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DMATTSON

Dr. Nestor Ortiz  
Sandia National Laboratories  
Division 6430  
P. O. Box 5800  
Albuquerque, NM 87185

Dear Dr. Ortiz:

The following technical assistance tasks are authorized under the short term TA task in FIN A-1158:

- Task 1. Completion of scoping exercises for sensitivity study to assess the importance of colloid transport of radionuclides.

Under the previous short term TA project, two letter reports describing processes important to colloid transport and the application of the population balance to assessment of the importance of colloid transport were submitted to the NRC. During the previous project several alternate approaches to assessing the significance of colloids in high-level waste disposal were identified. Under the proposed task, a final technical report which integrates information from the two letter reports described above will be provided to NRC. In addition, a detailed letter report will be submitted to the NRC with specific recommendations for both long term and short term studies. The amount authorized to accomplish the above task is \$13K. The project will be completed by April 30, 1984.

- Task 2. Calculations of sensitivity of radionuclide discharge to rate constants for reactions between radionuclide species with different retardation factors.

A letter report describing first-order irreversible reactions has been submitted to the NRC under the previous short term contract. SNL shall continue the study to include radioactive decay and production, reversible reactions, and radioelements with multiple nuclides in the analysis. SNL shall develop criteria for the evaluation of the adequacy of radionuclide transport experiments where speciation effects need to be considered. The amount

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authorized to complete this effort is \$21K. A letter report will be submitted to the NRC by March 19, 1984 summarizing this work.

**Task 3. Calculations of radionuclide solubility in basaltic groundwater.**

A letter report describing solubilities of radionuclides in basaltic groundwaters with redox potentials of -0.2V and -0.3V has been submitted to the NRC. The results were compared with those of Early, et al. (RHO-RW-ST-39P). Many of the differences between the SNL and RHO calculations may have been attributable to differences in the thermodynamic data bases. Under this task, SNL shall test their calculational method by using the RHO data base. In addition, a data base incorporating data from both the SNLA and RHO sources will be compiled for use in further calculations of solubilities in other potential basaltic ground-water compositions. The effect of closed versus open geochemical systems on calculated solubilities will also be assessed. The amount authorized for this subtask is \$6K. A letter report will be submitted to the NRC on March 30, 1984.

The action taken by this letter is considered to be within the scope of the current contract SOEW 5C-81-43. No changes to costs or delivery of other contracted products are authorized. Please notify me immediately if you believe this letter would result in changes to costs or delivery of contracted products.

Sincerely,

*PSI*  
Peter Ornstein  
Hydrology Section  
Geotechnical Branch  
Division of Waste Management

:WMGT <i>JC</i>	:WMGT <i>PO</i>	:WMPP	:WMGT <i>PK</i>	:	:	:
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