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October 29, 1999

Asadul H. Chowdhury
Manager, Mining, Geotechnical, and Facility Engineering
Center For nuclear Waste Regulatory Analyses
6220 Culebra Road P.O. Drawer 28510
San Antonio Texas 78228-0510

Subject: REPOSITORY DESIGN AND THERMAL MECHANICAL EFFECTS KEY TECHNICAL ISSUE INTERMEDIATE MILESTONE NO. 20-1402-671-970: PROCESS-LEVEL ROCKFALL STUDY FOR INPUT TO SEISMO MODULE OF TPA CODE–WP ANALYSIS REPORT

Dear Dr. Chowdhury,

We have received the subject Intermediate Milestone Report submitted by the Center on September 23, 1999. The subject progress report deals with the mechanical failure of waste packages subject to impact stresses resulting from falling rocks within the emplacement drifts. The objective of this study is to develop a realistic abstraction that can be used in the existing SEISMO module to predict the number of waste packages that may be breached as a result of seismic events. SEISMO module currently uses a simplified analytical approach to provide inputs to performance assessments. The finite element model used in the subject report is intended to be used to determine the relative importance of a number of parameters listed on pages 1-4 under section 1.2 of the report. Some of these parameters, such as: (1) long-term corrosion-related degradation of waste package; (2) initial manufacturing defects; (3) residual stresses resulting from fabrication; and (4) material embrittlement, clearly, are important considerations in waste package design. However, it is not clear whether the consideration of such parameters would be more appropriate under the "Container Life and Source Term" (CLST) program element rather than under the "Repository Design Thermal-Mechanical Effects" (RDTME) Key Technical Issue (KTI). Thus, it appears that a significant level of coordination between the CLST and RDTME KTI teams will be required before the Center can proceed with the next phase of the proposed work under this task. I have coordinated my review of the subject report with Dr. Tae Ahn , Acting Team lead for the NRC CLST KTI team. Based on our review, the subject report is accepted in its current form and is considered to fulfill the Center's obligation for this intermediate milestone under the RDTME Program Element for the Fiscal Year 1999.

I propose a telephone-conference between the two KTI teams at an early convenient date to discuss and decide a future course of action for the fiscal year 2000 activities and resource allocation between the two program elements. The basic questions to be considered are: (1) would the proposed three-dimensional finite element approach enhance our ability to provide more realistic inputs to the TPA code (in comparison to the simplified analytical model currently in use); (2) would the proposed approach provide additional insights to waste package design; and finally, (3) how should we allocate resources to the FY 2000 activities under this task.

WM-11
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PDR WASTE

No written response to this letter is considered necessary. Because the subject report is a progress report, the report will be considered pre-decisional and may not be made available to the public until more definitive conclusions can be drawn from the study. If you have any questions regarding the contents of this letter, please contact me at (301) 415-6695 or via e-mail msn1@nrc.gov.

Sincerely.
[Original Signed By]

Mysore Nataraja, Ph.D., PE
Program Element Manager
High-Level Waste and Performance
Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

cc: J. Linehan
B. Meehan
B. Sagar, CNWRA

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[Orogina1 Signed By]

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