



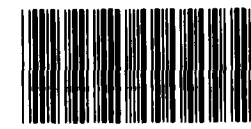
COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON DC 20548

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November 7, 1980

B-201063

The Honorable Jack Brooks, Chairman  
Committee on Government Operations  
House of Representatives



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Dear Mr. Chairman:

Subject: Review of the Tennessee Valley  
Authority's Procurements of  
Automatic Data Processing  
Equipment (EMD-81-20)

In your letter of March 25, 1980 (see enc. I) you expressed concern that the Tennessee Valley Authority (TVA) is not properly managing its current automatic data processing (ADP) resources. You specifically requested that we review TVA's proposed non-competitive purchase of ADP equipment and the progress the agency is making toward a fully competitive replacement of its large-scale ADP resources.

Because of the immediacy of your Committee's need for information about these issues, you asked us to complete our review and orally report our findings to the Committee by June 30, 1980. We provided the briefing you requested on June 25, 1980. At that time, your office requested a written report on the details of our review findings. This report responds to that request and provides pertinent information on procurement actions through September 1980.

In conducting our review, we reviewed Office of Management and Budget circulars; General Services Administration (GSA) regulations and procedures; TVA policies, procedures, and records, and other documentation relating to ADP procurements. We also discussed the procurements with representatives of the Office of Management and Budget, GSA, TVA, and the computer industry.

Because of the limited time available to conduct our review and because of TVA's lack of documentation supporting its computing requirements, we could not determine whether the requirements were accurately stated. Therefore, in reviewing TVA's proposed non-competitive purchase of ADP equipment, we determined how efficiently TVA was using its

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computing resources and whether it could meet the stated requirements by improving ADP management practices to optimize the use of its resources. In reviewing the progress TVA is making toward a fully competitive procurement, we determined the status of the procurement and evaluated contract specifications to determine whether they precluded full competition. We did not determine whether the most economical procurement approach was used.

In July 1980, under a delegation of procurement authority from GSA, TVA non-competitively purchased additional ADP equipment costing approximately \$4.8 million. TVA made this acquisition even though we (1) provided data showing that it could meet its requirements by obtaining the full practical use of its existing ADP resources and (2) told GSA that we questioned TVA's need for the procurement.

More than 4 years have passed since GSA directed TVA to initiate actions toward a competitive replacement of its large-scale ADP equipment. As of September 1980, TVA was evaluating contractors' proposals for the procurement. However, the specifications used for the procurement tended to limit competition. As a result, only a few computer vendors have submitted a contract proposal.

Further, TVA has not validated its current and future computing requirements and is not obtaining the full practical use of its existing equipment. Therefore, the agency's need for additional purchases of ADP equipment is questionable.

As your office advised, we did not obtain TVA's nor GSA's comments on this report. However, we met with TVA computer management officials to determine the accuracy of the information upon which our conclusions and recommendations are based.

#### BACKGROUND

TVA's central computing center is located in Chattanooga, Tennessee; however, more than 600 remote computer terminals, located in offices throughout TVA's service area, account for virtually all of the central computing system's work. This intensive use of ADP has a major and rapidly growing impact on administering TVA programs efficiently and economically.

By September 1976, TVA and GSA had concluded that additional computing equipment was needed to handle TVA's expanding workload. Because this need was considered urgent, GSA

allowed TVA to lease additional equipment without soliciting competitive bids from computer vendors. But, to encourage TVA to proceed expeditiously toward a competitive procurement, GSA stipulated that:

--The equipment leased should be sufficient for meeting only part of TVA's workload requirements.

--ADP services that could not be provided with the leased equipment should be acquired under competitive commercial contracts.

--TVA should develop contract specifications and complete, by September 1978, a competitive procurement to replace its central computing system.

During 1977, TVA non-competitively leased the additional equipment, contracted for commercial ADP support, and initiated actions to award a competitive contract for replacing its central computing system. Since 1977, TVA made two additional non-competitive ADP acquisitions, became heavily dependent upon commercial computing support, and has not completed the competitive procurement.

EFFICIENT MANAGEMENT OF ADP  
RESOURCES COULD HAVE SAVED  
MILLIONS OF DOLLARS AND PREVENTED  
A NON-COMPETITIVE PROCUREMENT

Since October 1978, TVA has spent more than \$9.1 million for supplemental commercial ADP services and additional ADP equipment. To meet its increasing data processing workload, TVA continued to increase the amount of work performed under its commercial ADP service contract, spending more than \$4.3 million for these services. To eliminate future needs for commercial services--and to reduce data processing costs--in July 1980, TVA spent approximately \$4.8 million to complete its third non-competitive purchase of ADP equipment. We found that with full practical use of its ADP resources, TVA could have avoided these costs; however, existing policies and procedures have limited the ability of TVA's computer management officials to use the agency's computing resources efficiently.

In January 1980, TVA completed a study to determine the most cost-effective way to meet its computing requirements through late 1981--the date TVA had projected for replacing all of its ADP resources. Based on its study, TVA concluded that:

--Its central computing system was not adequate for meeting its requirements through late 1981.

--To meet its requirements, it would have to either increase the amount of work performed under the commercial service contract or acquire additional ADP equipment.

--ADP resources sufficient for meeting its requirements could be purchased for approximately \$4.8 million; the cost of meeting the requirements through its commercial service contract would be about \$8.9 million.

To determine whether TVA's computing system could meet the agency's requirements through late 1981, we reviewed the utilization of the computing system, examined computer workload projections and resource accounting data, and interviewed TVA management and operations personnel. We found that, although the central computing center was operating 24 hours per day, 7 days per week, TVA was using only two of the three computers it had available. The third computer, which accounted for about 15 percent of TVA's total computing capacity, had not been used in over a year. Moreover, utilization of the two computers in operation averaged only about 50 percent of their capacity. For example, in May 1980--the latest and busiest of the 7 months that we reviewed--1,248 hours of processing time were available, but TVA's data shows that only 702 hours, or 56 percent of available capacity, were used. Had the third computer been used, the computing system would have been operating at only 43 percent of its capacity.

During this same month, we estimate that TVA's use of commercial ADP services amounted to the equivalent of 142 hours of processing time on TVA's computing system. Had this work been performed on the two TVA computers being used, utilization would have been only 68 percent of computing capacity available. By using its third computer, TVA could have processed its entire workload while using only 52 percent of its total computing capacity. Our review shows that the remaining capacity was adequate for meeting TVA's computing requirements through late 1981.

However, for TVA to have processed its total ADP workload on the central computing system, some adjustments in the distribution of its workload would have been required. This could have been accomplished by deferring part of the low-priority work that was processed during the busiest work hours. Deferred work, which would have accounted for less than 10 percent of TVA's total ADP workload, could have been processed later in the day when there was less demand for computing services.

We discussed our analysis with TVA computer management officials. While they did not question the accuracy of the data we used, they were concerned about their ability to make the necessary adjustments in TVA's workload distribution to process the total ADP workload on the central computing system. This is consistent with the agency's ADP management policies and procedures under which the computing center's management has little authority to influence ADP users to make effective, efficient use of the central computing system.

The net result of ADP user decisions--made for the benefit and convenience of individual user organizations rather than for the full practical use of TVA's computing resources--resulted in most of TVA's ADP workload being processed during the daytime shift. This intense demand for ADP service during the daytime shift, when 90 percent of the computing system's capacity was being used, led TVA computer management officials to conclude that the central computing system lacked the capacity to process the agency's projected ADP workload through late 1981--even though all the needed capacity was available during other times of the day.

In July 1980, under GSA's delegation of procurement authority, TVA purchased additional ADP equipment costing approximately \$4.8 million. This purchase was made even though (1) TVA officials recognized that it was technically possible to process the agency's entire workload by optimizing existing ADP resources and (2) we told GSA that, based on our audit findings, we questioned the need for the procurement. The additional ADP equipment increased TVA's computing capacity to more than twice that needed to meet TVA's projected requirements for late 1981.

#### PROBLEMS IN TVA'S COMPETITIVE PROCUREMENT

TVA has encountered numerous delays in completing a competitive procurement of large-scale ADP equipment to replace its central computing system. More than 4 years have passed since GSA directed TVA to initiate actions toward this procurement. Computer vendors were requested to make proposals for the contract in January 1980. As of September 1980, TVA was evaluating the proposals received. However, we found that, for technical and economic reasons, specifications for the procurement tended to limit competition. As a result, only a few computer vendors made contract proposals.

The procurement specifications required vendors to propose a system that uses a single point of control for all data processing work. The requirement for this type of

system, which is similar to the system TVA currently has installed, is very advantageous to computer vendors that offer large central, consolidated computer systems. As a result, the requirement tended to limit competition to vendors that could provide (1) large-scale equipment produced by only a limited number of computer manufacturers and (2) a computer system that is similar to TVA's existing system in its design and in the way the equipment interacts with computer software.

The specifications also required vendors to demonstrate that they have the capability of processing the agency's workload. This limited the competition to those vendors that can afford the substantial costs of aggregating the necessary demonstration equipment. Three of the four major computer manufacturers we contacted told us that the cost involved in demonstrating its capability was a major factor in its decision not to make a contract proposal.

The difficulty in obtaining full competition for the procurement was heightened by the substantial costs that a vendor would incur in converting TVA's computer programs to work on new equipment. No Federal procurement policy directs how conversion costs should be considered in evaluating vendor proposals to determine the lowest overall costs of acquiring computer systems. However, Public Law 89-306, 1/the predominant influence on the ADP acquisition process as implemented by GSA, permits GSA to determine when it is appropriate to consider them.

In the TVA procurement, the costs allowed by GSA were substantial enough to severely limit competition to (1) vendors having equipment compatible with TVA's computer software or (2) vendors willing to offer substantial discounts on the cost of their computer hardware. For example, according to an analysis performed by GSA's Federal Conversion Support Center, the conversion costs to vendors having equipment compatible with TVA's software would be approximately \$7 million; however, the costs to vendors offering non-compatible equipment would be about \$23 million. GSA estimates that a non-compatible equipment vendor would have to discount its equipment by 43 percent for its proposed cost to be competitive with an undiscounted cost proposal of a compatible equipment vendor. Each of the major computer manufacturers we contacted produce the non-compatible equipment and told us that the conversion cost involved was a primary factor in its decision not to compete for the contract.

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1/The Brooks Act.

Both GSA and TVA were well aware that the specifications might limit competition for the contract. In February 1979, TVA told GSA that the requirements would probably result in a proposal from only a few computer vendors and suggested that an alternative procurement strategy be developed to enhance competition. TVA suggested that:

--Only vendors offering computer equipment compatible with TVA's installed equipment be allowed to compete for the central processing equipment.

--Separate competitive contracts be awarded to vendors offering computer terminals and other peripheral computer equipment.

The procurement strategy TVA proposed might have resulted in either limited or no competition for the central processing equipment, estimated to cost \$33 million. However, the approach should have resulted in competitive bidding for TVA's computer terminals and other peripheral equipment, estimated to cost \$21 million.

In March 1979, GSA informed TVA that it also was concerned about the potential for only limited competition. However, GSA rejected TVA's suggestion to modify the procurement strategy and instructed TVA to proceed toward the award of a single contract for the entire computer system. GSA also stated, however, that if TVA obtained no competition for the contract, a reappraisal would be made of TVA's need for a central consolidated system and consideration would be given to alternative configurations that would increase the possibilities for competition.

We also found that TVA has not developed procedures to validate the requirements of its ADP users and has not performed a concise, well-documented study of its existing and future needs for ADP equipment. TVA has initiated actions to correct these problems, but much remains to be done. As we stated in our recent report on TVA's activities, 1/ the agency only recently began developing a formal ADP planning system, which includes procedures necessary to validate the needs of ADP users and the resources required to meet them.

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1/"Triennial Assessment of the Tennessee Valley Authority-- Fiscal Years 1977-1979" (EMD-80-91, Aug. 13, 1980).

The House Appropriations Committee also is concerned about TVA's justification for its large-scale ADP acquisition. In its report on the Energy and Water Development Appropriation Bill of 1981, the Committee states that:

"The Committee believes that the justification for this proposed acquisition is incomplete and inadequate. The Committee directs TVA to prepare, prior to acquiring any additional electronic computing equipment, a thoroughly documented requirements study justifying the proposed acquisition \* \* \*."

"\* \* \* \* The Committee believes that the General Manager and/or the Board must require more systematic planning and execution of the program for procurement, operation and maintenance of the electronic computing equipment and services."

Also, we found that TVA has not fully developed ADP management policies and procedures for obtaining the full practical use of its ADP equipment (see p. 3). Therefore, the agency is attempting to purchase the additional large-scale computing equipment before it has assurance that the equipment will be used efficiently. This could have a significant impact on TVA's computing needs and the cost of equipment needed to meet them.

#### CONCLUSIONS

We believe, with full practical use of its ADP resources, TVA could have avoided substantial expenditures in supplementing the processing capacity of its central computing system. However, TVA's ADP management policies and procedures do not result in the full practical use of computing resources. Therefore, TVA's computer management officials concluded that the central computing system--which was used intensively only during the daytime shift--was inadequate to process future requirements. As a result, in July 1980, TVA completed its proposed non-competitive purchase of ADP equipment at a cost of approximately \$4.8 million.

TVA's progress toward a fully competitive procurement of ADP equipment to replace its central computing system has been hampered by numerous delays. Although the agency has received contractor proposals, specifications for the procurement have tended to limit competition. As a result, only a few computer vendors have submitted proposals.



We believe that it is essential for TVA to identify the needs of its ADP users and the amount of computing capacity needed in an efficiently managed computing environment. The agency cannot be assured that acquiring additional equipment is the most economical way of meeting its requirements until it (1) completes a study which validates its current and future ADP requirements and (2) develops and implements management policies and procedures to ensure full practical use of its ADP resources.

RECOMMENDATIONS

To make TVA's ADP resources responsive to the agency's needs and to provide appropriate management and control over these resources, we recommend that the Chairman, Tennessee Valley Authority Board of Directors, require responsible agency officials to expedite efforts to

- validate TVA's existing and future ADP requirements and
- develop and implement policies and procedures for assuring the full practical use of ADP equipment.

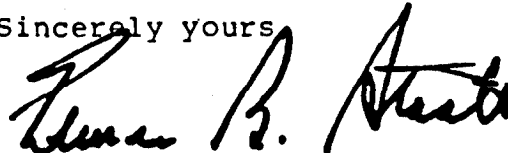
Also, we recommend that, to ensure ADP acquisitions are economical, the Chairman direct that a contract for replacing TVA's large-scale ADP equipment not be consummated until the agency has validated its ADP requirements and is efficiently using its existing ADP equipment.

Since TVA plans to make major ADP equipment purchases over the next few years, we intend to monitor the agency's progress and to conduct follow-on work related to TVA's need for and procurement of additional equipment.

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As your office advised, we have not obtained agency comments on this report, but the information upon which we based our conclusions and recommendations was discussed with TVA officials to determine its accuracy. As requested by your office, we plan no further distribution of this report until 30 days from the date of its issuance. At that time, we will send a copy of the report to the Chairman of the Tennessee Valley Authority Board of Directors, and make copies available to interested parties.

Sincerely yours



Comptroller General  
of the United States

Enclosure

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NINETY-SIXTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
 COMMITTEE ON GOVERNMENT OPERATIONS  
 2157 Rayburn House Office Building  
 Washington, D.C. 20515

March 25, 1980

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MAJORITY—225-5061  
 MINORITY—225-5074

The Honorable Elmer B. Staats  
 Comptroller General of the United States  
 General Accounting Office  
 Washington, D.C. 20548

Dear General:

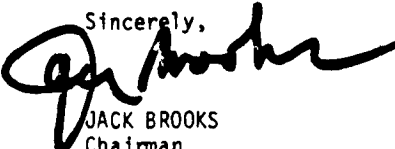
It has recently come to my attention that the Tennessee Valley Authority (TVA) has requested procurement authority from the General Services Administration for an interim sole-source upgrade of large-scale ADP resources. This proposed procurement represents the second non-competitive upgrade within the past two years. As you know, the Government Operations Committee has been reviewing the government's procurement practices for the past several years in an effort to reduce agencies' reliance on these non-competitive acquisitions.

I am particularly interested in TVA's proposal because it is indicative to me that despite past assurances the agency is not properly managing its current ADP resources. This is further supported by your recent report which criticized TVA's procurement practices especially as they related to the acquisition of ADP resources under Public Law 89-306. Specifically, your report stated that TVA has failed to (1) plan properly for ADP acquisitions, (2) justify its need for ADP acquisitions, and (3) follow prescribed government-wide policies and regulations.

I am requesting that you initiate a follow-on investigation specifically directed at reviewing TVA's proposed non-competitive interim upgrade as well as the progress they are making on their fully competitive replacement of all their ADP resources. I am particularly interested in knowing the extent to which TVA is developing this replacement acquisition in a way to maximize free and open competition in the marketplace. Since this is of great interest to the Committee, I am requesting that you complete this review and orally report your findings to the Committee by June 30, 1980.

I look forward to the results of your review. With best wishes, I am

Sincerely,



JACK BROOKS  
 Chairman