Sandia National Laboratories

Albuquerque, New Mexico 87185

August 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 July 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:
Office of the Director, NMSS
Attn: Program Support
Robert Browning, Director
Division of High-Level Waste Management
Malcolm R. Knapp, Director
Division of Low-Level Waste Management and Decommissioning
Ronald L. Ballard, Chief
Technical Review Branch
Division of High-Level Waste Management
David Brooks
Geochemistry Section, Technical Review Branch
Division of High-Level Waste Management
Document Control Center
6400 R. Cochrell
6410 N. R. Ortiz
6416 R. M. Cranwell
6416 M. D. Siegel
1512 K. L. Erickson

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 transfered to the NRC under Task V.

ACTIVITIES DURING JULY 1987

Task I. Uncertainty in Integrated Radionuclide Discharge

Subtask IA. Conceptual Models for Repository Sites.

The second draft of a letter report describing the conceptual geochemical model for the basalt site was prepared. Review of the document and preparation of the final draft should be completed in August.

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 July. A decision was made to move some material originally included in this volume to the second volume of this report. This restructuring of the document has resulted in some delay in publication.

Subtask IC. Sorption Effects.

Final revisions to the user's guide for the Sandia Sorption Data Management System are being made. A final draft of the document should be sent to the NRC in September.

Subtask IE. Coupled/Dynamic Effects

No activity during July.

Task V. Technology Transfer

A user-friendly version of a code that plots Piper (Trilinear) diagrams has been written. TRILIN_C runs on VAX computers and prepares standard hydrochemical plots of major ground-water solute relationships. The code is being used for analysis of ground-water compositions at the BWIP, NTS and Deaf Smith sites. A sample plot is shown in Figure 1. Documentation of the code is being prepared under this subtask.

Allocation of Resources

Task I.....50%
Task V.....50%

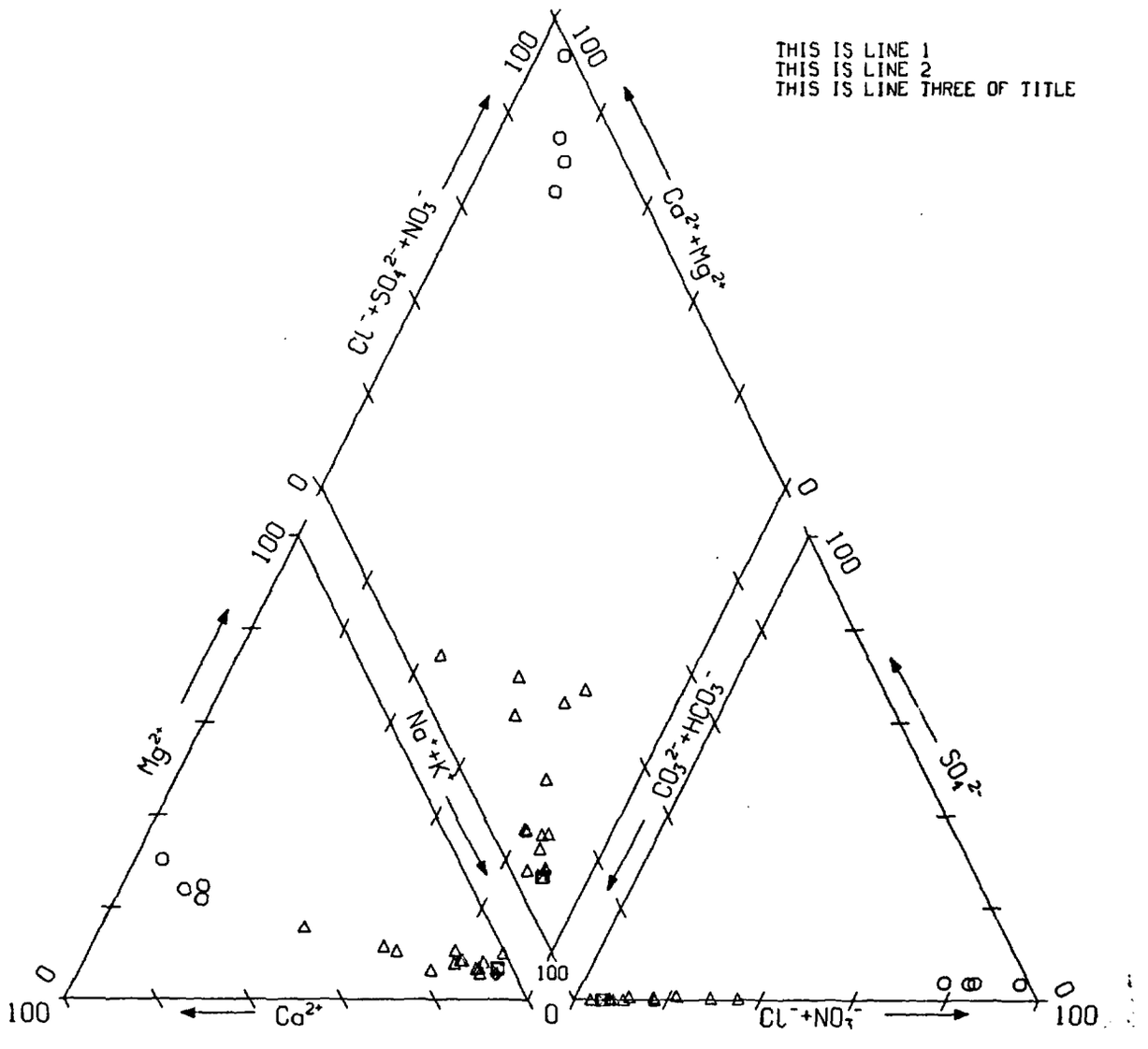

Figure 1. Sample of TRILIN-C plot.

A-1756
1646.010
July 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)	0.9	5.7
II.	Direct Loaded Labor Costs	11	54
	Materials and Services	0	7
	ADP Support (computer)	4	16
	Subcontracts	1	155
	Travel	0	1
	G & A	-3	7
	Other (computer roundoff)	-1	-1
	TOTAL COSTS	12	239

III. Funding Status

Prior FY Carryover	FY 87 Projected Funding Level	FY 87 Funds Received to Date	FY 87 Funding Balance Needed
32K	232K	200K	None

* Note: TOTAL COSTS do not reflect pending transfers. Actual TOTAL COSTS are below $232 K.