

March 31, 2003

Joseph D. Ziegler, Acting Director  
Office of License Application and Strategy  
U.S. Department of Energy  
Office of Repository Development  
P.O. Box 364629 M/S 523  
North Las Vegas, NV 89036-8629

SUBJECT: STRUCTURAL DEFORMATION AND SEISMICITY KEY TECHNICAL ISSUE  
AGREEMENT 2.04: STATUS - PARTLY RECEIVED

Dear Mr. Ziegler:

During the Technical Exchange and Management Meeting held on October 11-12, 2000, the U.S. Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) reached agreements on a number of issues within the Structural Deformation and Seismicity (SDS) Key Technical Issue (KTI). By letters dated October 25, 2001, and January 22, 2003, DOE provided information pertaining to SDS Agreement 2.04. In the January 22, 2003, letter, you requested that Container Life and Source Term (CLST) Agreement 2.09 be subsumed into SDS Agreement 2.04, because the information requested in the CLST agreement would be forthcoming as you address the related additional information needs for SDS Agreement 2.04. You also indicated that you believe that mapping Total System Performance Assessment and Integration Agreement 2.02 (Item Number 39) to CLST Agreement 2.08 would be sufficient.

Your proposal to address the information requested in CLST Agreement 2.09 concurrent with your efforts to satisfy SDS Agreement 2.04 is acceptable, for the purposes of tracking the information requested in CLST Agreement 2.09. We do not accept your proposal to subsume CLST Agreement 2.09 into SDS Agreement 2.04. CLST, Repository Design Thermal Mechanical Effects, and SDS KTI staff will review the forthcoming information mentioned in your letter of January 22, 2003, to ensure that it satisfies Agreements SDS 2.04 and CLST 2.09.

We would like to point out that the October 25, 2001, letter report titled "Approach to Postclosure Seismic Design Analyses for a Potential Geologic Repository at Yucca Mountain, Nevada," which was submitted by Dr. S. Brocoum to address SDS Agreements 1.02 and 2.03, also contains information relevant to SDS 2.04. In particular, the NRC Staff considers that this report provides an acceptable approach for DOE analyses of seismic risk and seismic fragility. Thus, NRC staff conclude that SDS Agreement 2.04 is now partly received.

J. Ziegler

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The staff will evaluate the implementation of this approach when it reviews future DOE documents. We will be looking forward to receive the additional information you mentioned in your letter of January 22, 2003, by July 2003 to fully satisfy SDS Agreement 2.04

If you have any questions regarding this letter, please contact Daniel Rom of my staff. He can be reached at (301) 415-6704.

Sincerely,  
/RA/

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

Enclosure: NRC Review of DOE Documents Pertaining  
to Key Technical Issue Agreements Related  
to Structural Deformation and Seismicity Key  
Technical Issue 2.04

cc: See attached distribution list

J. Ziegler

-2-

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Letter to J. Ziegler from J. Schlueter, dated: March 31, 2003

cc:

A. Kalt, Churchill County, NV	M. Corradini, NWTRB
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M. Murphy, Nye County, NV	R. Arnold, Pahrump Paiute Tribe

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cc: (Continued)

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R. McCullum, NEI

S. Kraft, NEI

J. Kessler, EPRI

D. Duncan, USGS

R. Craig, USGS

W. Booth, Engineering Svcs, LTD

L. Lehman, T-Reg, Inc.

S. Echols, ESQ

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Owens Valley

R. Mike, Duckwater Shoshone Tribe

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J. Leeds, Las Vegas Indian Center

R. M. Saulque, Benton Paiute Indian Tribe

C. Bradley, Kaibab Band of Southern Paiutes

R. Joseph, Lone Pine Paiute-Shoshone Tribe

L. Tom, Paiute Indian Tribes of Utah

E. Smith, Chemehuevi Indian Tribe

V. McQueen, Sr., Ely Shoshone Tribe

R. Quintero, Inter-Tribal Council of NV  
(Chairman, Walker River Paiute Tribe)

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

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**NRC Review of DOE Documents Pertaining to**  
**Key Technical Issue Agreements Related to Structural Deformation and Seismicity**  
**Key Technical Issue 2.04**

The U.S. Nuclear Regulatory Commission (NRC) goal of issue resolution during this interim precicensing period is to ensure that the U.S. Department of Energy (DOE) has assembled enough information on a given issue for NRC to accept a license application for review. Resolution by the NRC staff during precicensing does not preclude anyone from raising any issue for NRC consideration during the licensing proceedings. Just as important, resolution by the NRC staff during precicensing does not prejudice what the NRC staff evaluation of that issue will be after its licensing review. Issues are considered to be resolved by the NRC staff during precicensing when the staff has no further questions or comments about how DOE is addressing an issue. Pertinent new information could raise new questions or comments on a previously resolved issue.

This enclosure addresses resolution of SDS Agreement 2.04 made during the October 11- 12, 2000, Structural Deformation and Seismicity (SDS) Technical Exchange and Management Meeting (see letter dated October 27, 2000, which summarized the meeting). By letter dated October 25, 2001, the DOE addressed three SDS Agreements: 1.02, 2.03, and 2.04. NRC's responses to the DOE's submittal on two of these SDS Agreements, Numbers 1.02 and 2.03, were provided in a letter dated September 17, 2002, from J. Schlueter to J. Ziegler. The discussion below summarizes the NRC staff evaluation of the DOE response to SDS Agreement 2.04.

**Structural Deformation and Seismicity SDS Agreement 2.04**

Wording of SDS Agreement 2.04: "The approach to evaluate seismic risk, including the assessment of seismic fragility and evaluation of event sequences is not clear to the NRC, provide additional information. DOE believes the approach contained in the FEPs AMR will be sufficient to support the site recommendation. The updated FEPs AMR is expected to be available in January 2001."

NRC Review: The staff reviewed the Letter Report document titled "Approach to Postclosure Seismic Analyses for a Potential Geologic Repository at Yucca Mountain, Nevada" dated October 25, 2001. In the Letter Report, DOE stated that it will conduct a seismic risk assessment. The product of the assessment will identify initiating seismic events, the range of EBS component damage states, component interaction, event sequences, and probability distribution for ground motion induced component damage states for input to the TSPA.

The NRC staff believes that the DOE response to this issue concerning the approach to be used is appropriate. This approach is not new and has been used and implemented previously for seismic analyses of other nuclear facilities, most notably for nuclear power plants. However, its extension to a long time period (10,000 years) is untested; thus, the staff may have some questions regarding the implementation of this approach to the High-Level Waste Repository. The staff will evaluate the implementation of this approach and/or the Monte Carlo approach that samples distributions to define future repository conditions (discussed in an August 6-8, 2002, Appendix 7 Meeting) when it reviews future DOE documents.

ENCLOSURE

It is the NRC staff's understanding that the additional information needed by the staff and documented in your January 22, 2003, letter to J. Schlueter will be provided to NRC in July, 2003, to address the remaining aspects of SDS Agreement 2.04.

**Additional Information Needed:** See letter from J. Ziegler to J. Schlueter Dated January 22, 2003.

**Status Of Agreement:** Partly received.