

August 28, 1992

MEMORANDUM FOR: Dade W. Moeller, Chairman  
Advisory Committee on Nuclear Waste

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

SUBJECT: RESPONSE TO THE ADVISORY COMMITTEE ON NUCLEAR WASTE LETTER  
OF AUGUST 4, 1992

This memorandum is in response to your letter dated August 4, 1992, to me. In that letter, the Advisory Committee on Nuclear Waste (ACNW) expressed concerns with the progress of the U.S. Department of Energy (DOE) in the preparation of site characterization study plans, ongoing site investigations, and resolution of U.S. Nuclear Regulatory Commission staff's concerns, as well as the timeliness of NRC review of study plans and other site characterization documents. In the past, the staff has benefitted from ACNW comments on NRC staff reviews of DOE's Site Characterization Plan (SCP) and study plans, and acknowledges a need to proceed more aggressively in its review and response to DOE's pre-licensing submittals. In recent months the staff has considerably improved the timeliness of its reviews of study plans. In addition, the staff agrees now that DOE has the necessary permits and has expanded its activities at the Yucca Mountain site, that there is a greater need to address the staff's concerns in a timely manner.

To date, the staff has taken a number of actions related to the Committee's concerns. First, by letter dated May 26, 1992 (enclosed), the staff restated its position that DOE address progress toward closure of NRC Site Characterization Analysis (SCA) and study plan concerns in the semi-annual progress reports in accordance with 10 CFR 60.18(g). The staff also requested that DOE provide a schedule with dates for when it expects to submit study plans and other documents related to site characterization for NRC review in fiscal year 1993 and to ensure that those study plans are complete and up-to-date when transmitted for the NRC staff's review. This information will allow NRC to better plan its reviews and respond in a more timely fashion to DOE's requests.

In addition, the staff continues to work with DOE to resolve concerns identified in the SCA. In its review of the SCP, the staff identified 198 concerns in the form of 2 objections, 133 comments, and 63 questions, which were published in the SCA. Since issuance of the SCA, the staff has concluded, based on information provided by DOE, that 60 of those concerns, including 1 objection, are resolved. Also, on March 3, 1992, DOE, in response to an NRC request of September 4, 1991 (letter from Linehan to Shelor), provided information relative to closure of SCA objection 1, 10 comments, and 1 question. The NRC staff has reviewed the information provided and plans to

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notify DOE of the results of that review in the immediate future. Also, on July 23, 1992, DOE provided its bases for closure of two additional SCA concerns and the staff will evaluate that information to determine whether or not those concerns are resolved. In addition, the NRC is reviewing responses provided by DOE to comments resulting from the staff's Detailed Technical Reviews of three study plans.

Although DOE committed to resolve objection level concerns prior to proceeding with site characterization work related to those objections, in the case of areas of activities where the NRC staff's concerns are in the form of comments and questions, DOE made no such commitment. DOE may defer resolution of concerns while proceeding with related activities at its own risk. In its response to the SCA, DOE deferred resolution of some concerns to a future document or issuance of one or more study plans. In addition, the lack of site access and the associated delay in site investigations have contributed to the deferral of the resolution of some concerns. Although the staff believes that DOE may have valid reasons for delays in addressing some of the SCA concerns, now that activities at the site have increased and work has begun on new studies, the staff shares the ACNW's concerns with regard to the need for resolution of SCA comments and questions. The staff considers those deferred concerns to be unresolved, and informed DOE in the July 31, 1989, letter (Bernero to Rousso) transmitting the SCA that DOE should consider all SCA concerns "serious and encourages DOE to give full attention to each in an attempt to resolve them early during site characterization." In addition, in letters dated June 25, 1990 (Bernero to Bartlett), and May 26, 1992 (Holonich to Roberts), we noted the need to address progress toward closure of NRC concerns.

In the case of DOE's sequencing, integration and scheduling of planned activities, the NRC staff agrees that the example (geophysical investigations) provided in the ACNW letter includes activities that could provide valuable input into tectonic investigations. In the SCA, the staff commented on its concerns related to the need for geophysical testing and the integration of those tests with other site characterization studies (SCA Comments 32, 51, 52, and 53). Although the staff agrees that tectonic investigations may benefit from geophysical tests in the early stages of the investigations, this is not an issue that will result in impacts to the site's ability to isolate waste or the ability to gather data in the future which are key criteria for generating objections or management level concerns in the staff's review of DOE activities. Although the sequencing and lack of integration of study plans does, to an extent, complicate the staff's review, as in the case of geophysical investigations, we do not feel that these concerns meet the above criteria. The staff does not believe that it is appropriate for it to provide comments on how DOE manages its program, unless the site or ability to collect future data are being impacted. This is consistent with one of the planning assumptions contained in the Five Year Plan for Fiscal Years 1992-1996 which states that NRC actions with regard to the high-level waste licensing program element, required under applicable legislation "will be interpreted narrowly and will not encompass broad oversight of the entire NWPA implementation (e.g. review of DOE site selection, cost, and schedule considerations)." The staff

believes the ACNW letter makes valid points related to the sequencing and integration of studies or tests, and the staff plans to transmit the ACNW letter, with a copy of the staff's reply, to DOE for its consideration.

Staff activities related to the review of DOE's characterization program, such as reviews of study plans, semi-annual progress reports, topical reports, the annotated outline for the repository license application, and the Early Site Suitability Evaluation, and observations of quality assurance audits are considered the staff's highest priority activities. However, due to limited staff resources, there are often scheduling conflicts for these reviews. Although some reviews have not been as timely as desired, to our knowledge we have not impacted DOE's program. In addition, a less readily apparent area requiring staff resources needed to support the staff review of DOE's site characterization activities is the development of guidance such as staff positions (e.g., guidance on seismic investigations and thermal loads) and analysis methods. To help the staff better follow the status of issues with DOE, the staff has developed a computerized system for open item tracking, and loading of those open items is in progress. The staff believes that when fully implemented, the system will facilitate the staff tracking and response to DOE requests for closure of open items generated as a result of the staff's review of the SCP, study plans, progress reports, and other DOE documents.

In summary, although the staff generally agrees with ACNW's concerns and has already recognized a number of them in its reviews of DOE activities, some of the concerns are better directed to DOE since they relate to how DOE manages its program. As indicated above, we will forward the Committee's letter to DOE for its consideration.

Original signed by  
Guy A. Ariotto

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

cc: The Chairman  
Commissioner Rogers  
Commissioner Curtiss  
Commissioner Remick  
Commissioner de Planque  
SECY  
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MAY 26 1992

Mr. John P. Roberts, Acting Associate Director for  
Systems and Compliance  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585

Dear Mr. Roberts:

**SUBJECT: STATUS OF STAFF REVIEWS OF STUDY PLANS AND RELATED  
U.S. DEPARTMENT OF ENERGY SITE CHARACTERIZATION REPORTS**

On April 9, 1992, the U.S. Department of Energy (DOE) transmitted a letter requesting information on the status of study plans undergoing review by the Nuclear Regulatory Commission. The NRC staff believes that the letter does not present a full and complete picture of the staff's efforts on study plan reviews. Therefore, this letter provides information that will ensure an accurate status of study plan reviews, and comments and concerns related to the status, completeness, and timing of DOE study plans and other site characterization reports.

Of the 36 study plans listed in the enclosure, the staff has completed its Phase I or start work review for 26. Six of these reviews were provided since the receipt of your April 9 letter. Your letter also indicated that the Phase I review of Study Plan 8.3.1.5.1.2, "Paleoclimate Study: Lake, Playa, and Marsh Deposits," was of particular concern. The results of the review of that study plan were transmitted to the DOE on April 27, 1992. In addition, the results of the Phase I review of Study Plan 8.3.1.17.4.6, "Quaternary Faulting Within the Site Area," which you identified as pending in your letter, were provided to the DOE on October 3, 1991.

With respect to the ten other study plans, eight need to be revised by DOE before the staff can initiate its review. As identified in your letter, reviews of five of the study plans were deferred because of the relationship to the Exploratory Studies Facility construction-phase testing which is currently under revision. Reviews of three other study plans were deferred because they are incomplete or undergoing revision. It is important that study plans submitted to the NRC staff for review be complete since the NRC does not have resources available to review study plans that are incomplete. If DOE believes that material missing from a study plan is not critical to that plan's completeness, NRC will consider DOE's request for a review to be initiated.

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In addition, it is important that DOE keep NRC informed of the status of study plan revisions so that the NRC staff does not conduct a review of study plans that are out of date. In particular, during a quality assurance observation audit, the NRC staff determined that the version of Study Plan 8.3.1.4.2.2.2, "Characterization of Structural Features in the Site Area," under review at that time, was substantially out of date. Therefore, it is important that DOE identify to the staff when it is changing a study plan, and justify why the staff should continue its review.

For the two remaining study plans, the staff began its review of Study Plan 8.3.1.17.3.4, "Effects of Local Site Geology on Surface and Subsurface Motion," late, but does expect to provide DOE with the results of the review by the end of May 1992. Although a copy of Study Plan 8.3.1.5.1.3, "Climatic Interpretations of Terrestrial Paleocology," has been received by the NRC staff, the staff has yet to receive a controlled copy of the study plan or the formal transmittal letter from DOE. A similar circumstance exists for Study Plan 8.3.1.2.2.5, "Diffusion Tests in the Exploratory Studies Facility," and Study Plan 8.3.1.2.3.2, "Characterization of the Yucca Mountain Saturated-Zone Hydrochemistry," which were submitted after your April 9, 1992, letter. In neither case has the NRC staff received a transmittal letter from DOE or controlled copies of the study plans.

In previous transmittals of study plans, it has been DOE's practice to consider only those copies of study plans transmitted by DOE's Office of Systems and Compliance as the official transmittal to NRC. In accordance with this previous practice, the NRC will defer the start of any reviews of study plans transmitted directly from the Yucca Mountain Project Office until the controlled copies and transmittal letters have been received from the appropriate DOE office. This problem has been discussed with Ms. Sharon Skuchko of your staff and she has informed us that the three study plans do not constitute DOE's official transmittal.

The NRC staff believes that the semi-annual progress reports provide a means for resolution of concerns related to the status of study plans and other site characterization activities. In a letter dated June 25, 1991, NRC provided DOE with comments on the first "Progress Report on the Scientific Investigation Program for the Nevada Yucca Mountain Site." In its June letter, NRC requested that the Progress Reports include significant site characterization results and references to where details of those results should be cited in the report. Further, NRC stated that Progress Reports should include the status of study plans under development, and requested that DOE address progress toward closure of NRC Site Characterization Analysis (SCA) and study

plan concerns that have been communicated to the DOE. To date the staff does not believe that DOE has been responsive to those requests. For example, an area where the Progress Reports are not providing updates to information is performance assessment (PA). At the recent technical exchange on PA, the staff found that DOE had made changes to its PA strategy that was described in the Site Characterization Plan (SCP) without providing the NRC benefit of discussions of those changes in Progress Reports. Progress and changes to DOE's site characterization program and resolution of NRC concerns are supposed to be provided in the semi-annual Progress Reports in accordance with 10 CFR 60.18 (g). By not doing so, DOE makes it difficult to achieve early and effective consultation by the NRC staff during the pre-licensing phase.

Another area where there is a concern related to our ability to provide efficient and timely prelicensing consultation is the review of the "Exploratory Studies Facility Alternatives Study" (ESFAS). On July 18, 1991, DOE transmitted the final draft of the ESFAS. The ESFAS was conducted, in part, in response to NRC concerns presented in the SCA. In its responses to the SCA, DOE deferred many of the SCA concerns (open items) until the NRC staff received the ESFAS and other documents; however, when DOE provided the ESFAS, the accompanying transmittal letter explained that the document was provided to the NRC for "information" and did not identify what aspects of the ESFAS responded to the staff's SCA concerns. In a letter of July 31, 1991 (Bernero to Bartlett), NRC requested that DOE should specify when open items are addressed in a document, and provide information as to which open item is addressed and where that information may be found in the document. In addition, in a letter of September 4, 1991 (Linehan to Shelor), NRC requested that DOE provide that information for the ESFAS "as expeditiously as possible." DOE provided that information to the NRC on March 3, 1992 (Roberts to Holonich). Without the necessary information to guide the staff to specific parts of the ESFAS, the staff was unable to begin its review for seven months. Therefore, it is important that DOE provide complete and up-to-date information when it submits documents in order for the staff to complete its review in a timely manner.

Due to limited resources and an increasing number of site characterization related documents, NRC must proceed in a manner that will most effectively provide responses to the DOE. For that reason, NRC requests that DOE provide a schedule with dates for when it expects to submit study plans and other documents, such as topical reports, iterations of site suitability and performance assessments, and revisions to the AO, for review in fiscal year 1993. This information will allow NRC to better plan its review schedules and, in turn, respond to DOE's requests for reviews in a more timely fashion. DOE can also assist NRC in achieving its goal to provide Phase I reviews of study plans within three months by ensuring that those study plans are complete and up to date when they are transmitted to the NRC.

Mr. John P. Roberts

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It is hoped that these comments and suggestions will be helpful. If you have any questions, please call Charlotte Abrams of my staff at (301) 504-3403.

Sincerely,

JS/

Joseph J. Holonich, Director  
Repository Licensing and Quality  
Assurance Project Directorate  
Division of High-Level Waste Management  
Office of Nuclear Material Safety  
and Safeguards

-Enclosure: As stated

cc: R. Loux, State of Nevada  
T. J. Hickey, Nevada Legislative Committee  
C. Gertz, DOE/NV  
S. Bradhurst, Nye County, NV  
M. Baughman, Lincoln County, NV  
D. Bechtel, Clark County, NV  
D. Weigel, GAO  
P. Niedzielski-Eichner, Nye County, NV  
C. Thistlethwaite, Inyo County, CA  
V. Poe, Mineral County, NV  
F. Sperry, White Pine County, NV  
R. Williams, Lander County, NV  
P. Goicoechea, Eureka County, NV  
L. Vaughan II, Esmeralda County, NV  
C. Shank, Churchill County, NV

STATUS OF STUDY PLANS SENT TO NRC FEB 1989 THROUGH FEB 1992

<u>Study Plan Number and Title</u>	<u>Date Sent to NRC</u>	<u>NRC Phase I Review</u>	<u>Detailed Review</u>
Study Plan 8.3.1.2.2.2 Water Movement Tracer Test (ESF)	02/09/89	**	#
Study Plan 8.3.1.2.2.4 Characterization of the Yucca Mountain Unsaturated Zone Percolation Study (ESF)	02/09/89	**	#
Study Plan 8.3.1.4.2.2 Characterization of Structural Features in the Site Area (ESF)	02/09/89	**	#
Study Plan 8.3.1.15.1.5 Excavation Investigations (ESF)	02/09/89	**	#
Study Plan 8.3.1.15.2.1 Characterization of the Site Ambient Stress Conditions (ESF)	02/09/89	**	#
Study Plan 8.3.1.5.2.1.3-.5 Characterization of the Yucca Mountain Quaternary Regional Hydrology	06/30/89	11/24/89	06/08/90
Study Plan 8.3.1.17.4.2 Evaluating the Location and Recency of Faulting Near Prospective Surface Facilities	06/30/89	11/24/89	03/16/90
Study Plan 8.3.1.3.2.1 Mineralogy, Petrology, and Geochemistry of Transport Pathways	11/30/89	08/20/90	03/13/91
Study Plan 8.3.1.2.3.1.7 Testing of the C-Hole Sites with Reactive Tracers	04/06/90 (complete version 03/07/91)	12-06-91	##
Study Plan 8.3.1.8.5.1 Characterization of Volcanic Features	05/15/90	08/20/90	03/18/91

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Study Plan 8.3.1.15.1.2 Laboratory Thermal Expansion Testing	10-04-90	***	#
Study Plan 8.3.1.2.1.2 Characterization of the Yucca Mountain Regional Surface - Water Runoff and Streamflow	10/04/90	05/14/91	+
Study Plan 8.3.1.16.1.1 Characterization of Flood Potential and Debris Hazards of the Yucca Mountain Site	10/11/90	05/08/91	Not needed
Study Plan 8.3.1.17.4.1 Historical and Current Seismicity	10/22/90	05/14/91	Not needed
Study Plan 8.3.1.15.1.1 Laboratory Thermal Properties	01/22/91	***	#
Study Plan 8.3.1.17.4.10 Geodetic Leveling	02/14/91	10/04/91	Not needed
Study Plan 8.3.1.2.1.3 Characterization of the Yucca Mountain Regional Ground Water Flow System	02/15/91	10/04/91	Not needed
Study Plan 8.3.1.17.4.6 Quaternary Faulting within the Site Area	02/19/91	10/03/91	Not needed
Study Plan 8.3.1.2.2.1 Characterization of the Unsaturated-Zone Infiltration	03/01/91	05/31/91	Not needed
Study Plan 8.3.1.8.1.1 Probability of Magmatic Disruption of the Repository	03/05/91	10/05/91	To be provided
Study Plan 8.3.1.2.3.1.1-6, Characterization of the Site Saturated-Zone Ground-Water Flow System	03/07/91	12/06/91	##

Study Plan 8.3.1.2.2.7 Hydrochemical Characterization of the Unsaturated Zone	05/08/91 & 09/13/91 (to amend errors)	04/27/92	Not needed
*Study Plan 8.3.1.2.2.3 Characterization of Percolation in the Unsaturated Zone, Surface-Based Study	05/10/91	03/26/92	Not needed
Study Plan 8.3.1.12.2.1 Meteorological Monitoring Plan (Study Plan for Meteorological Data Collection at the Yucca Mountain Site)	05/16/91	11/12/91	##
Study Plan 8.3.1.15.1.3 Laboratory Determination of Mechanical Properties of Intact Rock	06/21/91	***	#
*Study Plan 8.3.1.5.1.4 Analysis of the Paleoenvironmental History of the Yucca Mountain Region	06/24/91	12/06/91	##
Study Plan 8.3.1.2.1.1 Characterization of Meteorology for Regional Hydrology	06/21/91	10/21/91	Not needed
Study Plan 8.3.1.2.2.6 Characterization of the Yucca Mountain Unsaturated- Zone Gaseous Phase Movement	06/24/91	10/07/91	Not needed
Study Plan 8.3.1.9.2.2 Water Resource Assessment of Yucca Mountain, Nevada	09/20/91	05/04/92	Not needed
*Study Plan 8.3.1.14.2 Studies to Provide Soil and Rock Properties for Potential Locations of Surface Facilities and Subsurface Access Facilities	10/16/91	01/23/92	##

Study Plan 8.3.1.17.3.4 Effects of Local Site Geology on Surface and Subsurface Motions	12/04/91	TBD	
Study Plan 8.3.1.5.1.2 Paleoclimate Study: Lake, Playa, and Marsh Deposits	12/06/91	4/27/92	##
Study Plan 8.3.1.2.1.4 Regional Hydrologic Synthesis and Modeling	01/15/92	5/06/92	+
Study Plan 8.3.1.17.3.1 Relevant Earthquake Sources	01/16/92	5/12/92	Not needed
Study Plan 8.3.1.3.2.2 History of Mineralogic and Geochemical Alteration of Yucca Mountain	01/31/92	4/27/92	##
Study Plan 8.3.1.5.1.3 Climatic Interpretations of Terrestrial Paleoecology	02/28/92	TBD	

\* DOE letter dated October 29, 1991, notified NRC of three study plans considered to be a high priority since these studies are either (1) supporting specific surface-based activities that the DOE would begin in FY92, or (2) supporting data acquisition to be used as input for Title II design of the ESF.

\*\* NRC review has been deferred because study plan is related to ESF construction-phase testing.

\*\*\* NRC review has been deferred because study plan is incomplete and/or undergoing substantial revision.

+ NRC letter to DOE is pending.

# NRC decision on whether a Detailed Technical Review of a particular study plan is to be done is made after completion of Phase I review. Phase I review has not been completed.

## NRC decision on whether a Detailed Technical Review is to be done is pending receipt of NRC-requested information from DOE.

TBD = To be determined by NRC as to when a Phase I Review is scheduled to be completed and if a Detailed Technical Review is necessary.