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UNITED STATES  
GENERAL ACCOUNTING OFFICE

# REPORT TO THE CONGRESS

JUN 4 1975

LIBRARY SYSTEM



Improved Planning — A Must  
Before A Department-wide  
Automatic Data Processing  
System Is Acquired For The  
Department Of Agriculture

*BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES*

LCD-75-108

JUNE 3, 1975

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

B-146864

To the President of the Senate and the  
Speaker of the House of Representatives

This report gives our reasons for recommending cancellation of a planned procurement of automatic data processing equipment for the Department of Agriculture.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Secretary of Agriculture and to the Administrator of General Services.

A handwritten signature in black ink, appearing to read "James A. Harts".

Comptroller General  
of the United States

C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	INTRODUCTION	1
2	SYSTEM PLANS AND STUDIES NEEDED BEFORE CONSOLIDATING ADP INSTALLATIONS AND INTEGRATING EXISTING SYSTEMS	4
3	DETERMINATION OF DATA PROCESSING AND COMMUNICATIONS REQUIREMENTS NEEDED BEFORE EQUIPMENT IS ACQUIRED	7
	Data processing requirements	7
	Communications requirements	10
	Current analysis of requirements	11
4	PRIVACY AND SECURITY REQUIREMENTS NEED ATTENTION	13
	RFP security provisions	13
	Recent actions	15
5	ECONOMIC STUDIES NEEDED TO EVALUATE COSTS, BENEFITS, AND ALTERNATIVES	17
6	CONCLUSIONS AND RECOMMENDATIONS	19
	Conclusions	19
	Recommendations	20
	USDA comments and our evaluation	20
	GSA comments and our evaluation	22
7	SCOPE OF REVIEW	24
APPENDIX		
I	Letter dated March 10, 1975, from the Assistant Secretary for Administration, Department of Agriculture, to GAO	25
II	Letter dated March 27, 1975, from the Administrator of General Services to GAO	31
III	Chronology	33
IV	Need for and benefits of integrated communications and computer planning in a consolidation project	35

APPENDIX

Page

V	Principal officials of the Department of Agriculture responsible for administration of the activities discussed in this report	39
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ABBREVIATIONS

ADP	automatic data processing
ADS	Office of Automated Data Systems
AMS	American Management Systems, Inc.
ASCS	Agricultural Stabilization and Conservation Service
FEDNET	Federal Information Network
GAO	General Accounting Office
GSA	General Services Administration
OMB	Office of Management and Budget
RFP	request for proposals
USDA	U.S. Department of Agriculture

COMPTROLLER GENERAL'S  
REPORT TO THE CONGRESS

IMPROVED PLANNING--A MUST  
BEFORE A DEPARTMENT-WIDE  
AUTOMATIC DATA PROCESSING SYSTEM  
IS ACQUIRED FOR THE  
DEPARTMENT OF AGRICULTURE

D I G E S T

WHY THE REVIEW WAS MADE

02  
03  
Congressman John E. Moss and former Senator Sam J. Ervin, Jr., requested that GAO review all circumstances surrounding a proposed computer network, known as FEDNET, with emphasis on potential invasion of privacy.

FINDINGS AND CONCLUSIONS

In February 1974 the General Services Administration released a request for proposals to industry to provide (1) automatic data processing equipment for use at one General Services center and at four Department of Agriculture centers and (2) a data communications network that eventually would have linked the computers with several thousand terminals throughout the country.

When the Congress learned of the project, there was widespread concern because the Congress had not been fully informed of plans for a project of its size and because it could pose a serious threat to the privacy of individuals, particularly since such a network might be expanded to link all Government computers.

As a result, the request for proposals was revised to eliminate the data communications network and the automatic data processing equipment for the General Services' center. The revised request provides for equipment for four Agriculture centers, with equipment for a fifth center optional. For the four centers, the total cost of the project, including \$106 million for equipment and software and operating costs over an 8-year period, is estimated at \$398 million. (See pp. 2 and 18.)

### System planning studies needed

1 In December 1970 the Secretary of Agriculture approved the following concepts to achieve effective use of automatic data processing resources. -2

--Management of all Agriculture's data processing resources by a central office.

--Development of an overall automatic data processing plan.

--Large-scale, regional computer centers with maximum use of terminals for remote use of computers. (See p. 4.)

In April 1971 a task force recommended consolidating automatic data processing resources and identified actions needed to develop the overall automatic data processing plan. (See p. 4.)

In February 1974 when General Services released the request for proposals covering both Agriculture's and General Services' equipment requirements, Agriculture had not developed the detailed plans or made the studies that should have preceded procurement. (See p. 6.)

### Determine user requirements before starting procurement

Agriculture had not determined the data processing and communications requirements for all of its agencies. The data processing requirements used to justify the February 1974 request for proposals were not representative of Department-wide needs because they were developed primarily from the workload analysis of only one Agriculture agency--one of the largest of 29 agencies and users.

There was no basis for designing an optimum communications network because agency users' locations and communications needs had not been identified. A complete accumulation and analysis of user requirements before procurement is imperative in view of the size, complexity, and eventual cost of the project. (See pp. 7 and 10.)

### Consider data security requirements

Agriculture had not adequately considered security requirements that would reasonably protect personal or other sensitive information from unauthorized access. Agriculture could not develop realistic security specifications for the request for proposals because it had not made an analysis of all users' sensitive and personal data. Such an analysis is a prerequisite to any determinations of cost-effective methods of providing acceptable levels of security. (See p. 13.)

Although Agriculture is now making a survey of its agency requirements for data processing and communications, its survey questions are not aimed at producing the types of information needed to reasonably protect personal and sensitive data. (See p. 15.)

### Compare costs for proposed and existing systems and for alternative designs

Agriculture did not make the economic studies required by Government regulations as a basis for evaluating a proposed project's benefits or the cost implications of alternative designs. (See p. 17.)

Agriculture officials told GAO that the project had been economically justified on the basis that the estimated overall cost for acquiring, preparing, and operating the proposed consolidation of installations and integration of data systems was less than what the overall cost would have been if each Agriculture agency had been permitted to acquire and operate its own system. GAO believes that this justification is not valid, mainly because it did not compare costs for existing and proposed systems and for alternative system designs. (See p. 17.)

In January 1973 Agriculture decided on the locations for four departmental centers. Three centers already existed and the fourth was in the planning stage. There were no systems or economic studies made for considering alternative numbers of centers or locations. Consequently there was no consideration of

the potential savings if only one, two, or three centers were established or of optimum locations for the centers. (See p. 18.)

### Conclusions

GAO recognizes that Agriculture could expect economies and efficiencies to result from (1) consolidating and integrating data processing services Department-wide and (2) replacing a collection of heterogeneous second- and third-generation equipment. At this time, however, the request for proposals is not based on the required studies and analyses. As a result there are unanswered questions concerning the number and location of sites, the data processing equipment configurations, interfaces with communications equipment, and the privacy and security considerations. (See p. 19.)

### RECOMMENDATIONS

The Secretary of Agriculture should:

- Advise General Services to cancel the planned procurement of automatic data processing equipment.
- Prepare a consolidation and integration plan for the proposed system.
- Complete the studies of Agriculture data processing and communication requirements, network and configuration analysis, security and privacy requirements, and economic factors.
- After completion and comparative analysis of the plan and studies, select, if warranted, the best alternative and prepare a new request for proposals based on established requirements.

### AGENCY ACTIONS AND UNRESOLVED ISSUES

Agriculture acknowledged that data processing and communications requirements of all users had not been determined when the request for proposals was released in February 1974; however, it thought that the pending procurement



of equipment should not be canceled until a survey of such requirements, begun in October 1974, is completed in May 1975. Agriculture says that if the survey results indicate that the procurement is not justified, it will be canceled. (See p. 20.)

Agriculture's comments indicate that it is either abandoning or deferring its stated objectives--consolidating computer activity at some 47 locations into 4 centers, integrating data systems, and maximizing use of terminals for remote computer use. If such is the case, GAO still believes that the procurement should be canceled because, according to Agriculture's consulting firm, existing equipment at three departmental centers that the firm visited was adequate, whereas equipment meeting the requirements of the request for proposals would provide considerably more computer power than Agriculture needs. (See p. 21.)

If Agriculture is merely deferring its stated objectives to the near future, a complete communications study, including network analysis and configuration, has to be made before any data processing equipment is procured, to insure its effective use. Since the purpose of such a study, which would involve a considerable amount of time, is to tailor the communications system to users' needs, it could not be made until after all user requirements have been determined. GAO believes that all required studies should be made. (See p. 22.)

General Services agrees that no contract award should be made until Agriculture has completed all the studies GAO noted and has taken the requisite actions, including obtaining General Services' approval of Agriculture's communications plans. Although General Services feels that industry should be advised of the possible cancellation, it believes that the procurement should not be canceled at this time because of the large investment by industry and the Government. (See p. 22.)

General Service's suggestion that Agriculture not award a contract until General Services has approved the communications plans emphasizes the importance of completing studies to determine the least costly alternatives before starting procurement. In GAO's opinion, Agriculture's noncompliance with the regulations on matters that could have a great impact on a system's requirements is ample justification for General Services' canceling the procurement. (See p. 23.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

01 The House Committee on Appropriations directed Agriculture to keep the Committee fully informed of the progress and proposals for the proposed computer system and to obtain the Committee's approval before obligating any additional funds for this system. The information in this report should also be useful to other committees and Members of Congress concerned with individual privacy safeguards and efficient and economical automatic data processing operations.

## CHAPTER 1

### INTRODUCTION

In response to requests on May 15, 1974, from Congressman John E. Moss and on May 22, 1974, from former Senator Sam J. Ervin, Jr., then the Chairman of the Subcommittee on Constitutional Rights, Senate Committee on the Judiciary, GAO has been reviewing circumstances surrounding a joint General Services Administration (GSA) and U.S. Department of Agriculture (USDA) computer acquisition project, referred to as the Federal Information Network (FEDNET). 1/

In 1965 Public Law 89-306 made GSA responsible for the economic and efficient acquisition, utilization, and maintenance of the Government's general-purpose automatic data processing (ADP) equipment. The law reiterated the existing responsibility of the Office of Management and Budget (OMB) for fiscal and policy control over all aspects of ADP management. OMB had previously issued policies and guidelines, in the form of circulars and bulletins, on acquiring and using ADP equipment and services. The law also provided for the National Bureau of Standards, Department of Commerce, to retain responsibility for developing technical standards and coordinating the Government's ADP research efforts. In May 1973 Executive Order 11717 transferred policy responsibilities to GSA, leaving OMB responsible for fiscal control and general oversight.

One of the law's objectives was for GSA to be the sole purchaser of the Government's general-purpose ADP equipment, to enable it to obtain quantity discounts; however, pending attaining that objective, GSA was authorized to delegate procurement authority to other Federal agencies. GSA issued Federal Property Management Regulations on the administrative and procurement procedures for agencies to follow.

When GSA receives an agency request for equipment procurement, it can elect to (1) delegate the procurement authority, (2) participate with the agency in the procurement, or (3) procure the equipment for the agency. The law prohibits GSA from interfering with agency determinations of ADP equipment requirements, including developing specifications and selecting the types and configurations of equipment needed.

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1/An acronym first used by GSA in 1973 for a proposed nationwide computer network for all Federal agencies.

In April 1973 USDA requested authority to procure ADP equipment for four centers (with the option to equip a fifth center). At that time GSA was planning to acquire a large-scale computer system for one of its Federal Data Processing Centers so that operations at its centers could be consolidated. GSA's planned procurement involved a data communications network for remote terminal use, but the proposed USDA procurement did not.

Because of the similarity in the procurement objectives of the two agencies and because of the potential savings through quantity discounts, USDA proposed a joint procurement. During negotiations GSA agreed to use USDA's request for proposals (RFP) for ADP equipment, including the benchmark, 1/ and USDA agreed to use GSA's RFP for the data communications network. On February 28, 1974, GSA released the RFP for the joint procurement to industry.

In April and May 1974 widespread concern was expressed in the Congress and elsewhere because of implications that FEDNET could be expanded to link all modern computers in the Government and could pose a serious threat to the privacy of all individuals involved in any Government operation or program. Some Members of Congress interpreted the joint procurement as another attempt to establish a national data center, a concept the Congress rejected in 1968 because of the privacy issue. The Congress was also critical because GSA had not kept the Congress fully informed of plans for a project as large as FEDNET.

Due to congressional opposition, the RFP was revised in July 1974 to eliminate the data communications network and ADP equipment for the GSA center. The closing date for contractor proposals was November 29, 1974. GSA is still handling the procurement for USDA, and the target date for contract award is mid-June 1975. (See app. III for a chronology of the USDA project.)

The Privacy Act of 1974 (Public Law 93-579), approved December 31, 1974, provides for protecting the privacy of individuals identified in Federal agencies' information systems by regulating the agencies' collection, maintenance, use, and dissemination of information. The law establishes requirements as to the types of information that Federal agencies can maintain, the rights of the individuals who

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1/The vendor's live test demonstration that his equipment can meet performance specifications.

are the subject of such information, how such information can be used and disclosed, the accounting for disclosures, and safeguards to insure information security and confidentiality. USDA's information systems include personal information on its employees as well as on farmers' incomes and financial positions.

Because of the impending procurement for USDA and because the proposed procurement for GSA has been withdrawn, our initial effort was directed primarily to the need and determination of requirements for USDA's part of the project. We are continuing our review, and in a later report we plan to provide information on actions that Federal agencies should take to protect personal and other sensitive data while fostering the proper use of data processing networks to achieve economic benefits and operational efficiency.

## CHAPTER 2

### SYSTEM PLANS AND STUDIES NEEDED BEFORE CONSOLIDATING ADP

#### INSTALLATIONS AND INTEGRATING EXISTING SYSTEMS

In implementing its objective to consolidate ADP installations and to integrate its agencies' data systems, USDA started procuring equipment before developing the system plans or making the analytical studies Government policies and regulations required. Such plans and studies are needed to insure that ADP equipment acquired meets the needs of all users in the most efficient and economical manner possible.

USDA administrative regulations, issued in April 1971, recognize the provisions of OMB Circular A-54 (superseded by Federal Management Circular 74-5, July 30, 1974) and Bulletin 60-6 concerning the planning and studies that should precede selecting and acquiring equipment. The regulations identify the essential elements of a systems study and require that the study be documented to (1) insure that a proper study has been made, (2) afford an opportunity for reviewing levels to evaluate the recommendations and resulting decisions, and (3) provide a basis for the future evaluation of the system in terms of original expectations.

In December 1970 a USDA staff study concluded that USDA's ADP resources were not being used effectively. The study identified 43 USDA computer systems in 26 cities and 67 new computers planned for installation by 1975. The staff recommended that the Secretary of Agriculture approve the following concepts, to avoid duplication and waste of resources.

1. Management of all of USDA's data processing resources by a central office.
2. Development of an overall ADP plan.
3. Large-scale, regional computer centers with maximum use of terminals for remote use of the computers.

The Secretary accepted the concepts and formed a task force to develop implementation policies and objectives.

The task force report, issued in April 1971, recommended consolidating ADP resources and identified the actions needed to develop the overall ADP plan. Some of the actions recommended were:

--Analyze USDA's data processing needs after establishing a catalog of data systems, existing and potential computing and data communications needs, and management information requirements.

--Identify agencies' use of common data and applications and conceptually design an integrated information system and computer network.

The task force recommended that, to insure that departmental control of ADP resources would meet individual agency needs, the central office acquire detailed knowledge of all of USDA agencies' missions, plans, and applications.

After the Secretary approved the April report, the Assistant Secretary for Administration formed new task forces, in July 1971, to assist in developing the overall ADP plan and accomplishing other actions recommended in the report.

A systems study task force was to systematically assess each agency's data processing program--the information received, the source and method of collecting the information, the type of processing, the output of results from processing, who got the results, and how the results were used. USDA officials were unable to provide documentation of such assessment.

The Secretary established the Office of Information Systems in March 1972 (changed to Office of Automated Data Systems (ADS) in January 1974) and made it responsible for managing all ADP resources and for developing the integrated, USDA-wide information system. Although ADS gradually assumed management control of the departmental computer centers, it did not analyze USDA agencies' data processing requirements or carry out the other actions previously identified as prerequisites to an overall ADP plan.

In November 1973 USDA released an RFP for a study to evaluate (1) the organization and management of ADP functions, (2) existing ADP operations in the light of user requirements, and (3) plans for consolidating ADP resources, including communication requirements. A contract was awarded to American Management Systems, Inc., (AMS) on January 8, 1974.

AMS later issued four interim reports covering its review of (1) the proposed ADP equipment RFP, (2) budgeting and control procedures within ADS and USDA, (3) the ADS organizational structure, and (4) USDA agency ADP requirements. AMS issued its final report on May 30, 1974. The reports listed several areas of concern involving:

1. Adequacy of USDA's planning and resources for conversion to the new equipment.
2. Accuracy of USDA's costing and sizing estimates.
3. Procuring too much computer power.
4. Lack of specific computer center plans.
5. Lack of detailed data on agency ADP workloads.
6. Capability of ADS to support the procurement from the viewpoint of organizational structure, technical expertise, planning, and staffing.

In its first interim report, AMS noted that it was assisting ADS in developing a single, comprehensive ADP plan because none had been prepared. On June 26, 1974, the AMS contract was amended to include assisting USDA in planning, systems analysis, and general management of ADP operations. One of AMS's new tasks was to define requirements and to develop specifications for the communications systems. It should be noted that this action was taken 4 months after the equipment RFP was released to industry.

The concepts the Secretary approved in 1970 and the planning actions recommended in the 1971 report provided, in our opinion, a sound basis for the efficient and economical procurement and use of ADP and communications equipment. But these goals have not been accomplished because the recommended actions were not taken.

USDA did not develop the detailed plans or make the studies that should have preceded procurement action. ADS, the central office for the USDA-wide information system, did not gather the information about management information requirements and agencies' computing and data communication needs.



## CHAPTER 3

### DETERMINATION OF

#### DATA PROCESSING AND COMMUNICATIONS REQUIREMENTS

##### NEEDED BEFORE EQUIPMENT IS ACQUIRED

USDA initiated action to acquire equipment for four departmental computer centers even though it had not determined the data processing and communications requirements for all of its agencies. A complete accumulation and analysis of user requirements before procurement is imperative in view of the size, complexity, and eventual cost of the project.

According to the 1971 task force report, one prerequisite of the overall ADP plan was determining data processing requirements. The report also cited the need for special emphasis on data communications because such communications were essential for

- providing access to computer facilities from remote locations,
- providing access to data files,
- balancing computer load,
- providing computer power to dispersed activities,
- acquiring data, and
- contributing to information exchange by people and computers.

#### DATA PROCESSING REQUIREMENTS

Data processing requirements used to justify the RFP released to industry in February 1974 are not representative of total USDA needs because they were developed primarily from the workload analysis prepared by only one USDA agency--the Agricultural Stabilization and Conservation Service (ASCS), one of the largest of the 29 user groups at USDA. This occurred even though the central office, according to the mandate of the approved 1971 task force report (see p. 4), was to acquire detailed knowledge of all USDA agencies' data processing applications and conceptually design an integrated departmental information system.

Following are some of the items identified in USDA's administrative regulations, which implement OMB's policies and guidelines, for inclusion in the systems study.

- Description of the end products to be produced by the system and the value of their intended use.
- Description of the data sources and major data files used in the system.
- Frequency and need for updating the major data files or producing end products.
- Volumes of data involved.
- Implementation schedule.
- ADP equipment specifications, if any, such as required delivery dates, need for compatibility, and performance standards.

The following procurement-oriented actions, instead of the actions recommended in the 1971 task force report and USDA administrative regulations, were taken.

In addition to establishing the systems study task force to assess each agency's program (see p. 5), the Assistant Secretary for Administration established a procurement task force in July 1971 to gather data on interim agency requirements and to write the necessary procurement documents for acquiring departmental computer equipment for use until the overall ADP plan was completed. The task force was given 5 months to complete its study.

In August 1971 the task force reported that it had identified five possible approaches for determining agency requirements and specifications and requested that one approach be selected so that the task force could continue its work. Each approach--ranging from a 100-percent survey of agency requirements (highest degree of reliability) to a 10-percent sample--was listed and compared for such factors as the risk in obtaining reliable requirements data, time and costs, and probability of GSA's approval.

During the review process, the Acting Director of ADS suggested a sixth approach--brand name or equal--because future workload requirements were vague or unknown. The brand-name-or-equal approach was considered (1) easier for

specifying known computer characteristics in an RFP and (2) the most expeditious--requiring 4 to 6 months for developing an RFP.

Although the Assistant Secretary approved using the brand-name-or-equal approach, he suggested that the manufacturer's name and model number be omitted and that equipment performance characteristics (such as core size and processing speeds) be used to insure getting the specific equipment desired without mentioning the manufacturer's name.

In February 1973 USDA informally asked GSA's opinion and reaction on a proposal to acquire, on a sole-source basis, IBM 370-168 systems for four departmental centers. In March 1973 GSA informally told USDA that the sole-source proposal was unjustified and suggested that USDA prepare an RFP for a competitive procurement.

On April 1, 1973, 18 employees from ASCS's ADP Division, including the project manager, were transferred to ADS to assist in developing the RFP which was to be finished in draft form 1 month later. We were told that, in view of the short time allowed for the work and the absence of requirements for all agencies, ADS used ASCS's November 1972 RFP as the basis for the departmental RFP.

According to the project records and our discussions with USDA officials, ASCS was the only USDA agency that had completed a thorough systems study. ASCS's RFP--which USDA did not approve--had called for a large-scale regional computer and a nationwide telecommunications network, similar to the 1970 concept the Secretary approved. (See p. 4.) ADS increased the number of computer centers in ASCS's RFP from one to four and expanded the workload requirements stated by ASCS so that the four centers would service all USDA users. There was no documentation showing ADS's rationale or methods for the modifications to the ASCS RFP.

On April 12, 1973, USDA formally requested that GSA authorize USDA to procure computer systems for the four departmental centers. The request pointed out that USDA was then operating 76 computers at 47 locations and that an objective of the proposed procurement was to reduce the number of data processing installations. USDA also advised GSA that the Air Force's Automatic Data Processing Equipment Selection Office was helping to write specifications and prepare recommendations to the final source selection authority.

Following submission of the request, according to the former director of ADS, USDA proposed a joint procurement with GSA because GSA was planning to consolidate its 12 Federal Data Processing Centers by upgrading equipment at one Center. GSA's plans included acquisition of a data communications network and computer equipment, whereas the USDA RFP was for only computer equipment, including peripheral equipment used for hookup to communications facilities.

During negotiations USDA's RFP was modified to accommodate GSA's requirements. Conversely, GSA's data communications RFP was modified to accommodate USDA's communications requirements. The RFP covering ADP equipment and the data communications network was released to industry on February 28, 1974.

GSA later deleted from the RFP the data communications network and equipment for a GSA center as a result of congressional concern over (1) how GSA had handled the project--not fully informing the Congress and giving inadequate attention to the potential for invasion of privacy--and (2) the possibility that the data communications network could eventually be expanded to establish a national data center linking all Federal agencies.

GSA is still handling the procurement for USDA. Proposals were due from vendors by November 29, 1974. We were informed that three proposals were received. The target date for contract award is mid-June 1975.

#### COMMUNICATIONS REQUIREMENTS

USDA has no basis for determining the optimum ADP system design and location--to insure efficient use of the new equipment--because it did not make a communications study to identify the types and volume of data, location of agency users, and estimated costs.

Subpart 101-32.11 of the Federal Property Management Regulations states that a data communications study should be made before a decision on the need or types of ADP equipment to be acquired is reached, if the proposed ADP system includes any of the following.

- A real-time or an on-line computer system.
- A time-sharing system.
- Remote locations that provide input and obtain output in a time frame that cannot be satisfied by nonelectronic communications means.

- Current and usable information that must be accessed with a high degree of immediacy by many users.
- Two or more computers, not located at the same site, with a requirement for backup, load balancing, or data transfer between them.

All of these conditions apply to the proposed departmental ADP system. Specifically, the proposed consolidation project is to have four computer installations with (1) several thousand remote terminals, nationwide, to service users in 29 USDA agencies and (2) integrated data systems on line with immediate access by users.

Subpart 101-32.11 states also that a data communications study should include a detailed analysis indicating (1) the additional equipment required, (2) the type and number of communications lines, (3) the impact on the format of the data and data banks, codes to be used, and programing required, and (4) the important elements of cost.

It is USDA's plan, however, to first acquire the large-scale ADP equipment and then--sometime in the future--gather user requirements, design a network, and integrate it with the ADP equipment. This approach is not consistent with the regulations which require that ADP and communications systems be planned in a coordinated and integrated process.

Apparently USDA has not recognized that efficient and economical acquisition and use of an ADP network is directly dependent on how the communications system is tailored to meet agency needs. (This point is discussed further in app. IV.)

#### CURRENT ANALYSIS OF REQUIREMENTS

In one of its interim reports to USDA, AMS concluded that it could not verify that the agencies' requirements would be satisfied by the RFP specifications. Consequently, in October 1974 ADS began an ADP systems inventory by sending four one-page survey forms to USDA agencies. The forms, to be returned by February 17, April 15, and September 15, 1975, inquire about existing and proposed systems and applications, operating environment, frequency of use, file activity, and conversion requirements.

One survey form asks agencies to identify the computer center where their jobs are being processed and to indicate their preference for future processing from the four

locations selected for the new equipment. It should be noted that gathering user requirements is the preliminary step in the system analysis and design process. After the forms are returned, analyses and further studies will be required. Such studies should, in our opinion, include a communications study and network analysis to determine the optimum network size and design.

It should also be noted that vendors' equipment proposals have been received, that benchmark tests have been completed, and that contract award is planned for mid-June 1975. It seems to us, therefore, that the survey and analyses initiated in October 1974 can have only a limited impact upon the already established specifications of the current procurement action.

## CHAPTER 4

### PRIVACY AND SECURITY REQUIREMENTS NEED ATTENTION

USDA has not adequately considered security requirements necessary to reasonably protect personal or other sensitive information from unauthorized access. Although such inadequate consideration may not have been uncommon in Federal agencies at the time the equipment RFP was released in February 1974, later expressions of congressional concern for the protection of personal privacy emphasized the need for greater consideration. Nevertheless, USDA's requests for its agencies' requirements in October 1974 showed that privacy and security requirements were still not being adequately considered.

#### RFP SECURITY PROVISIONS

Although the RFP specifies certain security features, USDA did not make the studies and analyses necessary to determine its security requirements. Such studies would have provided such information as

- user data to be placed on the system,
- data confidentiality and sensitivity,
- the most likely sources of threat to the data,
- safeguards available and their corresponding cost,  
and
- the most cost-effective mix of security safeguards which would satisfy user needs.

A system's hardware and software provide the technical features necessary to achieve the level of security established by an analysis of users' security requirements. Since USDA did not make the studies necessary to develop the security requirements, it could not have an adequate basis for developing realistic security specifications for the RFP.

The security specifications in the RFP merely recite the security features whose presence in a system is no assurance that the system is or can be made suitable for

processing sensitive or personal data. 1/ On the contrary, a number of the specifications describe operating controls that support a particular concept and type of operation that has been repeatedly shown, on contemporary systems, to inadequately protect data from unauthorized access by a determined user. The term "determined user" refers to an individual who has programing knowledge and who is willing to spend time and money to compromise, change, or destroy the data.

The state of the art in computer security is such that absolute security has not been achieved in a multiuser time-sharing environment. In fact, security against a determined perpetrator cannot be absolutely insured in any environment without complete physical isolation. Decisions must therefore be made on the degree of security which would be adequate in relation to the value of personal and sensitive information to potential perpetrators, to data subjects, and to the agencies holding the information.

There are a number of methods that could be employed, depending on the degree of sensitivity of the data that requires protection. Which method or combination of methods would be appropriate cannot be determined until the sensitive or personal data requiring processing is identified. Once this is done, the most cost-effective method of providing an acceptable level of security to that data can be determined.

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1/ The RFP specified such security features as:

a. User and file password. An identification technique which permits the system to recognize an authorized user before giving access to the systems or restricted data.

b. Privileged instructions. Those instructions that can be executed only by computer programs that have such control functions as scheduling and allocating the system's resources (the operating system) and not by unprivileged users.

c. Hardware memory read/write protection. A feature to prevent inadvertent data or program erasure and to protect data integrity.

d. Audit trail. A record in sufficient detail to determine the cause or originator of all unauthorized attempts to look at or change the data base.



To provide the degree of protection considered appropriate for sensitive or personal data, it may be necessary, in some cases, to operate one or more dedicated systems; 1/ use scheduled, exclusive-use processing; 2/ use demonstrated, logical isolation techniques; 3/ or use a combination of these and other techniques.

If one of the alternatives to a dedicated system for handling sensitive and personal data is considered the appropriate means of providing secure processing, the network interface and the type of secure communications required may change considerably. It appears that some of USDA's data that will require protection must be accessible to agency offices, nationwide. The telecommunications network design, therefore, is likely to be affected by the need to provide some form of communications security.

The above observations illustrate that security requirements have far-reaching effects on the hardware, operating system, communications network, and general design of the type of ADP service center best suited to meet the needs of USDA as a whole. The best approach to providing an adequately secure computing environment cannot be established until the volume, frequency, and other aspects of the requirements for secure data processing are known.

#### RECENT ACTIONS

In a July 1974 letter to USDA's Assistant Secretary for Administration, OMB referred to extensive discussions among OMB, USDA, GSA, and the Office of Telecommunications Policy and to the general consensus:

- 
- 1/ A system reserved exclusively for processing data for a single user or function.
  - 2/ Establishes scheduled periods when a multiuser computer is used exclusively for processing data for a single user or function.
  - 3/ Advanced techniques, such as a virtual machine system, which make available to each user an interface to the computer that is functionally equivalent to a separate machine, with no restrictions on the type or category of instructions that can be executed. This is contrasted with the conventional operating system which, to protect itself, is designed to restrict the user from executing privileged instructions.

"\* \* \* that a detailed analysis of all individually identifiable data which will be stored in these computers be made and plans for safeguarding any such data in the system be developed prior to the award of the contract."

As previously noted, in October 1974 USDA started an ADP systems survey to obtain information on existing and planned data processing applications for the departmental computer centers. (See p. 11.) This survey included USDA's first effort to obtain information on its security requirements. Yet it inadequately recognized the security problem, notwithstanding the strong expressions of congressional concern for the protection of privacy after release of the RFP in February 1974 and the July 1974 letter from OMB. Only the following two questions relating to privacy and security were asked.

1. "Any security considerations? Yes-No."
2. "Any personal/corporate data in this file? Yes-No."

Although formal Government-wide policies and regulations for safeguarding personal privacy have not been issued, the National Bureau of Standards has distributed various publications on computer security. <sup>1/</sup> For example, the Bureau's Technical Note 809, "Government Looks at Privacy and Security in Computer Systems," issued in February 1974, identified problems related to safeguarding information and some solutions to minimize the risks, including an outline of a privacy action plan developed during a joint study by the State of Illinois and International Business Machines Corporation.

The privacy action plan outline included steps that would determine system requirements, analyze confidentiality, and assess risks. These publications were available to USDA, but USDA did not recognize the suggestions contained therein in preparing the ADP application systems survey.

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<sup>1/</sup> The National Bureau of Standards is circulating for comment a draft of a document entitled "Computer Security Guidelines for Implementing the Privacy Act of 1974" (see p. 2), dated April 15, 1975. This document provides guidance on using technical procedures for safeguarding personal data in automated information systems.

## CHAPTER 5

### ECONOMIC STUDIES NEEDED TO EVALUATE COSTS, BENEFITS, AND ALTERNATIVES

USDA did not make the economic studies required by Government regulations before it issued the RFP in February 1974. Consequently USDA had no basis for evaluating the potential costs and benefits of the proposed procurement or the costs of alternative approaches for satisfying its ADP needs.

OMB policies and guidelines, the Federal Property Management Regulations, and USDA regulations require that well-documented systems and economic studies precede decisions to acquire equipment. Such studies provide a factual basis for determining whether the proposed procurement will achieve the highest practicable degree of effectiveness with optimum efficiency and operational economy. Two important items that are to be included in the economic studies are

- detailed comparative cost data for the existing and proposed systems and
- analysis of benefits and costs of the proposed system design and cost implications of alternatives for satisfying data processing and communications requirements.

When we asked USDA for its economic studies justifying the proposed project, ADS officials told us that the project had been economically justified on the basis that the estimated overall cost--for acquisition, preparation, and operation--of the proposed consolidation of installations and integration of data systems was less than what the overall cost would have been if each agency had been permitted to acquire and operate its own system.

We found that the proposed system had not been compared with the existing systems, contrary to Government regulations. Instead, the proposed system's costs were compared with the estimated acquisition and operating costs of decentralized systems that individual agencies might have acquired had ADP management not been centralized. Since the Secretary of Agriculture had approved the central management concept in 1971 and had established ADS in March 1972 to implement that concept, using cost estimates for projects based on a decentralized concept seems inappropriate.

One reason for cost studies is to provide the data needed to compare alternative approaches for satisfying user requirements. In January 1973 USDA decided on four departmental centers. Three centers already existed and the fourth was in the planning stage. There were no systems or economic studies made considering alternative numbers of centers or locations. Consequently there was no consideration of the potential savings if only one, two, or three centers were established or of optimum geographical locations for the centers.

Two months after the RFP was released in February 1974, AMS prepared estimates of the costs of four centers covering the project's 8-year systems life. We computed the following overall cost of the project on the basis of those estimates.

<u>Item</u>	<u>Cost</u>
	(000,000 omitted)
ADP equipment and software	\$106
Site preparation and miscellaneous	14
Conversion	31
Telecommunications	146
Operating	<u>101</u>
Total estimated project cost	<u>\$398</u>

The RFP gives USDA the opportunity to acquire equipment for a possible fifth center. We estimated that total project costs could be increased by about \$80 million by such acquisition and related operation of the fifth center.

In summary, neither the USDA cost justification nor the AMS cost estimates considered the potential economies from using alternative system designs. We believe, therefore, that, after all data processing and communications requirements and system design studies have been completed, economic studies should be made which, as prescribed by policy and regulations, should include cost comparisons for existing and proposed systems and for alternative system designs.

## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

#### CONCLUSIONS

The RFP for USDA's data processing equipment involves procurement estimated to be in excess of \$100 million and could ultimately involve total acquisition and operating costs over an 8-year period of about \$398 million. This large procurement action was initiated without USDA's making the studies necessary for determining its data processing and communication requirements, contrary to Government regulations. This report shows that

- a consolidation and integration plan was not prepared,
- a user-agency requirements analysis identifying existing and projected data processing workloads and security requirements was not made,
- a communication requirements study was not made, and
- economic studies containing required analyses and information were not made.

As consequences of not having identified requirements and made the necessary studies

- USDA does not have a basis for relating its decisions on configurations, number, and location of the proposed computer centers to the actual needs of the user agencies;
- a teleprocessing-network analysis taking into account the type and volume of data, user locations, and communication cost is lacking, and therefore USDA has not determined that the centers are properly located;
- the impact of confidentiality and data security requirements on communications and the configuration and location of centers has not been determined; and
- insufficient data has been collected for assessing the proposed system's benefits and costs or comparing alternative solutions.

We recognize that USDA could expect economies and efficiencies to result from (1) consolidating and integrating data processing services USDA-wide and (2) replacing a collection of heterogeneous second- and third-generation equipment. At this time, however, the RFP is not based on the required studies and analyses.

As a result there are unanswered questions concerning the number and location of sites, the data processing equipment configurations, interfaces with communications equipment, and the privacy and security considerations. This situation inevitably leads to the conclusion that this procurement will not provide USDA with ADP systems that achieve a high degree of effectiveness with optimum efficiency and operational economy.

#### RECOMMENDATIONS

We recommend that the Secretary of Agriculture:

- Advise GSA to cancel the planned procurement of ADP equipment.
- Prepare a consolidation and integration plan for the proposed system.
- Complete the studies of USDA data processing and communication requirements, network and configuration analysis, security and privacy requirements, and economic factors.
- After completion and comparative analysis of the plan and studies, select, if warranted, the best alternative and prepare a new RFP based on established requirements.

#### USDA COMMENTS AND OUR EVALUATION

We discussed our findings and reservations regarding the proposed procurement with USDA's Assistant Secretary for Administration and his deputy on November 1, 1974. The Assistant Secretary agreed that a more thorough justification for the procurement was needed.

On November 13, 1974, the Deputy Assistant Secretary provided us with a position paper which agreed that requirement studies were needed and noted that the situation allowed the following three options.

- Cancel the procurement.
- Defer the procurement until the necessary studies and analyses have been completed.
- Proceed with the procurement in parallel with the studies and analyses, having the results available 4 to 6 weeks before the award is to be made.

The alternative USDA preferred was to proceed with the procurement in parallel with completing the requirement studies. The survey of requirements, begun in October 1974, is to be completed in May 1975. In essence, the position paper asserts that the studies will have little or no impact on the configuration and system design approach already chosen. USDA's stated position is that the RFP is flexible in that USDA can select a vendor and then negotiate the number of sites and the specific configurations needed at the individual sites.

On March 10, 1975, the Assistant Secretary formally commented on our findings and proposals. (See app. I.) USDA generally agreed with our findings but believed that the report did not completely and accurately present USDA's position. Essentially, USDA said that (1) it would not award a contract unless there was ample justification to warrant the action and (2) the procurement process should be continued because the additional delays due to termination would result in added costs, ill will among vendors, and operating problems which would force USDA to use sole-source procurements to upgrade equipment at each of its computer centers.

USDA also told us that it was not developing a new system but was standardizing and upgrading equipment for four departmental centers that would use existing communications when the new data processing equipment was installed. These comments indicate that USDA is either abandoning or deferring its stated objectives--consolidating computer activity at some 47 locations into 4 centers, integrating data systems, and maximizing use of terminals for remote computer use.

We believe that, if USDA has abandoned its stated objectives, the procurement should be canceled because, according to USDA's consulting firm, existing equipment at three USDA centers that the firm visited was adequate, whereas equipment meeting the requirements of the RFP would provide considerably more computer power than USDA needs.

If USDA is merely deferring its stated objectives to the near future, a complete communications study, including network analysis and configuration, should be made before any data processing equipment is procured, because effective use of the equipment is directly dependent on how the communications system is tailored to meet user needs. Such a study, which would involve a considerable amount of time, could not be made until after all user requirements have been determined.

If delays in completing the studies result in operating problems requiring interim upgrading of computer capability, USDA would be required to consider the alternatives specified in Federal Management Circular 74-5. This circular requires agencies, before any sole-source procurement, to (1) validate the need for additional capability by determining whether the existing operation can be made more efficient, (2) determine whether there is available time on existing Government ADP systems or available excess Government-owned equipment, (3) determine, by a comparative cost analysis, that the use of commercial ADP services would not be appropriate (OMB Circular A-76), and (4) consider all responsive and responsible vendors, including equipment manufacturers, leasing companies, and third-party vendors.

#### GSA COMMENTS AND OUR EVALUATION

The Administrator of General Services suggested that we revise our proposals as follows:

- The USDA procurement not be canceled at this time because of the large investment by industry and the Government.
- GSA advise industry that the planned award date for the contract is being extended, pending the outcome of USDA studies that could result in canceling the procurement in whole or in part.
- USDA not award a contract until it has completed the required studies and obtained GSA's approval of its communications plans, as the Federal Property Management Regulations require.

Deferring cancellation of the procurement until the current USDA studies are completed, in hopes of saving an unspecified amount of sunk costs if the study results validate the RFP requirements, is not, in our opinion, a valid reason



for not canceling the procurement now. We believe that USDA's revision of the stated objectives--consolidating centers and integrating data systems with several thousand remote terminals to a standardization and upgrading of equipment at four departmental centers that would use existing communications--is a substantive reason for immediately canceling the procurement. We believe also that USDA should make new studies to determine whether future data processing and communications requirements can be met through less costly alternatives.

We agree with GSA that the competing vendors should be advised immediately of the possible procurement cancellation. GSA could have taken this action in November 1974 when both GSA and USDA were advised of our preliminary findings. We believe that, since GSA is handling the procurement, pursuant to its statutory responsibilities, it should have notified the competing vendors of the possibility of cancellation in November 1974 and should have deferred the benchmark evaluations--began in January 1975 and completed in March 1975--which presumably were costly to both the vendors and the Government.

GSA's suggestion that USDA not award a contract until GSA approves the communications plans emphasizes the importance of completing studies to determine the least costly alternatives before starting procurement. In our opinion, USDA's noncompliance with the Federal Property Management Regulations on matters that could have a great impact on a system's requirements is ample justification for GSA's canceling the procurement.

## CHAPTER 7

### SCOPE OF REVIEW

We reviewed OMB circulars and guidelines and GSA and USDA regulations related to the planning and procurement of ADP equipment. We also interviewed officials and examined records at USDA headquarters in Washington, D.C., pertaining to the planning and proposed acquisition of equipment for four departmental computer centers.



DEPARTMENT OF AGRICULTURE  
OFFICE OF THE SECRETARY  
WASHINGTON, D. C. 20250

March 10, 1975

Mr. Fred J. Shafer, Director  
Logistics and Communications Division  
U.S. General Accounting Office  
441 G Street, N. W.  
Washington, D. C. 20548

Dear Mr. Shafer:

We have reviewed your draft report to Congress entitled "Improved Planning-- A Must Before a Department-wide Automatic Data Processing System is Acquired For The Department of Agriculture." Overall, we generally agree with the findings as presented, but feel quite strongly that the Summary and Details Sections of the report need to more fully capture the Department's position. Additionally, we believe that the report contains some erroneous statements of fact. This, in turn, has resulted in certain reported conditions and conclusions, particularly in the summary portion of the report, which do not reflect an accurate and complete "picture" of the Department's posture. Accordingly, we have limited our views to those specific areas of concern. These follow:

1. Overall Philosophy

Let me first point out that USDA's position and objective is identical to that of GAO's -- namely, that no contract award will be made unless sufficient justification exists to warrant the action. We believe that cessation of the procurement process is a "last resort" which can be taken at any time up to contract award, currently scheduled for June 17, 1975. The cost of additional delay due to premature termination of the procurement process as recommended by GAO would be substantial in terms of dollars, ill-will among the vendors and would result in very serious operating problems for USDA agencies requiring the capabilities that the proposed procurement will provide. Of equal concern to us is that this recommended delay would force the Department into sole-source upgrading of equipment at each of its computer centers with the very strong likelihood of creating a dominant position for one computer manufacturer, a situation of major concern to Congressman Brooks.

In addition to these major problems which would result from procurement cancellation, at this time, here are other factors that support our position to postpone any decision regarding contract award until the results of our studies are completed:

- . estimated 3-year delay in the procurement process causing increased costs fueled by inflation and concomitant inflexibility

- to meet growing agency needs.
- . continued proliferation of programming inefficiencies, caused by mix of 2nd and 3rd generation equipment.
- . unnecessary expansion of one configuration to meet requirements when excess capacity is available on another, i.e., lack of flexibility to move workloads due to multi-vendor environment.
- . failure to attract and maintain high quality data processing personnel.
- . larger, more lengthy and more costly conversion process.
- . substantial ill-will from the vendors, which could possibly lead them to attempt to recoup their delay costs via higher eventual prices, if they bid.
- . substantial ill-will from the USDA agencies toward ADS due to lack of knowledge of the hardware/software environment, which will further delay already long-overdue systems development, not to mention the ever present need for ADS to improve its relationship with USDA agencies without regard to any possible delay.
- . potential deadlock situation leading to rapid deterioration of ADP services provided by ADS. This could occur if ADS is both unable to procure new equipment and unable to sole-source upgrade the capabilities at the data centers.

The cost of further delays in this procurement would be ruinous to the effort. We believe that there exists a strong case for continuing the process. You will recall that last December we provided GAO with cost estimates of what cancellation at this point would mean by way of monetary impact. We suggest that these data again be reviewed by GAO prior to report release.

## 2. Historical Perspective

The report implies that the current USDA procurement action is related to FEDNET. Because of that implication, coupled with the use of selected report terminology, we are concerned that the basic thrust of the USDA action may be misunderstood. On page 4, for instance, the report indicates that "this justification is not valid mainly because it did not compare costs for existing and proposed systems and for alternative system designs." The fact is that the Department is not developing a new system; rather, it is standardizing the hardware of in-place configurations.

The communications facilities that are in place now are identical to those facilities that are planned to be in place when the new hardware is procured. Throughout the report, our procurement is treated by GAO as though we were establishing a completely new facility from both an ADPE, telecommunications and an applications systems standpoint (see page 18, second paragraph, under COMMUNICATIONS REQUIREMENTS). Essentially, the Department is standardizing the existing computer equipment which will result in elimination of a multi-vendor environment with combinations of

second and third generation hardware and operating systems. Resulting from this standardization will be: (1) decreased numbers of hardware systems and, therefore, decreased manpower requirements for operating that equipment; (2) the capability to administratively interchange personnel and workloads between centers; (3) the elimination of hiring second generation-oriented programmers, and ultimately improving the overall programming efficiency and management within the Department.

### 3. Thrust of USDA's Position Omitted

On page 4, in the last paragraph, the report indicates that "USDA believes that the request for proposals is flexible enough for it to negotiate with the selected vendor on the specific equipment configurations needed for each center based on the results of the studies and analyses." This comment does not place the USDA position in proper perspective. The report should reflect the fact that if our studies do not justify contract award, then the process will be canceled or delayed. The implication from the report wording is that USDA plans to consummate the contract without regard to the results of internal analyses. The same suggestion is present on page 30, end of the second paragraph.

### 4. Determination of Departmental Requirements

The report points out that USDA did not determine the data processing and communication requirements for all its agencies. Last fall, we agreed with the GAO position that a comprehensive determination of Department requirements had not been made. We further indicated that, prior to contract award, such a determination would be made and reviewed within the Department. We went so far, as you will recall, as to make available for GAO review the results of our studies. We still stand behind this offer. We are confident that the flexibility afforded in the RFP will permit us to procure only that which is necessary and justified -- no more. Otherwise, we will not proceed with the contract award. The results of our studies will serve to support this decision. Attachment I is a summary of major facts that were considered by the Department in the development of the workload presentation in the RFP which, we believe, may not have been fully considered by GAO. [See GAO note 1, p. 30.]

### 5. Security Requirements

The report shows that USDA did not give adequate consideration to security requirements that would reasonably protect personal data or other sensitive information from unauthorized access. We believe that the general security guidelines contained in the RFP, plus yet-to-be implemented Departmental privacy guidelines for automated data, will provide the requisite privacy security. The application of techniques suggested by GAO on page 23, last paragraph, is not, in our opinion, practical nor reasonable for the categories of personal data maintained within the Department.

Moreover, the report indicates on page 21 that USDA did not conduct studies which would have provided information such as user data to be placed on the system, confidentiality and sensitivity of that data, etc., and that USDA's request for agency requirements in October 1974 showed that there was still insufficient consideration of privacy and security requirements. It should be noted that the Department has considerable knowledge of data to support USDA programs including that kept in both automated and manual files. The Department reviewed and provided information on data bases with privacy implications to the Subcommittee on Constitutional Rights of the Committee on the Judiciary, U.S. Senate, during the latter part of 1972. In 1974, this information was updated by another survey within the Department.

On June 29, 1971, a task force was created to begin implementation of a concept to design information data bases. Phase I consisted of determining data requirements of programs conducted in USDA. As a result, six items entitled "USDA Data Inventory" were published in 1973 and 1974. This information which is updated on a scheduled basis, forms the building block of data knowledge within the Department. As correctly indicated on page 25 of the GAO report, the Department's survey did ask two questions relating to privacy and security. Information collected on the forms was specifically designed to allow easy cross-neck with the "USDA Data Inventory". The program identification codes on the survey forms correlate with the program identification codes on the data inventory. This was intended to simplify updating the data inventory by providing complete records of Departmental data with privacy and security implications.

#### 6. Number and Location of Computer Centers

GAO reports that USDA initially decided on four Departmental centers and, therefore, made no systems or economic studies to determine the optimum number and locations of centers. This point was discussed thoroughly in our position paper to GAO last fall. The actual number of sites will be based on our estimate of the Department's requirements and, although the plan calls for four centers ideally, the RFP provides the flexibility of equipping any number of centers, up to five, including the most unlikely alternative of one or two.

As regards our earlier decision to go with four Computer Centers, we believe that Washington, New Orleans, Kansas City, and Fort Collins are appropriate locations. This must consider that at the time Departmental Computer operations were consolidated and centralized the Washington, New Orleans and Kansas City computer centers with its space, equipment and personnel were already there. Fort Collins was subsequently established to accomplish an improved geographical distribution and balance of workload in the Northwest. In this connection, we have listed below some key factors that need to be considered by GAO:

- . About 98 percent of the work processed by the Washington Computer

- Center comes from within five to ten miles of the Beltway.
- . In New Orleans, about 70 percent of the work of the Computer Center comes directly from the National Finance Center, co-located in the same building as the computer center. Another 4 percent comes from within the New Orleans area.
  - . In Kansas City, 95 percent of the workload comes from the ASCS whose programmers are co-located in the same building as the computer center. ASCS is a widely distributed organization throughout the United States and a centralized location is appropriate. Additionally, all the work of the St. Louis Computer Center comes from the FmHA which is co-located in the same building as the computer center and it can easily be transferred electronically to, or consolidated with, the Kansas City Computer operation some 220 miles away, should the St. Louis Computer Center be phased out.
  - . The Fort Collins Computer Center principally serves the Forest Service which has regions throughout the United States with a heavy concentration west of the Mississippi.

[See GAO note 2, p. 30.]

#### 8. Procurement Proposal

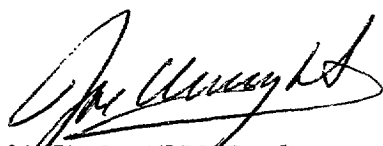
On page 17, the report states that "USDA proposed a joint procurement with GSA..." This is incorrect. GSA proposed the procurement, not USDA.

[See GAO note 2.]

In conclusion, we continue to maintain the position we previously conveyed to GAO, that to discontinue the procurement process at this time would be unnecessarily costly and impractical, and we strongly urge that the procurement process be continued. We again would like to reemphasize that should our requirements and cost benefits analyses indicate contract award to be unjustified, we will terminate or delay contract action. Should, on the other hand, the results of our studies demonstrate and justify moving ahead with the procurement, we would be willing to make available for GAO review the results of these studies.

We appreciate the time and effort GAO has expended on this review and believe as you do that no contract should be awarded unless sufficient justification exists to warrant the action.

Sincerely,



JOSEPH R. WRIGHT, JR.  
Assistant Secretary  
for Administration

- GAO note:
1. Attachment 1 is not included.
  2. Portions of this letter have been deleted because they are no longer relevant to the matters discussed in this report.
  3. Page references in this appendix refer to the draft report and do not agree with the page numbers in this final report.



UNITED STATES OF AMERICA  
GENERAL SERVICES ADMINISTRATION  
WASHINGTON, DC 20405



MAR 27 1975

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

Dear Mr. Staats:

Thank you for the opportunity to review your draft report, "Improved Planning - a must before a Department-wide ADP system is acquired for the Department of Agriculture."

We suggest that the GAO recommendations be revised to state that:

1. The USDA procurement not be cancelled at this time because of the large investment by industry and Government.
2. Industry be advised by GSA,
  - a. It is necessary to extend the planned award date of June 17, 1975, in order for USDA to complete necessary studies prior to award; and,
  - b. The completed studies may cause the procurement to be cancelled in whole or in part.
3. No contract award should be made by USDA until the USDA studies of agency,
  - a. Data processing and communications requirements,
  - b. Networks and configuration analysis,
  - c. Security and privacy requirements; and,
  - d. Economic factors

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have been completed and the requisite actions taken. In particular, there must be GSA approval of USDA communications plans in accordance with FPMR 101-35.

If there are any questions, please let us know.

Sincerely,



Arthur F. Sampson  
Administrator

CHRONOLOGYUSDA'S ADP CONSOLIDATION AND INTEGRATION PROJECTDate

- 12-21-70 USDA staff study recommended concepts, including centralized management of ADP and development of an overall ADP plan.
- 4-27-71 ADP task force report recommended actions to implement concepts, including centralized management, consolidation of centers and joint use of remote terminals, and integration of data systems.
- 7- 6-71 Procurement task force formed to gather data on interim agency requirements and to write procurement documents for use until the overall ADP plan was completed.
- 7-12-71 Systems study task force formed to make systematic assessment of each agency's data processing program.
- 3-30-72 Secretary's order made ADS responsible for managing all ADP resources and for developing and implementing the overall ADP plan.
- 11-17-72 ASCS proposed RFP for centralized computer complex using 2,800 remote terminals, nationwide.
- 2- 1-73 USDA informally requested GSA's opinion of and reaction to a proposal to acquire ADP equipment for four centers on a sole-source basis.
- 3-15-73 GSA informally advised USDA that the sole-source proposal was unjustified and suggested that USDA prepare an RFP for a competitive procurement.
- 4-12-73 USDA requested a delegation of authority from GSA to procure equipment for four centers.
- 1- 8-74 USDA contract award to AMS to evaluate ADP organization, management, and planning.
- 2-28-74 Joint GSA and USDA RFP issued for equipment.

- 10-18-74 ADP applications system inventory survey forms sent to USDA agencies.
- 11-29-74 Closing date for vendors to submit proposals in response to the February 1974 RFP.
- 6-17-75 Target date for contract award.

NEED FOR AND BENEFITS OF INTEGRATED  
COMMUNICATIONS AND COMPUTER PLANNING  
IN A CONSOLIDATION PROJECT

Technological evolution over the past 10 years has brought forward vastly more powerful equipment with major reductions in cost factors. GSA has concurred with estimates that computer power increases roughly with the third power of computer cost. Therefore, if a computer cost doubles, the resulting computer power will increase by a factor of 8. The economies of this favorable cost-power ratio can be realized only if the volume of work to be processed is large enough to justify the additional power and if a way is designed to get this workload to and from the computer efficiently and economically.

The Organization of Economic Co-operation and Development, a worldwide group of governmental ADP users, completed an information study in June 1973 titled, "Commuters and Telecommunications." The study noted:

"\* \* \* it is evident that the effective application of the computer art to meet individual, commercial, scientific and governmental requirements is becoming ever more dependent upon the availability of adequate telecommunication facilities at reasonable cost."

The study also concluded that:

1. The considerable underutilization of governmental computers could be reduced by appropriate telecommunication facilities.
2. Because computer costs are decreasing (50 percent every 2 years) more than telecommunication tariffs (2 percent each year), the latter will become an increasingly more important factor in large telecommunication computer systems, accounting for up to 75 percent of system cost.

The large commercial service bureaus take advantage of the economy of scale provided by the latest equipment. Recognizing that the success of these large-scale systems depends heavily on telecommunications, the bureaus make network and configuration analyses to develop site locations and a network configuration that offer the optimum cost-benefits for itself and its users.

USDA has apparently not recognized the importance of data communications planning and design before acquiring data processing capability. It plans to acquire large-scale data processing equipment and--sometime in the future--gather user communications requirements, design a network, and integrate it with the data processing equipment.

USDA's ultimate plan is to provide a computer utility in the form of a totally integrated computer network with readily transferable data and programs. Effective use of data processing equipment in a computer utility depends on how efficiently and economically data is transferred to and from the computer. Because of the close relationship between telecommunications and ADP and because USDA has not planned and designed a telecommunications network and made it an integral part of the consolidated ADP design, it is doubtful that USDA's efforts will offer optimum cost-benefits to its users.

We based this conclusion on the following considerations taken from GSA regulations and documents and from the Organization for Economic Co-operation and Development's study.

1. ADP equipment cannot be considered alone because it must contain storage for communications software.

2. The cost of data communications should bear heavily on the determination of where and how many ADP sites should be used. (AMS has estimated that the terminal-line costs of the USDA procurement would average about \$18 million a year for 8 years.) A total network approach to planning and design would allow the most economical and technically feasible placement of ADP sites.

3. The computer utility concept has been defined as the sharing of raw computer power and the various computer services by customers who are geographically far apart. As the product of two technologies--computers and telecommunications--it involves complex combinations of such factors as

- time,
- computation speed,
- instruction repertoires,
- data and procedure basis,
- peripheral equipment characteristics and uses,
- communication speeds,
- communication capacities, and
- access time to the system.

Because of the interdependence of the two technologies, they must be planned and designed in an integrated process to obtain optimum results.

4. To many users, a data communication network's primary advantage will be found in the areas of low cost, high transmission speeds, and reliability. To others, the most important advantages will lie in short minimum-charge periods, short connect times, low incidence of network-busy conditions, and full duplex 1/ transmission. Due to these variances in user requirements, the success of any large centralized ADP system, in terms of efficiency and economy, is contingent on how well telecommunications are tailored to meet user needs.

5. Planning and implementing an integrated data communications network in conjunction with the new ADP equipment will inhibit the heretofore proliferation of fragmented data networks; proliferation leads to underuse and disorganization.

6. In an integrated-network operation, concentrators at strategic points in the network gather, organize, and distribute the workload for efficient transmission and processing. The concentrators selectively feed the data to and from the various large-scale systems. This leads to efficient use of the main ADP systems as it relieves them of routine housekeeping chores; allows for better use through workload leveling; and allows for backup, when necessary.

7. Data communication requirements should be analogous to and compatible with ADP requirements in developing system specifications and configuration using workload determination as a basis. Workload determination is developing the methods of describing workload and capturing descriptive workload data for present and future users of the new capability. In this sense, workload includes both data processing requirements and data communication requirements in that they represent the total needs of the present and future users.

8. Telecommunication requirements should be analogous to and compatible with ADP requirements in the following areas of systems development.

--User requirements--workload presentation and quantification.

---

1/Simultaneous two-way transmission.

--System control and compatibility--formulation of system requirements.

--Benchmark simulation--methodology for evaluation.

In summary, ADP and communication systems must be planned and implemented in a coordinated and integrated process to insure the efficient and economical use of a centralized system. Optimum benefits and maximum economies of computers and communications will be realized only when they are linked together. In combination, computers and communications add power to each other. Data communication links bring the capabilities of the computers and the information in the data banks to thousands of locations where it can be used and computers, in return, control the immense switching centers and help divide the enormous capacity among the users.

Procuring a large-scale system for consolidation without integrating a modern telecommunication network with it is analogous to building a large city and leaving intact the old country roads as the only means of getting in and out of the city--all functions within would operate at a less than optimum level, with a standstill at peak use.



PRINCIPAL OFFICIALS OF  
THE DEPARTMENT OF AGRICULTURE  
RESPONSIBLE FOR ADMINISTRATION OF THE  
ACTIVITIES DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
SECRETARY OF AGRICULTURE:		
Earl L. Butz	Dec. 1971	Present
Clifford M. Hardin	Jan. 1969	Nov. 1971
ASSISTANT SECRETARY FOR ADMINISTRATION:		
Joseph R. Wright, Jr.	Mar. 1973	Present
Frank B. Elliot	Apr. 1971	Mar. 1973
Joseph M. Robertson	Apr. 1961	Mar. 1971
DIRECTOR, OFFICE OF AUTOMATED DATA SYSTEMS (note a):		
Henry Meetze	Jan. 1975	Present
J. Paul Bolduc (acting)	Aug. 1974	Jan. 1975
Arthur T. Devlin (acting)	June 1974	Aug. 1974
Melvyn R. Copen	Sept. 1971	May 1974
Arthur T. Devlin (acting)	Jan. 1971	Sept. 1971
Frank B. Elliot	Sept. 1970	Jan. 1971

a/Before reorganization in January 1974, the Office of Information Systems, which was established in March 1972, had USDA-wide responsibility for managing ADP activities. Before that date, the Office of Management Improvement had responsibility for coordinating ADP operations.



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