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QA: N/A

**JUL 19 2001**

OVERNIGHT MAIL

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**FISCAL YEAR 2001 (FY 01) SUPPLEMENTAL SCIENCE AND PERFORMANCE  
ANALYSES, VOLUME 1: SCIENTIFIC BASES AND ANALYSES**

The enclosure is the *FY 01 Supplemental Science and Performance Analyses, Volume 1: Scientific Bases and Analyses* (SSPA). This report is provided for your information. This document is intended to supplement information contained in Analysis and Modeling Reports (AMR) supporting the *Yucca Mountain Science and Engineering Report, Revision 00* (S&ER). The S&ER and its supporting reports have been provided previously to the U.S. Nuclear Regulatory Commission (NRC).

Please note that we have internally identified an error that has affected the figures and tables listed in Enclosure 3. However, in the interest of getting the SSPA to you in a timely manner, we are sending you Revision 00 to be followed by an Interim Change Notice with corrected figures, tables, and associated text.

The SSPA has been prepared to address several specific aspects of the existing uncertainties related to the performance of a potential Yucca Mountain, Nevada, repository. It describes new information developed since the completion of the S&ER and its supporting references, the Total System Performance Assessment for the Site Recommendation (TSPA-SR), and the AMRs and Process Model Reports cited therein.

Based on internal reviews of the S&ER and other documents, the U.S. Department of Energy (DOE) has identified and performed several types of analyses to supplement the treatment of uncertainty in support of the consideration of a possible site recommendation. The information in this report is intended to supplement, not supplant, that contained in earlier documents. In general, the studies and analyses described in this document provide additional information of three types:

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1. Unquantified Uncertainties Analysis – to provide insights into the significance of the unquantified uncertainties and the degree of conservatism in the overall assessment of repository performance.
2. Supplemental Scientific Information – to provide insights into the impacts of new scientific results and improved models and to develop additional confidence in the models and parameters used for TSPA.
3. Lower-Temperature Operating Mode Analysis – to provide insights into the effect of thermal parameters on predicted repository performance, including uncertainty of those predictions, and to increase confidence in the predicted repository performance over a range of thermal conditions.

Due to the SSPA's purpose, not all of the models, analyses, and data used in this study are fully qualified. It has not yet been determined which, if any of these models, analyses, and data need to be fully qualified. Because of quality assurance requirements, the models, analyses, and data used in this study are not intended to be used, as is, in a license application (LA) if the Yucca Mountain site is found to be suitable for the development of a repository. However, if DOE determines that information from the SSPA will be used in a LA, this information would be fully qualified for that purpose.

We are working with your staff to schedule an interaction on the enclosed report in the near future. If you have any questions or require further information, please call William J. Boyle at (702) 794-5506 or Timothy C. Gunter at (702) 794-1343.



Stephan Brocoun  
Assistant Manager, Office of  
Licensing and Regulatory Compliance

OL&RC:TCG-1437

Enclosures:

1. Hard Copy of Enclosure 2
2. CD containing *FY 01 Supplemental Science and Performance Analyses, Volume 1: Scientific Bases and Analyses*
3. List of Figures and Tables to be Replaced in Interim Change Notice 01

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cc w/encls 2 & 3:

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**Figures and Tables to be replaced in Interim Change Notice 01**

**Section 5.3.1.4.11 (pp 5-51 - 5-54)**

Figure 5.3.1.4.11-1

Figure 5.3.1.4.11-2

Figure 5.3.1.4.11-3

Table 5.3.1.4.11-1

**Section 5.3.2.4.2 (pp 5-63 - 5-67)**

Figure 5.3.2.4.2-9

Figure 5.3.2.4.2-10

Figure 5.3.2.4.2-11

Figure 5.3.2.4.2-12

Table 5.3.2.4.2-2

**Section 5.3.2.4.3 (pp 5-67 - 5-68)**

Figure 5.3.2.4.3-1

Figure 5.3.2.4.3-2

Figure 5.3.2.4.3-3

Figure 5.3.2.4.3-4

Table 5.3.2.4.3-1

**Section 5.4.2 (pp 5-95 - 5-98)**

Figure 5.4.2-2

Figure 5.4.2-3

Figure 5.4.2-4

Figure 5.4.2-5

Figure 5.4.2-6

Figure 5.4.2-7

Figure 5.4.2-8