

Department of Energy

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**CLARIFICATION OF THE RESPONSE TO ACTION ITEM 18 (885AI 18) FROM THE 1985
U.S. NUCLEAR REGULATORY COMMISSION-NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
(NRC-NNWSI) PROJECT EXPLORATORY SHAFT DESIGN/CONSTRUCTION MEETING**

- References:
- (1) Letter, Vieth to Linehan, dtd. 6/17/87
 - (2) Letter, Linehan to Kunich, dtd. 8/19/87
 - (3) NRC/NNWSI Project Exploratory Shaft Design/Construction Meeting Summary, August 27-28, 1985
 - (4) J. B. Case and P. C. Kelsall, "Modification of Rock Mass Permeability in the Zone Surrounding a Shaft in Fractured, Welded Tuff," Sandia National Laboratories Report, SAND86-7001, March 1987

In Reference 2 above, the NRC stated that the report, SAND86-7001 (Reference 4), which was proposed in Reference 1 to close Action Item 18 from the subject meeting (see Reference 3) did not provide adequate justification for the damage zone model used by the U.S. Department of Energy in the performance analysis presentation in the meeting. Instead, SAND86-7001 uses a model different from the model used in the presentation. The NRC recommended that the NNWSI Project provide a clarification as to what rock damage zone model is intended to be used in the performance analysis and provide necessary data to support that model. It is the intent of this letter to provide the needed clarification and data to close this action item.

The modified permeability zone model described in SAND86-7001 was developed specifically for and will be used in the performance analysis of the exploratory shaft. Specifically, the equivalent permeability values given in Table 4 are the basis for the performance analysis. After the August 1985 meeting, the NNWSI Project decided to revise the performance analysis. In order to have a referenceable basis for the models used in the analysis, the NNWSI Project initiated the development of an extensive bibliography on rock damage caused by blasting, evaluated the effects of stress relief on the permeability near a shaft, and documented the results in SAND86-7001. The necessary data and assumptions to support the modified model are presented or referenced in the report. For example, the data used in the stress analysis (rock mass classification data, unconfined compressive strength, etc.) are shown in Table 1 and the field and lab data used to relate permeability to effective normal stress are given in Figures 11-14.


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The NNWSI Project now considers this item to be closed. Should you have any questions regarding this topic, please contact either David M. Dawson, FTS 575-8657, at Science Applications International Corporation or Lester P. Skousen, FTS 575-8929, of my staff.


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WMPO:MBB-1110

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