



UNITED STATES
NUCLEAR REGULATORY COMMISSION
 WASHINGTON, D.C. 20555-0001

March 28, 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, DC 20585

SUBJECT: ISSUE RESOLUTION STATUS REPORT ON CHAPTER 6 OF THE LAAO
 RECOMMENDATION TO CLOSE SITE CHARACTERIZATION ANALYSIS OPEN ITEMS
 101, 103, AND 115

Dear Mr. Milner:

The U.S. Nuclear Regulatory Commission staff has conducted an evaluation of issues related to the scenario selection and screening methodology as described in Chapter 6, "Overall System Performance Assessment," of the U.S. Department of Energy's (DOE's) "Mined Geologic Disposal License Application Annotated Outline (LAAO)" (3/95). There are five open items applicable to these issues, which were documented in the staff's 1989 Site Characterization Analysis (SCA): SCA Comments 95, 101, 103, 105, and 115. The staff reviewed the LAAO to determine if it provided sufficient information to resolve these open items, whether it described plans and information needs that would address them, or whether the DOE program had changed such that the open item could now be considered obsolete. The staff believes that three of the five open items can be closed.

Based on its review of the LAAO and of other information available, and consistent with the agreement on issue resolution, the staff considers the following SCA open items closed, for the reasons discussed below.

- Open Item 101 addressed an equation cited in the 1988 Site Characterization Plan (page 8.3.5.13-21) used to estimate the partial performance measure for the j^{th} scenario class involving water pathway releases. The staff's initial concern was that the equation may be in error. However, DOE is no longer proposing the use of partial performance measures in its methodology.
- Open Item 103 addressed the use of "Ross Sequence Numbers" in the SCP. (Specifically, the Ross Sequence Numbers 59 through 62 and 64 through 69 do not characterize scenarios.) However, there is no indication of any further use of the Ross Sequence Numbers by DOE in the designation of scenarios or scenario classes.
- Open Item 115 addressed a statement in the SCP that complementary cumulative distribution function (CCDF) scenario classes can only be

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expanded if entities are independent. The staff considers this statement incorrect. Section 6.3.4.1, page 6.3-18 of the LAAO (3/95) shows the use of conditional probabilities in determining the probability of the volcanic component of a repository release. The staff considers derivation of the CCDF in terms of conditional probability to be a better formulation than the statements made in the SCP. However, the staff continued to have concerns regarding the formulation used in the LAAO, in that the formulation does not consider all contributions to probability or to consequences that should be included but do not appear to be included in the LAAO formulation. The staff has discussed this issue in correspondence regarding the use of the "tripartite probability" (M. Bell to S. Brocoum, letter of February 8, 1996) and agrees with DOE's discussion (S. Brocoum to J. Holonich, August 11, 1995) of how volcanism will be incorporated into TSPA. Therefore, DOE appears to have addressed the staff's concerns.

The staff considers the following SCA open items open, for the reasons discussed below:

- Open Item 95 considered the underlying logic for and implementation of scenario development and screening deficient for generating a CCDF and for guiding site characterization. Based on its review of the LAAO, it appears that DOE has provided some additional, but limited, information on an outline for an approach for screening scenarios. However, the scenario selection and screening approach has not been sufficiently demonstrated so as to permit the staff to make a determination that it would be acceptable for site characterization or licensing. Specifically, DOE still has not provided an application of a systematic selection methodology to a comprehensive list of scenarios representing credible events and processes appropriate to Yucca Mountain.
- Open Item 105 addressed the concern that site characterization should provide data, analyses, or justification to substantiate elimination of scenarios. The DOE has not yet provided a complete and logically consistent demonstration of the use of site specific data in selecting and screening scenarios.

If you have any questions, please feel free to contact the NRC Project Manager for Licensing Issues, Ms. Sandra Wastler at (301) 415-6724.

Sincerely,

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

cc: R. Loux, State of Nevada
J. Meder, Nevada Legislative Counsel Bureau
W. Barnes, YMPO
C. Einberg, DOE/Wash, 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
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