

03/06/87

PROGRESS REPORT FOR FEBRUARY 1987

PROJECT TITLE: Technical Assistance in Geochemistry

PROJECT STAFF: J. G. Blencoe, R. M. Gove, G. K. Jacobs, R. E. Meyer,
V. S. Tripathi, and K. L. Von Damm

PROJECT MANAGER: A. D. Kelmers
Chemical Development Section
Chemical Technology Division
OAK RIDGE NATIONAL LABORATORY, Operated by
MARTIN MARIETTA ENERGY SYSTEMS, INC.

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 the candidate HLW geologic repository sites. The project emphasizes the collection and review of key information to provide input to the NRC analysis of technical issues regarding the geochemical aspects of HLW isolation.

TECHNICAL HIGHLIGHTS:

Yucca Mountain:

J. G. Blencoe reviewed the report: Mineralogic Summary of Yucca Mountain, Nevada, by D. L. Bish and D. T. Vaniman. The overview follows:

This report offers preliminary observations on the patterns of distribution of primary and secondary minerals in the tuffaceous rocks at the Yucca Mountain candidate HLW repository site. Most of the authors' conclusions are based on data obtained from semi-quantitative x-ray powder diffraction analyses of Yucca Mountain tuffs. These data indicate that there are six mappable "mineral types" at Yucca Mountain: primary glass plus tridymite, primary and secondary quartz, secondary smectite, clinoptilolite plus mordenite, secondary analcine, and secondary albite. Two additional primary minerals, cristobalite and K-bearing feldspar, are nearly ubiquitous in Yucca Mountain rocks.

A. D. Kelmers and R. E. Meyer reviewed the Los Alamos National Laboratory quality assurance plan for radionuclide sorption work. Five concerns were identified and described in a letter report. The concerns are: (1) Under what QA level is the sorption data being obtained?, (2) How will the

sorption data obtained prior to institution of an NQA-1 QA plan be qualified as acceptable?, (3) What work is underway relative to precipitation?, (4) What are the details of the procedures identified?, and (5) What information is in some of the published reports, or in items marked as deliverables prior to the current date?

General:

A Meeting Report was prepared describing highlights of The Second Topical Conference on Nuclear Waste Management Quality Assurance. The summary follows:

The meeting was organized by the American Society for Quality Control, and was devoted entirely to nuclear waste management. Most of the discussion and commentary dealt with the high-level waste repository program. Most of the parties with an interest in the three candidate high-level waste repository sites were present and took advantage of the meeting to air their dissatisfaction with the current status of the program as managed by the DOE. Utility spokesmen indicated that they had lost confidence in the ability of DOE to complete a repository. The planned completion date for the first repository has slipped by five years after only four years of operation under the Nuclear Waste Policy Act. Utilities are contributing \$400 M per year for the repository and DOE has already spent \$ 1 B out of this fund. The schedule is important to utilities because spent fuel is accumulating. Spokesmen for the affected Indian tribes (principally the Yakima and Umatilla nations) stated that their treaty rights to the Hanford site were illegally abrogated and they want the site returned to their control in an uncontaminated condition. Representatives of the states (Texas, Washington, and Nevada) all expressed dissatisfaction with the site selection process as carried out by DOE. The agent from Texas seemed adamant that Deaf Smith county was unacceptable as a waste repository location. Texas will not allow DOE to have access to the land even for site characterization purposes. The representatives of the states of Washington and Nevada focused their criticisms on geotechnical aspects of the respective sites. They suggested that none of the sites may satisfy the qualifying conditions of the regulations. Representatives of the NRC were critical of the DOE QA program and its implementation by the DOE. NRC spokesman indicated that the NRC would be giving more attention to the DOE QA programs. Mr. Asselstine, NRC Commissioner, delivered a particularly hard-hitting and wide-ranging critique of the DOE repository program. He felt that the DOE had lost creditability with the public and had not properly carried out the site selection process as specified in the Nuclear Waste Policy Act. He suggested that the DOE repository program should be halted, a new nuclear waste law passed by congress, and a new search for suitable repository sites initiated. The various DOE representatives did their best to show that the DOE was following the law, was not at fault for the recent five year slip in the planned completion date of the first repository, and that adequate QA either existed or was planned by the respective site projects.

Draft Letter Reports analyzing the geochemistry issues for the Yucca Mountain site and The Hanford Site are being prepared. Six issues have been defined that cover all aspects of site characterization and selection, and of repository construction, operation, and closure. Major report sections for the six issues at each site will be: (i) Regulatory Rationale, (ii) Data and Information Needed to Analyze the Issue, (iii) Methods, Strategies, and Approaches Available to Acquire the Needed Data and Information, and (iv) Precision and Accuracy Necessary, or Uncertainty Acceptable, for the Data and Information Needed to Analyze the Issue. A first draft of the Regulatory Rationale has been completed and we are working on the various Data and Information Needed sections. A draft of the Yucca Mountain report containing these two sections for all six issues is expected to be completed on schedule and forwarded to the NRC Project Manager with the April Progress Report, as discussed in the January Progress Report.

MEETINGS AND TRIPS:

A. D. Kelmers attended The Second Topical Conference on Nuclear Waste Management Quality Assurance, at Las Vegas, Nevada, February 9-11, 1987.

REPORTS AND PUBLICATIONS:

A. D. Kelmers, Meeting Report MR-287-10, Meeting Report on: The Second Topical Conference on Nuclear Waste Management Quality Assurance, sponsored by the Energy Division of the American Society for Quality Control, at Las Vegas, Nevada, February 9-11, 1987, February 18, 1987.

J. G. Blencoe, Letter Report LR-287-70, Review and Evaluation of 'Mineralogic Summary of Yucca Mountain, Nevada', LA-10543-MS, October 1985, by D. L. Bish and D. T. Vanniman, March 3, 1987.

A. D. Kelmers and R. E. Meyer, Letter Report LR-287-71, Concerns Relative to the Plan for Quality Assurance of Radionuclide Sorption and Precipitation Investigations (Los Alamos National Laboratory Scientific Investigation Plan SIP No. 86/4.1.5-SP, June 1986), March 6, 1987.

PROBLEM AREAS:

None

COST/BUDGET REPORT:

Expenditures for February were not available at this time. A detailed cost/budget report will be forwarded under separate cover.