



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

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ENERGY AND MINERALS
DIVISION

B-197264

FEBRUARY 5, 1980

The Honorable Charles W. Duncan, Jr.
The Secretary of Energy



Dear Mr. Secretary:

Subject: U.S. international energy research
and development program management
(ID-80-14)

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We have reviewed your Department's efforts in cooperative international energy research and development arrangements and found a number of problems, including a need for

- mechanisms to identify potential cooperative international energy projects;
- guidelines and criteria for determining a reasonable level of U.S. contribution;
- opportunities for U.S. private sector competition; and
- controls over the status of research and development payments.

DCG 01104
International Energy Agency officials claim that considerable progress has been made in cooperative energy research and development arrangements; however, they and officials of your Department have generally taken the position that it is too early to fully assess the technological benefits. The International Energy Agency believes that more can and should be done. (See p. 4 of encl.)

We recommend that, in coordination with the Secretary *12000032* of State (pursuant to sections 503 and 504 of Public Law 95-426) and in consultation with other affected agencies, you develop a clear policy statement and establish guidelines for U.S. participation in cooperative bilateral and multi-lateral energy research and development arrangements. (See p. 6 of encl.)

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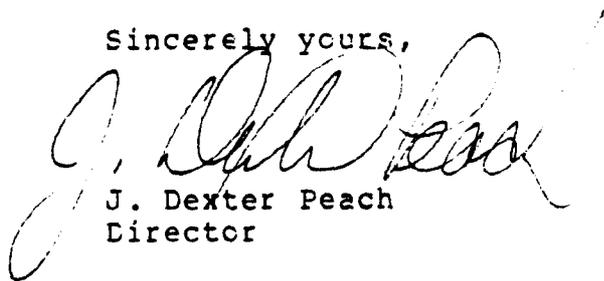
The guidelines should address identification of projects, cost-sharing, private sector opportunities, and controls over payments. Detailed examples of our findings, conclusions, and recommendations are enclosed.

We discussed these matters with the Departments of Energy and State and incorporated their technical clarification and updated information where appropriate.

As you know, 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. We would appreciate receiving copies of your statements to the Committees on actions taken.

We are sending copies of this report to the Director, Office of Management and Budget; Secretary of State; four Committees mentioned above; and chairmen of energy-related congressional committees.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "J. Dexter Peach".

J. Dexter Peach
Director

Enclosure

U.S. INTERNATIONAL ENERGY RESEARCH AND
DEVELOPMENT PROGRAM MANAGEMENT

INTRODUCTION

In September 1974, the United States and most other industrialized countries agreed to develop a program for cooperation on energy. The participating nations established the International Energy Agency (IEA) in November 1974 to administer, monitor, and execute the program. Current participating nations include Australia, Austria, Belgium, Canada, Denmark, Federal Republic of Germany, Greece, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. The Energy Reorganization Act of 1974 (enacted Oct. 11, 1974) established the Energy Research and Development Administration and included in its mandate provisions to encourage and participate in international cooperation in energy and related environmental research and development (R&D).

The Energy Research and Development Administration's responsibilities were transferred under the Department of Energy Organization Act (Public Law 95-91, Aug. 4, 1977) to the Department of Energy (DOE). ^{1/} The new law directed DCE, in coordination with the Secretaries of State, Treasury, and Defense, to establish and implement (1) policies for international energy issues that have a direct impact on use, supply, conservation, and research and development of U.S. energy and (2) activities involving the integration of domestic and foreign energy policies. The law provided that the Secretary of State shall continue to exercise primary authority for the conduct of foreign policy related to energy, pursuant to policy guidelines established by the President. However, Departments of Energy and State officials say that such guidelines have not been established.

DOE's Assistant Secretary for International Affairs has responsibility for coordinating international energy R&D programs. He works with the DCE program administrators in the program divisions (such as solar, fossil fuel, conservation, and geothermal) to establish new initiatives, set priorities, develop an overall policy framework, assess the benefits of ongoing and proposed programs, and implement the agreements

^{1/}DCE is used throughout this enclosure to refer to actions by it or by the Energy Research and Development Administration.

which result. Since technical expertise is maintained within each program division, the administrators are generally responsible for deciding which efforts should be undertaken, administering the agreements, and monitoring and evaluating project progress and results. Each division has a program budget from which domestic and international projects are funded.

The Office of International Affairs provides political and international information to the program divisions and coordination with other executive agencies, particularly the Department of State. Representatives of both the Office of International Affairs and the program divisions participate in IEA activities.

ROLE OF DEPARTMENT OF STATE

The Department of Energy Organization Act left with the Secretary of State primary authority for the conduct of foreign policy related to energy, pursuant to policy guidelines established by the President. DCE and State officials told us that such guidelines have not been established. Furthermore, several DCE program officials expressed uncertainties on the role of each agency in deciding on international programs.

In addition to the authority left with the Secretary of State by the DCE Organization Act, sections 503 and 504 of Title V of Public Law 95-426 (Foreign Relations Authorization Act, Fiscal Year 1979) set forth certain expanded responsibilities for the Secretary in the interaction of science, technology, and foreign policy. State officials said in November 1979 that their role as a result of this legislation is continuing to evolve but it is clear that the role will be significantly expanded. They also said that:

"To implement the provisions of Title V various activities are under way. None of these specifically addresses international energy R&D cooperation. An interagency funding study, under the auspices of the Committee on International Science, Engineering and Technology (CISSET), is in preparation to examine current funding mechanisms for all USG science and technology activities. Preparations for the first annual Presidential Report required by Title V are well under way. The report will include sections on bilateral and multilateral cooperation in energy."

CURRENT AGREEMENTS AND EXPENDITURES

According to DCE, the United States was a signatory to 53 cooperative R&D agreements for non-nuclear energy as of September 1979, including 35 agreements sponsored by IEA and 18 bilateral agreements. DOE officials estimated that the United States has agreed to contribute in the range of \$100 million in support of the IEA agreements. ^{1/} This amount is for the duration of the agreements, which run from 2 to 8 years.

REVIEW RESULTS

We found a number of problem areas in DOE's cooperative international energy R&D programs, including a need for

- mechanisms to identify potential cooperative international energy projects;
- guidelines and criteria for determining a reasonable level of U.S. contribution;
- opportunities for U.S. private sector competition; and
- controls over the status of R&D payments.

Need for an active program
to identify potential cooperative
international energy projects

The DCE program division and project managers' emphases and initiatives toward cooperative international energy R&D arrangements are inconsistent. Although the United States was a primary force in the establishment of the IEA and emphasized the importance of cooperative international energy R&D efforts, DCE has developed no overall strategy for identifying potential international energy R&D programs, either bilaterally or through IEA, to complement its domestic R&D efforts. DCE officials agreed that no such strategy has been developed but informed us in September 1979 that working groups consider

^{1/}This is a rough estimate because of inaccurate initial estimates and fluctuations in exchange rates, and it includes domestic costs, primarily in support of ongoing domestic projects.

the potential of priority area projects on an ad-hoc basis. In addition, DOE officials have said that the Executive Office of the President and the Department of State also influence the U.S. involvement in cooperative energy R&D arrangements.

It is administration policy to consider IEA the focus for cooperation with other IEA countries in energy R&D activities. DOE stated that it adheres to this policy and gives preference to multilateral agreements (specifically IEA) over bilateral agreements. However, State said that it has no general preference for multilateral over bilateral agreements.

One of IEA's primary objectives is to encourage member countries to reduce dependence on imported oil by undertaking accelerated development of alternative sources of energy and energy research and development. IEA officials claim considerable progress in cooperative energy R&D arrangements, but DOE officials have generally taken the position that it is too early to fully assess the technological benefits. However, the Department has reported that efforts in international energy R&D cooperation may not have always yielded optimum benefits to the United States. Nevertheless, IEA believes more can and should be done.

A February 1978 report on an IEA review of member countries' national energy R&D programs noted potential for more effective cooperative energy research and development efforts. It concluded that (1) a number of countries could and should increase substantially their domestic energy R&D efforts in order for each country to contribute its fair share of the technology needs of the IEA and (2) several countries have substantial potential for making additional financial and technological contributions to existing agency projects. The report showed that the United States participates in more IEA projects than any other country.

Need for guidelines and considerations for sharing costs

Establishment of guidelines for determining the additional share of costs to be assumed by both host and operating agent countries is especially important. It has been generally recognized that one impediment to agreement on future projects is the reluctance of participating countries to fund projects in other countries.

Technological benefits, potential for development of new markets, market balance, and political implications are considerations to be assessed. However, these considerations are difficult to quantify for a cost/benefits ratio. DOE officials informed us in September 1979 that they believe some instances exist where the United States has a chance to gain technology by being a party to the project even at the risk of sharing costs to a extent greater than might otherwise be appropriate.

The proportion of the project cost that should be borne by the host country (where test facilities and other hardware projects are located) or by the country of the operating agent has not been consistently established. For example, the DOE wind energy group has established that the country of the operating agent will contribute 40 percent of the overall project cost and the other participating countries will share the remaining costs according to an established scale of contributions. The DOE conservation group has accepted as a general rule that the host country will be responsible for at least 50 percent of project cost. Good management principles, while recognizing the need for flexibility, dictate the need for some formally established parameters within which negotiations can be conducted.

Need for U.S. private sector competition opportunities

American companies and academic institutions have not had equal opportunities to compete with foreign companies for IEA-sponsored projects. Of the 13 jointly funded projects reviewed, the United States was the lead country in only 1 while European countries had the lead in the remaining 12. The lead country designates the operating agent, whose expenses are generally paid from contributions by the participating countries. This process has resulted in substantial payment to European governmental entities acting as operating agents.

The agreements for the jointly funded projects generally delegate authority for contracting to the operating agent through procedures adopted by the appropriate IEA Executive

Committee. ^{1/} DOE informed us in September 1979 that operating agents as a rule use their own procurement procedures, which may not always be compatible with those of the United States, such as bid procedures. In this regard, we were told that DOE had learned some lessons and that it was working toward gaining greater private sector competition opportunities.

In addition, American companies were not allowed to participate in a geothermal project. The Federal Republic of Germany, the lead country, designated a German Government laboratory as operating agent and contracts were awarded to European countries. The U.S. representative at the IEA meeting for this project attempted to open up competition to American companies, but the Germans would not reconsider.

Need for control over
the status of R&D payments

The U.S. commitment in 13 IEA jointly funded energy area tasks amounted to about \$9.6 million at the time the agreements were signed. This initial commitment increased to \$17.8 million due to (1) inflation, (2) increases in project scope, and (3) declining dollar exchange rates.

We attempted to identify how much the United States had paid under each task and the timeliness of the payments. DOE in many cases could not identify such data, and in certain other cases there were extensive delays in making payments. For example:

- Information needed to determine payment status was not available for three tasks.
- Payments for invoices had not been made for three tasks. The payments were delinquent by 2 to 6 months.
- Payments for three fossil fuel tasks had been made on an average of 6 months later than the required payment dates.

^{1/}The IEA Executive Committee consists of one member from each participating country for each project.

The inadequate payment and monitoring process is largely attributed to the decentralization of responsibilities and the lack of overall agency policies and guidelines which clearly state how payments are to be made and monitored.

CONCLUSIONS AND RECOMMENDATIONS

We believe that formal guidelines and criteria will enhance U.S. participation in cooperative international energy R&D arrangements. Also, formal application of the criteria would help to provide historical information to serve as a basis for making decisions and would enable better management for current and future projects. We recognize that, in implementing the established criteria, changing political or economic relationships would have to be considered.

We recommend that, in coordination with the Secretary of State (pursuant to sections 503 and 504 of Public Law 95-426) and in consultation with the Executive Office of the President and other affected agencies, the Secretary of Energy develop a clear policy statement and establish guidelines for U.S. participation in cooperative bilateral and multilateral energy R&D arrangements. The guidelines should deal with

- identification of potential cooperative international energy projects;
- cost-sharing arrangements;
- private sector competition opportunities;
and
- controls over the status of R&D payments.