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

ENERGY AND MINERALS  
DIVISION

June 19, 1981

B-203691

The Honorable James B. Edwards  
Secretary of Energy

Dear Mr. Secretary:

Subject: [Greater Use of Satellite Telecommunications  
To Link ADP Facilities Could Save Millions]  
(EMD-81-102)

We are currently completing a review of the Department of Energy's (DOE's) planning and acquisition of automatic data processing (ADP) equipment. During our review, we noted that DOE needs to strengthen its ADP acquisition planning procedures to ensure that its computing requirements are met in a cost-effective manner. We are bringing this matter to your attention because procurement actions on one major acquisition we reviewed have not been completed and there may be time to identify less costly alternatives.

Specifically, we identified weaknesses in certain aspects of DOE's procurement plans to acquire a major scientific computing system for its research and development work which is conducted by the Sandia National Laboratories located at Albuquerque, New Mexico. In January 1981, DOE estimated that \$15.5 million would be needed to provide the additional scientific computing capability. However, our review shows that DOE has not fully considered using available satellite telecommunication data processing capabilities, a less costly alternative. Also, the use of satellite telecommunications may be applicable to other major ADP equipment purchases that DOE is initiating.

Because ADP services are only incidental to the major work done by DOE's Government-owned/contractor-operated laboratories, ADP equipment and resources acquired to support the missions of the laboratories are usually not subject to the review and approval process administered by the General Services Administration. However, such acquisitions must be made in accordance with the procurement procedures

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established by DOE. <sup>1/</sup> These procedures emphasize that additional ADP equipment should not be acquired unless each of the following conditions has been met or a complete explanation for non-compliance is made.

- Data processing needs have been validated and the performance of installed equipment has been evaluated.
- A determination has been made that the needs cannot be satisfied by excess Government-owned equipment.
- It is not feasible to meet the needs by sharing available Government equipment with other users.
- Studies are performed in accordance with Office of Management and Budget Circular No. A-76 which sets forth policies for acquiring commercial or industrial products and services needed by the Government.

Although DOE procedures require that written justifications for ADP equipment include information on each of these areas, our review shows that they were not discussed in the justification submitted by Sandia Laboratories. Also, neither Sandia Laboratories nor DOE's Office of ADP Management have documentation fully demonstrating that appropriate studies have been performed to evaluate the feasibility of alternative approaches to providing Sandia with the needed computer capacity. In discussions with Office of ADP Management officials, we were told that all procurement alternatives were considered, but records were not maintained on the alternatives and the reasons that they were not feasible.

Based on our review, at least one alternative to purchasing additional computing resources appears to warrant further consideration. In April 1980, the Sandia National Laboratory in Livermore, California, increased its computing capability far in excess of its needs. As a result, this laboratory has offered to share its resources with other classified DOE laboratories. Our review of ADP long range plans submitted by Sandia Laboratories (fiscal years 1982-1986) shows that the computing capacity available would satisfy a large portion of Sandia's computing needs at its Albuquerque location through fiscal year 1984.

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<sup>1/</sup>These requirements are set forth in DOE Order 1360.1, "Acquisition and Management of Automatic Data Processing Equipment and Resources."

In our discussions with Sandia Laboratories officials, we were told that existing telecommunications between the Albuquerque and Livermore laboratories do not permit high volume, rapid data transmission needed to process the Albuquerque laboratories workload. However, we found that satellite communications which do provide the needed transmission speeds are commercially available. Our analysis shows that the costs of using these services would be much lower than the costs of purchasing additional computing resources at the Albuquerque location. For example, the annual projected costs of the satellite services for 5 years would be approximately \$556,000. Therefore, if this alternative is feasible, DOE could eliminate the planned acquisition which has an estimated \$15.5 million cost and an annual maintenance cost of about \$400,000.

We discussed our analysis with DOE's Office of ADP Management officials. While they agreed that satellite telecommunications offer the potential for substantial cost savings, they questioned the current technological feasibility of using this approach. However, they were unable to demonstrate that a detailed evaluation had been conducted to identify alternative system design concepts for determining the system's functional and performance capabilities to meet mission needs and program objectives. Although we did not perform a detailed analysis of the feasibility of using satellite telecommunications, we had several discussions with representatives of a contractor that specializes in providing these services. We were told that linking ADP resources by satellite is well within the current state-of-the-art technology. For example, these services are already being provided to Federal agencies and private industry.

In view of the potential cost benefits of using satellite technology, we recommend that procurement actions to acquire large-scale ADP equipment for the Albuquerque laboratories not be completed until all alternatives to meeting computing needs are fully evaluated and documented. We also recommend that DOE fully consider satellite technology in meeting its future computing requirements. This is especially important at the present time because, during fiscal years 1981 through 1986, DOE plans to begin acquiring 13 large computer systems, which will cost over \$200 million.

We would be pleased to discuss this matter with you or your representatives. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head

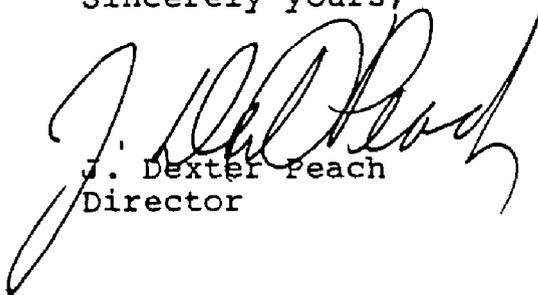
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of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs within 60 days after the date of this letter; a like statement to the House and Senate Committees on Appropriations should accompany the agency's first request for appropriations made more than 60 days after the date.

We are sending copies of this letter to the Director, Office of Management and Budget and the congressional committees identified above.

We sincerely appreciate the courtesies and cooperation extended to us during our review.

Sincerely yours,



J. Dexter Peach  
Director