



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

October 2, 1998

Dr. Stephan Brocoum
Assistant Manager for Licensing
U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Yucca Mountain Site Characterization Office
P.O. Box 30307
North Las Vegas, Nevada 89036-0307

SUBJECT: ISSUE RESOLUTION STATUS REPORT (REV. 1)
KEY TECHNICAL ISSUE: REPOSITORY DESIGN AND
THERMAL-MECHANICAL EFFECTS

Dear Dr. Brocoum:

As you know, the staff of the U.S. Nuclear Regulatory Commission (NRC) has developed a process for early resolution of technical issues at the staff level, which involves the preparation of Issue Resolution Status Reports (IRSRs) for the 10 key technical issues (KTIs) most important to performance. Rev. 0 of the IRSR on Repository Design and Thermal-Mechanical Effects (RDTME) KTI was issued on October 29, 1997. The U.S. Department of Energy (DOE) commented on Rev. 0 on April 28, 1998, and no changes to the IRSR resulted from DOE comments. The enclosed IRSR (Rev. 1) covers work done by the staff and its contractor (Center for Nuclear Waste Regulatory Analyses) during the current fiscal year (FY) 1998.

As in Rev. 0, the main issue of the RDTME KTI has been broken into four subissues dealing respectively with: (1) design control process; (2) seismic design; (3) thermal effects; and (4) repository seals. Rev. 0 addressed one component of the first subissue, namely, design control process for the exploratory studies facility (ESF), and one component of the second subissue, namely, preclosure seismic design methodology for the geologic repository operations area (GROA). IRSR Rev. 0 concluded that: (1) the design control process employed by DOE for the design, construction, and operation of the ESF; and (2) the seismic design methodology proposed by DOE for the GROA, were acceptable to the staff. This version (Rev. 1) of the IRSR focuses on the second component of the first subissue, namely, the design control process for the GROA, and the third subissue, namely, thermal-mechanical (TM) effects. TM effects subissue has three components, all of which have been developed to different degrees in this version. These components of subissues identified above are important because they potentially impact the performance of the repository.

Based on a focused review of a limited number of selected DOE design control documents, the staff concludes that the design control process being implemented by DOE in designing the GROA is, in general, acceptable to the staff. There is one area of concern, that being the control of changes to an original design and proper documentation of such changes. The staff will continue to monitor DOE's design control process that will be implemented in the design of the GROA during FY1999.

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No progress in the resolution of seismic design inputs has been reported in this revision of the IRSR because the anticipated completion of the topical report (TR-3) on the subject was postponed to FY1999 by DOE. The staff expects to review DOE's TR-3 during FY1999 and to document the results in Rev. 2 of the IRSR.

In this version of the IRSR, the staff has developed and documented acceptance criteria and much of the supporting technical bases for all the three components of the TM effects subissue. However, more work needs to be done in reviewing and documenting the work done by DOE in this area before achieving resolution of the subissue. The staff expects to continue work under this topic during FY1999 and to document its work in the next revision to the IRSR.

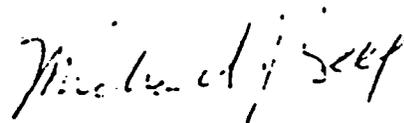
No work was done on the fourth subissue related to repository seals during FY1998 because of the low priority assigned to it at this time. This subissue will be addressed in subsequent revisions as DOE and NRC begin to focus more attention on it.

Consistent with 10 CFR Part 60 requirements and a 1992 agreement with DOE, staff-level issue resolution can be achieved during the prelicensing consultation period. However, such resolution at the staff level would not preclude the issue being raised and considered during the licensing proceedings. Issue resolution at the staff level during prelicensing is achieved when the staff has no further questions or comments (i.e., open items) at a point in time, regarding how the DOE program is addressing an issue. There may be some cases where resolution at the staff level may be limited to documenting a common understanding regarding differences in the staff's and DOE's points of view. Pertinent additional information could raise new questions or comments regarding a previously resolved issue.

Finally, the enclosure should be viewed as a status report that provides the staff's most current views on the RDTME KTI. The report is scheduled to be updated in the future as additional information becomes available. We welcome a dialogue on this subject with DOE, the U.S. Nuclear Waste Technical Review Board, State of Nevada, and other interested parties.

If you have any questions about this letter, please contact Dr. Mysore Nataraja of my staff at (301) 415-6695, or via Internet mail service (msn1@nrc.gov).

Sincerely,



Michael J. Bell, Branch Chief
Engineering and Geosciences Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated
cc: See attached list

Letter to S. Brocoum from M. Bell dated: October 2, 1998

cc: R. Loux, State of Nevada
S. Frishman, State of Nevada
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A. Brownstein, DOE/Wash, DC
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B. Price, Nevada Legislative Committee
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J. Kessler, EPRI

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Finally, the enclosure should be viewed as a status report that provides the staff's most current views on the RDTME KT1. The report is scheduled to be updated in the future as additional information becomes available. We welcome a dialogue on this subject with DOE, the U.S. Nuclear Waste Technical Review Board, State of Nevada, and other interested parties.

If you have any questions about this letter, please contact Dr. Mysore Nataraja of my staff at (301) 415-6695, or via Internet mail service (msn1@nrc.gov).

Sincerely,
 (orig signed by:)
 Michael J. Bell, Branch Chief
 Engineering and Geosciences Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

Enclosure: As stated
 cc: See attached list

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