

THOMAS NOTE

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OCT 2 1 1989

NOTE TO: Brian Thomas, HLPD
 FROM: John Buckley, HLEN
 SUBJECT: COMMENTS ON THERMAL LOADS TP SCOPE

On September 1, 1989 the Engineering Branch issued the proposed scope for a TP on Repository Design-Thermal Loads. Copies of the scope were sent to HLGP, HLPD, OGC and RES. Comments were received from HLPD and HLGP. As required by WM Policy #46, the comments have been summarized and addressed below.

- 1) HLGP - The author should clearly state the purpose for the TP and discuss how this purpose is related to the current DOE position on thermal loading.

To date the DOE has not outlined a specific method for evaluating and predicting the host rock response to thermal loading. As stated on page 4 of the scope this technical position will focus on presenting an acceptable methodology for reducing the uncertainties associated with the prediction of the thermal conditions and thermomechanical response of the geologic setting.

There are several sources of uncertainties associated with the prediction of the thermal conditions and thermomechanical response of the geologic setting. For example, there are uncertainties associated with 1) the selection of constitutive models, 2) representation of constitutive models by computer codes, and 3) input data for computer models. This list is not meant to be exhaustive, but it does present examples of the types of uncertainties associated with making predictions.

- 2) HLGP - Since there appears to be no inconsistency between NRC's and DOE's interpretation of 10 CFR Part 60 with regards to thermal loading, NRC's guidance should be in the form of a letter rather than a TP.

The HLEN staff believes a TP may be warranted to be consistent with the criteria identified on page 2 of WM Policy #46. The prediction of host rock response to thermal loading is particularly complex and may be potentially troublesome during licensing.

- 3) HLGP - Elaboration should be provided regarding "constitutive models," and "total system PA".

An effort will be made to include a discussion on these items in the TP.

- 4) HLGP - Explain the relationship between thermal loads and other Division activities such as transport modeling.

An effort will be made to include a discussion on the integration of TP on thermal loads with other Division guidance and activities in the TP.

- 5) HLPD - The scope does not provide sufficient justification regarding the need for a TP on thermal loads.

The HLEN staff believes the prediction of thermal loads and the response of the host rock to those loads is a potentially troublesome issue. Thus criteria 4 on page 2 of WM Policy #46 is met. HLPD has not presented any evidence to support its assumption that this is an insignificant issue.

- 6) HLPD - There is a concern regarding the HLEN overall approach for guidance development. Guidance should be developed using a systems based approach to develop a smaller number of TPs covering particular system design issues. TPs should be produced only for those systems with considerable uncertainty or controversy.
- 7) HLPD - The Division will suffer from a significant setback in resources following the HLEN TP development plan.

These comments do not pertain to the Scope of the TP on which comments were requested. Instead, both of these comments pertain to information in the transmittal letter which indicated the need to prepare a plan to address the numerous technical issues that were potential candidates for TPs. The transmittal memo indicated that the plan would be prepared by the end of October. The comments mis-characterize the information presented in the transmittal memo; furthermore, the plan has not yet been completed and transmitted for comment and the transmittal memo in no way foretold the outcome of the plan. It is therefore premature to engage in comment and response. We suggest that HLPD be sufficiently patient to review the plan before making its comments.

- 8) OGC - Should TP's be developed which present acceptable approaches for demonstrating compliance with requirements?

Waste Management Policy #46, page 1, states that one reason for issuing TPs is to present a methodology or approach acceptable to the NRC for meeting the regulations.

- 9) OGC - The scope of the TP is too broad and should be focused to present the meaning of "predicted thermal and thermomechanical response of the host rock."

To date neither the Center nor the staff has identified significant uncertainty associated with the above phrase.

HLEN staff will be available to discuss comment responses at your earliest convenience. It should be noted that the development schedule called for a determination on the need for the thermal loads TP to be made by 9/29/89. The Office and Division Operating Plans must be revised to reflect the delay.

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HLEN is currently preparing a long-term guidance development plan. Joe Bunting plans to submit this plan to Browning by the end of October. It may be beneficial to review this plan before determining the schedule for the TP on Repository Design-Thermal Loads.

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