

Sandia National Laboratories

Albuquerque, New Mexico 87185

September 15, 1987

Mr. Paul Bembia
Geotechnical Branch
Division of Waste Management
U.S. Nuclear Regulatory Commission
7915 Eastern Avenue
Silver Spring, MD 20910

Dear Mr. Bembia:

Enclosed is the monthly report on FIN A-1756, Geochemistry Sensitivity Analysis for August 1987. Please feel free to contact me at (FTS) 844-8368 or Malcolm Siegel at (FTS) 846-5874 if you have any questions or comments.

Sincerely,

Robert M. Cranwell

Robert M. Cranwell, Supervisor
Waste Management Systems
Division 6416

RMC:6416

Enclosure

Copy to:

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A-1756 PDR

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WM Project: WM-10, 11, 16
PDR w/encl
(Return to WM, 623-55)

WM Record File: A-1756
LPDR w/encl

PROGRAM: Geochemical Sensitivity Analysis FIN#: A-1756

CONTRACTOR: Sandia National Laboratories BUDGET PERIOD: 10/86 - 9/87

NMSS PROGRAM MANAGER: P. Bembia BUDGET AMOUNT: 200K

CONTRACT PROGRAM MANAGER: R. M. Cranwell FTS PHONE: 844-8368

PRINCIPAL INVESTIGATORS: M. D. Siegel FTS PHONE: 846-5874

PROJECT OBJECTIVE

The objective of this project is to provide technical assistance to the NRC in determining the sensitivity of performance assessment calculations to uncertainties in geochemical data and in the representation of geochemical processes in transport models. In Task I, the error in model calculations of integrated radionuclide discharge due to speciation, sorption and kinetic effects will be evaluated. In Task II, the potential importance of organic molecules and colloids will be examined. SNLA will assist the NRC in determining how geochemical processes should be represented in transport models in Task III. Short-term technical assistance will be carried out under Task IV and the codes and data bases developed under this project will be transferred to the NRC under Task V.

ACTIVITIES DURING AUGUST 1987

Task I. Uncertainty in Integrated Radionuclide Discharge

Subtask IA. Conceptual Models for Repository Sites.

Preparation of the final draft of a letter report describing the conceptual geochemical model for the basalt site continued during August. The letter report will be sent to the NRC during early October.

Subtask IB. Solubility/Speciation Effects.

Preparation of the final draft of "Thermodynamic Tables for Use in Performance Assessment of High-Level Waste Repositories. Volume 1. Aqueous Solutions Data Base," NUREG/CR-4864, SAND87-0323 continued during August. Quality control checks on data were carried out during this month. The final draft of the report will be sent to the NRC on October 15 for review.

Subtask IC. Sorption Effects.

A draft of the user's guide to the Sandia Sorption Data Management System was prepared and was sent to the NRC for review. M. Siegel met with J. Leckie of Stanford University to discuss progress in calculations of Kds for neptunyl and uranyl systems. A short letter report describing calculations for the Np system was received from Stanford. Work on calculations of uranium behavior in waters similar to those found at the BWIP site continue.

Subtask IE. Coupled/Dynamic Effects

No activity during August.

Task II. Uncertainty In Radionuclide Discharge Due to Complexation by Organic Ligands and Colloids.

Calculations of the sorption behavior of uranium in the presence of EDTA, an organic complexing agent were carried out with MINEQL by Stanford staff. Additional calculations will be carried out in the coming months. A letter report summarizing available data on the amounts and speciation of organic ligands present at the candidate HLW repository sites will be prepared in the first quarter of FY88. It is anticipated that these two activities plus the previous letter reports describing the potential for radionuclide transport by colloids will fulfill the requirements of this task.

Task IV. Short-Term Technical Assistance.

No activity during August.

Task V. Technology Transfer

No activity during August.

Allocation of Resources

Task I.....90%
Task II.....10%

A-1756
 1646.010
 August 1987

THIS IS AN ESTIMATE ONLY AND MAY NOT MATCH THE INVOICES SENT TO NRC BY SANDIA'S ACCOUNTING DEPARTMENT.

	Current Month -----	Year -to- Date -----
I. Direct Manpower (man-months of charged effort)	0.3 ---	6.0 ---
II. Direct Loaded Labor Costs	2	56
Materials and Services	0	7
ADP Support (computer)	0	16
Subcontracts	-55	110
Travel	0	3
G & A	-6	1
Other (computer roundoff)	-1	-1
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TOTAL COSTS	-60	192

III. Funding Status

Prior FY Carryover -----	FY 87 Projected Funding Level -----	FY 87 Funds Received to Date -----	FY 87 Funding Balance Needed -----
29K	229K	200K	None

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WM-RES
WM Record File
A1756
SNL

WM Project *10, 11, 16*
Docket No. _____

PDR
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Distribution:

<i>Dumbia</i>	

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