

October 15, 1986

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

Dear Mr. Kelly:

Enclosed is the monthly report on FIN A-1756, Geochemistry Sensitivity Analysis for September 1986. Please feel free to contact me if you have any questions or comments.

Sincerely,

Robert M. Cranwell 

Robert M. Cranwell, Supervisor
Waste Management Systems
Division 6431

RMC:6431

Enclosure

Copy to:
Office of the Director, NMSS
Attn: Program Support
Robert Browning, Director
Division of Waste Management
Phillip Justus
Division of Waste Management
Malcolm R. Knapp
Low Level Waste and Uranium Recovery Branch
Kenneth Jackson
Division of Waste Management
Branch Chief
Health, Siting and Waste Management
Document Control Center
6430 N. R. Ortiz
6431 R. M. Cranwell
6431 M. D. Siegel
6431 R. Rechard
1500 W. Herrmann
1510 J. W. Nunziato
1512 J. C. Cummings
1512 K. L. Erickson

PROGRAM: Geochemical Sensitivity Analysis FIN#: A-1756

CONTRACTOR: Sandia National Laboratories BUDGET PERIOD: 10/85 - 9/86

NMSS PROGRAM MANAGER: W. Kelly BUDGET AMOUNT: 365K

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

PRINCIPAL INVESTIGATORS: M. D. Siegel FTS PHONE: 846-5448

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 1986

Task I. Uncertainty in Integrated Radionuclide Discharge

Subtask 1A. Conceptual Models for Repository Sites.

All of the available data describing sorption of radionuclides onto rocks that may be encountered in the flow path used in our model basalt repository site have been entered into the dBASE3 Plus system. The data are currently undergoing a number of QA/QC checks. Additional features were added to the Sorption Data base to ease user access. The current data base system allows the user to subset the sorption information on the basis of criteria such as rock type, ground-water composition, and experimental conditions.

Subtask 1B. Solubility/Speciation Effects.

Work on statistical pre- and post-processors for the Aqueous Solutions Database continued during September. Initial calculations will focus on the speciation and solubility of neptunium, selenium and radium in waters from the BWIP and Deaf Smith County sites. A re-evaluation of available data for Np was initiated during this month.

Subtask 1C. Sorption Effects.

No activity to report.

Subtask 1E. Coupled/Dynamic Effects

A report summarizing recent work on the assumption of local equilibrium for chemical reactions in the presence of advective flow in porous media was received from Stanford University this month. The report is currently under review and will be incorporated into the FY86 Annual Report.

Task 4. Short-Term Technical Assistance.

M. D. Siegel hosted a two-day visit by W. Kelly during September. A work plan for the period FY87 - FY88 was drafted. A milestone schedule is being sent to the NRC under a separate cover.

Allocation of Resources

Task 1..... 70%
Task 4.....30%