11/07/86

MONTHLY PROGRESS REPORT FOR OCTOBER

PROJECT TITLE: Technical Assistance in Geochemistry

PROJECT STAFF: J. G. Blencoe, R. M. Gove, A. D. Kelmers, R. E. Meyer, G. D. O'Kelley, V. S. Tripathi, and K. L. Von Damm

PROJECT MANAGER: G. K. Jacobs, Earth Sciences Section
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ACTIVITY NUMBER: ORNL #41 88 54 92 4 (FIN No. B0287)/NRC #50 19 03 01

OBJECTIVE:

The objective of this project is to provide technical assistance to the NRC in the evaluation of geochemical information pertinent to candidate HLW repository sites. The project emphasizes the collection and review of key information in order to provide input to the NRC analysis of technical issues regarding the geochemical aspects of HLW isolation.

TECHNICAL HIGHLIGHTS

Basalt:

J. G. Blencoe reviewed the report, A Report on the the Status of Hydrothermal Testing of Fully Radioactive Waste Forms and Basalt Repository Waste Package Components, SD-BWI-TI-253, 1984, by J. A. Schramke, S. A. Simonson, and D. G. Coles. The report describes initial geochemical and radiochemical data obtained from three preliminary hydrothermal tests on two "fully radioactive" simulated waste forms. The overall objective of the tests was to acquire baseline data for subsequent tests with fully radioactive waste forms and various waste-package materials. A detailed review and evaluation will be forwarded under separate cover.

General:

K. L. Von Damm reviewed the report, "Origin of saline groundwaters in the Carnmenellis granite (Cornwall, England): Natural processes and reaction during hot dry rock reservoir circulation," Chem. Geol. 49, 287-301, 1985, by W. M. Edmunds, R. L. F. Kay, and R. A. McCartney. The report is a synthesis of several more detailed studies undertaken in an

attempt to understand the origin of highly saline (up to 19,002 mg/l TDS) fluids in the Carnmenellis granite. The authors propose a model that includes groundwater movement, convective heat transport, water/rock interaction, secondary mineral formation, and fluid inclusion formation and stability to explain the genesis of the observed saline fluids. A detailed letter report will be forwarded under separate cover.

A report (McKinley and Jefferies, AERE-R 11881, 1985) is attached for your information. This report summarizes an evaluation of sorption techniques and data pertinent to the radioactive waste management program of the United Kingdom. The authors discuss weaknesses in the K_d approach similar to those that we have expressed concern over in the DOE program.

PROJECT MANAGEMENT:

Nothing to report.

MEETINGS AND TRIPS:

Nothing to report.

REPORTS AND PUBLICATIONS:

LR-287-61, by G. K. Jacobs, J. G. Blencoe, and A. D. Kelmers, "Suggested Issues for a Workshop on Performance Assessment with DOE/Hanford." This letter report was previously forwarded under separate cover.

LR-287-63, by J. G. Blencoe, "Review and Evaluation of: A Report on the the Status of Hydrothermal Testing of Fully Radioactive Waste Forms and Basalt Repository Waste Package Components, SD-BWI-TI-253, 1984, by J. A. Schramke, S. A. Simonson, and D. G. Coles."

LR-287-64, by K. L. Von Damm, "Review of: "Origin of saline groundwaters in the Carnmenellis granite (Cornwall, England): Natural processes and reaction during hot dry rock reservoir circulation," Chem. Geol. 49, 287-301, 1985, by W. M. Edmunds, R. L. F. Kay, and R. A. McCartney."

PROBLEM AREAS:

None.

COST/BUDGET REPORT:

Reports on expenditures for October were not available at this time. A final cost/budget report for October, when available, will be sent under separate cover.