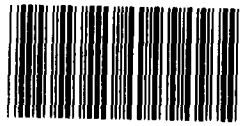
~~15377~~
113689

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-199666

NOVEMBER 6, 1980


113689

The Honorable Richardson Preyer
Chairman, Subcommittee on Government
Information and Individual Rights
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

Subject: The Veterans Administration's Plans to Convert the Automated Hospital Information System at the Washington, D.C., Medical Center (HRD-81-17)

This report is in response to your May 4, 1979, letter and later agreements with your office regarding the Veterans Administration's (VA's) efforts to develop a Health Care Information System and other computerized medical applications. As you know, we have had staff assigned to the Subcommittee reviewing overall aspects of VA's computerized medical efforts, and we testified before your Subcommittee on September 4, 1980, regarding VA's management of its automatic data processing resources.

The enclosure discusses our review of VA's plans to upgrade the Automated Hospital Information System (AHIS) at the Washington, D.C., Medical Center by converting it to operate on newer computer equipment. This system--which provides automated assistance for such inpatient functions as admissions and discharges, scheduling, dietetics, radiology, and intensive care--has been in operation on the present computer equipment since 1967.

In September 1979, VA awarded a contract for nearly $900,000 to convert AHIS by reprograming it to operate on newer computer equipment because, according to VA, the current equipment is becoming less reliable. In April 1980:

(400472)

012724

--The Office of Management and Budget questioned whether (1) adequate regard was given to less costly alternatives and (2) appropriate procurement procedures were followed, and recommended that the contract be terminated.

--We received a bid protest from one of the companies that had made an offer to perform the AHIS conversion on the basis that an error was made in evaluating the cost proposal.

--VA terminated the contract to reevaluate its approach to the conversion before reissuing the request for proposals, and the protest was subsequently dismissed.

In addition, in our July 1980 report 1/ to the Chairman, Subcommittee on Special Investigations, House Committee on Veterans' Affairs, we assessed the Office of Management and Budget's charges of Federal procurement irregularities associated with five VA-awarded contracts in September 1979--one of these contracts was for the AHIS conversion. We concluded that VA violated Federal Procurement Regulations in awarding these contracts, including the AHIS conversion contract. The enclosure discusses issues that were not in our July report, such as VA's failure to follow its own procedures and the need to more fully consider other solutions to its AHIS conversion effort.

VA did not adequately justify the need to replace all AHIS equipment or fully explore other alternatives for meeting the information needs of the medical center. In particular, VA did not fully explore acquisition of available private sector or Government-owned hospital information systems for meeting the medical center's information needs in a more timely and less costly manner. VA also did not conduct the cost/benefit study required by its procedures to support the AHIS conversion procurement, but has now decided to conduct a cost/benefit study of its conversion approach before reissuing the request for proposals.

1/"Five Contracts Awarded by VA at the End of Fiscal Year 1979" (HRD-80-101, July 31, 1980).

To ensure that VA's approach for converting AHIS to newer computer equipment is adequately justified, we recommend that the Administrator require that:

--All identified alternatives for meeting the Washington Center's needs be fully explored, giving particular attention to less costly available private sector and Government-owned hospital information systems.

--The cost/benefit study being made to justify the conversion approach consider the (1) impact on AHIS conversion costs of the potential need for an additional computer system and (2) benefits expected to result from the conversion, including user and automatic data processing personnel savings.

As requested by your office, we have not obtained written agency comments on the matters discussed in the report.

As arranged with your office, we are providing copies of this report to the Chairman, House Committee on Government Operations, Senate Committee on Governmental Affairs, House and Senate Committees on Veterans' Affairs, and cognizant House and Senate Appropriations Subcommittees; the Director, Office of Management and Budget; the Administrator of General Services; and the Administrator of Veterans Affairs.

Sincerely yours,

Comptroller General
of the United States

Enclosure

ENCLOSURE I

THE VETERANS ADMINISTRATION'S PLANS TO CONVERT THE AUTOMATED HOSPITAL INFORMATION SYSTEM

In a May 4, 1979, letter, the Chairman, Subcommittee on Government Information and Individual Rights, House Committee on Government Operations, asked us to review the Veterans Administration's (VA's) efforts to develop its proposed Health Care Information System (HCIS). Later agreements expanded our review to include all VA computerized medical applications.

This report discusses our review of VA's plans to convert the Automated Hospital Information System (AHIS) used at the Washington, D.C., VA Medical Center to operate on newer computer equipment. Because of the system's limited capabilities, VA does not intend to implement the converted AHIS at other medical centers. Rather, VA's proposed HCIS will encompass the AHIS ward-oriented functions along with other support capabilities not provided by AHIS--such as pharmacy and outpatient scheduling. Since VA does not expect to begin implementing HCIS before 1989, the other medical centers will continue to meet such information needs primarily through manual or semiautomated procedures.

We made our review at VA headquarters in Washington, D.C., and at the Washington, D.C., VA Medical Center. We interviewed VA officials and reviewed records regarding current AHIS operations and VA's justification for converting the system to newer computer equipment. We also reviewed applicable VA regulations and policies, other related documents and correspondence, and prior studies of AHIS.

BACKGROUND

AHIS began as a pilot project in 1963 at the Los Angeles VA Medical Center to determine the applicability of automated techniques to VA medical centers, particularly regarding inpatient operations. The project moved to the Washington, D.C., VA Medical Center in 1965, and initial application areas were selected for research and development. The system became operational at the Washington Center in 1967.

AHIS was designed to improve information processing for inpatient care and, as such, provides the medical center wards and other inpatient service areas with direct communication to the computer through 54 remote input and output terminals. The terminals are located in wards of the general medical and surgical teaching hospital and in the radiology, laboratory, dietetic, medical administration, escort, chief nurse, and

other locations. The system provides staff members with the ability for immediate notification and retrieval of inpatient information and also produces various reports for management.

AHIS is in operation every day from 5 a.m. to 1 a.m. on an IBM Model 360/40 computer system acquired in 1965. Since the acquisition cost of the computer system has been completely amortized, personnel and maintenance are the principal costs associated with current operations.

In July 1979, VA completed a study of AHIS operations which, after considering certain problems and alternative solutions, recommended and estimated the cost, excluding personnel, of acquiring newer computer equipment and converting AHIS to operate on it. Although this study was used as the feasibility study justifying an AHIS conversion procurement, VA, in August 1979, decided to upgrade and use an available in-house computer--justified for implementation of another automatic data processing (ADP) medical application at the Washington Center--thereby reducing its original estimated equipment cost for AHIS. Using available fiscal year 1979 yearend funds, VA awarded a contract in September 1979 for nearly $900,000 to convert AHIS by reprograming it for operation on upgraded in-house equipment. (See p. 3.)

In February 1980--5 months after contract award--VA presented estimates of dollar savings from personnel reductions expected to result from the converted AHIS operation. In addition, VA designated a second computer at the Washington Center as a contingency to process combined workloads of the converted AHIS operation and the medical application for which the initial in-house computer was upgraded. In April 1980, the Office of Management and Budget (OMB) questioned whether less costly alternatives to the AHIS conversion had been fully considered and, alleging that VA did not follow appropriate procurement practices, recommended termination of the AHIS contract. Also, at about the same time, we received a bid protest from one of the unsuccessful offerors for the conversion contract, on the basis that VA incorrectly assessed its cost proposal. 1/ On April 25, VA terminated the AHIS

1/The April 9, 1980, bid protest was based on an error by the VA contracting officer in scoring the contractor's cost proposal, which resulted in a higher overall score and contract award to another offeror. Had the correct cost of the protesting company's proposal been used, it would have been scored the highest overall. On June 16, 1980, we told the company that we were closing out the case because VA had terminated the contract.

contract to reevaluate its approach to the conversion. The protest was dismissed after the contract was terminated. In August 1980, VA decided to conduct a cost/benefit study to justify the approach before recompeting the AHIS conversion effort. VA internal procedures require a cost/benefit study for all proposals involving ADP resources (Veterans Administration Manual MP-1, General Administrative, Part II, Chapter 20). (See p. 11.)

PROPOSED AHIS CONVERSION NOT ADEQUATELY JUSTIFIED

According to VA, the existing AHIS operation at the Washington Center is becoming less reliable. The basis for this conclusion was an agency study of the current AHIS operation made between April and July 1979. The AHIS report 1/ briefly discussed maintenance problems with the current system and identified eight alternatives for meeting the medical center's information needs. The report recommended considering three alternatives involving conversion of the AHIS operation to newer equipment and estimated some of the costs associated with each of the alternatives. The study team estimated the conversion costs of the alternative adopted at $1.146 million, and estimated the equipment acquisition and 8-year maintenance costs, excluding personnel, at $747,000. Although this study was used as the feasibility study justifying the AHIS conversion procurement, VA, in August 1979, decided to upgrade and use an available in-house Digital Equipment Corporation (DEC) Model 11/70 computer--justified for implementation of another medical ADP application at the Washington Center--thereby reducing the original estimated equipment acquisition and 8-year maintenance costs to about $471,000. Using available fiscal year 1979 yearend funds, VA awarded a contract in September 1979 for $899,996--about $246,000 less than its original estimate--to convert AHIS by reprograming it for operation on upgraded in-house equipment.

The study team did not determine the impact of maintenance problems on medical center operations and did not fully consider the identified alternatives for meeting the center's information needs. In addition, VA did not make a cost/benefit study as required by its procedures to support the AHIS conversion. The AHIS study team concluded that VA could expect the conversion to result in a reduction of personnel needed to maintain and operate the system, but did not estimate the associated cost savings.

1/"Automated Hospital Information System (AHIS), AHIS Ad Hoc Maintenance Review Study Team" (Final report, July 19, 1979).

AHIS problems and alternative solutions not adequately assessed

The AHIS study team did not assess operational data to determine the nature and magnitude of equipment maintenance problems and the impact of such problems on medical center operations. In fact, we found, on the basis of information available at the Washington Center, that the present computer mainframe is reliable. While we agree that difficulties are encountered with the terminals and that the terminals are technologically obsolete, the study team did not determine the causes of terminal equipment failures and the impact of the failures on user operations. In addition, five identified alternatives were rejected without adequate justification and were not subject to cost analyses.

Maintenance problems not supported

Specific examples of the problems with AHIS identified by the study team and our related findings follow:

--According to the study team, the IBM Model 360/40 computer mainframe is old, its reliability has declined, and it cannot be expected to function for more than 2 years.

Data maintained by the medical center showed that the mainframe was operational for an average of 95 percent of total available time during calendar year 1978, 95 percent of total available time during 1979, and 96 percent of total available time during the first 4 months of 1980. In only three instances during this time did the computer reliability fall below 90 percent (84.9 percent in May 1978, 89.2 percent in March 1979, and 89.9 percent in January 1980). While AHIS officials at the Washington Center stated that 95-percent reliability is inadequate and the system should be operated 99 to 100 percent of available time, VA has not supported the requirement for such a high availability rate. Moreover, the acceptance criterion specified by DEC for the Model 11/70 computer is satisfied when the equipment is operational 90 percent or more of the available time during the initial 30-day performance period. The AHIS study team presented no information supporting its claim that the IBM Model 360/40 computer cannot be expected to function for more than 2 years. Data maintained by the medical center showed a steady

trend of availability of the system over the past 2 years. In the absence of an analysis of the impact of anticipated changes to AHIS operations--such as failure of parts that cannot be replaced, inability to add needed terminals, or uncorrectable capacity problems causing declining response time--the reliability of the IBM Model 360/40 would be expected to continue to approximate that of the previous 2 years.

--The study team noted that the terminals are old and frequently malfunction.

The study team presented no information on the nature and extent of the malfunctions or the impact on current or future user operations. While the medical center maintains records of the number of times terminals are inoperable, data are not readily available on the cause and duration of the failures, and the medical center does not accumulate and report such information. As a result, VA does not know the magnitude of terminal equipment failures or the impact of the failures on user operations. AHIS officials at the medical center indicated that the terminals become inoperable for a variety of reasons in addition to equipment malfunctions, including paper shortages, improper switch settings, and inadvertently unplugged units. However, when malfunctions occur, eight spare printer terminals are available which are substituted for the malfunctioning units while they are repaired, thereby reducing the impact on user operations. Also, when a spare printer terminal is unavailable--or when an input terminal malfunctions--users are generally able to meet their information needs by using a nearby terminal or by reverting to manual procedures.

--The study team noted that the existing terminals are expensive to maintain.

While the current annual terminal maintenance costs ($30,477)--which were not presented in the report--are greater than the estimated maintenance costs ($28,740) for the proposed replacement terminals, the study team did not estimate increases in future maintenance costs for the proposed terminals and the currently installed terminals.

--The study team indicated that almost all of the disk storage capacity is used, and implied that capacity has been exceeded in the past and caused the system to fail. In addition, the study team indicated that the current system is limited to processing a maximum of 9,999 inpatient records at any one time.

According to AHIS officials at the medical center, disk storage capacity has never been exceeded, although overflows almost occurred on two occasions--most recently in December 1979 when patient discharges were high and physicians fell behind in preparing the paperwork to remove the patients' records from the file. On each occasion, the system was removed from service as a precautionary measure and selected data purged from the file. As a result, the system was not available to users for about 4 hours on each occasion. An April 1978 request by the medical center for additional disk storage was rejected by the central office on the basis that (1) VA-owned disks were expected to become available shortly, at which time the request would be reevaluated, and (2) assistance was being requested to reduce paperwork backlogs. While VA has not installed additional disks, it has stressed to the center staff the importance of minimizing paperwork backlogs, thereby providing for timely removal of patients' records from the file. Also, AHIS officials at the center indicated that the 9,999-computer-program limit on the number of active inpatient records is not a problem in itself since the peak number experienced to date was 5,000 and averages between 3,000 and 4,000.

However, while AHIS is programed for a maximum of 9,999 inpatient records at a time, as the number of records approaches 5,000, physical space on the disk nears capacity. Again, the study team neither presented information nor conducted an analysis showing that the existing disk storage capacity was expected to be exceeded over the coming years and, if so, present alternative solutions--such as adding disk storage devices to the system or modifying control programs.

--The study team indicated that excessive personnel are needed to maintain AHIS programs because they are written in a complex language. 1/ The team concluded that converting the programs to a more commonly used and less complex language, such as Common Business Oriented Language (COBOL), would reduce the number of persons needed to maintain and operate the system from about 20 persons to fewer than 10.

The AHIS study team did not estimate the dollar savings expected to result from personnel reductions and did not include personnel in the cost estimates for the alternatives recommended for further consideration--each of these alternatives exceeded the annual equipment and maintenance costs of the current system. (See p. 10.) While conversion to a language such as COBOL and implementation of AHIS on newer computer equipment could be expected to reduce the number of personnel needed to maintain and operate AHIS, the study team did not explain the method used to determine expected personnel reductions.

Although the study team indicated that the system does not have the capacity for expansion to include outpatient functions, the present conversion proposal does not provide for any new functions to be added to AHIS.

VA has adequately established neither the magnitude of AHIS equipment problems nor the impact of these problems on future operations at the medical center.

All identified alternatives not fully considered

The AHIS study team identified eight alternatives for meeting the needs of the Washington Center which are being met by the existing system. The alternatives fall into five categories: (1) converting to manual procedures, (2) maintaining the current system (status quo), (3) replacing terminals and partially converting existing computer programs (two alternatives), (4) acquiring available hospital information systems from other sources for installation on other VA computer equipment, and (5) completely replacing the existing AHIS computer system and converting or purchasing

---

1/IBM Assembly Language.

all programs (three alternatives). Other than the three involving complete replacement, the other five alternatives were rejected with little justification and no cost analyses. The rejected alternatives were:

--Converting to manual procedures--In a January 1979 report, VA's Office of Inspector General concluded that the present AHIS system was not cost effective and recommended that the system not be further expanded until management decides on the desired successor to AHIS, whether manual or automatic. The AHIS study team recognized the Inspector General's recommendation, but rejected the manual alternative on the basis that it was not a positive solution to the maintenance problems and would have an unfavorable impact on the medical center. No estimate was made of the cost of converting to a manual system, and no assessment was made of the impact of such a conversion on medical center information needs and user satisfaction.

--Maintaining the current system--This alternative was rejected by the study team because it would be costly in terms of personnel and would not solve most of the maintenance problems. Current system maintenance and personnel costs, while available, were not presented in the report and the study team did not develop an adequate basis for rejecting this alternative.

--Replacing terminals and partially converting existing programs--The study team presented two alternatives involving terminal replacement and partial reprograming. The study noted that these actions would alleviate the terminal problems, but rejected the alternatives because they would require a significant reprograming effort involving logic and other changes to the control programs. No estimates of the magnitude of these efforts were made and no cost estimates were prepared.

--Acquiring available hospital information systems from other sources for installation on other VA computer equipment--According to the study team, this alternative was not considered in detail because it did not appear likely that one package could be found that would cover all AHIS functions tailored to run on VA computer equipment. As discussed further on page 12, VA's contracting officer has questioned whether adequate consideration has been given to this alternative

as related to available private sector or Government-owned ADP hospital systems, and OMB questioned whether adequate regard was given to less costly alternatives for meeting the information needs of the Washington Center. A contractor recently completed a study on behalf of VA's Department of Medicine and Surgery which identified a number of available private sector ADP hospital systems. (See p. 13.)

The study team identified three alternatives involving completely replacing the current AHIS computer system and programs and recommended each for consideration. The cost estimates for these alternatives were incomplete.

VA rejected five alternative solutions without adequate support or assessment. In one case, the study team rejected an alternative because it believed it would have an unfavorable impact on the medical center, yet no assessment of the impact was made. In two other cases, the study team rejected alternatives because of excessive costs or because a significant programing effort was required, but no assessment was made of the effort or the costs of the alternatives. In the last case--using an available outside system--the study team rejected the alternative because it believed it was not "likely" that an acceptable system could be found, and made no attempt to determine whether such a system was in fact available.

Required cost/benefit study not conducted

VA did not make a cost/benefit study before awarding the contract for the AHIS conversion as required by agency procedures. (See p. 3.) According to VA officials, a cost/benefit study was not required for the AHIS conversion proposal because the effort involved converting a current system rather than creating a new one. However, VA procedures require that all proposals involving ADP resources--except certain Government-mandated ADP programing changes and minor system modifications expected to cost less than $7,500--be subjected to cost/benefit studies before initiating the effort to provide objective estimates of costs, appraisals of anticipated benefits, and projections of resources to be consumed. Among other things, the procedures specifically require that cost/benefit studies be made for proposals for new or replacement ADP systems and modification or expansion of ongoing ADP systems. The procedures further specify that, for major proposals requiring an initial resource investment expected to exceed $350,000,

the organization which initiated the proposal is to request that the Office of Planning and Program Evaluation conduct the cost/benefit portion of the required feasibility study.

The Office of Planning and Program Evaluation was not requested to conduct the required cost/benefit study, and it was not involved in the feasibility study prepared by the AHIS study team. Instead, the study team--representatives from the Office of Data Management and Telecommunications and the Department of Medicine and Surgery--developed cost estimates for the three recommended alternatives, but did not include estimated personnel costs and neither identified nor estimated the value of anticipated benefits. Also, while the current operating costs of AHIS were available, the study team did not present them in the report and compare them to the estimated costs of the recommended alternatives. Finally, the study team made no attempt to reflect the impact of such factors as inflation and increased maintenance on future costs over the life of the system to more accurately project the resources expected to be consumed.

The 8-year life cycle cost estimates made by the study team for the three recommended alternatives ranged from $1.22 million to $6.31 million. These estimates included conversion, equipment acquisition, and maintenance, but not personnel costs. The most recent related yearly costs for the current AHIS operation excluding personnel were $92,000. Using VA's method of computing 8-year life cycle costs, the comparable cost of operating the current AHIS is $736,000 over 8 years. Therefore, the most conservative of the recommended alternatives exceeded the 8-year operating cost of the present AHIS operation by over $480,000. The 8-year cost estimate for the alternative selected by VA was $1.89 million, which consisted of $747,000 for equipment acquisition and related maintenance, and an estimated $1.146 million for conversion. This is over $1.15 million higher than related costs for the current AHIS operation.

VA's decision in August 1979 to convert AHIS by reprograming it to operate on an available DEC Model 11/70 computer, justified for another medical ADP application at the Washington Center, had the effect of reducing the study team's equipment acquisition and maintenance cost estimates. According to VA, by sharing a previously acquired computer with another application, the DEC Model 11/70 equipment and related maintenance costs--except for terminals and certain storage equipment needed only for AHIS--would be "free" to AHIS, thereby reducing the original estimated equipment and

related maintenance cost from $747,000 to $471,000. Using the reduced estimate, the 8-year hardware, maintenance, and estimated conversion costs exceed the related current AHIS operating costs by $881,000.

The study team anticipated that, by converting AHIS to the more commonly used COBOL language and by implementing AHIS on newer equipment, VA should be able to reduce the staff needed to maintain and operate the system from the present level of 20 to fewer than 10 persons. While such a personnel reduction could, if realized, result in savings which would outweigh the apparent increased equipment and maintenance costs of the recommended alternatives, the study team did not (1) explain and detail how it determined the anticipated personnel reductions, (2) estimate the dollar savings which would result from such reductions, and (3) include personnel in its cost estimates. In addition, the study team did not assess the projected impact of the converted AHIS operation on user personnel--staff time in using terminals would be affected if response time is improved or if newer terminals are more efficient and easier to use.

In the absence of complete estimates of costs and expected benefits over the anticipated life of the current AHIS operation and recommended alternatives, the AHIS report--which comprised the feasibility study for the conversion procurement--did not support the selection of the recommended alternative over the current system and thus did not adequately justify the September 1979 procurement.

STATUS OF AHIS CONVERSION

In February 1980, VA presented a $2.8 million estimate of savings over 8 years from personnel reductions expected to result from the converted AHIS operation. In addition, VA designated another computer at the Washington Center as a contingency to process combined workloads of the converted AHIS operation and the other medical application for which the DEC Model 11/70 computer was to be used. The estimated 8-year cost, excluding personnel, of this additional computer capacity is $553,000. In April 1980, OMB alleged that VA did not follow appropriate procurement practices and recommended termination of the AHIS contract. On April 25, VA terminated the AHIS contract to reevaluate its approach to the conversion. Finally, in August VA decided to make a cost/benefit study as required by its procedures to justify its approach before recompeting the AHIS conversion effort.

ENCLOSURE I

Less costly alternatives need to be explored

As discussed on page 7, the AHIS study team identified eight alternatives for meeting the medical center's information needs, recommended three for consideration, and rejected the other five. Although VA terminated the original contract to convert AHIS by reprograming it for operation on upgraded equipment, it plans to reissue its request for proposals without fully exploring other identified alternatives for meeting the Washington Center's information needs. In particular, VA has not adequately evaluated available private sector or Government-owned hospital information systems.

In November 1979, OMB began a review of VA procurements for ADP equipment and services awarded during September 1979, including the AHIS conversion contract. In an April 7, 1980, letter, OMB, alleging procurement irregularities, recommended that VA terminate seven of the contracts, including the AHIS conversion. In regard to the AHIS contract, OMB questioned whether VA had given adequate regard to less costly alternatives for meeting the information needs of the Washington Center.

On April 25, 1980, VA terminated the conversion contract for the Government's convenience, advising the contractor that it had decided to reevaluate its approach to AHIS conversion. According to the VA contracting officer, adequate assurance had not been provided that less costly alternatives had been fully explored for meeting the information needs of the Washington Center, particularly through acquisition of an existing hospital information system from private sector or Government sources. Specifically, VA's contracting office requested a reevaluation of one of the rejected offers for the initial AHIS conversion contract. The offeror proposed modifying a Government-owned hospital system to meet the center's needs at substantially less cost than the final contract award, but was rejected by VA's proposal evaluation team on the basis that it was nonresponsive to the request for proposals.

In June 1980, a study of private sector ADP hospital systems was completed by a contractor on behalf of the Department of Medicine and Surgery. The study was intended to identify private sector hospital systems which could meet the requirements of VA's HCIS. The study recommended considering five vendors' systems that might meet VA's HCIS functions; many of the functions identified for each were the same as those performed by AHIS. It also identified 14 other vendors whose systems contained fewer functions. The results of this study have not been used to identify and assess potentially less costly alternatives to the AHIS conversion effort.

VA estimates that it will take at least 18 months from contract award to complete the AHIS conversion effort. Because many private sector hospitals have operational ADP systems, some of which have been identified in the Department of Medicine and Surgery study, VA should fully explore these and other Government sources to determine whether less costly systems are available to meet the Washington Center's needs in a more timely manner.

Required cost/benefit study to be conducted

VA did not make a cost/benefit study as required by its procedures to justify the AHIS conversion procurement. While the AHIS study team prepared cost estimates for the three recommended alternatives, it did not include estimated personnel costs or the value of anticipated benefits.

In February 1980, VA presented dollar estimates of the personnel savings it expects to result from the converted AHIS operation. The estimated personnel savings result principally from VA's decision to operate AHIS on a DEC Model 11/70 computer, located at the Washington Center, and justified for implementation of another medical application. According to VA, because AHIS will share this previously acquired computer with another application, the computer operators needed for the Model 11/70 computer would be "free" to AHIS since they were already included in the justification for the other application. Accordingly, VA estimates a staff reduction of 12 operators and 4 programers and systems analysts as a result of converting AHIS for operation on the Model 11/70 computer. If realized, this staff reduction would yield an estimated 8-year $2.8 million savings that would outweigh the cost of the conversion, terminals, and additional storage equipment to operate the converted AHIS.

ENCLOSURE I

However, these savings in personnel and certain computer equipment depend to a large extent on the capability of the DEC Model 11/70 computer to process both applications to the satisfaction of the medical center users. Because VA decided that it was not feasible to determine its precise hardware needs, it is unsure whether the DEC Model 11/70 computer will be able to satisfactorily handle both applications by itself. Accordingly, VA has designated an upgraded DEC Model 11/34 computer at the center as a contingency which it will use, if needed, to alleviate some of the workload on the primary computer. If the addition of AHIS to the Model 11/70 computer requires another computer to satisfactorily meet user requirements for both applications, the cost of the upgraded Model 11/34 computer, its operators, and maintenance would be attributable to AHIS and thus affect the estimated savings. VA has estimated the 8-year cost of the upgraded Model 11/34 computer, excluding personnel, to be $553,000.

After we discussed the preliminary results of our review with VA officials, on August 13, 1980, the Office of Planning and Program Evaluation was requested to conduct a cost/benefit study of the proposed AHIS conversion effort. It expects to complete the study by the end of October 1980.

The Office's cost/benefit study needs to consider

--all potential AHIS conversion and operating costs, including the potential need for an additional computer and operators to satisfactorily process the Washington Center's workload, and

--the benefits expected to result from the converted AHIS operation, including projected user personnel savings.

CONCLUSIONS

VA did not adequately justify the September 1979 AHIS conversion procurement. The required cost/benefit study was not conducted. While VA's decision to convert AHIS by reprograming it to operate on newer equipment was based on an agency study which identified problems with the current system and considered various solutions, the study did not assess the nature and magnitude of maintenance problems and the impact of such problems on medical center operations. Furthermore, the study rejected alternative solutions which involved less than a complete replacement and conversion of the system without adequate support and cost analyses.

ENCLOSURE I

Although VA terminated the original contract to convert AHIS programs, it plans to reissue its request for proposals without fully exploring less costly alternatives for meeting the Washington Center's information needs--particularly through acquisition of available private sector or Government-owned hospital information systems.

While VA has initiated a cost/benefit study to justify its conversion approach, it needs to ensure that the study accurately reflects all potential costs and benefits before proceeding with the procurement.

RECOMMENDATIONS TO THE ADMINISTRATOR OF VETERANS AFFAIRS

To ensure that VA's approach for converting AHIS to newer computer equipment is adequately justified, we recommend that the Administrator require that:

--All identified alternatives for meeting the Washington Center's needs be fully explored, giving particular attention to less costly available private sector and Government-owned hospital information systems.

--The cost/benefit study being made to justify the conversion approach consider the (1) impact on AHIS conversion costs of the potential need for an additional computer system and (2) benefits expected to result from the conversion, including user and automatic data processing personnel savings.