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JULY MONTHLY PROGRESS REPORT: THE PARTITIONING OF MAJOR, MINOR, AND TRACE ELEMENTS DURING SIMULATED IN-SITU OIL SHALE RETORTING

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Authors

Fox, Phyllis
Fish, Richard.

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August 25, 1980

TO: Brian Harney and Art Hartstein
FROM: Phyllis Fox and Richard Fish
RE: July Monthly Progress Report
The Partitioning of Major, Minor, and Trace Elements
during Simulated In-Situ Oil Shale Retorting
LBID-262

SPECIATION OF INORGANIC AND ORGANOMETALLIC COMPOUNDS IN OIL SHALE
PROCESS WATERS

We are presently studying the origin of previously identified As species -- arsenate and methyl and phenylarsonic acids. Anvil Points oil shale was ground and extracted with ammonium bicarbonate. Shale oils from the LLL retorts were also extracted with ammonium bicarbonate. These samples are presently being analyzed by HPLC-GFAA to identify As species.

IDENTIFICATION OF POTENTIAL ORGANIC COMPOUNDS AS LIGANDS OF METALS IN
OIL SHALE PROCESS WATERS

Last month we reported that butylation of Occidental's Heater-Treater water provided the butyl ester of acetic acid. We have now evaluated the data more extensively and have found that C₂ to C₄ monocarboxylic acids, which were not previously observed, are present in that process water.

This finding suggests that these lower molecular weight monocarboxylic acids may be present in the other process waters which we previously studied. We are presently verifying this hypothesis.

GEOKINETICS CORE STUDIES

A program has been initiated to study trace element distribution in raw and spent shale cores from Geokinetics Retort No. 16. Major, minor, and trace elements will be measured in 160 one-foot spent shale composite samples and in 40 one-foot raw shale composite samples. The geochemical origin of As, Se, Hg, and Cd will be investigated, and leaching studies will be conducted on select samples and the leachate characterized for As species.

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LAWRENCE BERKELEY LABORATORY
UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA 94720