OAK RIDGE NATIONAL LABORATORY

OPERATED BY
UNION CARBIDE CORPORATION
NUCLEAR DIVISION

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WM Record File
B-0290

WM Project
Docket No.
PDR
LPDR

June 20, 1983

Distribution:

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Dr. R. J. Starmer
HLW Technical Development Branch
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
427-SS
Washington, D.C. 20555

Dear John:

Enclosed is the progress report for the month of May 1983 for B0290, "Laboratory Evaluation of DOE Radionuclide Solubility Data and Other Geochemical Parameters, Experimental Strategies, Laboratory Techniques and Procedures."

Sincerely,

Allen

Allen G. Croff, Manager
Engineering Analysis and Planning
Chemical Technology Division

AGC:ll

Enclosure

cc: R. O. Chester
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6/20/83

MONTHLY PROGRESS REPORT FOR MAY 1983

PROJECT TITLE: Laboratory Evaluation of DOE Radionuclide Solubility Data and Selected Retardation Parameters, Experimental Strategies, Laboratory Techniques, and Procedures

PROJECT MANAGER: A. G. Croff

ACTIVITY NUMBER: ORNL #41 88 54 92 6 (189 #B0290) / NRC #50 19 03 1

TECHNICAL HIGHLIGHTS

Neptunium Studies:

Preparation of the Alpha Laboratory facilities for the anoxic-condition tests with neptunium have continued during the month. The controlled-atmosphere glove boxes were received and are being activated. The Searle 1185 counter and the associated ND 66 computer control system were calibrated for the ^{235}Np gamma peak. Preparation for the initial oxic-condition tests is under way.

Technetium Studies:

Clinoptilolite is a zeolite mineral found in the secondary mineralization lining of fractures in basalt. Since the basalt primary minerals showed no technetium sorption under oxic conditions, tests were initiated with clinoptilolite to study sorption on secondary minerals which could be important in the release pathway. The range of experimental conditions was similar to those reported in April for basalt. One significant difference was that all equilibrations were carried out at approximately 6[illegible]°C, the far-field ambient temperature. Two samples of clinoptilolite were tested; both were from locations other than the BWIP site. Sorption ratios for both were 0 mL/g, within experimental precision.

Calculational Activities:

Additional computational codes are being considered for implementation at ORNL. Acquisition of a later version of the WATEQ family than WATEQ2, the version currently running, is under way. Because major revisions of EQ3/EQ6 are reportedly nearly completed by others, acquisition of these codes will be delayed until the newer versions are available.

General Aspects:

As a result of comments received during the April 12-13, 1983 meeting with the NRC staff at ORNL, the work plan for this project was revised and sent to the NRC. This work plan will form the basis for the ORNL activities until the course of events necessitates changes.

A search of the literature revealed that studies have been conducted at INEL concerning the migration of chemical and radionuclide species in underlying basalt layers not unlike those being considered by BWIP. A letter summarizing the available information on this subject and proposing a general approach to obtaining further data was written and sent to the NRC project manager.

MEETINGS AND TRIPS:

None.

REPORTS AND PUBLICATIONS:

None.

PROBLEM AREAS:

None.

COST/BUDGET REPORT:

Expenditures for the month of May were $41.1K and expenditures to-date are $207.4K. A more detailed cost/budget report is given in the attached exhibit.