the meeting as consultants to the Subcommittee were J. Carson Mark and John C. Maxwell. Listed below are the comments and/or suggestions made on this matter by the Waste Management Subcommittee as a result of this meeting.

II. COMMENTS AND/OR SUGGESTIONS

A. General

In general, the comments prepared by the NRC Staff are comprehensive and thorough, and they appear to cover all key points. The comments also reflect considerable time, effort, and diligence on the part of the NRC Staff. In the opinion of the Subcommittee, the NRC Staff is to be complimented, not only on the technical quality of their review, but also on the fact that, through the approach they have chosen, the iterative process of their interactions with the DOE Staff is being made a part of the public record and is thus readily available for access by all interested parties.

The Waste Management Subcommittee generally agrees with the comments submitted by the NRC Staff and believes that they should be transmitted to DOE for resolution, including, particularly, the list of the five "Objections" to the CDSCP. As noted below, however, the Waste Management Subcommittee believes that the NRC Staff might give consideration to highlighting in their report other concerns worthy of being considered as important as the "Objections."

B. Specific

In terms of specific comments, the Waste Management Subcommittee offers the following:

1. The system currently being used to designate concerns of greatest importance, the "Objections," is that they "be of such immediate seriousness to the site characterization program that NRC would recommend that DOE not start work until they are satisfactorily resolved."

We believe that it would be useful for the NRC Staff to modify

their report so as to emphasize additional concerns that are of importance to the longer range development of the repository. Examples, some of which we believe represent fundamental flaws in the approach being taken by DOE, include:

- a. A basic "theme" projected by the five "Objections" raised by the NRC Staff is a lack of conservatism on the part of the U.S. Department of Energy (DOE) in the development of its plans for characterizing the proposed repository site. Whereas the NRC Staff favors adopting a conservative approach, which could then be relaxed if further analyses justified it, the DOE appears to prefer to begin with a nonconservative approach and then to tighten up the requirements at a later time, if necessary. While the Waste Management Subcommittee understands that the DOE approach reflects to some degree the urgency seen by that Agency in moving ahead with plans for the repository (and their emphasis that the project be conducted in a cost-effective manner), it is quite possible that the development and implementation of a more conservative approach at this stage in the process will save time and money in the long run. To assist in this effort, the NRC Staff might consider providing specific guidance to the DOE Staff relative to the degree of conservatism that they would consider acceptable for those items where this difference is in question.
- b. In its efforts to meet the requirements regarding waste releases, the DOE Staff has proposed three design objectives for the waste package. On examination, the NRC Staff has discovered that the requirements for the pre-closure phase for the repository are less stringent than those for the post-closure phase.

This has led to design objectives that are both internally inconsistent and nonconservative. This is a serious deficiency in the CDSCP, and it should be emphasized in the NRC Staff review. To the extent that these deficiencies represent differences of opinion on the part of the NRC and DOE staffs, such differences should be clarified and clearly enunciated.

- c. A third important area of concern is illustrated by the positions or approaches taken by DOE that appear not to comply either with the Standards for a high-level waste repository, as promulgated by the U. S. Environmental Protection Agency, or with the regulations promulgated by the NRC to assure compliance with the EPA Standards. Again, we believe that these examples of apparent noncompliance may represent a fundamental weakness in the DOE approach.

- d. A fourth area of importance relates to premature acceptance of a geologic model for the Yucca Mountain site, a complex area characterized by geologically recent volcanic activity and faulting. Based on our interpretation of the NRC Staff review, we believe that certain portions of the data on geology, as presented in the CDSCP, are technically inadequate. This, again, appears to reveal a deficiency. The NRC Staff has noted DOE's inability or unwillingness to consider alternative explanations or mechanisms for selected phenomena, when such alternatives remain clearly within the scope of the data. This inflexibility could seriously hamper application of demonstrably sound technical judgment.
- e. Discussions with the NRC Staff and Waste Subcommittee consultants revealed that movement along some of the faults near the proposed repository, and the weight of the rock overhead, could result in shifts (lateral, vertical or rotational) that might cause the host rock to shear and thereby place stresses on the waste canisters. This, in turn, could lead to the loss of their integrity. This is a matter that should be given attention.
- f. Another concern may include the matter of volcanism. The presence of a nearby volcanic cone, apparently active within geologically recent time, as well as hot springs, may signal the need to evaluate the potential for thermal instabilities at the repository site. This concern should be addressed and resolved by DOE, to the satisfaction of the NRC Staff.

III. SUGGESTED IMPROVEMENTS REGARDING NRC COMMENTS

One way that the NRC Staff might modify their review of the CDSCP to emphasize the additional concerns cited above would be to group the current list of "Comments" into several categories, depending on their importance and the type of problems they reflect. One possible approach, for example, would be to group the "Comments" into those that reflect a nonconservative approach on the part of the DOE Staff, those that reflect apparent nonconformance with EPA standards or NRC regulations, and those that reflect approaches to geological matters that are technically inadequate.

IV. ADDITIONAL COMMENTS

1. It should be noted that the comments given above are preliminary and are based on an incomplete review by the Subcommittee of the CDSCP as well as the areas of concern expressed by the NRC Staff. As time permits, we plan to conduct more in-depth reviews of selected portions of the CDSCP. Specific areas that have been selected for more detailed analysis include "Performance Allocation" and "Performance Assessment."

2. In our review of the work of the NRC Staff in evaluating several DOE repository related programs, we were impressed by several aspects of the Staff's approach that we believe are worthy of special mention. One is their concerted effort to examine the CDSCP at this time in sufficient detail to try to assure that all questions of importance are raised at this early stage in the review process.

Another is their effort to require DOE both to implement an acceptable QA program and to develop an inhouse means for its review and audit. With this program in place, the primary function of the NRC Staff in the QA area will be to review and critique the DOE auditing procedures. If the DOE QA program and auditing procedures pass NRC scrutiny, this should provide reasonable assurance that the DOE QA program is adequate. The burden for assuring that the procedures are followed will then rest with the DOE Staff, not with the NRC.