

September 20, 2006

Mr. Mark H. Williams, Director  
Regulatory Authority Office  
Office of Civilian Radioactive Waste Management  
U.S. Department of Energy  
1551 Hillshire Drive  
North Las Vegas, NV 89134-6321

SUBJECT: PRE-LICENSING EVALUATION OF "PEAK GROUND VELOCITIES FOR SEISMIC EVENTS AT YUCCA MOUNTAIN, NEVADA"

Dear Mr. Williams:

This letter is in reference to the subject U.S. Department of Energy (DOE) report titled, "Peak Ground Velocities for Seismic Events at Yucca Mountain, Nevada," in which DOE describes its technical basis bounding credible horizontal peak ground velocities for the potential repository at Yucca Mountain. The U.S. Nuclear Regulatory Commission (NRC) requested that the Center for Nuclear Waste Regulatory Analyses (CNWRA) conduct an objective evaluation of the adequacy of the information supporting the technical basis for the scientific analysis and findings in the DOE report. I have enclosed the CNWRA report describing the results of its review, titled "Review of 'Peak Ground Velocities for Seismic Events at Yucca Mountain, Nevada,'" for your information.

The CNWRA review indicates that although relevant geologic information and engineering data and models were incorporated into the DOE analysis, the DOE report does not provide sufficient technical basis for the proposed limit on horizontal peak ground velocity at Yucca Mountain. Specifically, the CNWRA review identified where DOE assumptions appeared to lack an objective measure to evaluate the site data. For example, DOE asserts that geologically observable damage would occur pervasively in a rock mass that may have experienced levels of seismic ground motion that correlate with the derived threshold shear strain, whereas, the CNWRA review indicates the damage may be localized along existing structures at Yucca Mountain. Further, the NRC staff has concern that the DOE site-response analysis, in its present state, may not provide a supportable technical basis for constraining the ground motions for low-probability seismic events.

The NRC staff expects that DOE will take reasonable and practical measures to ensure that its performance assessment provides a credible representation of seismic events that might affect repository performance at Yucca Mountain. The NRC staff is encouraged by DOE's proposed future work investigating the physical realism and potential development of objective measures for bounding low-probability ground motions at Yucca Mountain. Other approaches, such as formal use of expert elicitation, could provide an alternative basis for assessing credible ground motions for low-probability seismic events at Yucca Mountain.

M. Williams

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The NRC staff is interested in interacting with your staff on peak ground velocities for seismic events at Yucca Mountain at your earliest convenience.

If you have any questions regarding this letter, please contact the Senior Project Manager for post-closure issues, Dr. James Rubenstone. He can be reached at (301) 415-5019 or by e-mail at [jxr5@nrc.gov](mailto:jxr5@nrc.gov).

Sincerely,

/RA/

Lawrence E. Kokajko, Deputy Director  
Division of High-Level Waste Repository Safety  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: Review of "Peak Ground  
Velocities for Seismic Events at  
Yucca Mountain, Nevada"

cc: See attached list.

Letter to M. Williams from L. E. Kokajko dated: September 20, 2006

cc:

A. Kalt, Churchill County, NV	A. Elzeftawy, Las Vegas Paiute Tribe
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E. von Tiesenhausen, Clark County, NV	R. Murray, DOE/OCRWM
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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/OCRWM
S. Schubert, Sen. Reid's Office	R. Dyer, DOE/OCRWM
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R. Anderson, NEI	J. Birchim, Yomba Shoshone Tribe

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W. Booth, Engineering Svcs, LTD

C. Marden, BNFL Inc.

J. Bacoeh, 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

M. Williams, DOE/OCRWM

J. Williams, DOE/Washington, DC

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B. Sagar, CNWRA

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C. Dahlberg, Fort Independence Indian Tribe

D. Vega, Bishop Paiute Indian Tribe

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J. Leeds, Las Vegas Indian Center

J. C. Saulque, Benton Paiute Indian Tribe

C. Bradley, Kaibab Band of Southern Paiutes

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R. List, Esmeralda County

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Lisa Mascaro, Washington Correspondent  
Las Vegas Sun, Washington, DC

M. Williams

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Sincerely,

/RA/

Lawrence E. Kokajko, Deputy Director  
Division of High-Level Waste Repository Safety  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: Review of "Peak Ground Velocities for Seismic Events at Yucca Mountain, Nevada"

cc: See attached list.

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