

From: Owens, Kirk W.  
Sent: Wednesday, April 20, 2011 12:01 PM  
To: Smith, Charlotte E.  
Subject: FW: Geologic stability items for NEPA

From: Flavin, Catherine A  
Sent: Wednesday, February 16, 2011 11:07 AM  
To: English, Elizabeth W  
Cc: Denlinger, Michael A; Simons, Wayne D  
Subject: RE: Geologic stability items for NEPA

Liz,

The bulleted statements only apply to the deep excavation option where the building is resting on exposed Unit 3 material. Those reasons are why the Unit 3 must be modified/replaced if the excavation is that deep. The fact that these issues exist for the shallow option, implied by the statement in the parenthesis, is someone's interpretation that is not supported by the geotechnical report or CMRR analysis. For the shallow option the 15 foot "raft" eliminates the concerns with the bullets shown.

Note The project has completed a draft slope stability analysis and has determined that global slope stability is not an issue for either option, the final slope stability calculation is in progress.

In comparison to the units above and below, the lower part of Unit 3 (Qbt3L) has lower bearing capacity, is more compressible, has higher porosity, and has less cohesion. These rock properties, coupled with its vertical proximity to the Modified CMRR-NF foundation grade (as little as 15 feet [4.5 meters] separate Qbt3L from the proposed foundation) and its lateral proximity to the slope of Two&#8209;Mile Canyon, have led to potentially significant structural design issues, including the following:

- Potential for static deflection (compression);
- Potential for hydro-collapse, due to wetting;
- Potential for excessive movement of buttress, due to dynamic slope instability;
- Inadequate resistance to dynamic sliding forces; and
- Seismic shaking and building response (Kleinfelder 2010a).

Kleinfelder (Kleinfelder Inc.), 2010a, Phase I Ground Modification Alternatives Feasibility Study, Chemistry and Metallurgy Research Replacement (CMRR) Nuclear Facility, Los Alamos National Laboratory, Project No. 101492, Los Alamos, New Mexico, February 22.

Regarding the weight of the building, I don't see anything specifically in the Kleinfelder (2010a) report regarding weight, but the first bulleted item above regarding compression reflects their concern regarding the weight of the building with respect to the weak geologic layer.