



Department of Energy
Office of Civilian Radioactive Waste Management
Office of Repository Development
1551 Hillshire Drive
Las Vegas, NV 89134-6321

QA: N/A
Project No. WM-00011

MAY 27 2004

OVERNIGHT MAIL

ATTN: Document Control Desk
Director, Division of High-Level Waste
Repository Safety
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

KEY TECHNICAL ISSUE (KTI) AGREEMENTS EVOLUTION OF THE NEAR-FIELD ENVIRONMENT (ENFE) 1.07 ADDITIONAL INFORMATION NEEDED (AIN), ENFE 4.02, AND TOTAL SYSTEM PERFORMANCE ASSESSMENT AND INTEGRATION (TSPA) 2.02, COMMENTS J-9 AND J-21

- References: (1) Ltr, Schlueter to Brocoum, dtd 2/14/02 (ENFE KTI Agreements)
(2) Ltr, Schlueter to Ziegler, dtd 3/20/03 (ENFE Agreement 1.07 and TSPA Agreement 2.02, Comment J-9 and Comment J-21, Status: Partly Received)
(3) Ltr, Schlueter to Ziegler, dtd 12/23/03 (Status of NRC Review of DOE KTI Agreement Responses and Information Needed to Complete NRC Reviews)
(4) Ltr, Ziegler to Director, Division of High-Level Waste Repository Safety (NRC), dtd 3/18/04 (Transmittal of Reference Documents to Support the NRC Review of KTI Agreements Related to TBD No. 3: Water Seeping into Drifts)

In Reference 1, the U.S. Nuclear Regulatory Commission (NRC) listed Agreement ENFE 4.02 as "Partly Received" pending the submittal of Revision 002 of the *Drift-Scale Coupled Processes (DST and THC Seepage) Models, Analysis and Model Report (AMR)*. In Reference 2, the NRC also listed Agreements ENFE 1.07 and TSPA 2.02 (Comments J-9 and J-21) as "Partly Received," and identified the AIN to complete these agreements. In the AIN, NRC requested that documentation be provided for a qualitative comparison of types and locations of the deposition of secondary minerals between observational results from the mineralogy-petrology analyses of side-wall core samples collected during the Drift Scale Test (DST) and estimates from the DST thermal/hydrological/chemical (THC) modeling. As discussed with your staff, only qualitative comparison is justifiable (or semi-quantitative if one allows that both model and observations indicate that mineral precipitation should have been miniscule in terms of mass and volume). The purpose of the comparison is to check to see that (a) the appropriate minerals were predicted to precipitate and (b) the locations of those relative to the boiling front, etc., agreed with the observed locations.

AM5507

MAY 27 2004

Director, Division of High-Level Waste
Repository Safety

-2-

In response to these agreements, the U.S. Department of Energy (DOE) is submitting AMR *Drift-Scale Coupled Processes (DST and THC Seepage) Models*, MDL-NBS-HS-000001, Revision 002, Errata 002 (enclosure 1) and a compact disk (CD) version of the report (enclosure 2). This submittal satisfies the Agreement ENFE 4.02. In addition, Section 7.1.12 of this AMR provides the comparison of predicted changes in mineralogy to measurements of in situ side-wall core samples for calcite, amorphous silica, and gypsum from the above-boiling zones during the heating phase of the DST. This addresses the AIN for completing Agreement ENFE 1.07 and the part of Agreement TSPA I 2.02 (Comments J-9 and J-21) pertaining to Agreement ENFE 1.07.

The DOE considers Agreements ENFE 1.07, ENFE 4.02, and the part of Agreement TSPA I 2.02 (Comments J-9 and J-21) pertaining to Agreement ENFE 1.07 to be fully addressed by the enclosed information, and pending review and acceptance by NRC, they should be closed.

Finally, the AMR *Drift-Scale Coupled Processes (DST and THC Seepage) Models*, MDL-NBS-HS-000001 Revision 002, Errata 002 is one of the ten documents cited in the *Technical Basis Document No. 3: Water Seeping into Drifts*, Revision 02 and requested by NRC in Reference 3. Eight of these documents were transmitted to NRC in Reference 4. The remaining documents requested for the NRC staff review will be sent once it has been approved.

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

OLA&S:JCP-1135

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

Enclosures:

1. AMR *Drift-Scale Coupled Processes (DST and THC Seepage) Models*, MDL-NBS-HS-000001 Revision 002, Errata 002
2. CD of Enclosure 1
3. Document File Format Information of CD

MAY 27 2004

Director, Division of High-Level Waste
Repository Safety

-3-

cc w/encls 1, 2 & 3:

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cc w/encls 2 & 3:

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cc w/o encls:

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L. L. Campbell, NRC, Rockville, MD
R. M. Latta, NRC, Las Vegas, NV
N. K. Stablein, NRC, Rockville, MD

Enclosure 3

Document File Format Information of CD

The enclosed CD contains the AMR *Drift Scale Coupled Processes (DST and THC) Models* requested by the NRC for KTI agreements ENFE 1.07, ENFI 4.02, and TSPAI 2.02 and for *Technical Basis Document No. 3: Water Seeping Into Drifts*.

The pdf files included in the CD are:

<u>Directory/File Name</u>	<u>Size (Kbytes)</u>	<u>Date</u>	<u>Sensitivity Level</u>
MDL-NBS-HS-000001 REV 002 ERRATA 002.pdf	20,417	4/7/04	Publicly Available