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OCT 30 1984

WM Record File WM-RES
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WM Project 10, PDR 11,16
Docket No. LPDR (B,N,S)
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Ms. Susan K. Whatley, Manager
Engineering Analysis and Planning
Chemical Technology Division
Oak Ridge National Laboratory
P.O. Box X
Oak Ridge, TN 37831

Dear Ms. Whatley:

SUBJECT: REVIEW OF SEPTEMBER MONTHLY PROGRESS REPORT FOR B0290 "LABORATORY EVALUATION OF DOE RADIONUCLIDE SOLUBILITY DATA AND SELECTED RETARDATION PARAMETERS, EXPERIMENTAL STRATEGIES, LABORATORY TECHNIQUES, AND PROCEDURES"

I have reviewed the September, 1984 Monthly Progress Report for the subject contract dated October 15, 1984. Based on my review, progress to date is satisfactory.

For the technetium studies, from the evidence that Rs changes with time, do you plan longer experiments to try to determine Rs values at steady-state conditions? Do you have an explanation for the larger uncertainties in experiments run at 60°C for 50 days as compared with those run at 60°C for 14 days or those run at 270°C for 50 days? How many duplicate runs are made per experiment? Are the uncertainties expressed as one or two standard deviations?

You mentioned that there is no evidence that basalt can reduce uranium to uranium (IV) in laboratory experiments. Along the same lines, at the Penrose Conference, Dr. George Parks from Stanford discussed his UO_2 solubility experiments. In order to keep uranium in the reduced state, he had to impose 500 bars hydrogen pressure on the system (total pressure = 1Kbar, T < 300°C).

The extraction methods for neptunium species are not "standard" to me. What are the bases (physicochemical processes) for these extractions and are they compatible with the groundwater compositions you are using? I'm glad to see

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that you are starting tests to determine the effect of SA/V ratios on Rs values.

The package of information and forms for acquiring Yucca Mountain samples was mailed October 10, 1984 to Mr. Maxwell Blanchard. He has received this package but processing will not begin until the ORNL Quality Assurance Plan is "NRC approved".

For the sample characterization of the Cohassett and Untanum basalts, are the phases determined by methods other than EDXA? For example, is "pyrite" really pyrite or is it some other iron sulfide? Are the phases compositionally zoned? I am anticipating a more detailed account of the mineralogy in the 1984 annual progress report.

The action taken by this letter is considered to be within the scope of the current contract FIN B-0290. No change to cost or delivery of contract products is authorized. Please notify me immediately if you believe this letter would result in changes to costs or delivery of contract products.

Sincerely,

John W. Bradbury
Geochemistry Section
Geotechnical Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

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