

November 5, 2004

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

SUBJECT: PRE-LICENSING EVALUATION OF IGNEOUS ACTIVITY KEY TECHNICAL ISSUE  
AGREEMENT 1.02

Dear Mr. Ziegler:

In a letter dated November 5, 2003, the U.S. Department of Energy (DOE) submitted information to address Igneous Activity (IA) Key Technical Issue (KTI) Agreement 1.02. The agreement between DOE and the U.S. Nuclear Regulatory Commission (NRC) was reached during the IA Technical Exchange and Management Meeting held from August 29-31, 2000. DOE's transmittal letter stated that it considered the agreement to be fully addressed. As stated in the NRC letter of September 13, 2004, the NRC is continuing to provide feedback on DOE's agreement responses, until a potential license application is submitted. The NRC will make its final determination on the relevant aspect of this issue during review of a potential license application, in accordance with the requirements of 10 CFR Part 63. The NRC review of IA KTI Agreement 1.02 is discussed in the enclosures to this letter.

DOE originally responded to this agreement item by letter dated September 26, 2002. The NRC reviewed the information provided in the submittal and requested that the DOE provide additional information in our letter of December 19, 2002. The NRC, in its letter response, stated:

DOE will need to provide a technical basis to constrain the number and age of volcanic events which have occurred in the Yucca Mountain region, including events which may be present and undetected, and provide an analysis which considers the full range this uncertainty, not just the limited range considered in the Letter Report. DOE also will need to provide an evaluation of how these magnetic data could change the conceptual basis used during the original elicitation to develop probability models and associated parameter distributions, including consideration of such things as event definitions, and dike and event lengths. In future work, DOE also should recognize the staff does not consider that substituting the judgement of project staff for the expert judgment of the panel as appropriate update to an existing expert elicitation.

The NRC staff has reviewed DOE's response, dated November 5, 2003, and notes that the response provided little new information. Rather, it restates DOE's position that the volcanic hazard estimate developed in its 1995 Probabilistic Volcanic Hazard Analysis (PVHA) provides a reasonable representation of the volcanic framework and hazards for the Yucca Mountain Region,

and that the information provides adequate support for the igneous activity sections of a potential license application for a high-level waste repository at Yucca Mountain.

Thus, DOE has not yet provided a transparent, traceable, and technically appropriate basis to support continued use of the PVHA conceptual model in light of credible interpretations of new aeromagnetic and ground magnetic data. NRC encourages DOE to complete its testing and analysis program identified in Enclosure 2 of its November 5, 2003, letter. The completion of all of DOE's planned activities in this area may contribute to establishing a reasonable basis to constrain existing uncertainties in the number and age of potential buried igneous events in the Yucca Mountain region. DOE announced at the public Appendix 7 meeting on September 21, 2004, that it has begun the process of updating the PVHA through an expert elicitation. The issues discussed in the enclosures to the present letter could affect probability models and should be considered in the PVHA update.

If you have any questions regarding this matter, please contact Dan Rom, at 301-415-6704 or by e-mail to [dsr@nrc.gov](mailto:dsr@nrc.gov).

Sincerely,

/RA/

C. William Reamer, Director  
Division of High-Level Waste Repository Safety  
Office of Nuclear Material Safety  
and Safeguards

Enclosures:

1. Review by NMSS of DOE's Agreement Response Related to the Proposed Geologic Repository at YM, NV, "Igneous Activity" KTI Agreement 1.02
2. Additional Comments by NMSS on Specific Technical Concerns with DOE's Agreement Response Related to the Proposed Geologic Repository at YM, NV, "Igneous Activity" KTI Agreement 1.02

cc: See attached list

and that the information provides adequate support for the igneous activity sections of a potential license application for a high-level waste repository at Yucca Mountain.

Thus, DOE has not yet provided a transparent, traceable, and technically appropriate basis to support continued use of the PVHA conceptual model in light of credible interpretations of new aeromagnetic and ground magnetic data. NRC encourages DOE to complete its testing and analysis program identified in Enclosure 2 of its November 5, 2003, letter. The completion of all of DOE's planned activities in this area may contribute to establishing a reasonable basis to constrain existing uncertainties in the number and age of potential buried igneous events in the Yucca Mountain region. DOE announced at the public Appendix 7 meeting on September 21, 2004, that it has begun the process of updating the PVHA through an expert elicitation. The issues discussed in the enclosures to the present letter could affect probability models and should be considered in the PVHA update.

If you have any questions regarding this matter, please contact Dan Rom, at 301-415-6704 or by e-mail to [dsr@nrc.gov](mailto:dsr@nrc.gov).

Sincerely,

/RA/

C. William Reamer, Director  
 Division of High-Level Waste Repository Safety  
 Office of Nuclear Material Safety  
 and Safeguards

Enclosures:

1. Review by NMSS of DOE's Agreement Response Related to the Proposed Geologic Repository at YM, NV, "Igneous Activity" KTI Agreement 1.02
2. Additional Comments by NMSS on Specific Technical Concerns with DOE's Agreement Response Related to the Proposed Geologic Repository at YM, NV, "Igneous Activity" KTI Agreement 1.02

cc: See attached list

**DISTRIBUTION:**

HLWRS r/f	ACNW	LKokajko	ECollins	CNWRA	JGuttman
KStablein	GHatchett	MBailey	FBrown	LChandler	MYoung
JMoore	MZobler	MWoods	TCombs	BSpitzberg	WMaier
GMorell	DHiggs	SRohrer	OSR	KMcConnell	

**ML042750096**

\*See previous concurrence

OFFICE	HLWRS		HLWRS		HLWRS		HLWRS	
NAME	JRubenstone*		GHatchett*		TMcCartin*		NKStablein*	
DATE	05/11/04		05/11/04		05/26/04		05/12/04	
OFFICE	HLWRS		OGC		HLWRS		HLWRS	
NAME	LCampbell*		JMoore*		LKokajko		CWReamer	
DATE	05/12/04		10/13/04		11/05/04		11/05/04	

Letter to J. Ziegler from C.W. Reamer, dated: November 5, 2004

---

cc:

A. Kalt, Churchill County, NV	A. Elzeftawy, Las Vegas Paiute Tribe
R. Massey, Churchill/Lander County, NV	J. Treichel, Nuclear Waste Task Force
I. Navis, Clark County, NV	W. Briggs, Ross, Dixon & Bell
E. von Tiesenhausen, Clark County, NV	M. Chu, DOE/Washington, D.C.
G. McCorkell, Esmeralda County, NV	G. Runkle, DOE/Washington, D.C.
R. Damele, Eureka County, NV	C. Einberg, DOE/Washington, D.C.
L. Marshall, Eureka County, NV	S. Gomberg, DOE/Washington, D.C.
A. Johnson, Eureka County, NV	W. J. Arthur, III , DOE/ORD
A. Remus, Inyo County, CA	R. Dyer, DOE/ORD
M. Yarbro, Lander County, NV	J. Ziegler, DOE/ORD
S. Hafen, Lincoln County, NV	A. Gil, DOE/ORD
M. Baughman, Lincoln County, NV	W. Boyle, DOE/ORD
L. Mathias, Mineral County, NV	D. Brown, DOE/OCRWM
D. Swanson, Nye County, NV	S. Mellington, DOE/ORD
M. Maher, Nye County, NV	C. Hanlon, DOE/ORD
D. Hammermeister, Nye County, NV	T. Gunter, DOE/ORD
M. Simon, White Pine County, NV	A. Benson, DOE/ORD
J. Ray, NV Congressional Delegation	N. Hunemuller, DOE/ORD
B. J. Vonderheide, NV Congressional Delegation	M. Mason, BSC
T. Story, NV Congressional Delegation	S. Cereghino, BSC
R. Herbert, NV Congressional Delegation	N. Williams, BSC
M. Murphy	E. Mueller, BSC
S. Joya, NV Congressional Delegation	J. Mitchell, BSC
K. Kirkeby, NV Congressional Delegation	D. Beckman, BSC/B&A
R. Loux, State of NV	M. Voegele, BSC/SAID
S. Frishman, State of NV	B. Helmer, Timbisha Shoshone Tribe
S. Lynch, State of NV	R. Boland, Timbisha Shoshone Tribe
P. Guinan, Legislative Counsel Bureau	R. Arnold, Pahrump Paiute Tribe
R. Clark, EPA	J. Birchim, Yomba Shoshone Tribe
R. Anderson, NEI	R. Holden, NCAE

cc: (Continued)

R. McCullum, NEI

S. Kraft, NEI

J. Kessler, EPRI

D. Duncan, USGS

R. Craig, USGS

W. Booth, Engineering Svcs, LTD

C. Marden, BNFL Inc.

J. Bacoach, Big Pine Paiute Tribe of the.  
Owens Valley

P. Thompson, Duckwater Shoshone Tribe

T. Kingham, GAO

D. Feehan, GAO

E. Hiruo, Platts Nuclear Publications

G. Hernandez, Las Vegas Paiute Tribe

K. Finrock, NV Congressional Delegation

P. Johnson, Citizen Alert

A. Capoferri, DOE/Washington, DC

J. Williams, DOE/Washington, DC

A. Robinson, Robinson-Seidler

M. Dayton, City of Las Vegas

D. Wilson, Sen. Reid's Office

L. Lehman, T-REG, Inc.

J. Donnell, DOE/ORD

C. Meyers, Moapa Paiute Indian Tribe

R. Wilder, Fort Independence Indian Tribe

D. Vega, Bishop Paiute Indian Tribe

J. Egan, Egan, Fitzpatrick & Malsch, PLLC

J. Leeds, Las Vegas Indian Center

J. C. 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

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

S. Devlin

G. Hudlow

D. Irwin, Hunton & Williams

L. Alfano, Lincoln County

M. Henderson, Cong. J. Gibbon's Office

D. Duquette, NWTRB

R. Murray, DOE/ORD