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- 1 -
(Return to WM, 623-SS)

DEC 05 1985

Dr. Gary K. Jacobs
Environmental Sciences Division
Building 1505/Room 312
P.O. Box X
Oak Ridge National Laboratory
Oak Ridge, TN 37831

Dear Dr. Jacobs:

SUBJECT: REVIEW OF OCTOBER 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 October, 1985 Monthly Progress Report dated November 20, 1985 for the subject contract. Based on my review, progress to date is satisfactory.

The experiments with the cesium and strontium are very interesting and raise many questions. The observation that sorption ratios decrease so drastically with increasing initial concentration in the "not pre-equilibrated" cesium tests is puzzling. Possibly, the soluble material is competing for sorption sites and the concentration range is near the sorption capacity for the solid. Virginia Oversby showed that the rinse solutions from leaching Busted Butte material contained significant amounts of Na, K, and Ca, which might be competing ions. I wonder how different is the composition of the liquid in the "not pre-equilibrated" experiment from that of J-13. Likewise, how different are the solids in the two experiments and do you plan to look for the differences?

For the uranium-synthetic J-13 groundwater experiments, you mention that the uranium was sorbed on the walls of the glass bottles. Do you expect the same result when plastic bottles are used? Would you expect that precipitating 10% of the uranium from the solution would not produce enough solid to be visible? If the solution is unstable, might it be due to the fact that the liquid is synthetic or that it is saturated with respect to some uranium-bearing solid phase. I will call you to discuss these questions later this week.

I have received your letter concerning the counting equipment and discussed the situation with others at the NRC. I will keep you informed on the progress of the request.

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

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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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