

Permit

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

November 13, 2007

Donald L. Winchell, Manager  
Los Alamos Site Office  
Department of Energy  
528 35<sup>th</sup> Street, Mail Stop A316  
Los Alamos, NM 87544

Richard S. Watkins, Associate Director  
Environment, Safety, Health, & Quality  
Los Alamos National Security, LLC  
Los Alamos Research Park  
4200 Jemez Road, Suite 400  
Los Alamos, NM 87545

**RE: NOTICE OF DEFICIENCY  
TRANSURANIC WASTE FACILITY (TRUWF) PERMIT  
MODIFICATION REQUEST (PMR)  
LOS ALAMOS NATIONAL LABORATORY (LANL)  
EPA ID NM 890010515-1  
HWB LANL-07-020**

Dear Messrs. Winchell and Watkins:

The New Mexico Environment Department (NMED) has reviewed the above-referenced document (LA-UR-07-5411) submitted by Los Alamos National Security, LLC (LANS) and the U.S. Department of Energy (the Permittees) on August 20, 2007, and hereby issues this Notice of Deficiency (NOD) concerning the seismic location standard identified in 20.4.1.900 NMAC (incorporating 40 CFR § 270.14(b)(11)(ii)). Specifically, the PMR is deficient at Appendix A, *Facility Description*, Section A.3.1, *Seismic Standard* and Supplement A.1, *Review of the Geologic and Structural Setting Near the Site of the Proposed Transuranic Waste Facility (TRUWF), Technical Area 52 (TA-52), Los Alamos National Laboratory, LA-UR-07-5191*.

For the PMR to be considered complete, it must demonstrate compliance with either 40 CFR § 270.14(b)(11)(ii)(A) or 40 CFR § 270.14(b)(11)(ii)(B). Paragraph A requires demonstration that "no faults which have had displacement in Holocene time are present, or no lineations which



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*suggest* the presence of a fault (which have displacement in Holocene time) within 3000 feet of a facility are present ....” (emphasis added) Evidence for lineaments passing within 3000 feet of the proposed facility location comes from at least two separate lines of evidence in published geologic studies: 1) aerial photography (Olig et al, 1996<sup>1</sup>); and 2) fracture density and aperture studies (Wohletz, 2006<sup>2</sup>). The westernmost of these lineaments aligns with the Guaje Mountain Fault Zone (Wohletz, EES-11 LANL, 2004<sup>3</sup>), which is a fault zone that has shown Holocene movement (Lewis et al, 2002<sup>4</sup>). This lineament is also in alignment with the displacement features shown on Figure 5 of Supplement A.1 of the PMR. Because the PMR provides no conclusive evidence of the time of these displacements, the lineaments could have had Holocene movement within 3000 feet of the site. The Permittees have therefore not demonstrated compliance with Paragraph A and must comply with Paragraph B.

Compliance with Paragraph B requires a comprehensive geologic analysis of the seismic activity proximal to the proposed facility location. Such an analysis was not included with the PMR.

NMED would consider a geologic analysis comprehensive if it includes, at a minimum, the following:

- Detailed fault map(s) that include all faults discovered during LANL trenching operations cited in other LANL reports. The map(s) should be of a usable scale and cover a five mile radius of the proposed TRUWF site;
- A lineament study and map using aerial photography and satellite imagery showing the locations of the identified lineaments within a five mile radius of the site;
- A detailed fracture density and aperture study similar to those performed by Wohletz in canyon walls and other exposures (e.g., road cuts) within or near the 3000 foot radius of the site;
- A mesa top gradient study combined with detailed contact mapping;
- A detailed description of trenching activities within one mile of the site that includes references to published literature documenting such activities;
- A discussion of the ability to determine Holocene movement in a tuff that may accommodate offset through greater fracture density and wider aperture openings;
- A discussion of potential ground motion from nearby local and regional faults;
- An earthquake map showing the epicenter of all earthquakes within Los Alamos County measured by LANL’s network of earthquake seismometers. The map should have an associated explanation that includes, at a minimum, the X,Y,Z coordinates of all earthquakes, each earthquake’s magnitude, and a discussion of uncertainty ;

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1 Olig, S., K. Kelson, J.N. Gardner, S.L. Reneau, and M. Hemphill-Haley, 1996. “The Earthquake Potential of the Pajarito Fault System, New Mexico.” New Mexico Geological Society Guidebook. 47<sup>th</sup> Field Conference, Jemez Mountains Region, 1996.

2 Wohletz, K., 2006. “Fractures in welded tuff”, Geological Society of America. Special Paper 408, 2006.

3 Wohletz, K., 2004. “Tuff Fracture Characterization Along Mortandad Canyon Between OU-01114 and OU-1129”, Los Alamos National Laboratory, LA-UR-04-8337, 2004.

4 Lewis, C.A, Lavine, S.L. Reneau, J.N. Gardner, R. Channell, and W. Criswell. 2002. “Geology of the western part of the Los Alamos National Laboratory (TA-3 to TA-16),” Rio Grande Rift, New Mexico. Rept. LA-13960-MS

- A map of the area within a 3000 foot radius of the site of sufficient scale that clearly illustrates all faults, offsets, lineaments, epicenters, and inferred faults from the fracture density studies;
- A discussion of the Permittees' seismic terminology (e.g., offset, fault, major independent fault zone, independent Holocene movement) and the regulatory ramifications, if any, of the terms; and
- Any other detailed relevant supporting evidence contained in the Permittees' records.

The Permittees must revise Section A.3.1 as appropriate. The Permittees must also revise Supplement A.1 of the PMR to include a comprehensive geologic analysis that addresses all comments contained in this NOD. If the Permittees' comprehensive geologic analysis is inconclusive concerning the absence of faults within 200 feet of the site, the Permittees must obtain the data that will meet all of the requirements of 40 CFR § 270.14(b)(11)(ii)(B). NMED anticipates initiating the drafting of permit requirements for the TRUWF in February 2008. The Permittees must resolve the seismic location standards for the facility by February 4, 2008 to avoid significant postponement of the issuance of the draft permit.

Please direct any questions you may have to Mr. Steve Pullen of my staff at (505) 476-6044.

Sincerely,



James P. Bearzi  
Chief  
Hazardous Waste Bureau

JPB:sdp

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