



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

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OVERNIGHT MAIL

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TRANSMITTAL OF REPORT *TECHNICAL BASIS DOCUMENT NO. 13: VOLCANIC EVENTS* ADDRESSING KEY TECHNICAL ISSUE (KTI) AGREEMENTS RELATED TO IGNEOUS ACTIVITY (IA)

This letter transmits *Technical Basis Document No.13: Volcanic Events*, 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 volcanism in the Yucca Mountain, Nevada, region and describes how this information is used in the probabilistic analysis of the risk represented by disruption of the Yucca Mountain repository by a basaltic volcanic event. The technical basis document also provides the context within which individual KTI agreements related to IA are addressed. Appendices A through D each provide a direct response to the following IA agreements:

- Appendix A – Likely Range of Tephra Volumes (Response to IA 2.03 AIN-1)
- Appendix B – Wind Speeds for Various Heights of Eruptive Columns (Response to IA 2.09 AIN-1)
- Appendix C – Waste Package Response to Stresses from Thermal and Mechanical Effects Associated with Exposure to Basaltic Magma (Response to IA 2.19)
- Appendix D – Potential for Basaltic Magma to Incorporate High-Level Radioactive Waste (Response to IA 2.20)

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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 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 characterize the volcanism in the Yucca Mountain region, as well as a description of numerical modeling of magma encountering the repository. This document places the responses to individual KTI agreements related to igneous activity within the context of the overall conceptual understanding of the repository system, explains their relationship to the postclosure safety analyses, and provides a discussion of the relevance of KTI agreements in the context of the overall study of volcanic events.

The DOE considers the KTI agreements covered in *Technical Basis Report 13: Volcanic Events* 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 Eric T. Smistad at (702) 794-5073 or Timothy C. Gunter at (702) 794-1343.


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

OLA&S:TCG-0049

Enclosures:

1. *Technical Basis Document No. 13: Volcanic Events*, Revision 2
2. CD of Enclosure 1

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cc w/encls 1 and 2:

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