

426.1/WM-84732/WRK/84/08/28/0

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AUG 31 1984

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Dr. Malcolm D. Siegel  
Division 6431  
Sandia National Laboratories  
Albuquerque, NM 87185

Dear Dr. Siegel:

SUBJECT: CONTRACT NO. NRC. 50-19-03-01/FIN A-~~1756~~, "GEOCHEMICAL SENSITIVITY ANALYSIS"

I have reviewed the July, 1984 monthly progress report for the above contract, dated August 15, 1984. Based on my review of this report, I have the following comments:

Task 1 - Uncertainty in Integrated Radionuclide Discharge

- Progress to date is satisfactory.
- Please include a brief summary of costs for the Oak Ridge meeting scheduled for October 1, 1984, along with the agenda and list of invitees.
- There are some concerns that have been raised by our hydrologists regarding the approach described in Appendix C of NUREG/CR-3235, Vol. 3. The analysis is justifiably simplistic, but has a number of apparent limitations which may limit the conclusions that can be drawn from your work. These limitations include: (1) 1-D transport in joints and the matrix is assumed; (2) a very large characteristic flow length of 200 feet is used; (3) longitudinal dispersion in the joints is ignored; (4) variability in fracture and matrix characteristics (e.g thickness, orientation, porosity, etc.) is ignored; and (5) only saturated flow is considered. The most important uncertainties may be due to spatial variability in hydraulic properties, which are not addressed. Can the equivalent porous media concept apply to a variable system? Please consider these comments and if and how they impact on your work, and whether you think assumptions in the model should be tested. I would like a response from you concerning these questions.

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**Task 2 - Evaluation of Error Due to Organics and Colloids**

- Progress to date is satisfactory.
- Program plan for calculations concerning colloid transport to be performed in FY 84 - FY 85 is satisfactory. However, there are a few comments: (1) we will not authorize any more than \$15K for these calculations through FY 85; (2) regarding the Bonano and Siegel letter report dated April, 1984, under paragraph B, page 2: "determining whether phenomena not explicitly described by the data are important" may not be possible since the lab experiments may not be representative and this approach has no check on that; and (3) there is concern that referenced reports (e.g. Tang, et al., 1981, and Sudicky and Frind, 1982) may not have data sufficient for reaching conclusions regarding the "relative importance and potential risks of colloidal particle transport through low and high porosity media" (Bonano and Siegel, p. 10). I would like a response from you regarding the latter two comments.

**Task 3 - Representation of Geochemical Processes in Models**

- No activity expected until FY 87.

**Task 4 - Short-term Technical Assistance**

- Progress to date is satisfactory.
- Please prepare a trip report for the coordination meeting with Oak Ridge on August 29.

**Additional Comments**

- I realize that there were some problems with the typing pool in sending this monthly report to us, but I must remind you again that these monthly reports are due here on the 15th of each month. When a monthly report is late, it upsets our schedule and impacts on our ability to send you a timely response. Please ensure that all future monthly reports reach our offices on time.

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The action taken by this letter is considered to be within the scope of the current contract A-1756. No changes to costs or delivery of contracted products is authorized. Please notify me immediately if you believe this letter would result in changes to costs or delivery of contract products.

Sincerely,

Walton R. Kelly  
Geochemistry Section  
Geotechnical Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

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