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August 7, 1986

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Dr. D. J. Brooks
Geotechnical Branch
Office of Nuclear Material
Safety and Safeguards
U.S. Nuclear Regulatory Commission
Room 623-SS
Washington, D.C. 20555

Dear Dave:

Please find enclosed the progress report for the month of July 1986 for B0287, "Technical Assistance in Geochemistry."

Sincerely,

Gary K. Jacobs
Gary K. Jacobs
Manager, NRC Waste Programs
Environmental Sciences Division
Building 1505, MS-3

GKJ/

Enclosure: Monthly Progress Report For July 1986

cc: Office of the Director, NMSS (Attn: Program Support Branch)
Division Director, NMSS Division of Waste Management (2)
Branch Chief, Waste Management Branch, RES
P. S. Justus, Chief, Geotechnical Branch
K. C. Jackson, Geotechnical Branch
J. W. Bradbury, Geotechnical Branch
G. F. Birchard, Waste Management Branch, RES
M. Siegel, Sandia National Laboratory
A. D. Kelmers A. P. Malinauskas
R. E. Meyer GKJ File

WM-RES
WM Record File
(B0287)
ORNL

WM Project 10, 11, 16
Docket No. _____
PDR
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Distribution:

D. Brooks Joan - Ticket

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B-0287 PDR

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MONTHLY PROGRESS REPORT FOR JULY 1986

PROJECT TITLE: Technical Assistance in Geochemistry
PROJECT MANAGER: G. K. Jacobs
PROJECT STAFF: J. G. Blencoe, R. M. Gove, A. D. Kelmers,
R. E. Meyer, G. D. O'Kelley, and K. L. Von Damm
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:

Hanford Site Geochemical Technical Assistance

J. G. Blencoe is making final revisions to the topical report on solubility information from the Hanford Site for simulated waste forms and thermodynamic calculations. In response to review comments from the NRC Project Manager, a new section has been written that summarizes the available information in a series of tables. This new section, which also points out difficulties in comparing information from different tests and calculations, will be forwarded under separate cover as letter report LR-287-53. We would appreciate comments on this material.

Yucca Mountain Geochemical Technical Assistance

Nothing significant to report.

Salt Site Geochemical Technical Assistance

Nothing significant to report.

Short-Term Technical Assistance

K. L. Von Damm reviewed the report, "Sub-sea-floor alteration in the Galapagos Spreading Center," Chemical Geology 49, 1985, 259-274, by H. Kawahata and T. Furuta. The report describes the alteration mineralogy of basalts in a core from DSDP Hole 504B. The basalts were hydrothermally altered by seawater. The reported results are compared to an experimental study of basalt/water interactions for the Hanford Site. Similarities in alteration mineralogy are apparent and significant differences can be accounted for by bulk compositional effects. Letter report LR-287-52 will be forwarded under separate cover.

G. D. O'Kelley reviewed the report, "Solubility Effects on the Corrosion of Nuclear Defense Waste Glasses," Nuclear and Chemical Waste Management 5, 193-201, 1985, by C. Maurer, D. E. Clark, L. L. Hench, and B. Grambow. Letter report LR-287-51 will be forwarded under separate cover.

Comments on the NRC staff review of the geochemistry portions of the Final Environmental Assessments were provided to the NRC Project Manager during July.

Review comments on the letter report from the sorption workshop were received from participants of the workshop. The comments will be reviewed and a final letter report issued during August.

PROJECT MANAGEMENT:

Nothing to report.

MEETINGS AND TRIPS:

A two-day seminar on the geochemical code EQ3/6 was held July 28-29 at ORNL. The seminar, which was led by Dr. T. S. Bowers of MIT, summarized some of the capabilities of the program and provided examples of EQ3/6 simulations from Dr. Bowers' work on sea-floor hydrothermal vents. Approximately 12 people from the NRC and ORNL participated in the seminar.

A Program Review of projects B0287 and B0290 was held July 30 at ORNL for R. E. Browning, P. S. Justus, and J. W. Bradbury. G. K. Jacobs presented an overview of the projects and then a tour of the sorption laboratory facilities was conducted.

REPORTS AND PUBLICATIONS:

LR-287-51, by G. D. O'Kelley, "Review of, "Solubility Effects on the Corrosion of Nuclear Defense Waste Glasses," Nuclear and Chemical Waste Management 5, 193-201, 1985, by C. Maurer, D. E. Clark, L. L. Hench, and B. Grambow."

LR-287-52, by K. L. Von Damm, "Review of, "Sub-sea-floor alteration in the Galapagos Spreading Center," Chemical Geology 49, 1985, 259-274, by H. Kawahata and T. Furuta."

LR-287-53, by J. G. Blencoe, "A Summary of DOE/Hanford Data on the Solubility/Concentration of Radionuclide-Analog Elements in Barrier Materials + Groundwater Systems."

PROBLEM AREAS:

None.

COST/BUDGET REPORT:

Expenditures were \$30.3K for July 1986 and \$387.2K for FY 86 to date. A detailed cost/budget report will be sent under separate cover.