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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ENERGY AND MINERALS DIVISION

FEBRUARY 9, 1979

B-178205

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The Honorable James R. Schlesinger
The Secretary of Energy

Dear Mr. Secretary:

While reviewing certain aspects of the Department of Energy's enhanced oil recovery field test program, we noted a contract proposal which is being seriously considered for award by the Department. In our view, there are significant questions on the merits of the proposal as well as the qualifications of the proposer, the Frank D. Smith Corporation. DLG00863

We also noted that the president of the Smith Corporation, Mr. Frank D. Smith, is the president of the Guyan Oil Corporation DLG00864 which is receiving Department funds to perform an enhanced oil recovery project. This project is now at the point where final testing can start but the test is being delayed because project funds have been spent and because of environmental concerns. In our view there are significant questions on the merits of the Department providing additional funds to expand this project.

BACKGROUND

An estimated 446 billion barrels of crude oil have been discovered in the United States. A major problem in producing this oil, however, is the inefficiency of its recovery from the pore space of the rock reservoirs in which it is found. As a result, a projected 299 billion barrels of the total 446 billion discovered is not recoverable based on current techniques and economic conditions. Currently, oil recovery efficiency ranges from over 70 percent in a few fields to less than 5 percent in others. During the last two decades, waterflooding, hydraulic fracturing, acidizing, and other enhanced oil recovery methods have increased economic recovery efficiency in existing U.S. fields by about .3 percent per year.

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The Federal Government established a cost sharing program for enhanced oil recovery projects with the passage of the Federal Non-nuclear Energy Research and Development Act of 1974 (Public Law 93-577). The purpose of the act is to establish and conduct a national program of research and development, including but not limited to demonstration of practical applications, of all potentially beneficial energy sources and utilization technologies. The act specifically requires demonstration of new and improved methods for extracting petroleum resources, including the enhanced recovery of oil and gas.

The proposal in question, submitted on February 22, 1977, by the Frank D. Smith Corporation, calls for a two-phased enhanced oil recovery project. The first phase would consist of drilling four wells into a 6,000 acre tract in Kanawha County, West Virginia, to define the magnitude and distribution of any remaining oil in the tract. A separate aspect of this phase calls for a study of the most applicable enhanced oil recovery processes to determine which might be best suited for the tract and to develop a process to use carbon dioxide injection. The second phase would consist of a drilling, coring, and testing program of an additional six wells.

The Smith Corporation and Department officials have met several times on the proposal and at the time of our review had tentatively agreed that the cost of the project will be $1,981,469 with the Department's share being $1,341,627. During September - November 1977, the Department audited the Smith Corporation--a normal practice whenever a contract award is likely. Department officials told us that they are seriously considering awarding the contract.

Our review of the proposed project, the Department's evaluation of it, and other relevant information raise the following questions:

--Is the project a worthwhile undertaking for, and is it consistent with, the enhanced oil recovery program?

--Is the Frank D. Smith Corporation capable of carrying out the project?

QUESTIONS ON THE PROPOSED PROJECT

Three other enhanced oil recovery projects have been approved for the same general area of West Virginia as the currently proposed project. These three approved projects involve actual field tests of an enhanced oil recovery technique; that is, a specific technique is being tested to determine how effectively it can be used in that area to produce oil.

The proposed project, however, involves only drilling and reservoir evaluation activities and a study to determine which oil recovery technique might be best for the area. An actual test of the best technique determined by the project--if conducted--would follow later under a separate contract.

Information on the oil production history of the area to be studied in the proposed project is very sketchy. The Department has obtained some data supporting the proposed project area--driller's logs dated from 1914 to 1917 and a 1956 laboratory analysis of core samples taken from one well in the area. Other vital information such as oil production histories of prior recovery efforts, descriptions and status reports of prior well treatments; and the current status of the wells in the area have not been obtained.

QUESTIONS REGARDING THE PROPOSER'S CAPABILITY

In reviewing contract proposals, the Department assesses the capabilities of the proposer including the management and technical capabilities of the proposer's personnel, adequacy of facilities to be used in the project, and the proposer's demonstrated ability to perform. It also assesses the financial capabilities of the proposer, including financing arrangement, balance sheet, profit and loss experience, and accounting practices. The Department made these assessments and found that: the Smith Corporation had only one employee--Mr. Frank D. Smith, the president; did not have the financial resources to carry out the project; did not have the technical expertise to carry out the project, and had never done any research on gas and oil production.

QUESTIONS REGARDING THE ONGOING PROJECT

In 1975 a project was funded to demonstrate the efficiency and economics of recovering oil by injecting carbon dioxide into a shallow, low temperature reservoir. The field equipment for the test is now in place but the $1.6 million in Government funds called for under the $3.9 million contract has been spent. In addition, the original contract completion date of August 31, 1978, is past and work has been halted because an environmental impact statement may be required.

The actual field test, which is to include the injection of carbon dioxide into the oil reservoir and monitoring of the resulting oil flow has not been initiated. In order to proceed, environmental clearance must be obtained and the contractor, the Guyan Oil Corporation, must purchase the carbon dioxide. Based on current estimates, the carbon dioxide required for the test would cost as much as $480,000. However, the Guyan Oil Corporation's capital financing is in doubt and, under the current contract terms Guyan is responsible for this purchase.

Guyan has proposed to expand the original contract. Based on the Department's evaluation, this proposal would increase the contract costs approximately $2.5 million to be shared evenly by the Government and Guyan. The purpose of the proposal is to expand the area to be treated by carbon dioxide from 10 acres to about 75 acres. The likely effect of this proposal would be to increase the Guyan's recovery of oil from the project and provide the Government with oil recovery information on the larger area. The president of Guyan Oil Corp., Mr. Frank D. Smith, apparently believes that the project was originally designed to treat the larger area. However, Department officials told us that those familiar with carbon dioxide injection methods would have been aware the original contract envisioned treatment of only the 10 acre area. It is also important to note that the original Federal approval and funding of this project was based on the 10-acre area, which now raises questions as to the purpose and benefits of expanding the test area.

Other questions have arisen concerning the Guyan Oil Corporation's ability to complete the current project or perform the proposed project expansion. To answer these questions, the Department requested the following information from Guyan on August 25, 1978.

--Assurance that the technical and financial obligations of the contract could be met.

--A management plan for completion of the contract and for completion of the proposed expansion including the duties of individuals, subcontractors, or consultants.

--A plan or details of financing which would support the project.

--Answers to a Department audit of the proposed project expansion which questioned over $900,000 of costs.

Department auditors had previously noted questionable company practices. For example, the son of the corporation's president was appointed as chief project officer at a $400 per month increase in salary without Department approval. Also, the corporation paid a file clerk's $6,000 salary from Federal funds although the Department's auditors could not document the services she performed for the corporation. The auditors noted that this clerk was a full-time employee of the State of West Virginia.

The Department has noted that past project management had been inadequate. In addition, Department auditors noted in September 1978 that the Guyan Oil Corporation had insufficient capital to proceed. As of December 22, 1978, the corporation had not provided the information the Department requested nor demonstrated to the Department the financial capability to continue.

The Department is funding two similar carbon dioxide enhanced oil recovery projects in this area. Based on the experience of these projects, the price of oil obtained by this method in Appalachian areas may be prohibitively expensive. One company official has estimated the cost as over $100 per barrel. However, Department officials said that such high costs are attributable to test situations and would be substantially reduced if the methods were incorporated in normal production operations.

The Department's management plan of February 1977 also cited research priorities for various research activities including enhanced oil recovery. According to the plan, carbon dioxide injection projects in the Appalachian area are of the Department's lowest priority. The rationale for this low priority rating is the small quantity of oil reserves remaining in the Appalachian area.

CONTRACTOR AND DEPARTMENT COMMENTS

We obtained the informal comments of the Department and Mr. Frank D. Smith on the contents of this letter. Both agreed that the facts presented in this letter are accurate. However, the Department and Mr. Smith stated that changes are going to be made to improve the contractor's financial and management capability to complete the ongoing project and the proposed project. While no proposals to change project management have been made to the Department, Frank D. Smith has talked to the Department about arranging to have an experienced oil production company assist in carrying out the projects.

CONCLUSIONS AND RECOMMENDATION

The Department is now seriously considering awarding a contract for an oil recovery project which, in our view, is faced with significant questions on the merits of the project, its usefulness to the Department's program, and the technical and financial capability of the proposer. We have similar reservations about the proposal to extend the ongoing project because of the suspended status of the project, the doubts about the contractor's ability to obtain the additional funds required for completion, the questionable proposal to enlarge the test area, the results of similar ongoing projects in the same area, and the low priority of this research. We recommend that you take the necessary actions to insure that neither the proposal now under consideration nor the extension of the existing contract be approved unless satisfactory data and analysis are developed to show that each is necessary to further the Department's goals regarding enhanced oil recovery and that the developer has the technical and financial capability to perform the contracts.

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Section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

Copies of this report are being sent to the Director, Office of Management and Budget; the Chairmen, House Committees on Appropriations and Government Operations and Senate Committees on Appropriations and Governmental Affairs; and oversight committees for the Department. We are also sending copies to the Chairman, Subcommittee on Fossil and Nuclear Energy Research, Development and Demonstration, House Committee on Science and Technology, because of his expressed interest in this matter.

Sincerely yours,

J. Dexter Peach
Director