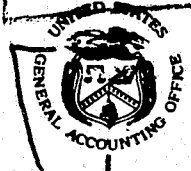


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# REPORT TO THE CONGRESS

## ① Review Of Status Of Development Toward Establishment Of A Unified National Communications System

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BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES

JULY 14, 1969



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

B-166655

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

This is our report on our review of the status of development toward establishment of a unified National Communications System. Our review was made 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).

Copies of this report are being sent to the President; the Special Assistant to the President for Telecommunications; the Director, Bureau of the Budget; the Director, Office of Emergency Preparedness; the major and minor National Communications System operating agencies; the Administrator, Veterans Administration; the Director, Defense Communications Agency; and the Director, Defense Supply Agency.

A handwritten signature in cursive script, reading "James B. Stacks".

Comptroller General  
of the United States

D I G E S T

WHY THE REVIEW WAS MADE

On August 21, 1963, the President directed the establishment of a unified National Communications System (NCS) in order to strengthen the communications support of all major functions of the Government. The objective was to provide necessary communications for the Federal Government under all conditions ranging from normal situations to national emergencies and international crises, including nuclear attack. (See ch. 3.)

The Government's telecommunications needs are varied, complex, worldwide in scope, and oftentimes very costly. Although precise data are not available, about \$1 billion annually has been estimated to be associated with the Government's long-distance communications costs in which NCS is principally involved. (See ch. 1.)

The General Accounting Office (GAO) made this review because of the importance of the system, potential savings through a unified system, and the interest of the Congress in the telecommunications area.

FINDINGS AND CONCLUSIONS

The need for the President to have necessary communications at all times and under all conditions is obvious, and a major objective of the NCS is to insure such availability. An NCS affords substantial opportunities for economies as well as improvements in day-to-day communications, and these are also important objectives of the NCS.

GAO's review showed that many of the issues and problems that are hampering accomplishment of the NCS objectives are of long standing and in need of early resolution. GAO's study also points out that the interest and concern expressed over the years by a number of congressional committees have not been dealt with in bringing about improvements in the policy formulation and direction of the Government's telecommunications resources.

In the more than 5 years that have elapsed since the President directed that a unified NCS be established, hundreds of millions of dollars have been expended annually in the procurement, construction, operation and maintenance of component networks, with little effective centraliz

direction and control. Some progress has been made (see ch. 5), but much remains to be done if the NCS is to properly achieve its objectives. (See ch. 6.)

Although NCS has provided a forum for the interchange of ideas between agency communications staffs, significant issues and problems exist within the NCS organizational structure and management arrangements, which appear to be impeding the timely achievement of its objectives and goals. (See ch. 9.)

Except for the President of the United States, there is no individual or organization in the Federal Government with the authority, stature, and resources to provide the essential policy, direction, and control required to establish a unified Government telecommunications system. Authority and responsibility for telecommunications decisions and activities are widely dispersed among the various departments and agencies involved. The basic planning and general design control are not carried out on a unified basis from a central source. These functions are performed largely in an agency-oriented environment rather than in an NCS frame of reference. (See ch. 9.)

Consequently, there is no basic plan or "blueprint" to chart the course of the NCS from its present confederation of agency networks to the goal of a unified system. Even if such a blueprint existed, there is no effective or authoritative overview to ensure that agency planning and funding would conform to the overall plan. (See ch. 9.)

As a result, the perpetuation, and even proliferation, of networks used largely for the accomplishment of individual agency missions continues. These networks are planned, designed, funded, operated, and maintained by the individual agencies.

Thus, there is little, if any, centralized direction and control over the development and improvement of the agency networks. (See ch. 10.) Also, there is no assurance that the broader national objectives of (1) reliable and effective communications capability and (2) economy of operation from a Government-wide standpoint are being effectively considered. (See chs. 7 and 8.)

#### RECOMMENDATIONS OR SUGGESTIONS

The President should give consideration to a major realignment of the existing NCS structure and organizational arrangements--a realignment which will establish an organization and give it stature, authority, and resources sufficient to provide a strong central telecommunications authority as the Government's central focal point in telecommunications matters.

In making the realignment, consideration should be given to:  
--removing the Office of the Director of Telecommunications Management (DTM) as a component part of the Office of Emergency Preparedness (OEP) and reconstituting this office as the new organization or entity, and

--assigning the present roles and functions of the Executive Agent, NCS, and the Manager, NCS, to the proposed organization or entity.

#### AGENCY ACTIONS AND UNRESOLVED ISSUES

The Special Assistant to the President for Telecommunications (SAPT) assured GAO that its recommendations would be given thorough consideration, together with other recommendations that have been made, prior to any decision concerning the necessity for and manner of realigning the telecommunications organization within the executive branch. (See ch. 12.)

Comments from other executive branch agencies and offices showed that the need for a strengthened policy-making structure was clearly and widely recognized. There was, however, a diversity of opinion as to the organizational activity to which the Executive Agent and Manager roles and functions--such as planning, designing, and coordinating activities under the guidance of the SAPT--should be transferred, if at all. (See ch. 12.) GAO strongly believes that these functions are an integral part of a centralized telecommunications authority and should be clearly recognized as such.

The GAO also believes that the centralization of essential policy direction and control with the functions of planning, designing and coordinating would better enable more effective and objective consideration of the dual purposes of day-to-day communications as well as service in times of extreme national emergency.

Such an arrangement would also avoid any conflict of roles in the discharge of the functions as they now exist under the separation of these functions between OEP and the Department of Defense (DOD).

It would separate these functions from the parochial interest of any individual agency, including the emergency planning functions of OEP.

The departments and agencies would own and operate the component networks of the NCS under the guidance and direction of the centralized authority. However, the centralized authority would consult with departments and agencies concerned. In case of conflict, both the departments and agencies and the centralized authority would have access to the President.

GAO is also recommending, in addition to an organization realignment, that the President direct that early attention and appropriate action be taken to (1) clarify what a "unified" NCS is intended to be (see chs. 3 and 12), (2) resolve the question of the establishment of an integrated trunking system (see ch. 6), and (3) resolve the issue concerning the combination of the separate voice networks operated by DOD and the General Services Administration. (See ch. 7.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

Several committees of the Congress have had a keen interest in the Government's overall telecommunications policies and the organizational arrangements that exist for formulating policy and managing this function within the executive branch. This report is being furnished to the Congress to apprise it of GAO's findings and recommendations, for consideration of such action as may be taken on these recommendations by the President, and for such action as it or its committees may deem appropriate.

C o n t e n t s

	<u>Page</u>
DIGEST	1
CHAPTER 1 THE NATIONAL COMMUNICATIONS SYSTEM	5
"    2 COMMUNICATIONS PROBLEMS THAT GAVE RISE TO ESTABLISHING THE NCS	9
"    3 CONCEPT AND OBJECTIVES OF THE NCS	12
"    4 ORGANIZATIONAL ARRANGEMENTS AND RESPONSIBILITIES FOR NCS	14
"    5 NCS OBJECTIVES ACCOMPLISHED	16
"    6 NCS OBJECTIVES TO BE ACCOMPLISHED	19
"    7 BENEFITS ACHIEVABLE FROM NETWORK UNIFICATION	23
"    8 POTENTIAL CANDIDATES FOR UNIFICATION	25
"    9 PROBLEMS HAMPERING ACCOMPLISHMENT OF NCS OBJECTIVES	28
"   10 PERPETUATION AND PROLIFERATION OF AGENCY TELECOMMUNICATIONS NETWORKS	34
"   11 PRESIDENTIAL AND CONGRESSIONAL CONCERN FOR TELECOMMUNICATIONS PROBLEMS	39
"   12 EXECUTIVE BRANCH COMMENTS	42
"   13 CONCLUSIONS AND RECOMMENDATIONS	47

APPENDIX

Letter dated May 16, 1969, from the Special Assistant to the President for Telecommunications to the Comptroller General, U. S. General Accounting Office

ABBREVIATIONS

AEC Atomic Energy Commission  
ARS Advanced Record System  
AT&T American Telephone and Telegraph Company  
AUTODIN Automatic Digital Network  
AUTOVON Automatic Voice Network  
BOB Bureau of the Budget  
DCA Defense Communications Agency  
DCS Defense Communications System  
DDR&E Deputy Director of Defense Research and Engineering  
DIDS Defense Services Center Integrated Data System  
DOD Department of Defense  
DOS Department of State  
DSA Defense Supply Agency  
DTM Director of Telecommunications Management  
DTS Defense Telephone Service  
FAA Federal Aviation Administration  
FTS Federal Telecommunications System  
GAO General Accounting Office  
GSA General Services Administration  
JUMPS Joint Uniform Military Pay System

NASA National Aeronautics and Space Administration  
NCS National Communications System  
NEAG NCS Emergency Action Group  
OCDM Office of Civil and Defense Mobilization  
OCFM Coordinator for Meteorological Services and Supporting Research  
OEP Office of Emergency Preparedness  
SADIE Secure Automatic Data Information Exchange Network  
SAPT Special Assistant to the President for Telecommunications  
VA Veterans Administration  
VADATS Veterans Administration Data System

## D I G E S T

### WHY THE REVIEW WAS MADE

On August 21, 1963, the President directed the establishment of a unified National Communications System (NCS) in order to strengthen the communications support of all major functions of the Government. The objective was to provide necessary communications for the Federal Government under all conditions ranging from normal situations to national emergencies and international crises, including nuclear attack. (See ch. 3.)

The Government's telecommunications needs are varied, complex, worldwide in scope, and oftentimes very costly. Although precise data are not available, about \$1 billion annually has been estimated to be associated with the Government's long-distance communications costs in which NCS is principally involved. (See ch. 1.)

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GAO's review showed that many of the issues and problems that are hampering accomplishment of the NCS objectives are of long standing and in need of early resolution. GAO's study also points out that the interest and concern expressed over the years by a number of congressional committees have not been dealt with in bringing about improvements in the policy formulation and direction of the Government's telecommunications resources.

In the more than 5 years that have elapsed since the President directed that a unified NCS be established, hundreds of millions of dollars have been expended annually in the procurement, construction, operation, and maintenance of component networks, with little effective centralized



direction and control. Some progress has been made (see ch. 5), but much remains to be done if the NCS is to properly achieve its objectives. (See ch. 6.)

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Except for the President of the United States, there is no individual or organization in the Federal Government with the authority, stature, and resources to provide the essential policy, direction, and control required to establish a unified Government telecommunications system. Authority and responsibility for telecommunications decisions and activities are widely dispersed among the various departments and agencies involved. The basic planning and general design control are not carried out on a unified basis from a central source. These functions are performed largely in an agency-oriented environment rather than in an NCS frame of reference. (See ch. 9.)

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Thus, there is little, if any, centralized direction and control over the development and improvement of the agency networks. (See ch. 10.) Also, there is no assurance that the broader national objectives of (1) reliable and effective communications capability and (2) economy of operation from a Government-wide standpoint are being effectively considered. (See chs. 7 and 8.)

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#### MATTERS FOR CONSIDERATION BY THE CONGRESS

Several committees of the Congress have had a keen interest in the Government's overall telecommunications policies and the organizational arrangements that exist for formulating policy and managing this function within the executive branch. This report is being furnished to the Congress to apprise it of GAO's findings and recommendations, for consideration of such action as may be taken on these recommendations by the President, and for such action as it or its committees may deem appropriate.

## CHAPTER 1

### THE NATIONAL COMMUNICATIONS SYSTEM

The National Communications System originated formally with National Security Action Memorandum 252 of July 11, 1963. On August 21 of that year, the President, in a memorandum to the heads of executive departments and agencies, directed the establishing of a unified Government communications system through the NCS to strengthen all major functions of the Government.

As it has evolved, NCS comprises long-distance telecommunications networks of the:

General Services Administration (GSA),  
Department of Defense,  
Department of State (DOS),  
Federal Aviation Administration (FAA),<sup>1</sup> and  
National Aeronautics and Space Administration (NASA).

These agencies are referred to as NCS major operation agencies. A description of their telecommunications systems follow.

#### GENERAL SERVICES ADMINISTRATION

Federal Telecommunications System (FTS)--a nationwide leased system of communications networks serving certain civil departments and agencies. It provides switched long-distance and local communications services to include terminal devices as required.

This system is composed of voice and record communications networks and/or systems. The voice grade network consists of several components and provides for

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<sup>1</sup>Currently an activity of the Department of Transportation.

common-user switched telephone and data traffic. The Advanced Record System (ARS) is designed to provide teletypewriter and data services.

#### DEPARTMENT OF DEFENSE

Defense Communications System (DCS)--a worldwide complex of DOD communications networks providing a variety of long-distance, point-to-point telecommunications services. It serves the President, the Secretary of Defense, the Joint Chiefs of Staff, the military departments, and other Government agencies as directed.

Major DCS projects currently being planned, implemented, or operated are the Automatic Digital Network, the Automatic Voice Network, the Defense Special Security Communications System, the Automatic Secure Voice Communications System, and the Communications Satellite Project.

The Automatic Digital Network (AUTODIN) is a worldwide network of communications facilities serving DOD and certain non-DOD customers in their particular geographic areas. It was designed for the secure transmission, control, and storage of message and data traffic.

The Automatic Voice Network (AUTOVON) is a worldwide communications network for the transmission of voice and graphic communications for DOD and certain non-DOD users.

The Defense Special Security Communications System was established to provide a secure intelligence communications network for the transmission of highly classified intelligence data.

The Automatic Secure Voice Communications System was established to eventually provide voice transmission with inherent security capabilities to DOD agencies and agencies having national security responsibilities on a worldwide basis.

The Defense Satellite Communications System is intended to handle high-level military command and control

communications on a worldwide basis by way of orbiting satellites.

#### DEPARTMENT OF STATE

Diplomatic Telecommunications System--a worldwide network which serves U.S. diplomatic posts overseas. The system provides communications service for a number of civilian agencies and certain military components located at foreign service posts. Transoceanic channels for the system are generally provided by DCS.

#### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

The NASA Communications Network is a separate self-contained system within the NCS which provides for the exchange of operational information between the project operations center, launch centers, scientific support centers, and tracking and data acquisition centers. Circuits in this network are installed under a mission-dedicated concept where, during operating periods, the circuits are configured to provide continuous connection between the project operations center and the supporting station. During nonmission periods, the circuits are arranged for common use by all projects. This network is composed of both domestic and overseas voice, teletype, and data nets.

#### FEDERAL AVIATION ADMINISTRATION

The purpose of the FAA's component networks is to satisfy user requirements for the rapid collection and dissemination of aircraft movement and control messages, meteorological data, notices to airmen, international air carrier operational data messages, and command control information. Its networks serve U.S. and foreign Government and non-Government aeronautical and meteorological interests.

In addition, NCS includes certain telecommunications networks of the Department of the Interior, Department of Commerce, Atomic Energy Commission (AEC), Federal Communications Commission, and U.S. Information Agency.

These agencies are referred to as NCS minor operating agencies.

A number of other agency communications networks exist which are not designated as NCS assets.

In fulfilling its communications requirements, the Government relies heavily upon the communication industry. Within the United States, the Government's communications systems consist mostly of leased commercial services, equipment, and facilities, while in overseas areas it is largely Government-owned. Transoceanic circuits are provided generally through leased cable or satellite facilities.

Although precise data are not available, one estimate showed that the Government spends about \$4 billion annually on its wide variety of communications equipment, research, development, and services. Of this total, about \$1 billion has been estimated to be associated with the Government's long-distance communications in which NCS is principally involved. Of the balance, the estimate showed that about \$2 billion goes for specialized systems and the remaining \$1 billion goes for nonconventional communications such as those internal to weapon systems.

## CHAPTER 2

### COMMUNICATIONS PROBLEMS THAT GAVE

#### RISE TO ESTABLISHING THE NCS

In the late 1950's most executive agencies participated in a series of alert exercises conducted by the Office of Civil and Defense Mobilization (OCDM). These exercises disclosed a need for improved communications. In November 1959, OCDM--now OEP--recommended to the President that a unified Federal civil agency communications system be established. It proposed that the system provide for the day-to-day business of the Government and include features that would ensure reliable communications during an emergency.

The proposal was approved subject to (1) a more precise study being conducted under the direction of the Administrator of GSA to determine feasibility and exact requirements, (2) resolution of certain questions regarding security requirements, and (3) a stipulation that the system developed be compatible with existing and planned military systems. The study was completed in June 1960.

On January 17, 1961, the Bureau of the Budget (BOB) advised the Administrator, GSA, that the President had approved the plan and authorized GSA to go forward on the establishment of the proposed communications system. The system became known as FTS.

Communications systems being planned by the individual military services also became of concern in the late 1950's. Such systems were proceeding with little thought given to compatibility between systems, and it was recognized that the long-distance communications facilities of the military services required streamlining and updating to satisfy more complex requirements. The outgrowth was the establishment of the Defense Communications Agency (DCA) as the single agency and DCS as the single system to meet the long-distance, point-to-point telecommunications requirements of DOD.

Thus, in the early 1960's, it appeared that two major Federal telecommunications systems were emerging--DCS, for which DOD was responsible, and FTS, for which GSA was responsible.

However, there were other major Federal communications networks outside the framework of DCS and FTS. These included the system planned and operated by the Department of State, (which in many overseas locations is the only U.S. Government-controlled communications link available); the air route traffic control telecommunications of the FAA; the then expanding network, planned and operated by NASA; and other smaller civil networks.

By early 1962, the changing nature of the international situation caused a great deal of attention to be given to civil defense and continuity of Government programs. On February 14 of that year, the President directed the establishment of a committee to reexamine Federal policy with respect to these areas. As a result, the Emergency Planning Committee was formed which consisted of representatives of BOB, OEP, and DOD.

The Committee issued its report on June 11. It concluded that there was a need to develop a survivable national communications system that would serve both military and civil needs under all levels of emergency conditions. This appears to have been the first recognition of the need for a single system concept for all Federal telecommunications.

On June 25 the President approved the Committee's report and formed a task group to further study the communications problem. This group analyzed the critical communication requirements of the President and top Government officials. Its report of August 20 set forth in more detail the need for, and concept of, a survivable national communications system.

While this report was under consideration, the crisis over Soviet missiles in Cuba arose. Many of the communications problems that were foreseen in the earlier studies

suddenly became real, since time had not permitted implementation of solutions recommended earlier. Expeditious actions were needed.

On October 26, a subcommittee on communications was established under the National Security Council. This subcommittee initiated a number of actions directed toward telecommunications improvements.

In its final report of May 21, 1963, the subcommittee stated in part that "the most pressing, immediate requirement is to proceed with the actual creation of a National Communications System." The subcommittee's report proposed a National Security Action Memorandum for that purpose. The memorandum was approved by the National Security Council and issued, as previously mentioned, July 11, 1963, formally directing the establishment of an NCS.

### CHAPTER 3

#### CONCEPT AND OBJECTIVES OF THE NCS

In his memorandum of August 21, 1963, the President directed that the NCS:

"\*\*\* shall be established and developed by linking together, improving, and extending on an evolutionary basis the communications facilities and components of the various Federal agencies."

In defining the objectives of NCS, the Presidential memorandum stated that it would serve to:

"\*\*\* provide necessary communications for the Federal Government under all conditions ranging from a normal situation to national emergencies and international crises, including nuclear attack."

The President stipulated that the system (1) be developed and operated to be responsive to the variety of needs of the national command and user agencies and be capable of meeting priority requirements under emergency or war conditions and, (2) provide the necessary combination of hardness, mobility, and circuit redundancy to obtain survivability of essential communications in all circumstances.

The President directed that initial steps in developing the system be toward meeting the most critical needs for communications in national security programs, particularly to overseas areas. He directed also that, as rapidly as is consistent with meeting critical needs, other Government needs be examined and satisfied, as warranted, in the context of NCS.

Thus, it appears that two priorities were established--the first was to meet critical or emergency requirements, and the second was to meet normal or day-to-day needs of the Government.

The memorandum did not specifically define the "unified" system that the President directed be established. It did, however, recognize that the extent and character of the system required careful consideration in light of the priorities of need, the benefits to be obtained, and the costs involved. It also recognized that design studies would be required and experience would be gained through actual practice before decisions could be reached as to just what form NCS would take. The memorandum did state that "it is generally conceived that the NCS would be comprised primarily of the long-haul, point-to-point, trunk communications which can serve one or more agencies."

Although the memorandum gives first priority to the satisfaction of emergency requirements, it is important to note that the satisfaction of day-to-day requirements is also an objective. Furthermore, the needs were to be met and the system was to be designed in consideration of the benefits to be obtained and the costs involved.

## CHAPTER 4

### ORGANIZATIONAL ARRANGEMENTS AND

#### RESPONSIBILITIES FOR NCS

Through the Presidential memorandum, and a document entitled "Procedures and Working Relationships for the NCS," dated August 21, 1963, certain organizational arrangements and responsibilities were prescribed for the initial establishment and operation of NCS. Responsibilities were specifically delineated for the DTM, Executive Office of the President; Secretary of Defense; Administrator, GSA; BOB; and all other Government agencies.

The DTM, in carrying out his broad functions under Executive Orders 10705 and 10995, was given responsibilities for policy direction over the development and operation of NCS. In this capacity, he also was designated to serve as SAPT and was given several functions to carry out, most of which concern NCS.

The Secretary of Defense was designated to serve as the Executive Agent for NCS, an apparent effort by the President to obtain the benefits of unified technical planning and operations. In that capacity, the Secretary of Defense was given responsibility for designing NCS for the approval of the President, developing plans for fulfilling approved requirements and priority determinations, and for recommending assignment of responsibilities for implementation.

To assist him in carrying out the Executive Agent responsibilities, the Secretary of Defense established, within the DOD, two positions: Assistant to the Secretary of Defense for NCS and Manager, NCS. The Assistant to the Secretary of Defense for NCS was designated as the principal advisor to the Secretary of Defense on NCS matters. These functions subsequently were assigned to the Assistant Secretary of Defense (Administration) and have been carried out by a small staff within that office.

The Secretary of Defense designated the Director, DCA, to also serve as the Manager, NCS, and delegated to him the responsibility for the principal unified technical planning toward establishing and developing the NCS. The Vice Director of DCA is designated as Vice Manager, NCS, and a DCA civilian employee serves as the Deputy Manager, NCS. The Deputy Manager has become the principal participant in carrying out the day-to-day activities of NCS. A relatively small staff composed of DOD military and civilian personnel, plus personnel on loan from various civil agencies assists him, as do the major operating agency representatives to the Manager, NCS.

The Presidential memorandum provided that the Administrator of GSA, in addition to participating as an operating NCS agency, continue to have responsibility for FTS and be responsible for establishing arrangements to avoid duplication in requests for cost, traffic, and other information needed from agencies served by FTS. It provided also that the Administrator's responsibilities under the Federal Property and Administrative Services Act of 1949, as amended, for telecommunications services remain unchanged.

BOB was directed to prescribe general guidelines and procedures for reviewing the financing of NCS within the budgetary process and for preparation of budget estimates by the participating agencies.

At the time NCS was established, the President designated as its major operating agencies DOD, DOS, GSA, FAA, and NASA. All Government agencies were directed to cooperate and assist in performance of NCS functions.

## CHAPTER 5

### NCS OBJECTIVES ACCOMPLISHED

Because the Presidential memorandum directed that

"\*\*\* initial emphasis in developing the NCS will be on meeting the most critical needs for communications in national security programs, particularly to overseas areas \*\*\*,"

the NCS staff's primary efforts have been devoted to the emergency and national security aspects of the Government's telecommunications. The staff and major operating agency representatives have undertaken and accomplished many tasks that appear to have enhanced and improved the Government's ability to provide communications during periods of emergencies and crises.

The more significant accomplishments of these efforts are:

1. Development of a uniform circuit restoration priority system for restoring circuitry interrupted to and between overseas areas as well as within the United States.
2. Establishment of a secure high-speed facsimile system connecting certain key installations in the Washington, D.C. area.
3. Agreement on contingency plans for the use of the NCS minor operating agency networks.
4. Establishment of an NCS Emergency Action Group (NEAG) comprised of representatives of SAPT, Executive Agent, Manager, NCS, and all NCS operating agencies to assist the Manager in directing the application of NCS assets and in providing advice and assistance to high-level Government officials in emergency conditions.

5. A continuity of operations plan to help ensure continuance of Manager, NCS, and NEAG functions in emergencies.
6. A test and exercise program providing a means of evaluating effectiveness and performance of the Government's communications networks under all conditions.
7. Provision for adequate emergency power to Government and carrier communications facilities.
8. Establishment of improved communications to and within many of the overseas areas.
9. Publication of a limited number of operational performance objectives, technical policies, and standards.

These accomplishments relate chiefly to ensuring availability of communications during times of emergency. In addition, some progress has been made in the interconnection of agency networks. For example, DCA and GSA agreed to the interconnection of the AUTODIN and ARS networks for exchange of digital message and data traffic. The agreement provides for interconnection of the three message switches of the ARS with three adjacent AUTODIN message switching centers. It is important to note that the interconnection is used for the exchange of message traffic only, not for purposes of alternate routing, due in part to security restrictions.

Other interconnections exist for exchange of record traffic between switching points and base stations of DCS and the ARS, DOS, NASA, and FAA networks. Messages transiting some of these facilities are not relayed automatically but are handled on a manual basis, due to procedural, economic, and technical reasons.

Although there has been emphasis on interconnection of DOD's AUTODIN and the GSA's FTS voice networks, only tie-line service exists between GSA and military switchboards in certain locations. No interconnection between



the automatic switches of these networks has been achieved or was planned. This interconnection is the subject of current studies.

In addition to these accomplishments, it is generally recognized that the NCS structure has provided a forum for the interchange of ideas between representatives of the operating agencies and that it is a focal point for the formal coordination of policy, technical, and operational matters of concern to the various component agencies.

## CHAPTER 6

### NCS OBJECTIVES TO BE ACCOMPLISHED

Although the President directed that first priority in developing NCS be given to meeting the most critical communications need in national security programs, he also stipulated that:

"As rapidly as is consistent with meeting critical needs, other Government needs will be examined and satisfied, as warranted, in the content of the NCS."

Early in 1967 a study group comprised of NCS staff members and representatives of the NCS major operating agencies made an appraisal of NCS. In their report of July 11, it is stated that the NCS, as a union of long-distance, point-to-point networks, should meet the stated objectives through increased emphasis on

--unified planning,

--development and application of operational and technical standards,

--mutuality of support concepts, and

--interconnection of the several systems.

The report pointed to an urgent need for enhancing the effectiveness of the current system design through greatly accelerated action in five areas.

1. Closer collaboration among all operating agencies in systems planning in order to meet NCS objectives in the most economical and effective manner and to avoid unnecessary duplication.
2. Interconnection of the major switched networks and, automatic interface where appropriate.

3. Development and implementation of appropriate operational, procedural, and technical standards for interconnect purposes.
4. Development of survivability criteria to meet the requirements specified by the President.
5. Development and application of procedures for exercising emergency control of all surviving NCS telecommunications assets.

The report also pointed out a need for greater emphasis on collaboration in systems planning in such areas as utilizing facilities in support of civil defense and continuity of Government programs and locations, Federal/State cooperation and assistance, secure voice program, communications privacy as a national problem, and emerging satellite techniques and capabilities.

Although many of these objectives or problems have been formally identified as NCS tasks and have been pursued by the NCS working groups, many remain to be resolved. Among these is the achievement of greater unification of the various agency networks. The emphasis given to this objective and the efforts undertaken to accomplish it are discussed below.

#### UNIFICATION OF AGENCY NETWORKS

In commenting on the second NCS long-range plan, SAPT advised the NCS Executive Agent by letter of October 31, 1966, that substantial progress had been made toward attaining the stated NCS objectives. He said, however, that a greater degree of unification was needed to meet the concept as prescribed in the documents which established NCS. He stated that:

"It now is appropriate to develop a longer range system design for the NCS. An essential first step is the formulation of a concept of a system configuration to attain the optimum degree of operational effectiveness in the 1970-1980 time frame with due regard to technological and economic factors."

As a result of this direction, a task group was established to study and recommend a concept for the system configuration of NCS for the decade of the 1970's. The Manager, NCS, and 10 of the 11 agencies participating in the study agreed that a feasible concept for NCS would feature an integrated trunking system and multipurpose and special-purpose networks. DOD did not agree, saying that the study did not provide sufficient technical, operational, and economic detail for a rational decision on an optimum NCS system design configuration.

The Manager, NCS, forwarded the study report to the NCS Executive Agent (i.e., the Secretary of Defense) on August 2, 1968, noting the nonconcurrence of DOD. The Manager agreed that follow-on design studies were required but stated that approval of the concept would enable NCS to hold the proposed studies within manageable bounds in order to determine the degree to which the concept proves to be technically feasible and to determine which of the many variations of the concept is best. He added that the manpower and skills required for the follow-on studies were far beyond that available to him and that he intended to utilize contractual assistance (\$240,000) for that purpose. He further noted that management arrangements for the selected concept would also require more definitive study.

On August 12, 1968, the Assistant Secretary of Defense (Administration), acting for the NCS Executive Agent, forwarded the study report to the SAPT. He restated DOD's nonconcurrence and added that a recommendation of a suitable concept would be submitted after completion of detailed studies, including a study by American Telephone and Telegraph Company (AT&T) on the integration alternatives for nonsecure voice networks of DOD's AUTOVON and GSA's FTS.

Replying October 9, the SAPT agreed that the adoption of a concept was premature. He judged that the arrangements proposed by the study would be an unavoidable phase in any realignment which might be indicated by further study. He recommended that the initial thrust of the follow-on studies be directed toward the analysis of that alternative.

In his letter the SAPT said:

"As it is essential that all of the communications assets of all of the agencies of the Government be considered potential parts of the NCS, this study effort should not be limited to consideration of presently identified NCS assets. It is equally important that the recommended management organization be such as to fully support the chosen concept and ensure that it be administratively, technically, and operationally effective. In this connection, consideration of management alternatives should not be constrained by the present structure of the NCS.

"It seems clear that if national needs are to be served, the NCS must be viewed as an entity and not a confederation of networks. Consequently, establishment of a single integrated system under a single manager, singly financed, may well be the ultimate long-range objective. I would hope that the studies undertaken give due consideration to this possibility."

As a result of this further direction, the NCS staff developed a proposed work statement for undertaking, through contractual arrangements, the further study effort directed by the SAPT. This statement was being coordinated with the NCS operating agencies at the conclusion of our study (March 1969). Should DOD continue its opposition to the proposed integrated trunking system without further study, agreement on a feasible concept for NCS may not be reached in the foreseeable future.

## CHAPTER 7

### BENEFITS ACHIEVABLE FROM

#### NETWORK UNIFICATION

During early 1960, GSA undertook a study looking toward the integration of all existing communications systems on the civilian side of Government with certain exceptions. The study, in which 53 departments and agencies participated, was completed in June 1960 and showed that it was feasible to establish a unified FTS.

The system contemplated the provision of telephone, teletypewriter, facsimile, and data service for both peacetime and emergency use with automatic switching. It was further contemplated that the system would be installed in a series of steps starting with the combination of facilities in selected areas to provide service improvements.

After further legislative and executive action, the voice portion of the FTS was activated in fiscal year 1963 and in fiscal year 1966 for the record or ARS portion of the FTS. Although GSA's 1960 study indicated that the implementation of the FTS would cost over \$5 million more than was then currently being spent by the agencies involved, the Government has subsequently realized substantial savings by the use of the FTS. For example, the Administrator's annual reports show that savings, compared with regular commercial costs, during fiscal years 1967 and 1968 amounted to \$64 million and \$79.5 million, respectively. Furthermore, according to a GSA official, these savings have been achieved while, at the same time, services have been substantially improved.

A similar action was taken by DOD in early 1960 after it recognized that its long-distance communications facilities required rapid streamlining and updating to satisfy expanding and more complex requirements. The records we reviewed indicated that the military services were proceeding to plan, develop, and upgrade their own

extensive and costly networks with little thought to compatibility between their systems.

In May 1960 the DCA and its DCS were established by the Secretary of Defense as the single communications system to meet all DOD's long-distance, point-to-point telecommunications requirements. This action and subsequent modifications were intended to bring together, under a single manager, the widespread, complex, diverse, and costly long-distance communications of the military departments.

During the ensuing years, DCA has identified a substantial number of special-purpose or dedicated networks within the military services. Many of these have been consolidated or integrated into the common-user portion of DCS. As a result there have been significant reductions in DOD's total annual costs.

The AT&T study, referred to in chapter 6, is an in-depth study on behalf of the telephone industry at the request of NCS to examine alternatives for the interconnection of AUTOVON and FTS within the United States during the period 1967 through 1988. One of the alternatives was the continuation of present arrangements. Although this initial study has, according to NCS officials, some defects in assumptions and other shortcomings, analysis indicates that at least three, and perhaps four, alternative arrangements are likely to yield significant cost advantages over the present separate AUTOVON and FTS arrangements. The range of potential savings may amount to millions of dollars a year.

NCS staff members have met with AT&T officials to clarify some of the defects in the initial study, and we understand that the scope of AT&T's efforts has been enlarged to include requirements not included in the initial phase. Therefore, the ultimate decisions for combining the systems remain to be resolved.

## CHAPTER 8

### POTENTIAL CANDIDATES FOR UNIFICATION

In addition to the actual and pending network unification actions discussed above, we were able to identify two other situations which appear to be potential candidates for further unification consideration. We found that the NCS staff had examined into both of these cases; however, its efforts were not successful in one case and actions on the other one have been deferred for subsequent consideration. The particulars of the two cases are briefly discussed below.

Shortly after the establishment of NCS was directed in August 1963, one of the first efforts undertaken within NCS in connection with large-scale communications support problems was an examination of the civil and military weather data communication complex. A group was established and was given the responsibility of (1) developing a definitive statement of national quantitative weather-information requirements and (2) a concept of operations for a unified national weather digital communications network as a component of NCS. This group included representatives of weather data user agencies.

The study group issued its report on November 30, 1963, and proposed the development of a digital automatic weather and notice-to-airmen system which would meet all user requirements. The group concluded, among other things, that (1) the then-existing weather and notice-to-airmen communications were not adequate for existing user agency requirements, (2) the user agency requirements were increasing and would continue to increase through 1976, (3) the integration or expansion of the then-existing systems using available plant would not be practicable or economical, and (4) a new system could be evolved which would meet the national user agency requirements using on-the-shelf components.

The study group pointed out in its report that the separate annual operating costs for weather teletype

networks of the several operating agencies totaled \$9.2 million. It was also recognized that the then-existing weather communications systems were largely saturated and in urgent need of emergency action to provide additional capability, particularly in the FAA and Air Force systems, which disseminate weather information required for aircraft operations.

The report set forth the user agencies' requirements in general terms and recommended a concept of operations for a single national network with the principal milestones for system implementation and use commencing in 1967. The Manager, NCS, submitted the report to the NCS Executive Agent (the Secretary of Defense) and pointed out that the agencies involved concurred in the proposed actions, recommending approval, and that appropriate actions be taken to undertake establishment of the system.

The Executive Agent, in the process of formally coordinating the report with the operating agencies, submitted a copy to the Office of the Deputy Director of Defense Research and Engineering (DDR&E) on February 13, 1964, to obtain the DOD position on the proposed course of action. DDR&E coordinated the report with the Chairman of the Federal Committee for Meteorological Services and Supporting Research. The Chairman decided that the newly established Federal Coordinator for Meteorological Services and Supporting Research (OCFM) should review the report.

These actions finally resulted in the forwarding of the DOD comments on the report to the NCS Executive Agent on October 2, 1964. On November 13, 1964, the Executive Agent advised the Manager to further examine the new courses of action recommended by the OCFM.

As a result of this delay, interim improvement programs of the weather communications networks of the FAA, the Air Force, the Navy, and the Weather Bureau had increased in scope to the extent that the establishment of a single system to serve all the agencies' weather communications needs as originally proposed by the study group was no longer desirable.

The separate weather networks continue to be operated by the various Federal agencies and the outcome of the NCS manager's efforts might be viewed largely as a failure.

In another case, we learned that GSA's FTS voice network is not, nor was it intended to be, used by DOD activities located in the metropolitan Washington, D.C., area for placing outgoing telephone calls. Instead, DOD activities in this area are provided telephone service through its own Defense Telephone Service (DTS).

Records showed that the DTS includes some 37,000 working lines and 87,000 extensions and provides service to 178 buildings located in Washington and surrounding areas. Outgoing long-distance service is obtained through any one or any combination of four services available to the DTS. These include AUTOVON and a variety of commercial toll services.

DOD, at the request of the Manager, NCS, made an analysis of costs and benefits which might result from use by the DTS of the outgoing facilities of the FTS. DOD's analysis indicated that, under busy conditions, the operators routed approximately 1,000 "overflow" calls over the commercial toll network. Their analysis also indicated their belief that the cost of handling this "overflow" traffic on GSA's FTS voice network would not be less than the present cost via the commercial toll network.

The Manager, NCS, in an October 1968 report to the Executive Agent, concurred in the analysis and concluded that the matter be considered further in the course of the AT&T study of the interconnection of AUTOVON and FTS.

## CHAPTER 9

### PROBLEMS HAMPERING ACCOMPLISHMENT OF NCS OBJECTIVES

#### AUTHORITY AND POLICY GUIDANCE

In his memorandum of August 21, 1963, directing the establishment of the NCS, the President also set up the management structure to carry it out. Essentially, this was a two-level organization with the DTM at the policy level and the Executive Agent for the NCS at the design and operational planning level.

At the policy level, it appears that the position of the DTM is ambiguous. He heads the Office of the Director of Telecommunications Management. This office is a component of the OEP in the Executive Office of the President. The President assigned the DTM to also act as the SAPT to advise and assist him with respect to telecommunications requirements and plans for the NCS. However, although subject to the control and authority of the President, the DTM position is held by one of the Assistant Directors of the OEP.

The charter (authority and responsibility) of the DTM is impressive, if considered alone, but it is almost emasculated by the welter of laws, orders, and policies affecting telecommunications which have been promulgated over the past several decades. The many executive departments and agencies individually have a wide range of mission-oriented responsibilities in the telecommunications field. These widely dispersed responsibilities are frequently interdependent, and, when conflicts arise, they require authoritative interpretation, clarification, and solution. But the weakness of the present management arrangements preclude prompt solution of problems.

The basic weakness of the present telecommunications management arrangements seems to be the doubt that has been created as to whether the DTM has the authority to act on behalf of the President in telecommunications matters. The DTM is administratively a part of OEP, an

organization which, in emergency situations, is a rival of other departments and agencies in claims on the national telecommunications resource. Rules and regulations issued by the DTM appear to be OEP directives. Thus, other agencies appear to be subject to the authority of a rival claimant--OEP--on the national telecommunications resource, on matters pertaining to that resource, when the DTM issues authorized and necessary rules and regulations.

This doubt exists among the departments and agencies, in the Congress, and among industrial and other leaders. The fact of this doubt diminishes motivation of the doubters to respond to DTM inquiries or suggestions and to attempt to resolve differences in the national interest under the aegis of the DTM.

Although funding has increased over the years to a little under \$2 million for fiscal year 1968, a DTM study report of April 1968 indicates that funding in the amount of \$12 million or \$13 million per year is required if DTM's responsibilities are to be fulfilled.

Further, the staff of the DTM is assigned from OEP, or on loan from other agencies, and funds provided to the DTM are controlled by the OEP. In summary, the DTM does not have control over his staff or his funds and the placement of his position creates doubt as to his stature and authority.

At the design and operational planning level, the position of the Executive Agent is conflicting. The President designated the Secretary of Defense as the Executive Agent for the NCS. Thus, as Secretary of Defense, he is responsible for the telecommunications of that department while, as Executive Agent, he has the broader responsibilities of the NCS.

The Secretary of Defense has designated the Director of the Defense Communications Agency as the Manager of the NCS and delegated to him the NCS design and operational planning functions. But this merely compounds the problem of conflict because the Director, DCA, has

responsibilities for telecommunications of that agency, as well as the broader responsibilities of the NCS. This organizational structure and placement of the design and operational planning function in the Defense establishment promotes the appearance, if not the actuality, that DOD "runs the show."

At the time of our study, the Office of the Manager, NCS, had a staff of 52 people. We were advised that this staff did not include the necessary systems engineering capability or support required to design and plan the NCS and to review the agency implementation.

The absence of a centralized source of policy guidance, the widespread dispersion of authority and responsibility, and lack of stature and resources to provide effective management, have, in our opinion, contributed to the planning problems discussed in the following section of this report.

#### PLANNING FOR UNIFIED NCS

The NCS design and planning efforts consist of the preparation of annual long-range (5-year) plans and the performance of studies (referred to as tasks) in selected areas. However, these efforts appear to be inadequate and ineffective for the accomplishment of the system design and planning of a unified NCS.

The preparation of the annual long-range plan is a time-consuming exercise requiring the coordination at various levels of agencies involved. Such a plan is little more than a consolidated annual report of individual agency plans and a progress report on study tasks.

In the annual long-range plans, the Manager, NCS, is supposed to present and cost alternative ways of satisfying user requirements. However, this is rather difficult to do since he is given a set of individual agency component plans which are already firmly established. Also, he would need a system engineering staff that would have raw requirements data and detailed component network data before he could design and cost alternatives. Neither

the staff nor the data are presently available. As a result, the Manager, NCS, cannot significantly influence the plan, the engineering of the component networks, or the engineering of the NCS itself; and the long-range plan is not, therefore, a blueprint for a unified NCS but merely a consolidation of individual agency component plans.

NCS's design and planning efforts also include study tasks which have been established to analyze NCS problems in selected areas. These study tasks are important system planning efforts requiring a high level of system engineering support. However, the Manager's office is not staffed to perform the large-scale engineering efforts required for the design and planning of the current, much less the future, NCS. Consequently, design and planning study tasks are performed under other arrangements.

These arrangements include ad hoc task groups formed from personnel representing the NCS operating agencies and chaired by a member of the Manager's staff. However, it appears that this arrangement is largely ineffective because of the parochial interest and agency network orientation of the agency representatives rather than a continuing NCS-oriented environment.

Thus, although efforts are being made to develop a blueprint for the future NCS, progress has been slow and extensive additional studies will likely be required. Moreover, since the operating agencies design and fund their components of the NCS, the absence of some control of agency telecommunications funding actions serves as an additional constraint to effective planning, as discussed below.

In his memorandum of August 1963, directing the establishment of the NCS, the President directed that,

"The Bureau of the Budget, in consultation with the Special Assistant to the President for Telecommunications, the Executive Agent and the Administrator of General Services, will prescribe

general guidelines and procedures for reviewing the financing of the NCS within the budgetary process and for preparation of budget estimates by the participating agencies."

Apparently, it was the intent that a budgetary overlook of NCS activities should be made. However, we have been advised by BOB officials that it is virtually impossible at present to obtain an accurate figure of NCS costs and accurate data on activities.

BOB has issued a series of bulletins establishing a planning, programming, budgeting system. However, these bulletins were general directives, not specifically addressed to the problem of coordinating the budgeting and planning for telecommunications.

In 1966 the Director, BOB, proposed the establishment of an NCS resource inventory which would describe the physical assets, the service provided, and the total funding and manpower for all the networks constituting the NCS. This was based on the belief that the incorporation of this information into future NCS component plans and long-range plans would permit achievement of a better perspective and appraisal of contemplated component programs and of the composite total. The Director stated that, where warranted, such an inventory would facilitate analysis in depth of alternative ways of satisfying user needs.

Submissions prepared by the operating agencies during calendar year 1967 do not appear to have been entirely adequate in providing an overview of the Government's annual telecommunications costs. We were advised by NCS officials that additional guidance for application of budgetary overlook features in the NCS planning process would be submitted to operating agencies as part of the next call for component plans.

Thus, it appears that the NCS design and planning effort is unequal to its task; a blueprint for the future NCS does not exist; and, even if such a blueprint did

exist, there is no authoritative overview to ensure that agency planning and funding would conform to the overall plan.



## CHAPTER 10

### PERPETUATION AND PROLIFERATION OF AGENCY TELECOMMUNICATIONS NETWORKS

The NCS, as it has evolved, is basically a federation of the several executive department and agency telecommunications networks. Although these networks are labeled and identified as NCS assets, the parent agencies have retained, for all practical purposes, the functions of designing, planning, funding, operating, and maintaining the networks largely for the fulfillment of their respective department or agency missions. Only GSA, among the NCS operating agencies, has the prime objective of furnishing telecommunications to satisfy requirements of other Government agencies rather than to support its own operations.

The Manager, NCS, by delegation of the Executive Agent, is charged with designing the NCS, for the approval of the President. Although this requires the Manager to take into consideration the communications needs and resources of all Federal agencies, he has actually little, if any, participation in or influence over the plans and ultimate decisions of the agency heads affecting their telecommunications networks. This lack of NCS involvement has, in certain instances, resulted in perpetuation and proliferation of agency networks; and, to some extent, it appears to have placed some agencies in competition with each other and brought about a pronounced separation among the various telecommunications networks.

A wide division has evolved, which exists today between DOD and GSA, in satisfying the telecommunications requirements originating with the DOD activities and those originating with the civil departments and agencies. Although many of the telecommunications requirements of the civil and defense departments and agencies are similar in many aspects, the general practice is that defense requirements are considered and satisfied within the networks of the DCS and the civil requirements are similarly considered for satisfaction through the FTS networks operated and managed by GSA. Also, as this report has

shown, separate networks have been established outside the DOD and GSA common-user networks.

We briefly examined into the manner in which the communications requirements originating in certain Federal agencies were being satisfied in four cases and the extent to which the NCS staff had become involved. Two of the cases concerned telecommunications requirements of activities of the DOD and two involved requirements of civil agencies in which GSA becomes involved.

The two DOD systems have Defense-wide application and involve the development and implementation of a Joint Uniform Military Pay System (JUMPS), by the Assistant Secretary of Defense (Comptroller), and a Defense Services Center Integrated Data System (DIDS), by the Defense Supply Agency (DSA). The civil agency requirements involve the establishment of an AEC Secure Automatic Data Information Exchange Network (SADIE) and a Veterans Administration (VA) Data System (VADATS) for the exchange of data related to veterans within and between the activities of the VA. The systems and the satisfaction of their telecommunications requirements are discussed below.

1. JUMPS has as its primary goal the establishment, within each of the military services, of a military pay system at a single operating site for each service which will provide (a) adequate service to members, (b) maximum uniformity between the military departments, (c) authorized and computerized pay account maintenance, and (d) optimum support of the planning, programming, and budgeting systems. The DOD implementing directive provided, as one of the policies for JUMPS, that communication methods, including AUTODIN (DOD's automatic digital data network), appropriate for the data involved, be used between disbursement and input sites and the centralized operation.

2. DIDS is an elaborate, integrated, logistical management system to provide for the dissemination to users of improved item characteristics and management data suitable for multiple logistical purposes, such as procurement, cataloging, provisioning, and material utilization and disposal. The communication needs for DIDS were furnished by DSA for inclusion in DCA's development

plan for the DCS during the 1970-80 time period. DCA analyzed the requirements and subsequently advised the military services and DSA that the DIDS traffic could be accommodated in the AUTODIN system and that additional equipment would be required at only 14 of the 196 proposed tributaries.

For effective operation of the JUMPS and DIDS systems, a large amount of information or data must be exchanged between the involved activities by means of communications processing and distributing systems. Although the telecommunications requirements have not been firmly established, it appears highly likely that the requirements for both systems will be considered from only an agency' viewpoint and satisfied through DOD's AUTODIN system.

3. AEC established a data transmission network and a secure teletypewriter system in June and July 1965, respectively, with the concurrence of GSA as required by the Federal Property and Administrative Services Act of 1949. In 1966, AEC undertook a project to develop its own Secure Automatic Data Information Exchange network through the combination of these two networks and modification and expansion of the resulting system. After analyzing the proposal, GSA concurred in the proposed plan in December 1966. There are no provisions whereby the Manager, NCS, should have become involved in the decision to allow AEC to develop its own network; however, AEC discussed plans for the new system with his representatives during development and formally apprised him immediately upon receiving GSA's approval. We found that AEC had given consideration to using DOD's AUTODIN network or GSA's ARS, as well as its own existing networks, and concluded that its requirements could best be satisfied through the development of its own improved system.

4. During the course of our study, we became aware of an attempt on the part of the VA to establish its own dedicated data transmission system (VADATS) to meet its known and anticipated needs for data and administrative traffic handling in fiscal year 1971-76 time period. VA submitted its proposal to GSA on January 8, 1969, in which VA stated that, in order to both realize savings

and provide for advanced data processing techniques in support of the mission of the VA, it was necessary that the VA have a record telecommunications system, providing for the automatic interchange of data between automated programs and encompassing, as a minimum, the capability of handling administrative traffic, on-line fast response information retrieval, and visual display, and of handling such traffic as error free as possible through error detection and correction through retransmission.

VA stated that GSA's advanced record system as it was configured would not provide for the VA needs in the fiscal year 1971-76 time period and proposed that (1) with the assistance of GSA, the VA establish the system with installation to be started in July 1970 and completed during fiscal year 1971 for all field station locations, (2) that the system be operated, funded, and managed by VA within the parameters of the GSA Federal property management regulations and NCS directives, and (3) immediate action be taken on VA's recommendations.

GSA replied to the proposal on January 17, 1969, informing that GSA had no doubts regarding the ability of the proposal to meet the VA requirements on the existing record or voice subsystems of the FTS at the least possible cost to the Government and to VA. However, GSA also stated that it continued to recognize and agree with VA's desire to fully explore the cost effectiveness, both to the Government as a whole and to VA singly, of all feasible alternatives for meeting VA's requirements before making a decision.

GSA proposed that further steps be taken to obtain information upon which a more comprehensive cost effectiveness evaluation could be made of the feasible alternatives that exist, with the intent of reaching a decision and proceeding with procurement. GSA pointed out that its proposed course of action was contingent upon GSA's controlling the message switch, as well as all switched circuitry that may be utilized.

The ultimate decision as to whether the VA requirement will be satisfied through the establishment of a separate dedicated network or through one of the two

existing FTS subsystems remains to be resolved. We found no evidence that this matter was brought to the attention of the NCS staff.

We did not perform an in-depth review of the cases cited above and are not in a position to render an opinion on the course of actions taken or proposed to satisfy the requirements. The cases do illustrate, we believe, the little participation and influence the Manager, NCS, and his staff have over the telecommunications requirements originating throughout the Government or the manner in which the requirements are being satisfied. The cases also seem to show that, without a long-range, overall, Government-wide plan or concept for achieving a more unified Government telecommunications systems, further and more widespread perpetuation and proliferation of the agency networks are likely to occur.

## CHAPTER 11

### PRESIDENTIAL AND CONGRESSIONAL CONCERN

#### FOR TELECOMMUNICATIONS PROBLEMS

The President and the Congress have been concerned with problems of national communications policy and the Government organization to carry it out. For example, in his message to the Congress, August 14, 1967, the President announced that he was appointing a task force of distinguished Government officials to make a comprehensive study of communications policy and that he had asked the BOB to make a thorough study of existing Government organization in the field of communications and to propose needed modifications.

Similarly, committees and subcommittees of the Congress, including the Subcommittee on Administrative Practice and Procedure of the Senate Committee on the Judiciary, the Senate Committee on Commerce, and the House Committee on Government Operations, have repeatedly expressed their concern with various communications problems.

For example, the Senate Committee on Commerce in its Report 837 (88th Cong., 2d sess.) of January 30, 1964, stated:

"Fast moving technical developments and expanding needs in the communications field require a review of our present policies \*\*\* The question of the establishment of an overall telecommunications policy has been raised by the Committees on Commerce on a number of occasions. Such policy is essential if we are to meet the current and future needs flowing from the technological developments of the space age."

The House Committee on Government Operations in its Report 178 (89th Cong. 1st sess.) of March 17, 1965, took note of the evolution of arrangements within the

executive branch for telecommunications management subsequent to the Radio Act of 1912 and of some of the many studies of these arrangements which had been conducted. The report stated:

"A comprehensive review of governmental responsibilities in communications has been called for repeatedly by various sources, both Congressional and private. The staff arm of the President requires added strength and separate organizational status to review the broad issues and policies that clearly require more emphasis and resolution. Only limited resources in men and money are now available to the Office of the Director of Telecommunications Management. The Office should be removed from the Office of Emergency Planning and be reconstituted as a separate unit in the Executive Office of the President. It should be funded and staffed to permit essential studies and coordination to be conducted more effectively than has been possible so far."

The House Committee on Government Operations in its Report 2318 (89th Cong. 2d sess.) of October 19, 1966, affirmed for the third time its belief that the Office of the DIM should be reconstituted as a separate coequal unit in the Executive Office of the President rather than remain a subordinate unit of OEP. The report stated:

"It is our understanding that the President is reluctant to expand the structure of the Executive Office. The Committee believes that a much more compelling consideration is the new and growing importance which telecommunications management has assumed in Government affairs.

The submission to the Congress of a reorganization plan to give the telecommunications office separate status, coequal with the Executive Office units for national security, economic, scientific, emergency mobilization, and budgetary affairs, will have the added advantage

of providing a statutory base for the Director in dealing with the Congress. At present his nonstatutory role of presidential advisor makes relationships with the Congress a sensitive issue and creates uncertainties as to what he can convey to the Congress in the way of information. A similar issue was presented, and in a measure resolved, in the Office of Science and Technology, which was given formal status in the Executive Office by reorganization plan."

Again on August 28, 1967, the House Committee on Government Operations in its Report 613 (90th Cong. 1st sess.) observed:

"The job of getting some kind of consensus among the contending parties falls to the Director of Telecommunications Management. His role is not the happiest one. The numerous problems to be studied outrun his limited resources in staff and funds. His authority in the Executive Office is anomalous, coming in part from the President and in part from the Director of Emergency Planning. He has the proximity of the President's power and prestige but stands at a distance from the great operating centers, such as the Department of Defense, where important decisions are daily made."

## CHAPTER 12

### EXECUTIVE BRANCH COMMENTS

On March 17, 1969, we submitted our draft report to the President for review and comment. We proposed that the President consider undertaking a major realignment of the existing NCS structure and organizational arrangements and establishing an organization or entity with sufficient stature, authority, and resources to provide a strong central telecommunications authority which would enhance the development of the NCS and serve as the Government's single voice and final authority in telecommunications matters.

We proposed also that, in undertaking the realignment, consideration be given to (1) removing the Office of the DTM as a component part of the OEP and reconstituting this office as the new organization or entity and (2) assigning the roles and functions of the Executive Agent, NCS, and Manager, NCS, to the proposed organization or entity.

We also submitted copies of our draft report to numerous other agencies and offices, including the Executive Agent, the Manager, and the major and minor operating agencies of the NCS.

The SAPT, in his letter dated May 16, 1969 (see app. I), stated that the factual information in our report appeared accurate and that the conclusions are sound and well supported. He mentioned that a study concerning the Government's telecommunications management structure was currently being coordinated among the executive departments and establishments. He stated that our proposals and other recommendations that have been made would be given thorough consideration prior to any decision concerning the necessity for and manner of realigning the telecommunications organization within the executive branch.

Comments were also received from most of the executive branch agencies and offices to which copies of the draft report were submitted. The principal comments of these agencies and offices are summarized as follows:

The United States Information Agency stated that, while the concept of a centralized structure had merit, it felt that such a structure should not be so all encompassing as to assume control of specialized facilities designed and operated to meet the needs of one agency and having no day-to-day impact on others.

GSA agreed with our conclusion that much has been done and much remains to be done toward accomplishing NCS objectives. GSA also agreed that the realignments we proposed would help solve the many problems that exist.

The Manager, NCS, stated that the report was by far the most penetrating examination of the NCS to date and that it contained a well-balanced analysis of NCS activities and displayed an excellent understanding of the problems faced in the present environment. The Manager agreed with our proposal that the DTM should be removed from OEP but did not agree that the Executive Agent and Manager roles should be included in the policy-making office. He expressed the opinion that the latter roles should remain within DOD because DOD owns the majority of NCS assets and has a national security mission. He also stated that, in his view, the report was based on the premise that the NCS was intended to be a unified system, and he pointed out that there was disagreement among the agencies concerned whether NCS was to be unified and what was meant by "unified." He went on to say that, if something more unified than the present confederation is desired, the NCS organization must be considerably strengthened.

The OEP reply stated that the report was factual and that its proposals warranted consideration. The reply also indicated that recent and changed focus on emergency preparedness, coupled with revitalization of the National Security Council and its staff mechanisms, created the potential for the SAPT to obtain timely Presidential guidance on NCS policy issues. The reply also stated that the OEP staff had prepared papers which, if approved, would lead to a reexamination of the NCS process and a reassessment of the NCS objectives, which OEP feels is a necessary initial step in the reordering of functions.

The Department of Transportation agreed that the policy-making function requires strengthening and that there is merit in the proposal to include the Executive Agent and Manager functions in the policy office. The Department felt that it was inappropriate for it to comment independently on the placement of the telecommunications policy-making and management functions, since it had previously furnished specific comments on the matter to BOB in connection with BOB's study of telecommunications organization in the Government. The Department did feel that it would be desirable to approach telecommunications problems, both in the Government and in non-Government areas, under the policy direction of a single agency.

The BOB did not offer any specific comments on the proposals contained in our draft report. It did say, however, that BOB would give consideration to the report before recommending organizational changes for the NCS.

The Department of State also agreed that strengthening of the telecommunications policy-making posture of the Government was needed and that a strengthened central policy organization would effect improvements. However, it was believed that a separate organizational entity should have the roles presently assigned to the Executive Agent and the Manager.

AEC stated that, although it had no basis for disagreement with our proposals, it felt that our report did not convincingly demonstrate that these proposals were essential to accomplishing the objective of the Presidential directive or that the current situation is wasteful. It expressed the belief that, if individual agency networks can be made compatible, the existence of the individual networks may not be undesirable, unnecessary, or contrary to the objectives of the NCS.

AEC commented that its network was compatible with the AUTODIN and that traffic was regularly exchanged between the two systems. Additional information was furnished (and it has been incorporated in this report) to show that AEC had formally apprised the NCS staff of its requirements 5 months earlier than we indicated in our draft report.

VA stated that it was in complete agreement with and wholeheartedly supported our proposals. It felt that the report was factual but that VA had developed its plans within the present framework of the NCS.

By the comments received from the executive branch agencies and offices, summarized above, the need for a strengthened policy-making structure was clearly and generally recognized. There was, however, a diversity of opinion as to the organizational activity to which the Executive Agent and Manager roles and functions should be transferred, if at all.

We believe that these roles and functions, consisting principally of designing, planning, and coordinating activities under the guidance of the SAPT, should be viewed as an integral part of the centralized telecommunications authority. Such an arrangement would avoid any conflict of roles in the discharge of the functions. At the same time, the departments and agencies would own and operate the component networks of the NCS under the guidance and direction of the centralized authority. However, the centralized authority would consult with departments and agencies concerned which would have access to the President in case of conflict.

The Manager, NCS, and others, in commenting on the draft report, raised the question as to whether NCS was intended to be a "unified" system and what is really meant by "unified." As we point out in chapter 3, the President did not define the "unified system" that he directed be established in his August 1963 memorandum. He did, however, recognize that design studies would be required and experience would be gained through actual practice before decisions could be reached as to just what form the NCS would take.

Although more than 5 years' experience has been gained, decisions on the composition of the NCS have not been made and, as the Manager, NCS, points out in his comments, disagreement among the agencies involved has arisen and exists today over what a unified system should be. This situation seems to strengthen our proposal that

someone be put in charge and that this question be promptly addressed.

The "unified" system, as we visualize it, should be one that is viewed in the context of a single governmental NCS, having as its components the several networks of the executive departments and agencies, but with ownership and operation retained by the departments and agencies. We believe the system, to be most effective in achieving its objectives, should be responsive to the authority and policy direction of a single entity and that its component networks should be designed, developed, improved, or modified through a unified planning process rather than solely upon the individual agency requirements.

According to the response by the SAPT, specific actions on the adoption and implementation of our proposals will await further study of other pending executive branch recommendations concerning realignment of the Government's telecommunications structure and organizational arrangements.

## CHAPTER 13

### CONCLUSIONS AND RECOMMENDATIONS

Although our study showed that some progress had been made, it also showed that much remains to be done to achieve a unified NCS such as the President directed be established in 1963. Our study disclosed that significant issues and problems exist within the NCS organizational structure and management arrangements, which appear to be impeding the timely achievement of its objectives and goals. Many of these issues and problems involve the very basic and essential ingredients that we believe are needed to achieve greater unification of the telecommunications networks that exist within the various agencies of the Government.

Of particular significance is the absence of any long-range plan or "blueprint" and centralized policy guidance within the Government to chart the course over which the telecommunications networks of the NCS operating agencies are to be developed to best serve the Government as a whole. Without such a blueprint and accompanying guidance, the corresponding and equally significant function of planning is virtually impossible; and, from a unification point of view, the operating agencies are not prevented from planning and developing their individual networks to perform and fulfill solely the mission needs of the agency.

The importance of mission-oriented planning is recognized; however, we believe that, with proper guidance provided by the blueprint, such planning could be combined with, and if necessary expanded to meet, national objectives as well. In this way perpetuation and proliferation of the separate networks could be controlled.

Organizationally, the present arrangements do not appear to be conducive to promoting the early achievement of the objectives and goals of the NCS. Although designated as the SAPT, doubt over the DTM's direction of telecommunications policies and actions has arisen and

prevails today. The Secretary of Defense, as Executive Agent for the NCS, is often put in a difficult, if not untenable, position, for he is faced with making policy decisions affecting other Government telecommunications users while, at the same time, his department is itself the major claimant of the NCS resources. The position of Manager, NCS, appears to be a misnomer, since he actually doesn't manage anything other than a small staff on loan from various operating agencies, and his decisions are essentially subject to veto by any agency.

As stated previously, two studies on telecommunications matters were requested by the President in 1967. The report of one study, made by the BOB, relating to the telecommunications management structure within the Government, has not been completed and therefore was not available for our review. The report on the other study, prepared by a panel of high-level Government personnel, relating to a comprehensive review of telecommunications policy, has been issued. The report concluded, among other things, that the patchwork nature of the present structure was not conducive to optimum performance of the telecommunications activities and requirements of the Federal Government and that a new Government capability was urgently required.

We believe that a realignment of the existing NCS structure and organizational arrangements should be undertaken. As the first and essential step, an organization or entity at the highest level of the executive branch of the Government, free of any conflict of roles, should be put in charge of the Government's telecommunications activities. We believe that the organization or entity should be given sufficient resources and stature to enable it to provide the President and the Government with a strong central telecommunications authority and serve as the Government's focal point for telecommunications policy and planning.

In addition, we believe that the organization or entity should

- possess sufficient authority to enforce policy determinations and to coordinate and review actions of Federal agencies in implementing telecommunications policies,
- have an active part in the deliberations over the establishment of new telecommunications capabilities or networks and serve as the final authority in such decisions,
- be empowered to examine existing agency networks which might more economically and effectively satisfy Government-wide requirements through modification or expansion,
- have the authority to ensure that all NCS assets, including mission-oriented dedicated networks, will be responsive to the highest level national objectives, and
- establish a close liaison with the BOB for coordinating the financial requirements of the various NCS operating agencies; with the OEP for coordinating matters involving emergency preparedness; with the Office of Science and Technology within the Executive Office of the President for coordinating research programs that involve communications; and with the other Government agencies for consultation on communications and related matters.

In our study of this subject, we learned that certain other alternatives had been suggested for realigning the present telecommunications structure. These have included (1) establishment of an independent unit outside the Executive Office of the President, (2) combination of the functions of the DTM with those of the Office of Science and Technology, with an appropriate redesignation of the name of the agency, and (3) location of a separate unit in an existing executive department or agency.

On balance, we favor continuation of the function in the Executive Office of the President to provide the



stature to enable the necessary central authority to deal effectively with the departments concerned. Also, we believe that an office working as a close adjunct to the White House could be of vital importance in times of national emergency.

#### RECOMMENDATIONS TO THE PRESIDENT

We therefore recommend that the President undertake a realignment of the NCS structure and organizational arrangements and that a single organization or entity be put in charge of the Government's telecommunications activities.

We also recommend that, in undertaking this realignment, consideration be given to (1) removing the Office of the DTM as a component part of the OEP and reconstituting this office as the new organization or entity and (2) assigning the roles and functions of the Executive Agent and the Manager, NCS, to the new organization or entity, in order to avoid any parochial or conflicting roles inherent in the present organizational arrangement.

We recommend further that, in addition to the organizational realignment, the President direct that early attention be given to (1) clarifying what a "unified" NCS is intended to be (see chs. 3 and 12), (2) resolving the question of the establishment of an integrated trunking system (see ch. 6), and (3) reaching a timely decision on the combination of the separate voice networks operated by DOD and GSA (see ch. 7).

#### APPENDIX

THE WHITE HOUSE  
WASHINGTON

May 16, 1969

Honorable Elmer B. Staats  
Comptroller General  
General Accounting Office  
Washington, D.C. 20548

Dear Mr. Comptroller General:

The draft "Report to the Congress of the United States - Study of the Progress Made Toward Establishment of a Unified National Communications System (Code 87510)" has been carefully reviewed.


The factual information appears accurate and no recommendations for change are offered; the conclusions are sound and well supported.

It is considered highly appropriate that the Report emphasizes the national security requirements for reliable and survivable national communications. This factor, of course, was the primary basis for the issuance by the National Security Council of National Security Action Memorandum No. 252, formally directing the establishment of the National Communications System (NCS).

As noted in your Report, other studies on telecommunication matters recently have been completed. One of these concerning a realignment of the telecommunications management structure within the Executive Branch currently is being coordinated among the Executive Departments and Establishments.

The recommendations of the GAO Report will be given thorough consideration, together with other recommendations which have been made, prior to any decision concerning the necessity for and manner of realigning the telecommunications organization within the Executive Branch. Special attention will be given to the organizational arrangements affecting the National Communications System.

Sincerely,

  
J. D. O'Connell  
Special Assistant to the President  
for Telecommunications