

December 23, 2003

Joseph D. Ziegler, Director
Office of License Application and Strategy
U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Office of Repository Development
1551 Hillshire Drive
North Las Vegas, NV 89134-6321

SUBJECT: STATUS OF U.S. NUCLEAR REGULATORY COMMISSION (NRC) REVIEW
OF U.S. DEPARTMENT OF ENERGY KEY TECHNICAL ISSUE AGREEMENT
RESPONSES AND INFORMATION NEEDED TO COMPLETE NRC REVIEWS

Dear Mr. Ziegler:

By letters dated September 24, 2003; October 2, 2003; October 3, 2003; October 31, 2003; November 18, 2003; and November 25, 2003, you submitted to the U.S. Nuclear Regulatory Commission (NRC) staff the following technical basis documents:

- Technical Basis Document No. 12: *Biosphere Transport*
- Technical Basis Document No. 11: *Saturated Zone Flow and Transport*
- Technical Basis Document No. 8: *Colloids*
- Technical Basis Document No. 3: *Water Seeping Into Drifts*
- Technical Basis Document No. 13: *Volcanic Events*; and
- Technical Basis Document No. 5: *In-Drift Chemical Environment*

The NRC has completed its initial review of Technical Basis Documents numbers 3, 8, 11, 12, and 13, and will complete its initial review of Technical Basis Document number 5 in January 2004. Technical basis documents where initial reviews have been completed represent responses to 53 agreement items, which include responses to NRC additional information needs.

The U.S. Department of Energy (DOE), as recently as the September 23, 2003, technical exchange concerning the approach for these technical basis documents, stated that it would provide all relevant information at the time the technical basis document was submitted to NRC. However, with regard to information that may be key to the NRC review, DOE has not routinely provided supporting information, most of which is also not publicly available. NRC expects DOE to provide NRC with all information requested in the original agreements. To date, the summary explanation contained within the various technical basis documents has not been sufficient. As a result of the lack of supporting information, NRC's review of certain agreement responses cannot be completed.

Specifically, NRC found that 74 percent (or 39) of the responses to agreements in the technical basis documents reviewed do not appear to fully satisfy the agreements. Consequently, DOE needs to provide the supporting documentation (e.g., currently non-publicly available analysis

model reports) or information required to review agreement responses where inadequate bases were provided. NRC has enclosed a list of references, that were identified by DOE in the various technical basis documents, as containing the supporting bases for assumptions, parameters, and conclusions. NRC cannot complete its review of these agreements without the documentation identified in the enclosure.

In addition, 26 percent (or 14) agreement responses appear to have adequately addressed the intent of the original agreements. For those agreements where adequate information appears to have been satisfactorily incorporated into the technical basis document, NRC will complete a detailed review and provide a letter response to DOE.

To facilitate the NRC agreement review process, I request that DOE inform NRC of its plans for how and when the supporting documentation detailed or referenced within agreements will be made available to NRC. As discussed during the November 13, 2003 quarterly public NRC/DOE management meeting, DOE has options for how it provides the necessary information to NRC (e.g., via website, by letter), thus also making the information publicly available.

NRC is prepared to discuss these information needs and challenges with DOE to identify a timely solution. If you have any questions regarding this matter, please contact Gregory Hatchett, of my staff at 301-415-3315 or by e-mail to gxh@nrc.gov.

Sincerely,

/RA/

Janet R. Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure:

NRC Request for Documentation Related to KTI Agreements Addressed Within
Various Technical Basis Docs

cc: See attached distribution list

model reports) or information required to review agreement responses where inadequate bases were provided. NRC has enclosed a list of references, that were identified by DOE in the various technical basis documents, as containing the supporting bases for assumptions, parameters, and conclusions. NRC cannot complete its review of these agreements without the documentation identified in the enclosure.

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Sincerely,

/RA/

Janet R. Schlueter, Chief
 High-Level Waste Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

Enclosure:
 NRC Request for Documentation Related to KTI Agreements Addressed Within
 Various Technical Basis Docs

cc: See attached distribution list

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| DATE | 12/9/03 | 12/18/03 | 12/18/03 | 12/19/03 | 12/22/03 |

Letter or Memorandum to J. Ziegler from J. Schlueter, dated: December 23, 2003

cc:

| | |
|---|---------------------------------------|
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P. Thompson, Duckwater Shoshone Tribe

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G. Hernandez, Las Vegas Paiute Tribe

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E. Smith, Chemehuevi Indian Tribe

D. Buckner, Ely Shoshone Tribe

V. Guzman, Walker River Paiute

D. Eddy, Jr., Colorado River Indian Tribes

H. Jackson, Public Citizen

J. Wells, Western Shoshone National Council

D. Crawford, Inter-Tribal Council of NV

I. Zabarte, Western Shoshone National Council

NRC On-Site Representatives

S. Devlin

G. Hudlow

NUCLEAR REGULATORY COMMISSION REQUEST FOR
DOCUMENTATION RELATED TO
KEY TECHNICAL ISSUE AGREEMENTS ADDRESSED WITHIN
VARIOUS TECHNICAL BASIS DOCUMENTS

The U.S. Nuclear Regulatory Commission (NRC) is reviewing the U.S. Department of Energy's (DOE) responses to various agreements identified in the following technical basis documents:

- Technical Basis Document No. 12: *Biosphere Transport*
- Technical Basis Document No. 11: *Saturated Zone Flow and Transport*
- Technical Basis Document No. 8: *Colloids*
- Technical Basis Document No. 3: *Water Seeping Into Drifts*
- Technical Basis Document No. 13: *Volcanic Events*; and
- Technical Basis Document No. 5: *In-Drift Chemical Environment*

NRC has completed its initial review of Technical Basis Documents numbers 3, 8, 11, 12, and 13 and will complete its initial review for Technical Basis Document number 5 by January 2004. NRC can not complete its review of certain agreement items in the technical basis documents without the following:

List of References related to Technical Basis Document No. 12: Biosphere Transport

- ▶ *Biosphere Model Report*. MDL-MGR-MD-000001 REV 00. Las Vegas, Nevada: Bechtel SAIC Company. ACC MOL.20020923.0177.
- ▶ *Inhalation Exposure Input Parameters for the Biosphere Model*. ANL-MGR-MD-000001 REV 02 ICN 00. Las Vegas, Nevada. Bechtel SAIC Company. ACC: DOC.20030611.0002.
- ▶ *Characteristics of the Receptor for the Biosphere Model*. ANL-MGR-MD-000005 REV 02. Las Vegas, Nevada. Bechtel SAIC Company. ACC: DOC.20030701.0001.
- ▶ *Agricultural and Environmental Input Parameters for the Biosphere Model*. ANL-MGR-MD-000006 REV 01. Las Vegas, Nevada. Bechtel SAIC Company. ACC: DOC.20030624.0004.
- ▶ *Environmental Transport Input Parameters for the Biosphere Model*. ANL-MGR-MD-000007 REV 01. Las Vegas, Nevada. Bechtel SAIC Company. ACC: DOC.20030701.0002.
- ▶ *Soil-Related Input Parameters for the Biosphere Model*. ANL-NBS-MD-000009 REV 01. Las Vegas, Nevada. Bechtel SAIC Company. ACC: DOC.20030707.0002.
- ▶ *Nominal Performance Biosphere Dose Conversion Factor Analysis*. ANL-MGR-MD-000009 REV 02. Las Vegas, Nevada. Bechtel SAIC Company. ACC: DOC.20030728.0008
- ▶ *Disruptive Event Biosphere Dose Conversion Factor Analysis*. ANL-MGR-MD-000003 REV 02. Las Vegas, Nevada. Bechtel SAIC Company. ACC: DOC.20030724.0003.

ENCLOSURE

- ▶ *Disruptive Event Biosphere Dose Conversion Factor Sensitivity Analysis.*
- ▶ *Input Parameter Values for External and Inhalation Radiation Exposure Analysis.*
- ▶ *Biosphere Process Model Report.*

List of References related to Technical Basis Document No. 8: Colloids

- ▶ *Waste Form and In-Drift Colloids-Associated Radionuclide Concentrations: Abstraction and Summary.* MDL-EBS-PA-000004 REV 00. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030626.0006.
- ▶ *Drift-Scale Coupled Processes (DST and THC Seepage) Models.* MDL-NBS-HS-000001 REV 02. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030804.0004.
- ▶ *Features, Events and Processes in UZ Flow and Transport.* ANL-NBS-MD-000001 REV 02B. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030922.0198.
- ▶ *EBS Radionuclide Transport Abstraction.* ANL-WIS-PA-000001 REV 01F. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030922.0199.
- ▶ *Radionuclide Transport Models under Ambient Conditions.* MDL-NBS-HS-000008 REV 01A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030828.0326.
- ▶ *Saturated Zone Colloid Transport.* ANL-NBS-HS-000031 REV 01A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030602.0288.
- ▶ *SZ Flow and Transport Model Abstraction.* MDL-NBS-HS-000021 REV 01. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030916.0008.
- ▶ Mertz, C.J.; Finch, R.J.; Fortner, J.A.; Jerden, J.L., Jr.; Yifen, T.; Cunnane, J.C.; and Finn, P.A. 2003. *Characterization of Colloids Generated from Commercial Spent Nuclear Fuel Corrosion.* Activity Number: PAWTP30A. Argonne, Illinois: Argonne National Laboratory. ACC: MOL.20030422.0337.
- ▶ *In-Package Chemistry Abstraction.* ANL-EBS-MD-00037 REV 01D. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030617.0024.
- ▶ *Particle Tracking Model and Abstraction of Transport Processes.* MDL-NBS-HS-000020 REV 00. ACC: MOL.20030611.0040.

List of References related to Technical Basis Document No. 11: Saturated Zone Flow & Transport

- ▶ *Site-Scale Saturated Zone Transport.* MDL-NBS-HS-000010 REV 01A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030626.0180.
- ▶ *Saturated Zone Colloid Transport.* ANL-NBS-HS-000031 REV 01A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030602.0288.
- ▶ *Site-Scale Saturated Zone Flow Model.* MDL-NBS-HS-000011 REV 01A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030626.0296. Revision 2

- ▶ *SZ Flow and Transport Model Abstraction*. MDL-NBS-HS-000021 REV 00A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030612.0138.
- ▶ *Saturated Zone In-Situ Testing*. ANL-NBS-HS-000039 REV 00A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030602.0291.
- ▶ *Geochemical and Isotopic Constraints on Groundwater Flow Directions and Magnitudes, Mixing, and Recharge at Yucca Mountain*. ANL-NBS-HS-000021 REV 01A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030604.0164.
- ▶ *Features, Events, and Processes in SZ Flow and Transport*. ANL-NBS-MD-000002 REV 02A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030823.0129.
- ▶ *Site-Scale Saturated Zone Flow Model*. MDL-NBS-HS-000011 REV 01A, Pre-Check Copy, File as of April 22, 2003. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030922.0071.

B.5.3 Source Data, Listed by Data Tracking Number

- ▶ GS010908314221.001. Geologic Map of the Yucca Mountain Region, Nye County, Nevada. Submittal date: 01/23/2002.
- ▶ GS011008314211.001. Interpretation of the Lithostratigraphy in Deep Boreholes NC-EWDP-19D1 and NC-EWDP-2DB Nye County Early Warning Drilling Program. Submittal date: 01/16/2001.
- ▶ GS021008312332.002. Hydrogeologic Framework Model for the Saturated-Zone Site-Scale Flow and Transport Model, Version YMP_9_02. Submittal date: 12/09/2002.
- ▶ GS030108314211.001. Interpretation of the Lithostratigraphy in Deep Boreholes NC-EWDP-18P, NC-EWDP-22SA, NC-EWDP-10SA, NC-EWDP-23P, NC-EWDP-19IM1A, and NC-EWDP-19IM2A, Nye County Early Warning Drilling Program, Phase III. Submittal date: 02/11/2003.
- ▶ GS030408314211.002. Subsurface Geologic Interpretations Along Cross Sections Nye-1, Nye-2, and Nye-3, Southern Nye County, Nevada - 2002. Submittal date: 05/09/2003.

List of References related to Technical Basis Document No. 3: Water Seeping Into Drifts

- ▶ *Abstraction of Drift Seepage*. MDL-NBS-HS-000019 REV 00. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030826.0001.
- ▶ *Drift-Scale Coupled Processes (DST and TH Seepage) Models*. MDL-NBS-HS-000015 REV 00C. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030910.0160.
- ▶ *UZ Flow Models and Submodels*. MDL-NBS-HS-000006 REV 01. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030818.0002.
- ▶ *Drift Degradation Analysis*. ANL-EBS-MD-000027 REV 02. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030709.0003.

- ▶ *Seepage Calibration Model and Seepage Testing Data.* MDL-NBS-HS-000004 REV 02. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030408.0004.
- ▶ *In Situ Field Testing of Processes.* ANL-NBS-HS-000005 REV02B. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030915.0238.
- ▶ *Drift Scale THM Model.* MDL-NBS-HS-000017 REV 00. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030818.0003.
- ▶ *Drift-Scale Coupled Processes (DST and THC Seepage) Models.* MDL-NBS-HS-000001 REV 02. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030804.0004.
- ▶ *Seepage Model For PA Including Drift Collapse.* MDL-NBS-HS-000002 REV 02. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20030709.0001.
- ▶ *Drift-Scale Coupled Processes (DST and TH Seepage).* MDL-NBS-HS-000015 REV 00C. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20030910.0160.
- ▶ *Thermal Testing Measurements Report.* ANL-NBS-HS-000041 REV 00. Las Vegas, Nevada: Bechtel SAIC Company. ACC: MOL.20021004.0314

List of References related to Technical Basis Document No. 13: Volcanic Events

- ▶ *Characterize Eruptive Processes at Yucca Mountain, Nevada.* ANL-MGR-GS-000002 REV 01C
- ▶ *Atmospheric dispersal and Deposition of Tephra from a Potential Volcanic Eruption at Yucca Mountain.* MSL-MGR-GS-000002 REV 00D
- ▶ *Igneous Intrusion Impacts on Waste Packages and Waste Forms.* MDL-EBS-GS-000002 REV 00
- ▶ *Dike/Drift Interactions.* MDL-MGR-GS-000005 REV 00E
- ▶ *Number of Waste Packages Hit by Igneous Intrusion.* ANL-MGR-GS-000002 REV 00C
- ▶ *Characterize Framework for Igneous Activity at Yucca Mountain, Nevada* ANL-MGR-GS-000001 REV 01C