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Mining, Geotechnical, and Facility Engineering
Center for Nuclear Waste Regulatory Analyses
P.O. Drawer 28510
6220 Culebra Road
San Antonio, Texas 78238-5166

June 20, 2000

Subject: RDTME KTI INTERMEDIATE MILESTONE NO. 20-01402.671.070: PROCESS
LEVEL WASTE PACKAGE STUDY FOR INPUT TO SEISMO MODULE OF
TPA CODE

Dear Dr. Chowdhury:

I have reviewed the Center report entitled: "Assessment of Mechanical Response of Drip Shields Under Repository Environment--Progress Report." I concur with the change of title which better reflects the contents of the report. The subject report documents the progress made to date in developing a finite element analysis methodology capable of assessing the effects of seismically induced rockfall on drip shields within the emplacement drifts of a potential repository. I believe that the effort is useful in understanding the long-term behavior of drip shields that will be subjected to thermal load and impact due to falling rocks.

We have noted that the example case studied in the subject report is not the same as the one under consideration by the Department of Energy (DOE) in terms of dimensions and construction. For example, the DOE concept has a much larger vertical gap between the waste package and the drip shield (approximately 15 cm as opposed to 0.5 cm). In addition, the DOE concept is a free standing structure as opposed to the fixed case studied by you. We understand that the current DOE concepts became available to you only recently. We encourage you to update your study using the most current concepts in your next phase of this task. An important aspect of the future work should be to confirm whether DOE is taking credit for the structural support of the drip shield to protect the waste package from the falling rocks. If that is not the case, the only concern will be whether the drip shield will be damaged enough to fail as a shield against dripping water.

The Container Life and Source Term team is interested in the future course of this study to include: (1) the effects of drip shield-waste package structural interaction due to seismic shaking and simultaneous rockfall; (2) considerations of potential large displacements of drip shield; and (3) development of an appropriate failure criterion for the drip shield. The Structural Deformation and Seismicity team is also interested in the outcome of this study and recommends the use of joint set databases for the Paintbrush Canyon units rather than the Tiva Canyon joint set data used in this report. Detailed comments by these two teams are being sent to you by e-mail separately.

The incomplete discussion on the significance of the tetrahedral rock block weighing approximately 81 tonnes and a random scaling down to 1- and 2-tonne sizes in the example studied might give rise to unnecessary confusion in the readers' minds. It is recommended that

a more detailed discussion be included to show the relevance to the problem being studied, or, the section be eliminated.

In view of the above discussion, I agree with the proposed future work outlined in the report and I suggest that a conference call be held among all interested teams before the scope of the next phase of the task is finalized.

I look forward to further discussions on this study with the interested teams. If you have any questions on the contents of this letter, please contact me at (301) 415-6695 or via e-mail (msn1@nrc.gov). No written response to this letter is required and the progress report is considered to fulfill the Center's contractual obligations for this Intermediate Milestone. Other specific technical comments on this progress report by the other KTI teams are being e-mailed to you for your information and consideration.

Sincerely,

/RA/

Mysore Nataraja, Program Element Manager
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

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Mysore Nataraja, Program Element Manager
 High-Level Waste Branch
 Division of Waste Management
 Office of Nuclear Material Safety
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