

Sandia National Laboratories

Albuquerque, New Mexico 87185

October 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 September 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, Supervisor
Waste Management Systems
Division 6416

RMC:6416

Enclosure

Copy to:

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Attn: Program Support
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Division of Low-Level Waste Management and Decommissioning
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NM Projects: NM-10, 11, 16
PDR w/encl
(Return to NM, 623-55)

NM Record File: A-1756
LPDR w/encl

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PDR WMRES EXISANL
A-1756 PDR

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 SEPTEMBER 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 model for the basalt site continued during September. A draft letter report will be sent to the NRC during November. A revised report will be written after review of the BWIP SCP.

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 September. Quality control checks on data are still being carried out. The final draft of the report will be sent to the NRC in late November for review.

Subtask IC. Sorption Effects.

Documentation of calculations of uranium and neptunium behavior in waters similar to those found at the BWIP site continues. Analysis of sorption data (Rd) for the BWIP site continues.

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

Work on a letter report summarizing available data on the amounts and speciation of organic ligands present at the candidate HLW repository sites was initiated during September.

Task III. Recommendations to the NRC on Representation of Geochemical Processes in Transport Models.

Discussions were held with J. Leckie and D. Freyberg of Stanford University to discuss recommendations to the NRC concerning the design of future sorption experiments and design of a comprehensive coupled chemical/transport code for use in sensitivity analysis.

Task V. Technology Transfer

Technical review of the User's Guide to the Sandia Sorption Data Management System has been completed and the final draft is being prepared. Work on the final draft of the User's Guide to TRANQL was initiated this month.

Other Activity

Malcolm Siegel presented the paper, 'Development of a Methodology of Geochemical Sensitivity Analysis for Performance Assessment', at the DOE/AECL 87 Conference on Geostatistical, Sensitivity, and Uncertainty Methods for Ground-Water Flow and Radionuclide Transport Modeling. A copy of the paper is being sent to the NRC for review.

A final draft of the Interim Report for Geochemical Sensitivity Analysis is in preparation and will be sent to the NRC in November. At the request of the NRC Program Manager, a revised milestone schedule and an abbreviated summary of activity during FY87 is being prepared. These above three documents are being accepted by the NRC in lieu of an annual report for FY87. The milestone schedule and summary of activity during FY87 will be sent to the NRC under a separate cover by the end of October.

Allocation of Resources

Task I.....60%
Task II.....10%
Task III.....10%
Task IV.....20%

A-1756
 1646.010
 September 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)	0.8 ---	6.8 ---
II. Direct Loaded Labor Costs	7	63
Materials and Services	0	7
ADP Support (computer)	0	16
Subcontracts	10	120
Travel	0	3
G & A	2	3
Other (computer roundoff)	-1	-1
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TOTAL COSTS	18	211

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 Record File

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WM Project 10, 11, 16

Docket No. _____

PDR

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