Memorandum

Date JUL 23 1997

From Joseph J. Green
Assistant Inspector General
for Public Health Service Audits

Subject Follow-up on Corrective Actions in Response to the General Accounting Office's Report on the National Institutes of Health Computer System (CIN: A-15-95-40001)

To Anthony L. Itteilag
Deputy Director for Management
National Institutes of Health

The attached final report provides the results of our follow-up review to determine progress by the National Institutes of Health (NIH) in implementing recommendations made by the General Accounting Office (GAO) in its November 1991 report entitled, "Major NIH Computer System--Poor Management Resulted in Unmet Scientists' Needs and Wasted Millions" (GAO/IMTEC-92-5).

In responding to our draft audit report, NIH generally agreed with two of our recommendations, and agreed in principle with the third for which NIH believes that it has already met the requirement of GAO's recommendation of implementing a capacity management program. Comments by NIH are reflected within this report and are presented in their entirety as Appendix III.

We would appreciate your views and the status of any further action taken or contemplated on our recommendations within the next 60 days. If you have any questions, please call me at (301) 443-3582.

Attachment

Department of Health and Human Services

OFFICE OF INSPECTOR GENERAL

FOLLOW-UP ON CORRECTIVE ACTIONS IN RESPONSE TO THE GENERAL ACCOUNTING OFFICE'S REPORT ON THE NATIONAL INSTITUTES OF HEALTH COMPUTER SYSTEM

JUNE GIBBS BROWN
Inspector General

JULY 1997
A-15-95-40001

OFFICE OF INSPECTOR GENERAL

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This final report provides the results of our follow-up review to determine progress by the National Institutes of Health (NIH) in implementing recommendations made by the General Accounting Office (GAO) in its November 1991 report entitled, "Major NIH Computer System--Poor Management Resulted in Unmet Scientists' Needs and Wasted Millions" (GAO/IMTEC-92-5).

The GAO reported that NIH did not:

- effectively manage its mainframe computer capacity;
- acquire computers for administrative processing in a straightforward manner. The GAO stated that NIH had improperly used the critical nature of scientists' work to justify the large computers it wanted without anyone questioning its decisions. The GAO found that NIH needed to eliminate the excess administrative processing capacity it acquired after obtaining authority to purchase computers on the basis that they were needed for scientific research;
- successfully promote competition; and
- adequately assess the computing needs of scientists. The GAO concluded that NIH needed to require its senior information resources management (IRM) officials to take the lead role in future major system acquisitions by developing a strategic plan and otherwise ensuring that acquisitions support the mission of NIH.

The NIH concurred with corrective actions GAO recommended and, in Fiscal Year (FY) 1996, reported that it had completed the corrective actions. Appendix I contains a summary of GAO's recommendations and corrective actions taken by NIH. The remainder of this report focuses on actions that still need to be taken.

EXECUTIVE SUMMARY

The NIH has implemented GAO's recommendations except that it:

- excluded one of its four International Business Machines (IBM) mainframe computers in reporting to the Department that it was running out of capacity. The **excluded computer** is identical to three that were included except that it is not configured for administrative processing. Unable to find an agency willing to take the excess computer, NIH kept it. It later used the computer for disaster recovery testing of critical NIH applications and for backing up the NIH Clinical Center's medical information system, in response to Chief Financial Officers (CFO) Act and management control review recommendations made subsequent to the attempted transfer to another agency.

  The NIH advised us that it did not consider this computer in its reports to the Department because it was not being used for production in administrative processing at the time; and

- has not established the adequacy of purchasing mechanisms identified in its Division of Computer Research and Technology (DCRT) IRM Plan for enabling scientists to acquire computing needs in a timely and cost effective manner. However, NIH has conducted studies which support a need for improved scientific processing in order to maintain its leadership position in scientific research.

As part of the response to the GAO report and Congressman Conyers in 1992, Secretary Sullivan agreed that NIH would, by the end of FY 1996, replace the IBM Total System contract which was used to acquire computers for administrative processing. The NIH has responded to this commitment by developing an acquisition strategy--Computer Equipment, Resources, and Technology Acquisition for NIH (CERTAN) which promotes open systems standards and emphasizes competition.

We are recommending that NIH:

1. report all available mainframe computing capacity in forecasting computing needs;

2. delay replacement of the IBM mainframes until sufficient data have been developed to show when it will be in the best interest of the government to replace them; and

3. reassess the adequacy of mechanisms available for enabling scientists to acquire computing needs in a timely and cost effective manner, and in a

manner which will maximize the sharing of resources within NIH and throughout the Government.

AGENCY COMMENTS

The NIH generally concurred with recommendations two and three above, and has taken/is taking action to implement them. Although NIH does not concur with recommendation one, it endorses the recommendation in principle, but believes it is inappropriate to include systems that are not configured for production processing for forecasting future production capacity needs. We continue to believe, however, that NIH should consider all available mainframe computing capacity in forecasting computing needs. Comments by NIH are addressed in this report and are included in their entirety in Appendix III.

BACKGROUND

INFORMATION RESOURCES MANAGEMENT AT NIH

The Office of Information Resources Management (OIRM) provides oversight to and assists NIH entities in the acquisition and management of computers and other information resources, and develops and monitors the execution of policies and procedures for use of Federal information processing resources within NIH. One of the entities OIRM assists, DCRT, operates a data center that provides a central resource for computing services, technical advice, and collaboration in the computational sciences in support of research and management programs of NIH.

In February 1992, NIH began planning for an acquisition known as CERTAN. The primary objective of CERTAN is to provide information technology resources to assist NIH in meeting its scientific, managerial, and administrative computing requirements beginning in FY 1996 and extending into the twenty-first century. CERTAN is expected to provide a mechanism for obtaining new information technology resources and services to meet NIH's computing requirements under four planned acquisitions:

- Corporate Systems Contract (mainframe, on-line storage systems, central printing and plotting, and relevant software);

- NIH Information Technology Support Services Contract (software development and maintenance, help desk assistance, training, assessment of new technologies, operations and facilities support, systems integration, software, local computer support, and networking support);

- Scientific Systems Contract (general purpose and high performance computing systems, file servers/on-line storage systems, and relevant software); and

- Distributed Resources Contract (scientific workstations, site licensed software for desktop systems, central server systems, and networking equipment and software).

The CERTAN is NIH's largest and most comprehensive purchasing mechanism for meeting computing requirements. The CERTAN acquisition is discussed in the DCRT IRM Plan for FYs 1997 through 2001, dated April 17, 1995 (DCRT IRM Plan), which identifies computing needs and methods for satisfying them.

The NIH was directed by the General Services Administration (GSA) to use the "Trail Boss" concept for the CERTAN acquisition. The "Trail Boss Program" was developed by GSA to ensure that all pertinent parties work as a team to accomplish highly visible and sensitive information technology acquisitions. The Trail Boss team for the CERTAN acquisition included representatives from GSA and the Department of Health and Human Services.

INFORMATION RESOURCES MANAGEMENT GOVERNMENTWIDE

Subsequent to the GAO report, the National Performance Review (NPR) recommended that the Federal Government reengineer through the use of information technology. The NPR has directed that a Governmentwide data processing consolidation and modernization plan be developed to reduce costs of data center operations by reducing the total number of Federal data centers and modernizing the remaining data centers.

The Office of Management and Budget (OMB) Bulletin 96-02, issued in October 1995, provides (1) guidelines for a data center consolidation strategy and a plan for implementing the strategy and (2) that by June 1998, data centers are to be large enough to meet minimum target sizes established by the bulletin.

In June 1995, the Department, in recognition of the directive of OMB under development at that time, put a freeze on all data center acquisitions until a plan for data center consolidations had been drafted for the Department. The Department established a data center consolidation committee, developed an inventory of data centers, and prepared a data center consolidation strategy and, in September 1996, issued a plan for implementing this strategy.

The Information Technology Management Reform Act of 1996 (the Act) tasks agency heads with designing and implementing a process for maximizing the value, and assessing and managing the risks of their information technology acquisitions. Key factors to manage are cost, and the capability of the system to meet requirements, timeliness, and quality. Section 5125(c)(2) of the Act requires the chief information officer to monitor the performance of information technology programs at the agency, and advise the agency head of information technology management issues. The Act took effect August 8, 1996.

At the time of our follow-up review, the Federal Information Resources Management Regulation (FIRMR) was the primary regulation for use by Federal agencies in their management, acquisitions, and use of information resources. This regulation was eliminated when the Act took effect. Parts of FIRMR that continue to be needed have been absorbed into Federal Acquisition Regulations and OMB guidance.

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The objective of this follow-up review was to determine NIH's progress in implementing recommendations made in GAO's report entitled "Major NIH Computer System--Poor Management Resulted in Unmet Scientists' Needs and Wasted Millions" (IMTEC-92-5).

Scope and Methodology

We reviewed NIH's corrective action plan and the results of studies by NIH and independent contractors on matters relating to GAO's recommendations. We obtained an understanding of the methods and significant assumptions used by the contractors in determining the nature and extent of scientific computing resources needed by NIH. We did not conduct independent tests to validate the determinations by NIH and its contractors.

In considering the reasonableness of the information in NIH's corrective action plan and studies on questions relating to management, acquisition, and use of automated data processing resources, we reviewed related regulations issued under FIRMR which provide guidance to Federal agencies. We also met with departmental IRM officials and considered legislation, regulations, and administrative guidance that became applicable since issuance of the GAO report.

We discussed the objective of our review with NIH officials to identify sources of information relative to corrective actions taken on the recommendations. Field work was performed at intervals between December 1994 and May 1997, at NIH Headquarters in Bethesda, Maryland. Our audit was performed in accordance with generally accepted government auditing standards. Our review of internal controls was limited to only those controls which we considered necessary to satisfy our objectives.

FINDINGS IN DETAIL

Our audit showed that:

- NIH excluded one of its four IBM mainframe computers in reporting to the Department that existing administrative computing capacity would reach its limit in FY 1997; and

- the DCRT IRM Plan's timetable for acquisitions under CERTAN allows replacement of all IBM mainframe computers, used for administrative processing, before the planned acquisition of scientific computing needs at an unspecified time in FY 1997.

EXCLUDED COMPUTER

The GAO recommended that DCRT implement a capacity management program to identify and eliminate excess capacity and unnecessary equipment, and assess whether dedicating a full-sized computer to backup, testing, and development was necessary. At a minimum, GAO recommended the elimination of one IBM mainframe computer from DCRT's system, in addition to the computer DCRT eliminated in July 1991.

The NIH implemented a capacity management program, which includes use of a computer modeling program known as "BEST/1" for use with its IBM mainframe computers.[1] In 1992, NIH tested software needed to comply with GAO's recommendation and released the computer dedicated to testing for sale to another agency, ultimately selling it to the Office of Personnel Management.

Of the 4 remaining IBM mainframe computers, 3 were used primarily for administrative processing and the fourth was used for scientific computing. In 1992, DCRT determined jointly with the NIH Advisory Committee on Computer Usage that the fourth computer was not the most appropriate choice for scientific computing and coordinated with the Department and the General Services Administration to sell the fourth computer. However, no agency was interested in the computer and it was retained at NIH.

The NIH, in 1993, earmarked the computer for use in disaster recovery testing of critical NIH applications after the discovery of a material weakness in Automated Data Processing security reported in a 1992 CFO audit report.[2] The CFO report recommended that DCRT implement a contingency plan for off-site processing in case of emergency. In 1994, NIH also began using the computer for backing up the NIH Clinical Center's medical information system, as recommended in a 1993 internal NIH management review of NIH computer facilities. This action was taken to implement a contingency plan for backing up the NIH medical information system which is critical for patient care activities. Use of the computer in these ways produced savings over alternatives available to address the findings.

In 1995, the Department established a freeze on computer center acquisitions as part of its data center consolidation initiative. The CERTAN Trail Boss, in a September 19, 1995 memorandum to the Department's Data Center Consolidation Committee (see Appendix II), used BEST/1 as a basis for requesting a waiver from the Department's freeze on data center consolidations. The waiver allowed NIH to acquire both administrative and scientific capacity. With respect to the proposed CERTAN Corporate Systems Contract, the Trail Boss stated:

> "The Corporate Systems Contract also meets three elements of waiver criterion 3: (1) BEST/1 modeling indicates that existing capacity will reach it's (sic) limit in FY 97. This coincides with the planned recompetition schedule we are following to best meet customer service performance standards; (2) NIH modernization plans include migration to open systems while meeting the needs of our legacy system

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[1] Of the IBM mainframe processing at NIH, 61 percent supports NIH activities such as administration of biomedical research conducted at NIH and by outside grantees and contractors. About 21 percent of the processing is for other entities within HHS, and the remaining 18 percent is for Federal and nonfederal entities outside HHS.

[2] The CFO audit report disclosed that a PHS-wide material weakness in automated information systems security, reported to have been corrected in 1991, continued to exist at NIH. The material weakness was originally identified in a 1988 Federal Managers' Financial Integrity Act report.

> users, and this contract will facilitate such transition while meeting the ongoing needs of our scientific and administrative communities; and (3) all purchases made under this contract will be portable to a consolidated data center."

The waiver was approved by the Deputy Assistant Secretary for Information Resources Management on September 22, 1995.

The DCRT excluded one of its four IBM mainframes in estimating available computing capacity when it requested the waiver because the computer is not configured for this purpose and was not being used in production service. The OIRM officials recognize that the computer could be configured to allow for administrative processing while also serving other purposes for which it is used. However, the DCRT officials noted that reconfiguration of the computer would employ approximately 20 staff days of system programmers. The DCRT officials believe that reconfiguration would not be cost-effective because the computer has not been needed for administrative processing, that the IBM mainframe computers had a market value of only $750 in 1996 and are currently obsolete, would not meet the plan for moving to open systems standards, and that NIH plans to develop a business case justifying when they should be replaced.

We recognize that NIH should not reconfigure the computer unless there is a need to do so. However, we believe a reconfiguration effort of only 20 staff days should not have precluded consideration of this computer when forecasting administrative computing needs. The IRM officials at NIH stated that the obsolescence issue was implicit in the September 19, 1995 waiver request from the CERTAN Trail Boss which states:

> "...NIH modernization plans include migration to open systems while meeting the needs of our legacy system users, and this contract will facilitate such transition while meeting the ongoing needs of our scientific and administrative communities..."

Our audit did not address obsolescence since documentation NIH provided to us at the time of the audit did not clearly indicate that obsolescence was an issue.

ACQUISITION STRATEGY

In responding to GAO's recommendation, NIH tasked its senior IRM official with developing a strategic plan and directing acquisition strategies in support of the NIH mission. The NIH recognized the need for improved scientific processing in order to maintain its leadership position in scientific research. Although the DCRT IRM Plan developed by NIH allows replacement of the IBM mainframes beginning in October 1996, it is not specific on: (1) whether these computers need to be replaced now; or (2) when there will be full assurance that all identified scientific computing needs can be acquired in a timely and cost effective manner.

The decision by NIH to award the acquisition which allows replacement of the IBM mainframes in October 1996, was driven by former Secretary Sullivan's written commitment in 1992 to Congressman Conyers indicating that the Total System Contract would be recompeted in FY 1996. As part of a response to the GAO report and Congressman Conyers, the Secretary committed NIH to an acquisition strategy requiring that by September 1996, that NIH: replace the IBM Total System contract which was used to acquire computers for administrative processing; develop a replacement system design that will promote moving to open systems standards; and emphasize a competitive procurement process. The commitment was in response to the Congressman's transmittal letter for the GAO report on the NIH award of the Total System Contract to IBM. The CERTAN Corporate Systems Contract, when in place, will lead to the termination of the Total System Contract as a source of equipment. The OIRM officials noted that the Total System Contract will not be used after FY 1996, except to purchase IBM proprietary software and software support documentation needed to support IBM compatible mainframes at NIH.

The OIRM officials also informed us that they and their contracting agents responsible for managing CERTAN acquisitions do not have the resources to conduct multiple concurrent procurements for all CERTAN acquisitions. The sequence and scheduling of awards of the contracts were done by the CERTAN Acquisition Advisory Council, taking these limitations into account.

Justification for Replacement of IBM Mainframes

The IBM mainframe computers are aging, but NIH had not yet established when it will be in the best interest of the Government to replace them. In this regard, FIRMR Subpart 201-20.201 provides that agencies perform an analysis of alternatives for meeting the requirements for Federal information processing resources.

An alternatives analysis for CERTAN, conducted by the Federal Systems Integration and Management Center (FEDSIM), an organization within GSA, provides a general framework to begin planning the acquisition process. The analysis indicated that continued use of the computers over the next 5 to 7 years is not feasible. However, the analysis was not specific enough for use in determining whether existing IBM mainframes should be replaced before assuring that NIH scientists are enabled to acquire scientific and distributed processing systems in a timely and cost-effective manner. The DCRT officials told us, in response to a working draft of this report, that, because changes in the computing industry are rapid, a detailed alternatives analysis for determining when to replace the IBM mainframes should not be performed before the acquisition to allow replacement is awarded. The officials stated that NIH will develop a business case justifying the replacement of the IBM mainframe computers.

Scientific Computing Acquisitions

The DCRT IRM Plan describes the CERTAN acquisition strategy for awarding acquisitions for scientific computing systems, workstations, and networking components in late FY 1997, as approved by GSA and the CERTAN Advisory Board. In responding to a working draft of this report, OIRM officials stated that CERTAN was never intended as the sole avenue used by NIH to address scientific needs; that the timing of the awarding of contracts for acquisitions of scientific systems and distributed resources in FY 1997 does not mean that current scientific needs are going unaddressed; that DCRT, OIRM and other NIH components regularly address scientific computing requirements in numerous ways. The OIRM officials stated that: (1) scientists' general computing requirements are also being readily met through numerous alternative vehicles for the provision of scientific support to include existing supercomputers, NIH and governmentwide contracts including "indefinite delivery/indefinite quantity" contract mechanisms available through the NIH Information Technology Acquisition and Assessment Center; (2) NIH has access to resources and capabilities (e.g., Convex and Silicon Graphics system) along with the availability of reliable global contracts to meet scientific requirements until the award of the Scientific Systems Contract by the end of FY 1997; and (3) other computing needs in support of scientific research will be met by the administrative computing facilities.

In late 1995, NIH used its current Total System Contract with IBM to acquire a new IBM SP2 supercomputer to augment two other supercomputers at NIH used in scientific processing. The OIRM officials stated that:

- "With the recent acquisition of the IBM SP2 and the availability of reliable global contracts, it was determined that the scientific computing needs will be appropriately met within the current acquisition plan." and

- it is impossible for NIH or any scientific institution to assure that all scientific computing needs can be acquired to support scientific users' requirements, that science is a quest for new discoveries which are not foreseeable, and that the new discoveries lead to new computing requirements which similarly are not foreseeable.

We agree that the availability of reliable global contracts could help assure that scientific and distributed processing needs are met, but we found no analysis showing that scientific computing needs were being satisfied timely and cost effectively.

We believe that if reliable global contracts for timely and cost effective delivery of all computing needs were in place, there would be no need to spend the resources to continue with CERTAN. In this regard, FEDSIM stated that without CERTAN, the NIH scientists would potentially have to purchase systems and services themselves, leading to some redundancy in computing resources at NIH. The OIRM officials

acknowledged the risk of redundancy where acquisitions are not made through mechanisms, such as CERTAN, that are coordinated by NIH IRM management.

OIG RECOMMENDATIONS

We recommend that NIH:

1. report all available mainframe computing capacity in forecasting computing needs;

2. delay replacement of the IBM mainframes until sufficient data have been developed to show when it will be in the best interest of the government to replace them; and

3. reassess the adequacy of mechanisms available for enabling scientists to acquire computing needs in a timely and cost-effective manner, and in a manner which will maximize the sharing of resources within NIH and throughout the Government.

Agency Comments and OIG Evaluation

The NIH concurred with recommendations two and three, and concurred with the intent of recommendation one.

The NIH, although it does not concur specifically with recommendation one, endorses its conceptual principle. The NIH stated that the goals of a capacity management program are to optimally match capacity to workload and required service levels. The NIH indicated that capacity management examines operating capacity to ensure that it reasonably matches that needed to meet service level objectives. Therefore, capacity management studies analyze usage of machines in production service, and projects the needs for additional (or less) capacity. As a result, NIH believes it is inappropriate to include systems not configured for production processing for forecasting future production capacity needs. To satisfy this recommendation, NIH indicated that it would have had to configure a machine that had never been used for production processing and that was not needed for that purpose. The NIH indicated that it would be inconsistent with the GAO recommendation that NIH eliminate unneeded capacity.

We continue to believe, however, that NIH should have considered all available capacity in estimating and reporting available computing capacity. Although NIH did not include one of its four IBM mainframe computers in production, we found nothing that would preclude NIH from considering an identical computer for use in forecasting future capacity needs for the reason that it was not in production service at the time.

The NIH responded to OIG recommendation two, that DCRT performed a net present value (NPV) analysis demonstrating the effectiveness of acquiring new computer processors with which to accomplish the Department's data center consolidation strategy. According to NIH, the data indicated that it was in the best interest of the government for DCRT to replace the 3090 IBM mainframes, and was forwarded in March 1997 to the NIH Deputy Director for Management, who serves as the Interim NIH Chief Information Officer (CIO). The DCRT also conducted an NPV analysis demonstrating the cost effectiveness of replacing the 3090 IBM mainframes with new processors in the absence of consolidation.

In responding to OIG recommendation three, NIH indicated that it has access to a wide variety of contract vehicles for acquiring information technology resources. The NIH noted that Project CERTAN provides some of these contracts, and other NIH and other Federal agency "Government Wide Agency Contracts" provide both scientists and administrators with a wide array of choices. The NIH indicated that it will continue to monitor the status of these contract vehicles and stay apprised of the Federal procurement situation. Further, after the NIH CIO is on board, NIH indicated that one of the priorities to be addressed will include the adequacy of purchasing mechanisms available for enabling scientists to acquire computing needs in a timely and cost effective manner, and in a manner which will maximize the sharing of resources within NIH.

APPENDICES

CORRECTIVE ACTIONS IN RESPONSE TO THE GENERAL ACCOUNTING OFFICE'S REPORT ON THE NATIONAL INSTITUTES OF HEALTH COMPUTER SYSTEM (A-15-95-40001)

In GAO's November 1991 report entitled, "Major NIH Computer System--Poor Management Resulted in Unmet Scientists' Needs and Wasted Millions" (GAO/IMTEC-92-5), GAO made the following recommendations to correct problems it had found in management of computer resources at NIH.

GAO REPORT

RECOMMENDATION 1 - MANAGE CAPACITY

The GAO recommended that NIH improve its computer operations by implementing a capacity management program that includes frequent analysis and modeling of all computers obtained under a contract, known as the Total System Contract, with IBM. Until an effective program is implemented, the NIH Director should report the lack of capacity management as a material weakness.

RECOMMENDATION 2 - ELIMINATE EXCESS CAPACITY

The GAO recommended that NIH use the capacity management program to identify and eliminate excess capacity and unnecessary equipment, including a determination of whether the approach of dedicating a full-sized computer to backup, testing, and development is necessary. The GAO stated that, at a minimum, adjustments should include the elimination of one IBM mainframe computer from NIH's system, in addition to the computer NIH eliminated in July 1991.

RECOMMENDATION 3 - MAXIMIZE COMPETITION

The GAO recommended that NIH determine whether it needs to acquire future computing needs through a single contractor, or whether it should better foster competition by awarding contracts to multiple vendors for the various types of computing needs.

RECOMMENDATION 4 - ACQUISITIONS TO SUPPORT MISSION

The GAO concluded that DCRT unilaterally: (1) had used the critical nature of scientists' work to justify the large computers it wanted; and (2) did not collect data on what NIH scientists needed. The GAO recommended that NIH require its senior IRM officials to take the lead role in future major system acquisitions by initiating activities

In its March 31, 1992 response to the GAO report, NIH concurred with all of GAO's recommendations, established a corrective action plan in response to each recommendation, monitored implementation of the plan, and, in FY 1996, concluded that it had completed actions needed to address GAO's recommendations.

NIH RESPONSE

GAO RECOMMENDATION 1 - MANAGE CAPACITY

The NIH implemented a capacity management program. As of mid-FY 1996, the DCRT's capacity management staff had met more than 60 times to analyze capacity management data and the results of IRM studies commissioned by NIH.

In response to GAO's recommendation, NIH reported in December 1991, the lack of capacity management as a material weakness under the Federal Managers' Financial Integrity Act. The NIH subsequently implemented a capacity management program that uses BEST/1 software[3] to prepare models for measuring and forecasting capacity utilization for three IBM mainframe computers at DCRT which are used primarily for administrative processing. In October 1992, the Department considered the material weakness to be corrected.

Additional actions that NIH needs to take in order to fully respond to GAO's recommendation are discussed in the report to which this appendix is attached.

GAO RECOMMENDATION 2 - ELIMINATE EXCESS CAPACITY

The agency has implemented GAO's recommendation. When GAO initiated its review, DCRT had six IBM mainframe computers. The DCRT transferred one to the National Library of Medicine in July 1991, and, in August 1993, entered into an agreement to transfer another IBM mainframe to the Office of Personnel Management. The DCRT uses three of the remaining four IBM mainframe computers primarily for administrative processing. It has earmarked the fourth computer for use in disaster recovery testing of critical NIH applications and for backing up the NIH Clinical Center's medical information system.

GAO RECOMMENDATION 3 - MAXIMIZING COMPETITION

The agency has implemented GAO's recommendation. The DCRT IRM Plan is to maximize competition in future acquisitions to allow for multiple vendors, rather than through a single vendor. The DCRT also plans to acquire a computer that can process

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[3] BEST/1 is an analytic modeling computer program that is widely used in capacity planning at IBM mainframe sites to evaluate current capacity requirements and to determine future capacity needs.

data in what is known as an "open systems environment."[4] This acquisition is a step toward reducing costs through increased competition by moving NIH from its dependency on the relatively few manufacturers of IBM-compatible products.

Users of DCRT's administrative processing services design applications and programs according to their own requirements. The NIH plans to encourage users to develop applications and programs that can be operated in an open systems environment. The senior IRM official expects that users will readily accept the open systems environment because of advantages such as lower cost.

GAO RECOMMENDATION 4 - ACQUISITIONS TO SUPPORT MISSION

In responding to GAO's recommendation, NIH tasked its senior IRM official with developing an IRM strategic plan and directing acquisition strategies in support of the NIH mission. The DCRT IRM Plan identifies the computing needs of scientists and includes a plan for addressing acquisition of scientific and administrative processing needs.

Scientific Computing Needs

The DCRT IRM plan takes into consideration the following studies commissioned by NIH and other actions subsequent to the GAO audit which show specific areas of scientific computing need:

- **"Corrective Action Review,"** March 1994. The NIH contracted with the Science Applications International Corporation to conduct a corrective action review 1 year after the material weakness identified by GAO had been removed.

- **"NIH Capacity Management Assessment and Validation for Large Systems."** The NIH, in September 1994, commissioned the Science Applications International Corporation and the General Telephone and Electronics Corporation's Government Systems-Federal Systems Division to perform a review in response to GAO recommending that NIH improve its computer operations by implementing a capacity management program that includes frequent analysis and modeling. The contractors determined that NIH implemented a capacity management program; however, improvements were needed in capacity management activities for major systems other than the DCRT IBM mainframes. The NIH is in the process of making the improvements.

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[4] An open system is a computer network designed to support equipment made by different manufacturers that use the same communications facilities and protocols.

The following studies were conducted by FEDSIM to plan NIH's next acquisitions:

- **"Concept of Operations,"** May 1993. The NIH contracted with FEDSIM to: (1) develop a user-based Concept of Operation based on data gathered during interviews with over 100 representatives of the NIH user community; and (2) conduct a requirements analysis for the reprocurement of computing resources.

- **"Interview and Workshop Summary for the Computer Equipment Resources and Technology Acquisition for NIH (CERTAN),"** May 1994. This study was commissioned to identify CERTAN user functional requirements in order to develop the plans, studies, and strategies required to support CERTAN acquisition activities. In 1994, 16 workshops and 32 interviews with a broad spectrum of 330 users that included NIH clinicians and scientists representing the NIH scientific communities were conducted to define the scientific and administrative requirements.

- **"Software Conversion Study for CERTAN,"** August 1994. The NIH contracted with FEDSIM to determine the costs of converting existing applications and programs that support the administrative and scientific communities at NIH. The FEDSIM analyzed two scenarios: (1) conversion to a platform compatible with the current IBM environment; and (2) conversion to an open system computing environment.

- **"Requirements Analysis for CERTAN,"** January 1995. This requirements analysis identified those functional requirements that are within the scope of the CERTAN acquisition. Information collected from interviews and workshops formed the basis for developing the computing requirements.

- **"Alternatives Analysis for CERTAN,"** April 1995. The objective of the analysis was to determine which acquisition method and technical configuration offer the most advantage to the Government. Life cycle costs and benefits for the technical configuration alternatives were evaluated using net present value analysis and examining the benefit/cost ratio for feasible technical alternatives.

In January 1995, the FEDSIM reported that its studies had shown a need for improved scientific processing in order to maintain NIH's leadership position in scientific research. It reported that:

(1) scientific users demand more powerful and sophisticated computer equipment;

(2) existing scientific processing resources are overutilized and running at near maximum capacity; and

(3) many problems will be computationally infeasible until larger and faster systems are made available to NIH.

The DCRT IRM Plan shows scientific processing needs in the following areas:

Computational Biosciences
High Performance Computing
Helix scientific computing systems
Advanced Laboratory Workstation
Clustered Workstation Computing
Image Processing in Structural Biology
Multimodality Radiology Image Processing System
Scientific Computing Resource Center

The DCRT IRM Plan also emphasizes the importance of meeting scientific processing needs by stating that:

> "It is critical that DCRT and NIH maintain a leadership position in the emerging discipline of computational science so that the biomedical sciences will reap its benefits and so that NIH intramural investigators are provided a first rate computational facility with which to collaborate and consult."

Acquisition Plan

The DCRT IRM Plan includes a description of three categories of purchasing mechanisms available to enable NIH scientists to acquire scientific computing needs--(1) CERTAN; (2) the National Aeronautics and Space Administration's Scientific Engineering Workstation Procurement (SEWP); and (3) other purchasing mechanisms.

CERTAN

The first CERTAN acquisition provides support services for administrative and scientific processing systems. The second acquisition is the Corporate Systems acquisition which includes replacement and modernizing NIH's administrative processing capabilities. The two remaining acquisitions are to enhance scientific processing capabilities through

mainframe and distributed processing. The following provides a summary description and timetable for CERTAN's four acquisitions.

Acquisition	Description	Target Award
1. Support Services	Provides technical support services for scientific and administrative computing needs, eg., software development and maintenance, help desk, training, on-site LAN, and computer support.	8/96
2. Corporate Systems	Compatibility-limited and open mainframes (DCRT and Clinical Center)	10/96
3. Scientific Systems	General purpose and high performance scientific computing systems, eg., large UNIX system for scientific users, high performance parallel computer, file servers/on-line storage systems, software, maintenance, and support.	End of FY '97
4. Distributed Resources	Scientific workstations and networking components	End of FY '97

SEWP

The OIRM officials referred to SEWP as the procurement mechanism of choice for scientific workstations to the extent that SEWP provides the anticipated lower prices, low procurement overhead, and rapid delivery. The alternative planned under CERTAN will be used to the extent that a better option is not available under SEWP.

OTHER PURCHASING MECHANISMS

The DCRT IRM Plan mentions alternative mechanisms such as use of GSA schedules and Governmentwide contracts available for certain types of purchases. An OIRM official told us there has been a proliferation of governmentwide contracts, including "indefinite delivery/indefinite quantity" procurement vehicles under NIH's Information Technology Acquisition and Assessment Center and GSA negotiated schedules for the purchase of scientific equipment, aside from SEWP and CERTAN.

The NIH scientists are left using these other purchasing mechanisms if it is not practical to obtain the scientific computing capability they need under SEWP, or to wait until CERTAN becomes available. The studies and other documents we reviewed did not indicate that the other purchasing mechanisms have been evaluated for cost-effectiveness and timeliness in meeting scientists' computing needs.

In commenting on our working draft report, OIRM officials stated that because of the nature of governmentwide contracts (1) they provide competition among each other;

(2) staff can easily check prices of different contracts and identify the most cost effective vehicle to use, and (3) the contracts also provide past performance data so that staff ordering information technology hardware or services may choose a vehicle that has a record of timeliness. If the new governmentwide contracting mechanisms are sufficient to satisfy all of NIH's information technology needs we do not understand why it is continuing to apply resources to CERTAN.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

National Institutes of Health
Bethesda, Maryland 20892

SEP 1 9 1995

To: DHHS Committee on Data Center Consolidation

From: Trail Boss,
Division of Computer Research and Technology, NIH

Through: Director,
Division of IRM Oversight and Clearance, OIRM/NIH MLM

Subject: Request for Waiver of CERTAN Acquisitions From Data Center Consolidation Freeze

GSA DPA KAA-95-0048/ OIRM DPA 01-95 provides authority for four acquisitions under project CERTAN: the NIH Corporate Systems Contract, the NIH Information Technology Support Services Contract, the Distributed Resources Contract, and the Scientific Systems Contract. However, the DASIRM letter of June 13, 1995 instituted a freeze on all data center acquisitions. The National Institutes of Health (NIH) requests confirmation that the CERTAN Support Services contract qualifies for exemption under criterion number 3, as it will provide contractual support services for ongoing operations. We further request confirmation of exemption for the Distributed Resources Contract, which supports local area networks, file servers, and scientific workstations, because these are not construed as the activities of a Federal Data Processing Center as defined in the draft OMB Bulletin on Consolidation of Federal Data Centers.

The CERTAN Corporate Systems Contract will provide replacement of the functionality of the existing MVS and VM systems in use at DCRT and the Clinical Center respectively, as well as provide an open systems platform to encourage the migration of applications to open systems. DHHS is committed to recompetition of the existing Total Systems Contract by the end of FY '96 per Secretary Sullivan's March 31, 1992 letter to Congressman Conyers. We have contracted with FEDSIM and FEDCAC for acquisition planning and conduct, and are scheduled to issue a final RFP in the October-November timeframe to meet the Secretary's commitment. The proposed NIH Corporate Systems contract thus meets waiver criterion 2 based on the Secretary's commitment to the Congress.

The Corporate Systems Contract also meets all three elements of waiver criterion 3: (1) BEST/1 modeling indicates that existing capacity will reach it's limit in FY'97. This coincides with the planned recompetition schedule we are following to best meet customer service performance standards; (2) NIH modernization plans include migration to open systems while meeting the needs

of our legacy systems users, and this contract will facilitate such transition while meeting the ongoing needs of our scientific and administrative communities, and (3) all purchases made under this contract will be portable to a consolidated data center. Finally, the Corporate Systems Contract meets criterion 4 because the systems to be acquired support the Clinical Center Management Information System necessary for patient care. DCRT also provides computing support for FEMA which is responsible for managing response to national health and safety emergencies.

Please be advised that FEDCAC has warned NIH that the procurement should not continue if the DPA remains frozen because competition may be seriously adversely affected or the Government may realize substantial financial liability in the event that an award is not forthcoming.

The Scientific Systems Contract meets all three elements of waiver criterion 3, as (1) all scientific computing systems are, at this time, fully utilized and upgrade is required to ensure customer satisfaction and to meet present and future workload demands; (2) upgrade of these systems is consistent with data center modernization plans in that there will be no compatibility requirements in the proposed open systems environment, and (3) the systems to be acquired will be fully portable to another data center.

The prompt action of the Committee on the requested waiver of the CERTAN DPA will allow these critical acquisitions to proceed on schedule with maximum protection of competition, and will permit the further development of the remaining contracts within the timeframes allotted.

Should you have any questions please call me on (301) 496-4823.

/S/

John Dickson, Ph.D.

DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service

National Institutes of Health
Bethesda, Maryland 20892

JUN 2 7 1997

TO: Joseph J. Green
Assistant Inspector for Public Health Service Audits

FROM: Deputy Director for
Management, NIH

SUBJECT: NIH Comments on the Office of Inspector General (OIG) Draft, *Follow-up on Corrective Actions in Response to the General Accounting Office's Report on the National Institutes of Health (NIH) Computer System* (A-15-95-0001)

Thank you for providing the NIH an opportunity to review the revised draft report referenced above. We appreciate the inclusion of many of the revisions previously suggested by the NIH.

We have included comments specifically related to the draft report in Attachment A. In general, the NIH concurs with recommendations 2 and 3 and has taken/is taking action to implement them. Regarding recommendation number 1, the NIH believes that it has already met the requirements of the General Accounting Office's (GAO) recommendations which asked NIH to "improve its computer operations by implementing a capacity management program that includes frequent analysis and modeling . . . " The NIH feels that there is a misunderstanding of the purpose of a computer capacity management program. Through the Computer Equipment, Resources, and Technology Acquisition (CERTAN), the NIH is only obtaining new computer equipment that meets user requirements and projected utilization based on workload estimates as determined by the capacity management program.

Many of the NIH suggested recommendations have been incorporated into this draft, however, NIH believes that key facts have either been omitted or erroneously presented. Attachment B includes recommended revisions.

Specifically, the draft report:

- Excludes reference to the 1992 Federal Managers Financial Integrity Act (FMFIA) report which led to the NIH decision to utilize an excess computer for disaster recovery purposes;
- Includes statements that infer that NIH neglected to mention computer obsolescence as the basis for mainframe computers until the conclusion of the OIG audit; and
- Inadequately describes the significant oversight by the Department of Health and Human Services (DHHS), the General Services Administration (GSA), and GSA's Federal Computer Acquisition Center (FEDCAC) in the development of the CERTAN acquisition strategy.

We appreciate the opportunity to review this draft. Should your staff have any questions, please ask them to call Mary Jane Meyers, Office of Management Assessment, NIH, at (301) 402-8482.

Anthony L. Itteilag

Attachments

cc:

Dr. Lee, OA	Dr. Beaven, OPC
Mr. Risso, DCRT	Dr. Skirboll, OSP
Ms. Dawson, DCRT	Ms. Wax, OLPA
Ms. Lenkin, OIRM	

NIH RESPONSE TO OIG WORKING DRAFT RECOMMENDATIONS

OIG Recommendation: We are recommending that NIH:

(1) ***"report all available mainframe computing capacity in forecasting computing need."***

NIH Comment: Although NIH does not concur with this specific recommendation, we endorse the conceptual principle set forth by the OIG. The goals of a capacity management program are to optimally match capacity to workload and required service levels. Capacity management examines operating capacity to ensure that it reasonably matches that needed to meet service level objectives. Therefore, capacity management studies analyze usage of machines in production service, and projects the needs for additional (or less) capacity. As a result, we believe it is inappropriate to include systems not configured for production processing for forecasting future production capacity needs. To satisfy this recommendation NIH would have had to reconfigure a machine that had never been used for production processing and that was not needed for that purpose. This would be inconsistent with the GAO recommendations, which asked that NIH eliminate unneeded capacity.

Through CERTAN, NIH is only obtaining new computer equipment that meets user requirements and projected utilization based on workload estimates as determined by the capacity management program.

OIG Recommendation:

(2) "delay replacement of the IBM mainframes until sufficient data have been developed to show when it will be in the best interest of the government to replace them"

NIH Comment: NIH concurs with this recommendation. The Division of Computer Research and Technology (DCRT) performed a net present value (NPV) analysis demonstrating the effectiveness of acquiring new computer processors with which to accomplish the Department's data center consolidation strategy. The data, which indicated that it was in the best interest of the government for DCRT to replace the 3090 IBM mainframes, and was forwarded in March 1997 to the NIH Deputy Director for Management, who serves as the Interim NIH CIO. DCRT also conducted an NPV analysis demonstrating the cost-effectiveness of replacing the 3090 IBM mainframes with new processors in the absence of consolidation.

OIG Recommendation:

(3) "reassess the adequacy of mechanisms available for enabling scientists to acquire

maximize the sharing of resources within NIH and throughout the Government."

NIH Comment: NIH concurs with this recommendation. The federal procurement environment, and specifically the environment for acquiring information technology, has changed dramatically in the two and a half years since this report was initiated. As a result, NIH has access to a wide variety of contract vehicles for acquiring information technology resources. Project CERTAN provides some of these contracts, and other NIH and other federal agency "Government Wide Agency Contracts" (GWACs) provide both scientists and administrators with a wide array of choices. NIH will continue to monitor the status of these contract vehicles and stay apprised of the federal procurement situation. After the NIH CIO is on board, one of the priorities to be addressed will include the adequacy of purchasing mechanisms available for enabling scientists to acquire computing needs in a timely and cost effective manner, and in a manner which will maximize the sharing of resources within NIH.

SUGGESTED NIH REVISIONS TO OIG WORKING DRAFT REPORT

EXCLUDED COMPUTER

- *Page 2 - Executive Summary*: The first paragraph should note that the decision by NIH to use one of its four mainframe computers for disaster recovery purposes was based on recommendations from Federal Managers Financial Integrity Act (FMFIA) and follow-up Chief Financial Officer (CFO) reports. Both reports declared deficiencies in ADP security as a material weakness and recommended that NIH implement a contingency plan for off-site processing in case of an emergency. We believe that the paragraph should be revised to state:

  "Unable to find an agency willing to take the excess computer, **NIH decided to use the computer for disaster recovery testing of critical NIH applications and for backing up the NIH Clinical Center's medical information system. This decision was made in order to address the recommendations of a Federal Managers Financial Integrity Act (FMFIA) report and a follow-up Chief Financial Officer's (CFO) report of June 1993, prepared by Price-Waterhouse concerning the need for off-site processing in case of an emergency."**

BACKGROUND

- *Page 4 - Information Technology Resources Management Governmentwide*: The second paragraph of this section incompletely characterizes Bulletin 96-02. We suggest adding the following language from the bulletin:

  "(2) that **agencies should modernize remaining data centers in order to improve the delivery of services and** by June 1998...."

FINDINGS IN DETAIL

- *Page 6 - Excluded Computer*: Paragraph 4 incorrectly combines two separate management review recommendations which were the basis of NIH's decision to use one of the four mainframe computers for disaster recovery purposes. NIH management initially decided to use the computer for disaster recovery testing in response to FMFIA and CFO reports concerning the need for off-site processing in case of an emergency. After this action was taken, an internal management review recommended that the NIH implement a contingency plan for back-up of the NIH medical information system and the computer was used to address this recommendation. We suggest revising this section

of the report to clarify that NIH's decision was based on the findings of these two management reviews by adding the following additional language:

> **"In 1993, NIH earmarked the computer for use in disaster recovery testing of critical NIH applications. These actions were taken after discovery of a material weakness in ADP security in a 1992 Federal Managers Financial Integrity Act (FMFIA) report, which recommended that DCRT implement a contingency plan for off-site processing in case of an emergency. NIH decided to use the fourth machine as part of NIH's Disaster Recovery/ Contingency Program after DCRT was unable to sell the machine. This decision was made in order to address the recommendations of the FMFIA report and a follow-up Chief Financial Officer's (CFO) report of June 1993, prepared by Price-Waterhouse concerning the need for off-site processing in case of an emergency.**
>
> **In addition, an internal NIH management review of NIH computer facilities performed in 1993 recommended that the NIH Clinical Center (CC) implement a contingency plan for back-up of the NIH medical information system which is critical for patient care activities. DCRT and CC agreed to implement disaster recovery for CC patient care systems at DCRT using the fourth computer. The computer was configured for use in developing a local disaster preparedness capability for the CC which has recovery requirements for CC systems too stringent to permit use of a commercial off-site back-up facility. Use of the computer in these ways produced savings over alternatives available to address the findings."**

- *Page 7 - Excluded Computer*: The second sentence of the third paragraph is incorrect since DCRT officials did not indicate that the computer could be configured to perform administrative processing, as well as disaster recovery testing and back-up of the NIH CC medical information system. We suggest that the sentence should be corrected to state that:

  > **"DCRT officials acknowledged that reconfiguration would enable the computer to perform administrative processing as well as disaster recovery testing for critical NIH applications. However, they noted that the computer would not be able to function as a back-up to the NIH CC medical information system if it was reconfigured for administrative processing."**

- *Page 7 - Excluded Computer*: The last paragraph makes it appear that NIH did not discuss the issue of the computers obsolescence until after the OIG audit, which is incorrect. NIH provided OIG staff materials that discussed plans to replace the computers because they were obsolete at various times during the audit. For example, the background materials provided at the entrance conference in December 1994 included the

Secretary's response to Congressman Conyers of March 1992 which committed NIH to a new computer "system design ...with full attention to new technologies available and to opportunities to move from proprietary to "open" systems." In addition, follow-up discussions and additional background materials provided to the OIG staff in February, 1996, clearly discussed the issue of the computers obsolescence and the need for NIH to replace these obsolete computer systems. NIH suggests the following revisions to the paragraph:

"The IRM officials at NIH stated that the obsolescence issue ~~they are now raising~~ was implicit in the September 19, 1995 waiver request....Our audit did not address obsolescence since ~~documentation NIH provided to us at the time of the audit did not clearly indicate that obsolescence was an issue~~ **it was outside the scope of this audit to determine whether these four computers are currently obsolete.**"

- ***Page 8 - Acquisition Strategy***: This section of the report has omitted the oversight provided to NIH in the development of the acquisition strategy for CERTAN by DHHS and GSA contracting officials and GSA's Federal Computer Acquisition Center (FEDCAC). We suggest the addition of the following paragraph after the second paragraph:

  "NIH conducted the CERTAN procurements with significant involvement and oversight provided by GSA and the Department representatives. GSA issued the DPA for CERTAN. DCRT established an Advisory Council comprising senior executives from NIH, DHHS, and GSA to advise upon and review all significant decisions regarding the conduct of CERTAN. GSA's Federal Computer Acquisition Center (FEDCAC) was the procurement organization with responsibility for addressing the CERTAN acquisition strategy as approved by GSA's Center for Information Technology Acquisition. The CERTAN DPA documents that approval, and FEDCAC participated with NIH in exploring and identifying the optimal acquisition strategy. Finally, various aspects of the CERTAN procurement plan were reviewed and approved by GSA's Deputy Commissioner for Information Technology, who serves as the selecting official for this procurement."

- ***Page 9 - Scientific Computing Acquisitions***: The quote from OIRM officials in the second bullet at the end of the last paragraph is taken out of context. The quote was made in response to the statement from a previous version of the OIG report concerning NIH "assuring that scientific and distributed processing needs are met". We suggest including the entire quote on page 10 after the first paragraph:

  "NIH officials stated that it is impossible for NIH or any scientific institution to assure that all scientific computing needs can be acquired to support scientific user's requirements. Science is a quest for new

discoveries which are not foreseeable. They noted that new discoveries occur every day as part of scientific research which lead to new computing requirements, which similarly are not foreseeable. As a result, they believe that NIH is reasonably meeting the computing needs of scientists."