

April 1989

**MEDICAL ADP
SYSTEMS**

**Composite Health Care
System Operational
Tests Extended**



**Information Management and
Technology Division**

B-220732

April 10, 1989

The Honorable Sam Nunn
Chairman, Committee on Armed Services
United States Senate

The Honorable Les Aspin
Chairman, Committee on Armed Services
House of Representatives

The Department of Defense Authorization Act for fiscal years 1988 and 1989 requires that we monitor the Department of Defense's operational test and evaluation (OT&E) of the Composite Health Care System (CHCS). As you know, CHCS is a state-of-the-art, integrated medical information system that Defense is acquiring at an estimated cost of \$1.1 billion for use in its 767 medical treatment facilities worldwide. The outcome of OT&E will demonstrate the system's effectiveness in meeting user requirements. Test results, together with an analysis of system cost and benefits, will enable Defense to determine whether CHCS should be deployed to military medical treatment facilities worldwide. This interim report discusses the difficulties that Defense has encountered while managing the deployment of the system to the military hospitals serving as test sites and Defense's plans for strengthening its implementation and testing processes.

Briefly, Defense is over 6 months behind schedule in deploying CHCS to test hospitals. Project start-up problems encountered during initial systems implementation and Defense's establishment of a contractor work load greater than that defined in its request for proposals led to the schedule delay. In addition, the extent to which the nine hospitals serving as OT&E sites are representative of the population of Defense medical facilities is questionable for two reasons. First, the test sites do not include the largest military hospitals, where attaining satisfactory system performance is expected to be difficult but where benefits are expected to be the greatest. Second, the sites do not include the smaller hospitals, which comprise the majority of Defense medical treatment facilities and at which system benefits are less apparent.

CHCS program managers share our concerns and have developed plans for corrective actions, which include improving the system's implementation process, lengthening the test period by 8 months—until August 1990, and adding larger and smaller hospitals to the test site mix. We believe these actions will address our immediate concerns. However,

whether enough CHCS hardware and software—sufficient to meet OT&E requirements—can be installed at additional sites within the new test period is uncertain because neither definitive plans and procedures related to all corrective actions nor site-specific implementation schedules had been developed by the close of our audit work on February 3, 1989. Therefore, we could not determine whether further time extensions beyond August 1990 may be necessary to obtain and evaluate CHCS performance and cost/benefit data from the additional sites, particularly the largest test sites, where implementation could be challenging.

Background: CHCS and the OT&E Concept

CHCS will provide military health care providers and administrators at Defense's 167 hospitals and 600 clinics with more timely patient care data by providing integrated automated support for the functional work centers of inpatient and outpatient care facilities, patient administration, patient appointment and scheduling, nursing, laboratory, pharmacy, radiology, and clinical dietetics. Since 1985, following a competitive acquisition process, Defense has conducted extensive proposal evaluations and demonstration tests of competing contractors' systems. Early in 1988, Science Applications International Corporation (SAIC) was selected as the winner of the competition phase and, on March 4, 1988, was awarded the OT&E-phase contract to deploy the system at seven test sites in the continental United States, one in Europe, and another in the Pacific.¹

Once CHCS is fully operational and stabilized at these sites, Defense plans to complete extensive data-collection activities to support its formal test and evaluation of system effectiveness, and will complete an analysis of system benefits in relation to cost. (See app. I for more CHCS background information.)

Within Defense, the concept of operational testing is most often associated with field tests of weapons systems, but it also applies to all major Defense systems² acquisitions—including CHCS. Generally, the purpose of OT&E is to determine (1) whether a system will satisfy mission needs and is suitable for use by typical military users, and (2) whether

¹Defense will also expand the system at Fort Knox, which it considers to be an OT&E site. However, it began installing and testing CHCS in 1987 during the competition stage of the acquisition. Because CHCS has been installed and operating at Fort Knox since late 1987, we believe it will not yield information comparable to that gained from the other nine OT&E sites. For example, initial installation and training data would not be comparable because system users at Fort Knox are far more experienced than are their counterparts at the other sites.

²Major Defense systems include all systems with estimated procurement costs greater than \$1 billion.

Defense and the contractor developing the system are capable of deploying it on schedule. (See app. II for more information on OT&E of major Defense systems.)

In Defense's 1988-1989 Authorization Act, the Congress established additional operational testing and reporting requirements pertaining only to CHCS. Specifically, the Act requires Defense to

- conduct OT&E at no fewer than six sites; and
- submit a report to the Senate and House Armed Services Committees that evaluates OT&E results, analyzes CHCS costs and benefits, and contains a full-production (deployment) plan based on the cost/benefit analysis.

Project Status: CHCS Implementation Late; OT&E to Be Extended

The OT&E phase of an information system acquisition consists of two broad categories of activities—systems implementation and systems testing. The major activities occurring during systems implementation include hardware and communications installation, software development³ and installation, user training, and system stabilization.⁴ During systems testing—which we will discuss in future reports—major activities focus on the collection and analysis of data on systems effectiveness, costs, and benefits.

In March 1988, at the start of implementation, Defense estimated completion of OT&E in about 18 months, but not later than September 1989. From our analysis of project files and interviews with senior program managers, about 9-12 months were allocated to systems implementation and about 6 months to system testing, evaluation, and preparation of required departmental decision documents and reports to the Congress. Under this original schedule,

- installation of system hardware and communications would have been completed at all OT&E sites by November 1988;

³Software development activities include periodic refinements to existing software, as well as development of additional system functions in accordance with schedules extending through fiscal year 1990.

⁴Once user training is completed, the full system at each site will undergo a stabilization period which, in essence, is the transition from an emphasis on systems installation and training to a routine of operation and maintenance. Defense is assuming a 90-day stabilization period, but expects some variance among individual sites due to differences in system user experience and attitudes toward automation.

- revised software would have been developed and tested in September, then installed in November 1988;
- user training would have been completed in March or April 1989; and
- testing would have been completed as early as July but not later than late August 1989.

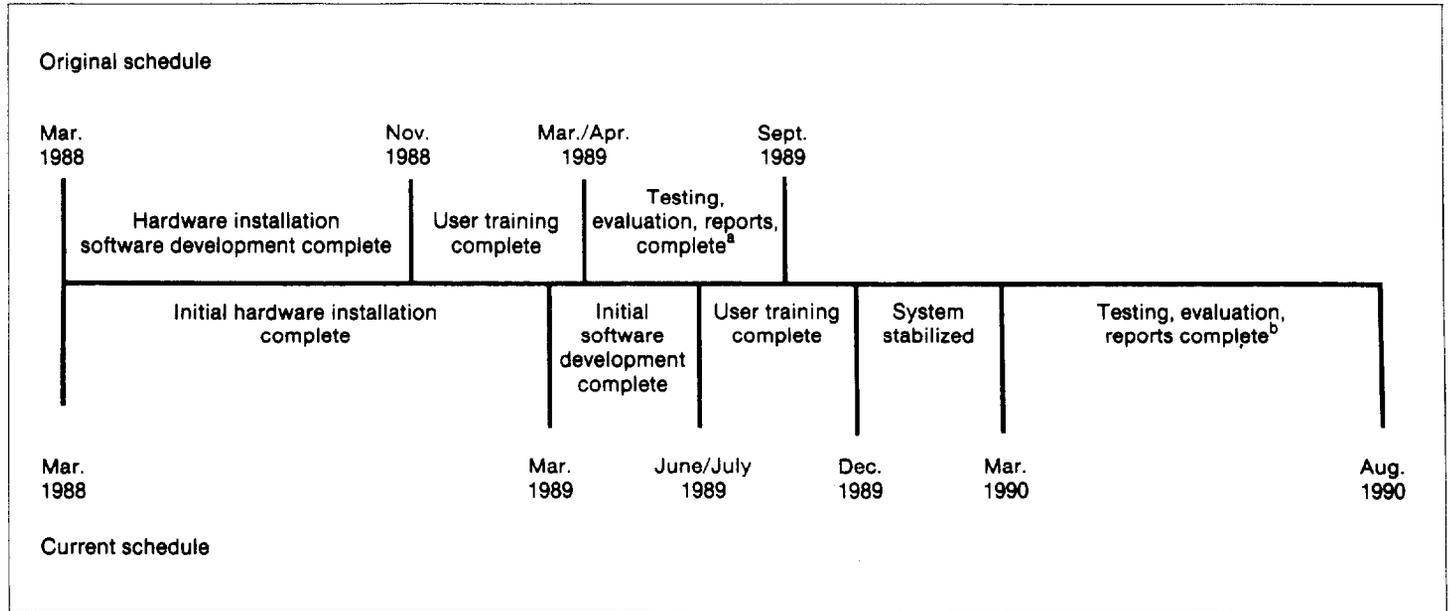
In June, about 4 months after the beginning of systems implementation, Defense extended the OT&E phase 3 months—until December 1989. While program management felt that some sites might be able to adhere to the original schedule, it was clear that most would not be ready for testing because of delays in two key implementation activities: hardware and communications installation and software development. Progress toward resolving problems in these two areas was slow. In September 1988 we expressed concern that delays in completing major systems implementation activities could seriously affect Defense's ability to conduct adequate systems testing. Program management agreed it was likely that OT&E would have to be extended because both software development and systems implementation were proceeding more slowly than expected. In November 1988 program management informed us that the completion date for OT&E would be extended about 8 months—until August 1990. Figure 1 shows the differences between the original and current OT&E schedules.

Between November 1988 and January 1989, to foster better SAIC compliance with the contract, Defense developed revised plans to consolidate software development and documentation requirements, including the preparation of related training materials, manuals, and schedules. In January 1989 program management and SAIC were negotiating delivery dates for the consolidated software. SAIC has proposed a June 1989 delivery date, but Defense requested an earlier date. At the close of our review, SAIC and Defense were still negotiating the delivery date.

Project Start-Up Problems and Increased Contractor Work Load Underlie Delays

Implementing a fully integrated CHCS in nine hospitals and training hundreds of system users at each site is a formidable job. It involves the technical challenge of deploying systems tailored to the physical characteristics of each hospital, as well as the general and special medical services they provide. In addition, it poses the managerial challenge of orchestrating a systems implementation approach that considers the needs and preferences of individual hospital management and staff, satisfies contractual requirements, and keeps the project on budget and on schedule. We found that two major factors contributed most to the OT&E-phase schedule delay:

Figure 1: Difference Between Original and Current Completion Dates for Major OT&E Activities



^aAlthough system stabilization was to occur under the original schedule, Defense had not identified a distinct period for this activity.

^bAlthough test data on contractor performance and various system functions is gathered throughout the OT&E, for integrated systems such as CHCS, the integration aspect of the system cannot be measured until the full system's hardware and key portions of the software are implemented.

- start-up problems encountered during initial system implementation, and
- Defense's establishment of a contractor work load greater than defined in its request for proposals.

Project Start-Up Problems

Though Defense has deployed smaller systems to military hospitals, program management had not anticipated all of the problems it might encounter while implementing a fully integrated, hospital-wide information system. For example, at each of the seven OT&E sites we visited during July and August 1988, we found an absence of clear communication among sites, program management, and SAIC, and uncertainty about the implementation process. Hospital officials told us that during the early months of the OT&E phase, the program office had communicated little specific information defining the responsibilities of test site and service branch staff, program officials, and SAIC representatives during system implementation. Hospital commanders and site implementation teams

felt that uncertainty about the responsibilities of and working relationships among the groups having roles in the system implementation process hampered preparations to do their part in implementing CHCS. The absence of site-specific schedules added to the uncertainty.

Defense also encountered problems managing seemingly routine system implementation activities, which often took months to resolve. For example, most sites experienced delays with the delivery and installation of system hardware. We found one instance where installation of CHCS hardware and communications equipment was delayed while program and hospital staff arranged for removal of the previous system's equipment—which had not been in use for nearly a year. At this site, we also found unpacked terminals and printers that could not be installed because the hospital's communications panels and conduits were filled to capacity with wiring from the previous system. Program management explained that removal of the system, which belonged to an unsuccessful CHCS competitor, was hampered by delays in obtaining a legal determination concerning the termination of the company's contract. During the same period, another site with a newly constructed computer room fully prepared for installation of system hardware and communications equipment, including the wiring of peripheral devices, waited several months for delivery of its equipment.

We also noted that at each site, resolution of disagreements over the number and location of terminals, printers, or power outlets was delayed for months because procedures on how site-specific problems would be identified and resolved had not been established. Test-site hospital officials believed that ineffective communication among program participants and the absence of definitive problem-resolution procedures contributed to schedule delays. Again, the need for problem-definition and -resolution mechanisms would have been evident, had this not been Defense's first experience implementing an integrated, hospital-wide system.

SAIC's limited experience implementing hospital information systems also contributed to the start-up problems. In 1986, prior to its selection as one of the four contractors to participate in the competition phase of the CHCS acquisition, SAIC had not developed or deployed hospital information systems. During this competition phase, it gained some experience by developing, installing, and demonstrating its prototype system in the Army hospital at Fort Knox, and its technical and cost proposals were judged superior to those of the other contractors. Nonetheless, when the contract for the OT&E phase was awarded to SAIC, the company

needed time to organize work forces, plan site-specific details of systems implementation, acquire staff resources, and develop management processes and controls for monitoring performance. Defense's senior program managers told us that because of SAIC's limited experience implementing medical information systems, it spent the first 3-4 months of the OT&E phase organizing and preparing for deployment of the system to individual OT&E sites.

In response to concerns we expressed during the course of our evaluation, Defense, among other actions, has

- improved communications with test sites by involving hospital commanders and on-site implementation teams in management meetings and decisions;
- improved working relationships with the Surgeons General and service branches by enhancing coordination and increasing information sharing through quarterly briefings and meetings; and
- strengthened internal controls within the systems implementation process by establishing clearer lines of responsibility for resolving different types of systems implementation problems and revising internal problem-reporting and -tracking procedures to provide more timely, accurate, and complete information to program management.

These actions should help alleviate the systems implementation problems now confronting program management.

Defense Increased SAIC's Contract Work Load

According to SAIC, and Defense agreed, the CHCS contract established a work load substantially greater than that proposed by SAIC when it responded to Defense's request for proposals. The contract increased the final number and changed the mix of test sites from those specified in the request for proposals. Furthermore, SAIC contends that Defense required it to develop software faster and deploy it earlier than the company had proposed.

Although Defense advised the competing contractors that a budgetary limitation would likely limit OT&E to four or five sites each, SAIC was asked to deploy its system at nine sites. In addition, three of the sites Defense ultimately included for OT&E were not among the potential sites identified in its request for proposals. These three sites still had the prototype systems of the unsuccessful vendors installed, which Defense wanted to replace because they did not meet hospital needs and would have been more expensive to operate than SAIC's system. SAIC's contract

manager explained that increasing the work load meant that the company had to begin additional deployment activities before it was able to hire and train additional staff. As a result, on-board staff were spread too thin to complete site-specific implementation activities on schedule, and system deployment was delayed.

According to SAIC management, Defense also asked the company to develop software faster, and to deploy it earlier, than the company had proposed. SAIC's proposal defined a process in which software developed during the competition stage would be installed at the OT&E sites, but the additional software scheduled to be developed during the OT&E phase would be installed only at Fort Knox. It would be refined there, but not deployed to other sites until the testing phase was completed. To provide for a more complete test of the system and more extensive analysis of its benefits, Defense wanted the additional software developed on a faster schedule, tested for a few months at Fort Knox, then deployed to the OT&E sites for inclusion in systems effectiveness and benefits analyses. According to SAIC's contract manager, the company agreed to software development and implementation requirements, but later found that it could not satisfy all of them within the time allotted by Defense. Program management, however, maintains that its emphasis in negotiating this work with SAIC was on (1) refining already developed software and (2) reordering existing contractual software development requirements—together with related documentation and training materials—so that what program management viewed as the most important system software could be deployed expediently to the OT&E sites.

About 8 months after the OT&E phase began, concerns over software development problems led Defense to curtail negotiations of future work agreements until SAIC addressed program management's concerns, devised a course of action to resolve them, and made further progress on current work orders. A December 7, 1988, memo to SAIC from the CHCS contracting officer cited several problem areas that had to be corrected, including

- completion and documentation of the basic software to be installed at test sites,
- development of training materials and user manuals corresponding to the software installed,
- tailoring training data bases to correspond to the system configuration at each test hospital,
- development of definitive training and conversion schedules,

- resolution of contractual issues concerning installed system performance, and
- expediting corporate-level approval of proposed work order terms and conditions negotiated with CHCS program officials.

We were unable to determine how these problems would be resolved because at the close of our audit work on February 3, 1989, program management and SAIC were still negotiating plans to correct them.

Test Sites Not Representative of Population of Military Hospitals

A critical variable affecting whether OT&E will provide useful information to decisionmakers is the extent to which the OT&E test sites are representative of the population of Defense's medical treatment facilities. The OT&E sites include two categories of military hospitals: facilities having 100 to 299 beds and those with 300 to 499 beds. At a November 1988 meeting with Defense's senior program management officials, we raised the concern that the test sites excluded the largest size military hospital—500 or more beds—and smaller hospitals (fewer than 100 beds).

We questioned why Defense was not testing at the largest military hospitals since it would (1) allow an opportunity to validate the assumption that those facilities will derive the greatest benefits from the system, and (2) provide a valuable measure of Defense's and SAIC's system implementation capabilities because systems installation, training, and stabilization are more difficult in these large facilities. We considered testing at smaller hospitals important because these facilities represent about two-thirds of the 167 hospitals in the military health service system. Further, conducting OT&E at small hospitals would also allow program management to address internal departmental concerns over whether the system would be cost effective at these facilities.

In response to our concerns about the exclusion of the largest and smallest military hospitals, Defense now plans to test CHCS at four more hospitals. The largest site added is the Walter Reed Army Medical Center (886 beds) in Washington, D.C. The Bethesda Naval Medical Center (494 beds), also in Washington, D.C., was also added because, according to senior program management, these two large medical treatment facilities share resources, services, and information in providing health services. Two small Air Force hospitals were also added: the Carswell facility in Texas (with 90 beds) and the Shaw facility in South Carolina

(with 40 beds).⁵ (Test site size and work load data are summarized in app. III.)

The addition of these sites will address our concern over the test-site mix. However, we could not determine whether CHCS would be sufficiently implemented to meet OT&E objectives at the four new sites by August 1990, the planned end of OT&E, because definitive implementation schedules for these sites had not been developed at the completion of our review. Definitive schedules will not be available until Defense program management obtains internal departmental approval of the planned changes to the OT&E schedule and site mix and completes negotiations with SAIC.

Conclusions

Project start-up problems, and the increase of SAIC's contract work load by Defense, caused the program to fall 6 months behind schedule. Defense, however, has made progress in establishing and improving the processes needed to manage the OT&E, and has adjusted its schedule to allow time for SAIC to correct the backlog of software development and systems implementation problems that have arisen to date. SAIC has also made progress improving its systems implementation capability, and its project manager believes the corporation now has the staff resources needed to satisfy contractual work load requirements on schedule.

We recognize that delays are not uncommon in developing and testing complex information systems, particularly when they are state-of-the-art systems such as CHCS. Therefore, we believe Defense has been prudent in extending the OT&E schedule rather than curtailing important OT&E activities to adhere to original program schedules. Only by thoroughly testing the system in a full range of operational environments will Defense be able to accurately assess system performance, costs, and benefits, and reduce the risk of deploying a costly system that does not meet user needs.

Objectives, Scope, and Methodology

For this report, our objective was to determine whether CHCS implementation plans were reasonable and if test objectives were achievable within the time frames established in Defense's OT&E-phase schedule. We

⁵According to program management, the system's ability to meet mobilization and contingency requirements will also be tested at Carswell, which participated in Defense's initial demonstration of CHCS mobilization characteristics. Program management considers these requirements to be critical aspects of the system. Carswell was selected on the basis of its performance during initial demonstration exercises.

analyzed (1) Defense and SAIC system implementation processes, (2) actual progress in implementing plans and meeting schedules, (3) problem identification and correction processes, and (4) implications that schedule delays have for accomplishing test objectives.

We visited the seven test sites in the continental United States, met with responsible Defense officials and SAIC representatives, and reviewed pertinent government and contractor documents. In addition, we met frequently with senior program management officials to discuss systems implementation problems, which provided them an opportunity to take corrective action. We briefed them on the results of our evaluation and incorporated their views into this report where appropriate. However, because program management agreed with our findings and planned to initiate corrective actions, we did not obtain official Department of Defense comments on a draft of this report. Our evaluation was conducted from April 1988 to February 1989, in accordance with generally accepted government auditing standards. (See app. IV for more details.)

We are sending copies of this report to the Chairmen of the House and Senate Committees on Appropriations; the Director, Office of Management and Budget; and the Secretary of Defense. Copies will also be made available to other interested parties upon request.

This work was performed under the direction of Melroy D. Quasney, Associate Director. Other major contributors are listed in appendix V.



Ralph V. Carlone
Assistant Comptroller General

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Figure 1: Difference Between Original and Current
Completion Dates for Major OT&E Activities

Abbreviations

CHCS	Composite Health Care System
DOD	Department of Defense
GAO	General Accounting Office
IMTEC	Information Management and Technology Division
OT&E	operational test and evaluation
SAIC	Science Applications International Corporation

Development History of the Composite Health Care System

Since 1968 Defense has pursued the goal of providing computer support to its hospitals and clinics. In 1979 it recognized the need for a standardized, automated, integrated medical facility support system that exceeded the capabilities of systems commercially available at that time. Working with the three Services, Defense developed and validated the standard set of requirements for an integrated medical information system which has become known as the Composite Health Care System (CHCS). Pending the successful outcome of operational testing, Defense plans to install the system at 167 hospitals and 600 clinics worldwide. The estimated cost of CHCS hardware and software is \$1.1 billion.

Defense followed the Office of Management and Budget's Circular A-109 as the basis for its procurement strategy. The circular provides guidelines to federal agencies on how to conduct a major systems acquisition and minimize the risks of inadequate systems performance and excessive cost. It addresses all aspects and phases of the acquisition—from needs analysis and requirements definition in the early stages, through system design, implementation, demonstration, full-scale testing, and the eventual system deployment and support.

In May 1985 Defense issued a request for proposals to develop CHCS. Six vendors responded by November 1985. Defense found four proposals acceptable and, on September 10, 1986, awarded contracts to each vendor for the design, development, and demonstration of prototype systems. Demonstration testing of each vendor's prototype system, one of the activities prescribed by Circular A-109, took place from early September 1987 to mid-December 1987. The testing included (1) a benchmark test conducted at vendor development facilities to determine to what extent the system met Defense's functional and work load requirements, and (2) a limited operational test in a hospital that provided an indication of the vendor's ability to install the system and train users, and of the system's performance in a hospital setting. During the demonstration test phase, Defense evaluated test results, as well as each vendor's technical and cost proposals and ability to manage the project.

Defense had the option of awarding contracts to up to two vendors for the operational test and evaluation phase. In March 1988 it awarded a single contract to Science Applications International Corporation (SAIC), which is installing the system at nine military hospitals. SAIC will also expand the prototype system installed at a hospital during the previous phase. Once CHCS is fully operational and stabilized at these sites, Defense plans to complete extensive data collection to support its formal test and evaluation of system effectiveness, as well as an analysis of

**Appendix I
Development History of the Composite
Health Care System**

system benefits in relation to costs. Afterward, Defense will determine whether to deploy the system worldwide.

CHCS is an integrated system supporting the functional work centers of inpatient and outpatient care facilities, patient administration, patient appointment and scheduling, nursing, laboratory, pharmacy, radiology, and clinical dietetics. CHCS will also provide integrated automated support for order entry, results reporting, administration, resource management, and quality assurance programs, as well as mobilization and mass casualty operations. It will also interface with other Defense systems, such as the Defense Enrollment Eligibility Reporting Systems and the Medical Expense and Performance Reporting System. With CHCS Defense plans to provide military health care providers and administrators with more timely patient care data. Interfaces with non-Defense systems at the Veterans Administration and the National Disaster Medical System will also be possible.

Operational Test and Evaluation in Major Defense Acquisitions

In response to growing congressional concerns about the risks associated with acquiring complex and costly medical ADP systems, the Assistant Secretary of Defense (Comptroller) in 1979 directed that the CHCS acquisition comply with Office of Management and Budget Circular A-109 acquisition guidelines. These guidelines instruct federal agencies on how to conduct a major system acquisition and minimize risks of inadequate system performance and excessive costs. The circular addresses all aspects of the acquisition process. Under the A-109 strategy, a full-scale test of a prototype system is conducted to determine if it will perform effectively under operational conditions.

The director of operational test and evaluation within the Office of the Secretary of Defense has the responsibility to monitor and review all operational test and evaluation within Defense (10 U.S.C. 138). Systems to be tested include all major Defense systems acquisitions with estimated life-cycle costs greater than \$1 billion (10 U.S.C. 2430). CHCS is a major system acquisition, with projected life-cycle costs of about \$1 billion.

Generally, OT&E seeks to determine (1) whether the system will satisfy mission needs and is suitable for use by typical military users and (2) if Defense and the contractor developing the system are capable of deploying it on schedule. Although field testing of weapons systems is the primary application of OT&E, Defense believes that automated information systems, such as CHCS, require the same level of testing as do major weapons systems to determine their effectiveness and suitability in the environment in which they will operate. In order to reduce the risk of deploying a costly medical information system before it is adequately developed and tested, Defense recognizes that CHCS must be tested in a realistic operating environment before the system can be deployed throughout the military hospital system.

Characteristics of Current and Proposed Additional OT&E Sites

Test site	Service branch	Beds	Percent occupied	Annual number of inpatients	Clinic visits
Current sites:					
Eisenhower (Georgia)	Army	384	83	15,273	530,780
Tripler (Hawaii)	Army	479	88	23,542	618,144
Nuernberg (Germany)	Army	142	82	8,844	244,931
Jacksonville (Florida)	Navy	178	52	10,619	263,562
Charleston (South Carolina)	Navy	184	54	9,326	238,113
LeJeune (North Carolina)	Navy	170	57	8,749	220,794
Keesler (Mississippi)	Air Force	295	80	11,885	436,427
Eglin (Florida)	Air Force	145	80	7,805	432,280
Sheppard (Texas)	Air Force	135	79	4,539	296,087
Proposed additional sites:					
Walter Reed (Washington, D.C.)	Army	886	78	24,083	935,825
Bethesda (Washington, D.C.)	Navy	494	65	16,400	389,135
Carswell (Texas)	Air Force	90	79	5,231	299,874
Shaw (South Carolina)	Air Force	40	68	2,537	150,538

Objectives, Scope, and Methodology

Defense's 1986 Authorization Act requires our evaluation of the acquisition and implementation of CHCS, and submission of reports to the Congress as may be appropriate. Further, the Defense Authorization Act for 1988-89 requires that we (1) monitor the OT&E phase and related CHCS acquisition activities and (2) submit a report to the Senate and House Armed Services Committees evaluating the results of OT&E and the process Defense is following in awarding a contract for the full production (deployment) of CHCS. For this report, our objective was to determine whether CHCS implementation plans were reasonable and if test objectives were achievable within the time frames specified in Defense's schedule.⁶ Our audit approach involved analyses of

- Defense and SAIC systems implementation processes for managing the deployment of CHCS to OT&E sites,
- actual progress in implementing plans and meeting schedules,
- problem identification and correction processes, and
- implications that schedule delays have for achieving the purposes of OT&E and accomplishing test objectives.

In conducting our evaluation, we visited each of the seven OT&E sites located in the continental United States, SAIC facilities in LaJolla, California, and McLean, Virginia, and the Defense Medical Systems Support Center (the program office managing the CHCS acquisition) in Falls Church, Virginia. We also visited the Army hospital at Fort Knox, Kentucky, where SAIC installed and demonstrated its prototype system during the acquisition's competition phase and which continues to serve as a test site for new systems software. We conducted our evaluation from April 1988 to February 1989.

⁶In previous reports, we examined issues pertaining to Defense's acquisition process. These reports were:

ADP Systems: Concerns About the Acquisition Plan for DOD's Composite Health Care System (GAO/IMTEC-86-12, March 31, 1986).

ADP Systems: Concerns About DOD's Composite Health Care System Development Contracts (GAO/IMTEC-87-25, June 8, 1987).

Medical ADP Systems: Composite Health Care System Operational Test and Evaluation Costs (GAO/IMTEC-88-18BR, Jan. 28, 1988).

Medical ADP Systems: Composite Health Care System Acquisition—Fair, Reasonable, Supported (GAO/IMTEC-88-26, March 4, 1988).

Medical ADP Systems: Analysis of Technical Aspects of DOD's Composite Health Care System (GAO/IMTEC-88-27, July 11, 1988).

Throughout our evaluation, we worked closely with senior program management officials to discuss our concerns as they arose; confirm our understanding of potential problems and their implications for achievement of test objectives; and allow an opportunity for management to respond to our observations and to initiate corrective action if they deemed it necessary. Because we briefed senior program management officials on the contents of our report and have incorporated their views where appropriate, we did not obtain official Department of Defense comments on a draft of this report. Our evaluation was conducted in accordance with generally accepted government auditing standards.

Major Contributors to This Report

Information
Management and
Technology Division,
Washington, D.C.

Melroy D. Quasney, Associate Director, (202) 275-4659
Ronald J. Maccaroni, Project Director
Edward G. Joseph, Project Manager
John A. Riley, Deputy Project Manager
William Barrick, Evaluator
Gregory Mills, Evaluator
Victoria Miller, Evaluator