

LETTER REPORT

TITLE: 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)

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PROJECT TITLE: Technical Assistance in Geochemistry

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ACTIVITY NUMBER: ORNL #41 88 54 92 4 (FIN No. B0287)/NRC #50 19 03 01

We have reviewed the Scientific Investigation Plan for Sorption and Precipitation (Los Alamos National Laboratory Scientific Investigation Plan SIP No. 86/4.1.5-SP, June 1986) which was transmitted by John Bradbury on February 11, 1987. We have some concerns relative to quality assurance aspects of the sorption work, as well as some technical questions. These are summarized below.

1. *Under what QA level is the sorption data being obtained?* The Plan states on p. 10, "This task has been determined to be Quality Level 1. See QALAS submission for details." We could find no description of a QALAS submission in the Plan. Thus, we are unable to tell if the work is being done under an approved NQA-1 quality assurance plan [Quality Assurance Program Requirements for Nuclear Facilities, ANSI/ASME NQA-1 - 1983 Edition]. The DOE quality assurance plan for HLW repositories [Quality Assurance Plan for High-Level Radioactive Waste Repositories, DOE/RW-0095, August 1986] states in Section 3.1.2, Items of Importance to Waste Isolation at the SCP Design Stage, of Attachment A, Methodology of Formulation a Q-List for Mined Geologic Repositories, that structures, systems, and components important to waste isolation including engineered barriers and features of the natural system which are necessary to comply or demonstrate compliance with performance objectives will be placed on the Q-list. Items on the Q-list, including characterization of the repository site, are specified in Section 2 of Appendix A to be performed in accordance with QA procedures corresponding to Quality Level 1. Therefore, it seems to us that the sorption data must be obtained at an NQA-1 level, but we are unable to tell from this Plan what QA plans and procedures are being followed at the Los Alamos National Laboratory. We suggest that the NRC may wish to consider interaction with the DOE with regard to the QA level of sorption

work currently being done.

2. *How will the sorption data obtained prior to institution of an NQA-1 QA plan be qualified as acceptable?* Experimental measurements of radionuclide sorption onto Yucca Mountain tuffs have been made at Los Alamos National Laboratory since the late 1970's. Indeed, it appears that much of the planned sorption data has already been obtained because one of the items under Previous Work on p. 12 of the Plan is a report "Summary Report on Sorption Measurements with Yucca Mountain Tuff Samples and Water from Well J-13." Qualification of this old data so as to be acceptable as equivalent to NQA-1 quality data may require technical judgment through a process such as peer review. The NRC Generic Technical Position on qualification of existing data (issued in June 1986) provides guidance on this subject, but we are unable to tell if the planned DOE activities are in concordance with that guidance. We suggest that the NRC may wish to consider interaction with the DOE toward participation in the process of qualification of the old sorption data.

3. *What work is underway relative to precipitation?* The Plan title is Sorption and Precipitation, however, we were unable to find any discussion of precipitation (presumably radionuclide precipitation) in the Plan. Only sorption coefficients are mentioned in Section 1, Objectives, Issues and Information Needs Addressed, or in subsequent sections of the Plan. The NRC may wish to consider interaction with the DOE to attempt to determine what radionuclide precipitation (or solubility) work is planned, and what QA plans and procedures will apply to this work.

4. *What are the details of the Procedures identified?* On p. 9 of the Plan, a number of experimental procedures are identified. We suggest that the NRC may wish to obtain copies of these from the DOE for evaluation of their contents. We would particularly be interested in seeing:

TWS-CNC-DP-05, R1 Sorption, Desorption Ratio Determinations of Geologic Materials by a Batch Method

TWS-INC-DP-30, R0 Partial CO₂ Atmospheric Control of Groundwater Chemistry

5. *What information is in some of the published reports, or in items marked as deliverables prior to the current date?* On p. 12 of the Plan, the previous work is listed, and on p. 14 milestones and deliverables are given. We have copies of most of the reports listed under previous work, but would like to obtain a copy of the following for evaluation:

K. W. Thomas, "Summary Report on Sorption Measurements Performed with Yucca Mountain Tuff Samples and Water from Well J-13"

The delivery date for the first four milestones on p. 14 has already passed, and we would like to obtain a copy of the following for evaluation:

R311 Preliminary report on statistical evaluation of sorption data

R309 Preliminary report on sorption modeling

M316 Report: sorption coefficients as a function of groundwater composition

R720 Interim report: letter report on sorption isotherms

We suggest that the NRC may wish to consider interaction with the DOE to obtain copies of these for evaluation.