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MONTHLY PROGRESS REPORT FOR MAY. STEAM STRIPPING PROJECT

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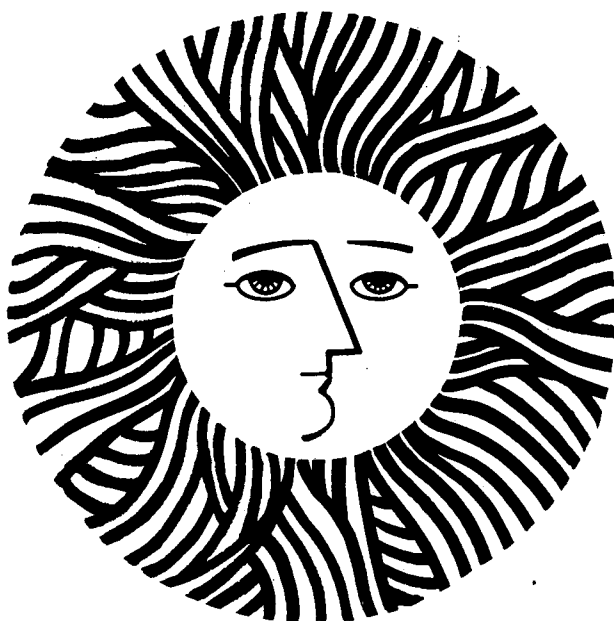
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June 2, 1981

TO: Charles Grua

FROM: Richard Sakaji and Bonnie Jones; Frank Pearson and
Christian Daughton (SERL)

RE: Monthly Progress Report for May
Steam Stripping Project
LBID-411

ANALYTICAL METHODS DEVELOPMENT

Carbon Analysis

Direct and indirect methods of dissolved organic carbon determination were compared using the Coulometrics carbon analyzer. The indirect method uses a CO_2 -evolution apparatus to determine dissolved inorganic carbon (DIC) which is then subtracted from the total carbon (TC) to give dissolved organic carbon (DOC). This method is preferred for samples that contain volatile organic solutes. The direct method consists of acidifying the sample and scrubbing with inert gas to purge the carbonates as CO_2 ; the total carbon remaining is then measured directly as DOC. In both instances, total carbon is determined by high-temperature oxidation of the aqueous sample in the analyzer's combustion tube.

As the CO_2 -evolution apparatus used to determine inorganic carbon had not been investigated extensively in our laboratory, a check of its operation was needed to validate the indirect method. A 1000-ppm standard solution (C as Na_2CO_3) yielded 101.8% recovery of the theoretical concentration ($n=5$, $\text{rsd}=0.6\%$), after correction for background. A check was also made of the purge time interval used for direct DOC determinations; the 10-minute interval we have been using was shown to be adequate. Certain aspects of the carbon analysis procedure still require examination, particularly the possibility that significant precipitation of organic compounds occurs when filtered retort water samples are acidified prior to purging.

A preliminary experiment demonstrated that both the direct and indirect methods of DOC analysis yielded similar results for Oxy-6 wastewater samples. Indirect DOC was 106% of direct DOC for retort water and 97.5% of direct DOC for gas condensate. Although gas condensate would be expected to contain more volatile organic constituents than retort water, these solutes apparently were not stripped from the gas condensate during sample purging for direct DOC determination.

STEAM STRIPPER DESIGN

Preliminary Work

In order to accommodate the increased electrical load, the SERL electrical switchboard was rewired and upgraded. The installation of wiring and operational controls of the steam stripper, as well as fabrication of the control panel was begun.

This report was done with support from the Department of Energy. Any conclusions or opinions expressed in this report represent solely those of the author(s) and not necessarily those of The Regents of the University of California, the Lawrence Berkeley Laboratory or the Department of Energy.

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