LANL Permit
TA-54
TA-55

NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

ENTERED

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MEMORANDUM

TO: LANL Files 2009

FROM: Sid Brandwein
Hazardous Waste Bureau

RE: LANL Lineament/Fault Inspection, Bldg. 185 (TA-55), Bldg. 39 and Dome 375 (TA-54)

Date: June 1, 2009

A field inspection looking for evidence of Holocene faulting relating to tectonic activity was conducted in the vicinity of Building 185 at TA-55, and Building 39 and Dome 375 at TA-54 on May 28, 2009. NMED personnel conducting the inspection consisted of Sid Brandwein, James Bearzi, Dave Cobrain and Michael Dale. LANL personnel included Emily Schultz-Fellenz, Jack Ellvinger, Rick Kelley and other permitting and geologic personnel. The inspection included:

- A general discussion of Holocene faulting in the Los Alamos area
- a visit at the CMRR excavation,
- following a contact in the Bandolier Tuff (units 2/3) exposed along the southwest facing cliffs of Two Mile Canyon to the south of building 185
- looking down into Mortandad Canyon and across at the south facing cliffs of the canyon to the north of building 185
- following a contact in the Bandolier Tuff (units 1/2) exposed along the south facing slope of Pajarito Canyon to the south of Dome 375 at TA-54
- following a contact in the Bandolier Tuff (units 1/2) exposed along the south facing slope of Pajarito Canyon to the south of building 39 at TA-54
- discussion of data included in Gardener et al., 1998, LA-13456-MS, High Precision Geologic Mapping to Evaluate the Potential for Seismic Rupture at TA-55, Los Alamos National Laboratory: Gardner et al., 1999, LA -13589-MS, Structural Geology of the Northwestern Portion of Los Alamos National Laboratory, Rio Grande Rift, New Mexico: Implications for Seismic Surface Rupture Potential from TA-3 to TA-55: and Reneau 1998, LA-13538-MS, Structure of the Tshirege Member of the Bandelier Tuff at Mesita del Buey, Technical Area 54, Los Alamos, National Laboratory
- General and specific questions by NMED personnel and answers by LANL personnel

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The RCRA regulations have a location standard (264.18(a)) for seismic considerations for new hazardous waste facilities. Los Alamos County is a listed county where compliance with the standard must be demonstrated (Appendix VI to Part 264). It must be shown that no faults which have had displacement in Holocene time (approximately the last 11,000 years) or lineaments which suggest the presence of a Holocene active faults exist within 3000 feet of the new facility, or, if they do, that no active Holocene faults exist within 200 feet of the facility (270.14(11)).

Lineaments, which could be considered to suggest Holocene faulting (because they align with known Holocene faults), exist within 3000 feet of TA-55. However, no faults were mapped (Gardner, 1998) or observed (this inspection) along the Unit 2/3 contact (approximately 1.22 million years ago) across the lineament closest to Building 185, nor along a swath a few hundred feet wide along the Unit 2/3 contact exposed in the canyon walls to the south of Building 185. No faults were mapped (Gardner, 1998) in the canyon walls to the north of building 185 nor observed in reconnaissance fashion (this report) from the mesa top. {Holocene faulting, if it existed across this area of Mortandad, should have been indicated by an offset in either the canyon floor, wall and/or top topography}

Lineaments exist within 3000 feet of TA-54, but they do not necessarily imply Holocene movement. No tectonic faults were mapped (Reneau, 1998) nor observed (this inspection) along the Unit 1/2 contact exposed in the cliffs to the south of TA-54 near building 39 and dome 375 nor across projected lineaments. Minor offsets (10s of centimeters) were mapped as being widely distributed and observed along the Unit 1/2 contact. These minor displacements do not display a consistent sense of movement and partially compensate for each other. These small offsets are not concentrated in discrete zones and may represent secondary faulting associated with earthquakes that have occurred elsewhere on the main trace of the Pajarito fault zone. The unit 1/2 contact is approximately 1.22 million years old. Other small scale offsets mapped at elsewhere at Pajarito Mesa had their last movement prior to 50-60,000 years ago (Reneau, 1998)}.

LANL is expected to supply documentation to show that the sites are considered to have met the seismic siting criteria.