



Department of Energy
Office of Civilian Radioactive Waste Management
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QA: N/A
Project No. WM-00011

OCT 31 2003

OVERNIGHT MAIL

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TRANSMITTAL OF REPORT *TECHNICAL BASIS DOCUMENT NO. 3: WATER SEEPING INTO DRIFTS* ADDRESSING KEY TECHNICAL ISSUE (KTI) AGREEMENTS

This letter transmits *Technical Basis Document No. 3: Water Seeping into Drifts*, Revision 2 (enclosure 1) and a CD format of the report (enclosure 2). This technical basis document contains a summary of the current conceptual understanding of drift seepage processes and provides the context within which individual KTI agreements related to water seeping into emplacement drifts are addressed. Appendices A through E provide direct responses to the following Radionuclide Transport (RT), Thermal Effects on Flow (TEF), Total System Performance Assessment and Integration (TSPAI), Unsaturated and Saturated Zone Flow Under Isothermal Conditions (USFIC), Structural Deformation and Seismicity (SDS) KTIs, and related General (GEN) 1.01 agreements:

- Appendix A – Effects of Heterogeneity on Thermal Seepage (Response to TEF 2.08 and GEN 1.01 (Comment 15))
- Appendix B – Using Test Data to Reduce Uncertainty in Total System Performance Assessment Seepage Abstraction (Response to TSPAI 3.25)
- Appendix C – In Situ Field Testing Results and Analyses (Response to USFIC 4.01)
- Appendix D – Justification of Continuum Approach for Seepage Modeling (Response to USFIC 4.06)
- Appendix E – Alcove 8/Niche 3 Pre-Test Predictions (Response to RT 3.06 AIN-1 and SDS 3.02 AIN-1)

The subject report is one in a series of technical basis documents that are being prepared to describe the Yucca Mountain repository system components and processes that are important for predicting the likely postclosure performance of the repository. The information presented in these documents, along with the associated references, responds to open KTI Agreements made

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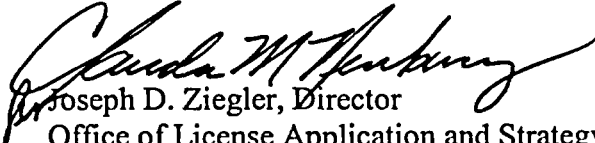
between the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE). Placing the DOE responses to individual KTI agreements in the context of the applicable repository system components and processes allows for a more direct discussion of the relevance of the agreements to the postclosure safety analyses that will be presented in the License Application. The goal of this approach is to provide a more direct and transparent discussion of the relevant KTI agreements.

The enclosed technical basis document discusses the methods used to model seepage into emplacement drifts. It includes a description of processes and features that are important to understanding drift seepage; the comprehensive testing program to obtain site-specific, seepage-relevant data; seepage-rate calculations based on calibrated and validated seepage models, and abstraction of drift seepage into the Total System Performance Assessment considering uncertainties and variabilities. This document places the responses to individual KTI agreements related to drift seepage within the context of the overall conceptual understanding of seepage into emplacement drifts, explains their relationship to the postclosure safety analyses, and provides a discussion of the relevance of KTI agreements in the context of the seepage models.

The DOE considers the KTI agreements covered in *Technical Basis Document No. 3: Water Seeping into Drifts* to be fully addressed, and pending review and acceptance by NRC, they should be closed.

There are no new regulatory commitments in the body or the enclosures of this letter. Please direct any questions concerning this letter and its enclosures to Deborah L. Barr at (702) 794-1479 or Joe C. Price at (702) 794-1441.

OLA&S:TCG-0053


Joseph D. Ziegler, Director
Office of License Application and Strategy

Enclosures:

1. *Technical Basis Document No. 3: Water Seeping into Drifts*, Revision 2
2. CD of Enclosure 1

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cc w/encls 1 and 2:

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