

Originally Processed With FOIA(s):  
2005-0336-F

FOIA Number:  
2005-0336-F

# FOIA MARKER

**This is not a textual record. This is used as an administrative marker by the George Bush Presidential Library Staff.**

---

**Record Group/Collection:** George H.W. Bush Presidential Records  
**Collection/Office of Origin:** Science and Technology Policy, Office of (OSTP)  
**Series:** Van Cleave, Michelle, Files  
**Subseries:** Reports and Publications Files

---

**OA/ID Number:** 62119  
**Folder ID Number:** 62119-003

---

**Folder Title:**  
Reports [3 of 3]

---

Stack:	Row:	Section:	Shelf:	Position:
	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

---

# A History of the National Communications System: The First 25 Years, 1963-1988

by Richard T. Loomis



**MITRE**

*Front Cover:* President John F. Kennedy in the Oval Office (1963).

*Inset:* President William McKinley in the White House "War Room" during the Spanish-American War (1898) showing telephone and telegraph communications and war maps.

# A History of the National Communications System: The First 25 Years, 1963-1988

Richard T. Loomis

August 1990

MTR-89W00102

SPONSOR:  
Defense Communications Agency  
CONTRACT NO.:  
F19628-89-C-0001

This document was prepared for authorized distribution.  
It has not been approved for public release.

The MITRE Corporation  
Washington C<sup>3</sup>I Division  
7525 Colshire Drive  
McLean, Virginia 22102-3481

A History of the  
National Communications System:  
The First 25 Years, 1963-1988

MITRE Department  
and Project Approval:

CE Bowen

August 1990

MITR-89W-0102

SPONSOR  
Defense Communications Agency  
CONTRACT NO.  
DCA-89-001

This report was prepared for delivery to the  
Defense Communications Agency.

The MITRE Corporation  
Washington, DC 22150  
3455 Capital Drive  
Bedford, MA 01730

## ABSTRACT

The National Communications System was established in 1963 by President John Kennedy in response to communication failures during the 1962 Cuban Missile Crisis. Since that time White House agencies, principally the Director of Telecommunications Management (1962-1970); the Office of Telecommunications Planning (1970-1978); and, since 1978, the National Security Council have undertaken programs to provide the President and other key decisionmakers with a national security and emergency preparedness telecommunications capability.

**Suggested Keywords:** Cuban missile crisis, Emergency communications, Telecommunications industry, Divestiture, Deregulation, National security and emergency preparedness telecommunications, Interoperability, Single universal system.

## PREFACE

The goal of this history is to place before the reader the story of a major crisis in Presidential communications which occurred during the Cuban missile crisis of October 1962, and the efforts made since that time to implement a high-level communications capability to satisfy the most critical requirements of the Nation's key decisionmakers.

For some 100 years prior to the Cuban emergency, electrical communications had been playing an increasingly important role in Presidential decisionmaking in time of crisis. During the major campaigns of the Civil War, Abraham Lincoln visited the War Department's telegraph office almost daily, often spending hours reading messages and sending orders to his generals. Later in the nineteenth century, during the Spanish-American War, William McKinley fashioned the first "war room" in the White House, equipping it with maps, telegraphs, and telephones to follow the progress of American troops in Cuba. On the eve of World War II, Franklin Roosevelt and Winston Churchill installed a direct telephone link between their respective offices in order that the two leaders of the Free World might communicate more freely.

By the time of the Cuban missile crisis in 1962, diplomatic and military communications had become a very complex enterprise involving, in addition to the control of nuclear weapons, intelligence gathering, public opinion at home and abroad, dozens of U.S. diplomatic posts worldwide, our NATO Allies and other heads of state, U.S. military forces at home and abroad and, of course, the Kremlin. When, in the course of the Cuban crisis, communications to one or more of these constituencies faltered, a young President Kennedy sent down orders to correct the problem. Thus, the birth of the National Communications System (NCS) and its journey through bureaucracy, budgets, technological change, evolving concepts, deregulation, and divestiture in the search for what President Kennedy in his August 21, 1963, memorandum described as "a unified Governmental communications system [that would] provide necessary communications for the Federal Government under all conditions ranging from a normal situation to National emergencies and international crises, including nuclear attack."

This study examines the origins of the NCS, charts its life through the 1960s and 1970s, and concludes with the status of the program as it has evolved in the 1980s.

## ACKNOWLEDGEMENTS

The author wishes to note his obligation and to express his gratitude to the following: Clarence E. Bowen, Department Head of the MITRE C<sup>3</sup>I Worldwide Communications Systems for constructive criticisms of the manuscript; Joan Richman, Group Leader, for her patient and continuing support and for assistance in understanding the complexities of Government operations; Maurice "Rick" Rifkin, long a colleague at MITRE, for reading the manuscript and for many invaluable criticisms and suggestions; Milt Weiner, also a long-time associate at MITRE, for his mini-seminars on satellite communications technology and for reviewing the manuscript; Don Kraft, formerly with the National Communications System, for alerting me to efforts by the Federal Government to organize and manage telecommunications in the late 1950s and early 1960s; A. L. "Lonn" Henrichsen, then of the National Communications System for suggestions concerning the Kennedy Administration's early responses to communication problems during the Cuban missile crisis; George W. White, one of the early staff members of the National Communications System, for assistance in gaining a better understanding of the early years of the NCS; Graham R. Lobb, Bellcore representative to the National Coordinating Center, for his thoughtful review of the manuscript and for his personal reflections on the Cuban missile crisis from his vantage point as staff communicator in the American Embassy in Paris in 1962; and Alexander B. "Chip" Komoroske of the National Communications System, a particular expression of gratitude for his encouragement and for sharing his rich store of corporate knowledge concerning the NCS. It was Chip's repository of historical documents and memories going back to the early 1960s which made much of this study possible. Lastly, the secretarial support provided by Deanna Phillips, along with her care and judgment, is greatly appreciated.

The selection of materials and the observations made along the way remain the responsibility of the author.

## TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT	iii
PREFACE	iv
ACKNOWLEDGEMENTS	v
CHAPTER I--YEARS OF OPTIMISM	1
1. The National Communications System is Born	1
2. Organization and Program Plans	3
3. Getting Under Way	5
4. The Planning Begins	6
5. The First Long-Range Plan	6
6. The Second Long-Range Plan	9
7. The Third and Fourth Long-Range Plans	15
8. Resistance to the NCS Program	16
9. An Interim NCS Plan is Proposed	18
10. Work on the NCS Program Suspended	20
CHAPTER II--YEARS OF CONTROVERSY	21
1. Critiques of the NCS, 1965-1969	21
2. The First Reorganization of the NCS, 1970: The Office of Telecommunications Policy	24
3. The NCS Reassesses Its Role	27
4. Conflicting Views Between OTP and NCS	28
5. The NCS Research Program During the 1970s	29
CHAPTER III--YEARS OF TRANSITION	35
1. The Second Reorganization of the NCS, 1978	35
2. A Revitalized National Communications System	36
3. A National Security Telecommunications Policy is Promulgated	37
4. A Revised NCS Agenda: Concept Plan and PD-53 Initiatives	38
5. Divestiture and the Changing Communications Environment	40
CHAPTER IV--TOWARD A NEW BEGINNING	41
1. The NCS in a Changing Environment	41
2. New NS/EP Telecommunication Entities: The ECWG and the NSTAC	41
3. The National Communications System in the Early 1980s	50
4. Work Continues on the Concept Plan and PD-53 Initiatives	52

## TABLE OF CONTENTS (Concluded)

	<u>Page</u>
CHAPTER V--THE NEW NATIONAL COMMUNICATIONS SYSTEM	57
1. The Third Reorganization of the NCS, 1984	57
2. The Revised NS/EP Telecommunications Mission and Organization	57
3. Implementing the New Executive Order (E.O. 12472)	60
4. NS/EP Telecommunications Planning Process	62
5. Funding NS/EP Telecommunications	62
CHAPTER VI--CURRENT (1987) NS/EP TELECOMMUNICATIONS PROGRAMS	67
1. National Level Program	67
2. Baseline Program	68
3. Judicial, Legislative, and Regulatory Developments	71
CHAPTER VII--SUMMARY AND OBSERVATIONS	73
CHRONOLOGY	79
BIBLIOGRAPHY	87
NOTES	95

## CHAPTER I

### YEARS OF OPTIMISM

In response to the order from the Oval Office to resolve the major communication problems which had surfaced during the Cuban missile crisis, the National Security Council, on October 26, 1962, formed the Interdepartmental Committee on Communications, headed by William H. Orrick, Jr., then Deputy Under Secretary of State for Administration. Its charter was direct and unambiguous: take whatever action was necessary to eliminate deficiencies in the Nation's communications systems supporting the President and other key decisionmakers, and do it quickly. To underscore White House concern, all agencies were instructed "to cooperate with Mr. Orrick in this mission to the fullest extent. If Mr. Orrick encounters difficulties or resistance, he will report at once to the President."<sup>1</sup>

For the next eight months, the Orrick Committee explored the problem of emergency communications. It confirmed the close relationship existing between the military, diplomatic, and civilian agencies of Government during a crisis, and concluded that the missing link in this interdependence was a common communications system. Thus, the recommendation that a survivable national communications system be established to serve not only the President but also the Department of Defense, essential diplomatic and intelligence activities, and key non-military civilian leadership functions.

The outcome of the Orrick Committee's investigation was the publication of National Security Action Memorandum 252 (NSAM 252) on July 11, 1963, and the Presidential Memorandum on August 21, 1963, which established the National Communications System.<sup>2</sup>

#### 1. The National Communications System is Born

The need for better management and utilization of the Government's telecommunication resources had been recognized before the Cuban missile crisis. Early in 1959, the Eisenhower cabinet discussed a detailed plan to build a unified Federal civil agencies communications system to better serve the Government in time of peace and in time of emergency.<sup>3</sup> Several months later, a report to President-elect Kennedy in December 1960, noted the lack of coordination in both the national and international communication arenas and urged a measure of consolidation. This latter recommendation led to the promulgation of Executive Order (E.O.) 10995, "Assigning Telecommunications Management Functions," on February 16, 1962, and the establishment of the position of Director of Telecommunications Management

(DTM) under the Office of Emergency Planning within the Executive Office of the President.

The goal of the new office was to centralize telecommunication policy leadership in the White House in order to achieve an efficient and well-planned national and international telecommunications program. It was to be a broad-based, policy-oriented effort in which the Director of Telecommunications Management, subject to the authority and control of the President, was responsible for coordinating the telecommunication activities of the executive branch. He was to promote and encourage the adoption of uniform policies and standards; develop data with regard to Government frequency requirements; encourage research and development; and contract for studies and reports. The planning, funding, building, as well as the operations of systems would, however, remain the responsibility of the individual agencies and departments.<sup>4</sup>

The Director was also made responsible for assigning all radio frequencies for use by the Federal Government and, as such, was given supervision of the Interdepartment Radio Advisory Committee (IRAC). Finally, in the event of war or emergency, the Director was delegated the responsibility for administering the President's telecommunications duties under Section 606 (now Section 706) of the Communications Act of 1934.<sup>5</sup>

The missile crisis of October 1962, however, led to a sudden and major shift in the Government's telecommunications reorganization effort. Instead of the long-range planning and policy-oriented approach, the emphasis suddenly shifted to more immediate communication needs. The experience of October 1962, said the President in his August 21, 1963, memorandum, now makes it imperative we take immediate steps to improve the communications support to all major functions of Government during crises. This goal was to be satisfied by establishing a unified Governmental communications system to be called the National Communications System. Such a system said the President, was to be established and developed by linking together, improving, and extending on an evolutionary basis the communications facilities and components of the various Federal agencies.

The objective of the NCS, continued the President, was to provide the necessary communications for the Federal Government under all conditions ranging from a normal situation to national emergencies and international crises, including nuclear attack. System design would concentrate on improving hardness, mobility, and circuit redundancy to provide the necessary level of survivability of essential communications.

Initial planning emphasis for the NCS would be on meeting the most critical needs for communications in our national security programs, particularly to overseas areas, where major problems surfaced during the height of the missile crisis. Then other Government needs were to be examined and satisfied as warranted but within the context of the NCS.

Although no complete definition of the NCS would be advanced at this time, it was generally assumed that the NCS would consist of the long-haul, point-to-point, trunk communications which could serve one or more agencies.

## 2. Organization and Program Plans

In addition to his functions outlined in E.O. 10995, the Director of Telecommunications Management was now made responsible for policy direction of the development and operation of the National Communications System. In this new role, the DTM was also given the title of Special Assistant to the President for Telecommunications, with responsibilities for advising the President on communication requirements for the National Communications System and for assigning NCS responsibilities to the implementing and using agencies. He was also made responsible for the identification of NCS communication requirements unique to the President and to ensure compliance with policy and guidance.<sup>6</sup>

Accompanying the President's August 21 memorandum were two attachments. One was entitled, "Procedures and Working Relationships for the NCS"; the other, "Statement of Initial Tasks for the National Communications System."<sup>7</sup> Both had been prepared by McGeorge Bundy, the President's National Security Advisor and driving force behind the National Communications System concept during its early years. The procedures document established the organizational framework and relationships within the executive branch by providing a two-tier NCS structure. At the Executive Office of the President level, as indicated previously, was the dual position of Director of Telecommunications Management and the Special Assistant to the President for Telecommunications.<sup>8</sup> At the second tier--the department level--the President named a single Executive Agent for the NCS, designating the Secretary of Defense to fill that role. As the Executive Agent, the Secretary of Defense was given responsibility for the design of, and planning for, the National Communications System. He was to assign implementation responsibilities to user agencies; allocate, reallocate, and arrange for restoration of communications facilities to authorized users; develop operational plans and provide operational guidance with respect to all elements of the NCS; and, lastly, carry out long-range planning and research to ensure that the NCS meets future Government needs.

To assist the Executive Agent, two positions were established within the Department of Defense. One was the Assistant Secretary of Defense for Administration who served as the principal staff assistant to the Executive Agent; the other was the Manager of the NCS, an assignment given to the Director, Defense Communications Agency. The Manager was responsible for implementing the President's August 21, 1963, memorandum. To effect this role, the Manager was to draw upon the DCA staff and work in close

coordination with representatives of the agencies whose communications assets would comprise the NCS. The General Services Administration (GSA), the Department of State (DOS), the Federal Aviation Administration (FAA), and the National Aeronautics and Space Administration (NASA), which, in addition to the Department of Defense (DOD), were expected to supply the bulk of the NCS assets, were each requested to designate a representative to work with the NCS Manager.<sup>9</sup>

Other executive offices and agencies were also assigned key roles in the procedures document, including the President's National Security Advisor, the Director of the Office of the Science and Technology (now the Office of Science and Technology Policy), and the Director of the Bureau of the Budget (now the Office of Management and Budget). The Special Assistant to the President for Telecommunications was instructed to work closely with all three of these officials. In addition, the Special Assistant was to provide for interagency consultation, since building the system required the assets and cooperation of a number of Federal agencies and departments. In the critical area of funding, the Bureau of the Budget was to prescribe general guidelines and procedures for financing the NCS within the budget framework of each participating agency. As envisioned at this time, the individual agencies would be responsible for funding and building specific portions of the system.<sup>10</sup>

The NCS development program, again according to the procedures document, would stress two system objectives: interconnectivity (or linking together of communications facilities and components) and survivability (achieved through hardness, mobility, circuit redundancy, and standardization). An early policy decision, which was to be a source of controversy throughout the life of the National Communications System, was to separate program planning and design from funding and implementation. NCS-designated assets would be operated and funded by the operating agencies, including improvements and modification required for the NCS. Program planning, however, would originate with the Manager, NCS, with advice from the operating agencies.<sup>11</sup>

The second attachment, the "Statement of Initial Tasks," contained ten tasks which were assigned to the Manager of the NCS by the Executive Agent. This work program set the direction of the NCS agenda for years to come. Task 1 directed the selection of communication assets to be included in the NCS, while Task 2 was to identify the Government departments or agencies responsible for installing, operating, maintaining, and modifying (including budget and funding responsibility) each subsystem or component. Tasks 3 and 8 called for plans detailing organizational arrangements for operating and managing the National Communications System, including a circuit restoration priority system. The NCS planning development process was described in Task 4, calling for the preparation of an initial near-term plan and a series of annual long-range plans detailing the evolution of the NCS. Task 5 recognized the importance of

standards in system development, while Task 6 called for a plan to accomplish the assignment of radio frequencies. Somewhat surprisingly, Task 7 scheduled the completion of an NCS exercise and test plan by December 1963, long before any final system concept was anticipated. Task 9 required a work program to carry out a range of research and development projects, an area that was to expand greatly over the years. The final task, Task 10, addressed an important in-house issue--the organization and staffing of the NCS. This last requirement was to be addressed often over the next 25 years as the program grew in scope and complexity.<sup>12</sup>

### 3. Getting Under Way

By the end of August 1963, one of the President's emergency communication goals arising out of the Cuban missile crisis had already been realized with the opening of the Washington-to-Moscow Hot Line. This link filled a vital gap in leader-to-leader communications by providing a direct teletype circuit between Washington and Moscow to be used by the two heads of state in the event the potential for nuclear war reached a critical stage. The opening of the Hot Line on August 30, 1963, coming as it did as the NCS was getting organized, stirred expectations for the early completion of the NCS, which was now seen as the essential national counterpart of the Washington-Moscow Hot Line. Yet before work on the NCS could proceed, the President had to fill the vacancy caused by the resignation of the Director of Telecommunications Management. As an interim step while he searched for a replacement, the President designated his science advisor, Jerome B. Wiesner, as Acting Special Assistant to the President for Telecommunications, as well as Acting Director of Telecommunications Management. Shortly after his dual appointment in the fall of 1963, Wiesner began issuing guidance to the Executive Agent and to the agencies assigned NCS responsibilities.<sup>13</sup>

In response to assignments forthcoming from the White House, the newly appointed Executive Agent, Secretary of Defense Robert S. McNamara, on October 5, 1963, issued an order assigning NCS responsibilities and defining an organization within the Defense Department.<sup>14</sup> He named Solis Horwitz to the position of Assistant to the Secretary of Defense for the National Communications System. As principal advisor to the Secretary of Defense on the NCS, it was Horwitz's responsibility to effect overall coordination, provide general guidance, and review the progress of the NCS. For the key role of Manager of the NCS, the Defense Secretary selected Lieutenant General Alfred D. Starbird, Director of the Defense Communications Agency. As Manager of the NCS, General Starbird became the principal technical planner responsible for designing the system as well as allocating circuits and arranging for circuit restoration. He was also directed to develop plans for the operational management of the system

(Task 3) and to issue the necessary instructions to accomplish this goal.<sup>15</sup>

The management approach adopted by General Starbird was to distribute NCS tasks throughout the DCA organization, rather than establish a separate NCS element. This mode of operation continued until January 1966 when a separate NCS unit was established within the Defense Communications Agency. During the years 1963 to 1965, the NCS operating agencies participated in the NCS process through liaison offices located in the parent agency. It was not until after the reorganization in 1966 that the Major Operating Agencies assigned permanent representatives to the Office of the Manager, NCS, to work with and under the Manager.

#### 4. The Planning Begins

One reason for designating the Secretary of Defense as Executive Agent was to obtain the benefits of the Defense Department's unified technical planning and operations. The Executive Agent's task was to design, for the approval of the President, a National Communications System taking into consideration the communications needs and resources of all Federal agencies. This was to be accomplished in steps, first by preparing an initial near-term plan followed by a series of long-range plans published annually. Contained in these plans were to be the objectives and requirements of the NCS, as well as a list of the communication assets to be included in the NCS. As planning progressed, it was anticipated that the NCS would identify requirements not fully met and recommend modifications and improvements in agency assets, until it arrived at a consensus system concept that could be approved by the President. All major improvement projects were to be financed by the individual operating agencies. Issues of policy and differences of views between agencies were to be identified and brought to the attention of the White House.<sup>16</sup>

Between October 1963 and July 1971, the Executive Agent prepared the initial near-term plan and five long-range plans. That the NCS did not produce a long-range plan each year as originally planned is testimony to the complex technical and institutional environment, and the delays and disagreements that the Manager of the NCS encountered along the way.

#### 5. The First Long-Range Plan

Planning for the National Communications System had only begun when the nation suffered a tragic loss in the assassination of President Kennedy on October 22, 1963, in Dallas, Texas. Although not apparent early on, the loss for the Nation was also a loss for the NCS

program since the President was clearly its leading proponent. Nonetheless, work on the communications program moved forward in the fall of 1963 with the Manager of the NCS laying plans for an integrated system in which the various Government long-haul communications systems would be linked together procedurally and technically. Such a system, said the Manager, would be comprised of common-user networks, dedicated networks, and direct "hot-line" circuits. The kinds of communications included telephone, message, facsimile, and data carried over an assortment of facilities such as radio, microwave, landline, and submarine cable. When completed, the National Communications System would provide capabilities for the command and control of our military forces, continuity of Government, and the management of foreign crises. Networks devoted to tactical and other limited or local purposes were specifically excluded. Domestic communications needs of the Federal agencies dealing with civil affairs were to be met by the Federal Telecommunications System (FTS), which had been established in 1961 and incorporated into the NCS by the August 21 Presidential memorandum.<sup>17</sup>

Nothing specifically was said in the President's 1963 memorandum about the possible relevance to the NCS of the new art of satellite communications, but the President did recognize the possibility, directing his Special Assistant to aid him in regard to his responsibilities under the Communications Satellite Act of 1962.<sup>18</sup>

An early planning objective was to identify the agencies and assets comprising the system. The Near-Term Plan, submitted in October 1963 and in revised form in March 1964, provided a preliminary look at the communications assets of several Federal agencies. The initial list of assets appeared in the First Long-Range Plan published in August 1964. In this document, the concept of Major and Minor Operating Agencies was established, with the Department of Defense, the General Services Administration, the Department of State, the Central Intelligence Agency, the Federal Aviation Administration, and the National Aeronautics and Space Administration comprising the Major Operating Agencies, and the departments of Treasury, Commerce, and Interior, and the Federal Communications Commission identified as the Minor Operating Agencies.<sup>19</sup> In all, a total of 32 communication networks operated by 5 Major Operating Agencies were identified as constituting the NCS inventory.

The First Long-Range Plan also drew conclusions as to the basic configuration of the NCS by recommending that (1) the switched system of the Defense Communications System (DCS) should be developed as the survivable secure component of the National Communications System and (2) the GSA Federal Telecommunications System voice and ARS networks should serve the needs of the civilian agencies of Government for matters other than national security. The plan also recommended that provisions be made for the interchange of traffic between the voice and record components of the DCS and FTS systems.<sup>20</sup>

Looking forward to the next long-range plan, the Executive Agent listed several requirements that needed to be addressed, including communications survivability plans and systems planning and cooperation among the Major and Minor Operating Agencies. He also emphasized the importance of developing the final system concept called for by the President in his August 1963 memorandum. As part of such a plan, the Executive Agent directed the Manager of the NCS to prepare instructions outlining procedures for processing NCS telecommunications circuit requirements under normal and emergency conditions. As an interim measure prior to the building of a National Communications System, the Executive Agent designated the existing DCA Operational Center Complex to serve as the NCS operational center for coordinating emergency actions required of the NCS.<sup>21</sup>

Before submitting this First Long-Range Plan, the NCS Manager addressed two issues raised by Major Operating Agencies. The first had to do with the desire of the GSA to upgrade the survivability of the FTS. The Manager ruled against this suggestion, noting cost and the fact that AUTOVON and AUTODIN had already been selected as the survivable and secure portion of NCS. A second issue involved the Defense Department's refusal to commit itself to any plan that allocated circuitry to other NCS operating agencies in advance of an emergency. The Manager's reply was that the executive branch could not plan or achieve an efficient and economical NCS unless all operating agencies were willing to make necessary commitments.<sup>22</sup>

It would be more than a year before the Special Assistant to the President for Telecommunications completed his review. Part of the delay could be attributed to the search for a permanent Director of Telecommunications Management (DTM). Another factor was the controversial nature of the NCS program itself and the challenge it presented to agency prerogatives and communication charters. Finally on October 31, 1965, some 15 months after the plan had been submitted, General James D. O'Connell, the recently appointed DTM and Special Assistant to the President for Telecommunications, announced his approval of the First Long-Range Plan, calling it an important step on the road to a final NCS concept plan.<sup>23</sup>

Approved by the White House were the designation of the Major and Minor Operating Agencies and the communication assets describing the NCS. The selection of the Defense Communications System as the national security component of the NCS, noted the Special Assistant, was in agreement with National Security Action Memorandum 166 (NSAM 166), dated June 25, 1962, in which the President approved an earlier committee report recommending "that the National Military Command System (NMCS) now being planned should be recognized as, and designed to be, the basis for such a unified, survivable national communications system."<sup>24</sup> Also approved was the designation of the Federal Telecommunications System to serve the non-national security requirements of the Federal Government. Together, these two systems--the DCS and the FTS--would comprise the basic system

components. In approving the FTS role, the Special Assistant also addressed the General Services Administration's desire that the survivability of the FTS be enhanced. He noted that while E.O. 11093 of February 26, 1963, and the Presidentially approved National Plan for Emergency Preparedness of December 1964 had assigned major emergency communications responsibilities to the GSA, the National Plan also stated that these GSA responsibilities were to be compatible with plans for the NCS.<sup>25</sup>

Beyond designating agencies and assets and setting forth a basic system configuration, the Special Assistant also took note of other recommendations in the First Long-Range Plan. The concept for meeting critical communications requirements was approved, as were proposals from the various operating agencies to increase mutual communications support. In reference to funding, the Special Assistant noted that the Bureau of the Budget was preparing instructions to be used by the agencies in preparing budgets.

As to the next long-range plan, the Special Assistant urged the staff of the National Communications System to prepare plans for the management of the surviving assets of the National Communications System by the Executive Agent, as well as plans for interconnectivity and priority preemption. But it was the need for a definitive system concept that concerned the Special Assistant most, and to this end he urged the Executive Agent to move decisively towards the "progressive evolution of the NCS components to form the single unified system approved by the President in NSAM 166 and further announced and extended in the Presidential memorandum of August 21, 1963."<sup>26</sup>

## 6. The Second Long-Range Plan

The concept of a single unified system was strongly defended by President Kennedy's successor, Lyndon B. Johnson. In promulgating the 1964 National Plan for Emergency Preparedness, President Johnson stated that "there will be a single, unified communication system for use by the Federal Government under any condition, normal or otherwise." The National Communications System was named to meet this requirement and was defined in the 1964 National Plan as "the unified Governmental communications system, responsive to a single Executive Agent, derived from linking together, improving, and extending the communication facilities and components of the various Federal agencies."<sup>27</sup>

Buoyed by this endorsement from the White House, the NCS launched into the preparation of the Second Long-Range Plan, hoping this time to achieve a final concept which the President could approve. The second plan, however, was more than two years in preparation during which the NCS was repeatedly buffeted by arguments over roles and missions and prerogatives. The depth of these interagency differences, as well as the

technical complexities of the concept itself, led the Manager of the NCS, in January 1966, to form a separate NCS organizational element within the Defense Communications Agency. Under this new arrangement, an Office of the Manager, NCS (OMNCS), was created, headed by a Deputy Manager and supported by two Assistant Deputy Managers, one for plans, the other for operations. By the close of 1966, the Assistant Manager for Plans had 17 full-time staff members and the Assistant Manager for Operations has 4. Included in these numbers were representatives from the FAA, NASA, GSA, and DOS working full-time under the direction of the Manager of the NCS.<sup>28</sup>

With a separate NCS staff organization, supported by representatives from the Major Operating Agencies, the Manager of the NCS was now in a better position to address the controversies building around the NCS. The proposal generating the greatest controversy was the plan to build a single or unified NCS in which the surviving components would be managed and operated by the Executive Agent, as specifically stated in the 1964 National Plan for Emergency Preparedness. This approach had sent shockwaves throughout the Major Operating Agencies, who saw it as a direct invasion of their own communications charters.

The issue of "who's in charge" had been first raised in 1964. At that time the Executive Agent suggested that a study be conducted of Presidential directives and executive orders assigning responsibilities for providing emergency communications as a way of sorting out responsibilities among agencies. This proposal, however, brought a strong rejoinder from the GSA Administrator who wrote to the President's Special Assistant challenging the Defense Department's position on this issue as well as posing a number of other questions concerning the Executive Agent's plans for the NCS. The Special Assistant's response was a lengthy review of the philosophy and objectives of the NCS. If it did not resolve the dispute, it at least made clearer the assumptions on which the Executive Office of the President was to operate throughout the remainder of the 1960s.

The starting point of the National Communications System, said the President's Special Assistant to the GSA Administrator, was "to provide maximum integration and utilization of those communications assets which are necessary to protect our national security...."<sup>29</sup> These assets were to be drawn from two sources. The first was the national security communications assets operated by the departments of Defense and State, the CIA, NASA, and the FAA. The second source was from the civilian side of the Federal Government, particularly GSA's Federal Telecommunications System. With some design and procedural changes, said the Special Assistant, the FTS voice and record systems could "add very significantly to the capabilities, redundancy and reliability of the NCS."<sup>30</sup> In regard to GSA's concern over NCS's proposed plans for controlling other agency networks, the Special Assistant reminded the GSA that the August 21, 1963, memorandum contemplated that each agency would continue to operate its own

networks on a day-to-day basis, even though a particular network had been designated an NCS asset. At the same time, however, agency plans for NCS-designated networks were to be submitted to the Executive Agent for his review and recommendations. The Acting Special Assistant to the President also noted that the Executive Agent would be the instrument for carrying out Presidential policy by prescribing operating standards and practices and by allocating and arranging for restoral of communications facilities within the NCS.

With respect to the questions raised by GSA over a review of executive orders and Presidential instructions concerning the organization and provision of emergency communications by the various Government agencies, the Special Assistant felt that there did appear to be ambiguities and possible duplication. A useful purpose would be served, therefore, were these orders and instructions reviewed in their entirety. In cooperation with the Director of the Office of Emergency Planning and the Director of the Bureau of the Budget, the Special Assistant initiated a review of this matter.<sup>31</sup>

In looking to the future, the Special Assistant concluded his remarks to the GSA Administrator by observing, rather prophetically, that "The establishment of the NCS is a major undertaking in Government which will occupy the best of our abilities for a long time to come if it is to successfully meet all the objectives established by the President. The contributions that each organization can make to this success are much more important than the rights, prerogatives or ambitions of the agencies concerned."<sup>32</sup>

In resuming work on the second long-range plan, the Executive Agent felt the need to revise the NCS mission statement in order to meet some of the objections which had been raised. The new mission read:

*NATIONAL COMMUNICATIONS SYSTEM: That telecommunications system which results from joining together technically and operationally the separate telecommunications systems of the several executive branch departments and agencies which have a significant capability for providing telecommunications. The facilities will continue to be operated and funded by their respective parent agencies to serve agency needs and such needs of other agencies as have been accepted for fulfillment pursuant to cross-service or mutual support arrangements. In addition, the separate agency systems will be responsive to plans, programs, standards, and procedures developed by the Manager, NCS, in coordination with the Operating Agencies. The objective is to insure that the important Federal telecommunications resources are improved progressively and so interlinked that the aggregate will function as if it were a coherent single system both for the*

*possible emergency situation, and for the effective and economical satisfaction of day-to-day telecommunications need of the Federal Government.*

Armed with this new mission statement, the NCS resumed work on the next plan grouping tasks under three headings: survivability, interconnectivity, and unified planning. Survivability was defined as the need for sufficient primary or alternative routes to handle essential traffic following a nuclear attack, supported by an operational management system and a precedence system to provide for the movement of information according to an assigned priority. The goal of the second study task, interconnectivity, was to progressively improve and link together key NCS networks so that the NCS would function as a "coherent single system." The last program element was unified planning. From the outset, the Special Assistant to the President for Telecommunications urged the Executive Agent and the Manager, NCS, to develop a close rapport with the operating agencies, and to encourage the sharing of communications plans as a means of facilitating integration.

The survivability task examined four areas: identification of present resources, a restoration priority system, the operational management of the NCS, and research and development. At this point in the mid-1960s, there was no database which adequately described the communications resources of the various agencies. Thus, a program was begun to inventory networks and facilities, particularly the major switched networks. In the area of restoration priority, the National Communications System issued NCS Memorandum No. 1-64, "Restoration Priority and Message Precedence Systems for the NCS," on September 21, 1964. This memorandum provided for the initial categorization of circuit requirements by NCS operating agencies. It was implemented on December 15, 1965.

The third area under survivability--the operational management of the NCS--had been one of the charter objectives of the August 1963 memorandum setting up the NCS. Task 3 of that document had directed the preparation of proposals for the "organizational arrangements and necessary procedures for the NCS which will accomplish effective allocation, reallocation, and arranging for restoral of circuits and channels and other assets of the NCS...."<sup>33</sup> This statement was further expanded in the 1964 National Plan for Emergency Preparedness which called for a central mechanism to control, coordinate, and direct the National Communications System.<sup>34</sup> As a step toward this goal, the Executive Agent, NCS, on July 28, 1965, published NCS Instruction 45-1, "NCS Operations Center Organizational Arrangements and Structure." In it the Executive Agent designated an NCS Operations Center (NCSOC), collocated with the DCA Operations Center. The function of the NCSOC was to serve as an information center through which the Manager, NCS, could be kept informed of significant events affecting the NCS. It would also be a 24-hour point-of-contact for the NCS operating agencies. The instruction also created the NCS Emergency Action

Group (NEAG), which would convene in the NCSOC at the call of the Manager to represent their respective operating agencies (DOD, DOS, FAA, GSA, and NASA) regarding emergency communication requirements. This group was to assist the Manager in assessing requirements and provide information and recommendations concerning the availability of communications resources from their respective NCS-designated communications systems.<sup>35</sup>

Throughout the remainder of the 1960s, the NCS Manager issued additional directives detailing technical control procedures, performance objectives for the NCS, priority restoration procedures, a message priority system, and technical standards.<sup>36</sup> Overall, however, these actions were only marginally significant, since no agreement had been reached on system design or system management.

The last area under survivability--research and development--was receiving increased attention, particularly in light of the advances being made in satellite communications and the implications of those advances for overseas communications. The development of the Interim Defense Satellite Communications System (IDSCS) in the early 1960s, followed by the Defense Satellite Communications System in 1965, prompted the Executive Agent to enter into conversations with the Communications Satellite Corporation on behalf of the NCS.<sup>37</sup> Another area of growing concern was the electromagnetic pulse (EMP) phenomenon. Nuclear bursts had introduced EMP effects of a magnitude heretofore unknown, thus prompting an intense interest in measuring these effects and incorporating the findings into the NCS design parameters. A third research and development area of interest at this time was electrical power and the requirement for emergency power to maintain communications in the event of a power blackout, such as occurred in the Northeast United States in 1965.

The interconnectivity tasks assumed that the National Communications System would be achieved by interconnecting two or more of the major switched networks serving Government agencies. The ideal was nonpre-emptible service and the interchange of traffic without manual reprocessing. Thus, there was the need for not only physical interconnection but also compatibility in operating procedures and routing instructions. During the 1960s, the primary attention was directed at interconnecting the voice and record networks of DOD's Defense Communications System (AUTOVON and AUTODIN) and GSA's Federal Telecommunications System (FTS voice and ARS), and on the operating procedures to effect these changes. Steps were also taken to interconnect the Diplomatic Telecommunications System with the Defense Communications System. Another approach to interconnectivity initiated at this time was the development of technical and procedural standards to ensure greater compatibility. This program (Task 5 of the original ten tasks) would continue throughout the 1970s and 1980s and would become the focus of NCS effort to enhance interoperability among key networks. Other interconnectivity studies begun in the 1960s included advanced switching technology and digital communications.

The only task under the third research area, unified planning, was the preparation of annual long-range plans prepared by the NCS staff, in coordination with representatives from the operating agencies. While projects under the other two research areas--system survivability and system interconnectivity--appeared to be proliferating, there was a noticeable lack of enthusiasm on the part of the operating agencies to enter into unified planning with the NCS. At least not until they understood better what impact the NCS, as a communications system and as an operating agency, would have on their own networks. In the meantime, the Manager, NCS, began identifying other examples of joint actions outside of the NCS framework as a way of encouraging greater cooperation among the agencies. One example was the Washington Area Secure High Speed Facsimile System (WASHFAX), which interconnected a number of stations within the region. Another was the Emergency Employment of Radio Systems project, which was evaluating the usefulness of Government and non-Government radio systems as an emergency back-up to the NCS.

By the time the Manager, NCS, and his staff had completed the Second Long-Range Plan in the summer of 1966, it was clear that they had raised more questions than they were answering. Compounding the problem was the rapidly changing strategic environment. The large increase in the variety and numbers of nuclear weapons and the emergence of the doctrine of "controlled response" were creating requirements for the near real-time transfer of large volumes of information, requirements which were making the design of the National Communications System increasingly complex.

Despite the growing complexity of the task, however, the second plan was forwarded to the White House in July 1966 in a mood of high optimism--if for no other reason than the hope that the host of problems besetting the program might soon be history. This second plan, enthused the Executive Agent, "reflects the evolution of the NCS from a bold concept and a fledgling organization, i.e., one of a telecommunications super-management group cutting across agency lines, to an effective, viable organization. Its impact is being felt in terms of increased communications flexibility, survivability, and economy, and in the creation of an atmosphere of mutual support and joint planning within the Departments and Agencies of the executive branch."<sup>38</sup>

The Special Assistant to the President for Telecommunications received the Second Long-Range Plan and approved it as a planning document. However, he could not join the Executive Agent and the Manager, NCS, in their unalloyed enthusiasm over progress to date. Steps toward developing an acceptable system concept, said the Special Assistant, were encouraging, and he commended the listing of research tasks by category as a promising device for identifying, analyzing, and resolving many of the technical, management, and financial problems confronting the NCS. Nonetheless, the urgent need was for a viable, implementable system concept, one which the President could approve. In the absence of such a plan and

apparently despairing of seeing one in the near future, the Special Assistant called upon the Executive Agent to undertake, without further delay, a separate study to provide the President with an interim emergency communication capability for the 1970s.<sup>39</sup>

In making this new assignment, the Special Assistant to the President for Telecommunications acknowledged the host of underlying statutory problems confronting the NCS. "In the examination of the spectrum of available options," said the Special Assistant, "due considerations should be given to the statutory responsibilities and managerial prerogatives of the several Operating Agency heads. However, should these factors prove to inhibit the orderly development of the future system envisaged, this fact should be reported."<sup>40</sup> The Executive Agent's response to this new assignment was to form an ad hoc NCS working group to begin work immediately on the interim plan. In the meantime, work would continue on developing the annual NCS long-range plans.<sup>41</sup>

## 7. The Third and Fourth Long-Range Plans

The Third and Fourth Long-Range Plans, published in 1968, were similar in content as well as in size (over 300 pages each). Both documents reaffirmed earlier NCS system configuration proposals identifying the Defense Communications System and the Federal Telecommunications System as the basic system elements. However, they had little to report on the progress toward interconnecting these two components, as agency rivalries and uncertainties surrounding the role of the NCS went unresolved. The three-part research program of survivability, interconnectivity, and unified planning was to be found in the new plans, with survivability studies addressing voice/record precedence systems, coterminus U.S. networks, emergency operations, electromagnetic pulse, continuity of operations, and restoration priority systems. In the area of interconnectivity, there was heightened interest in technical solutions to network linking and in the development of hardware, software, and procedural standards. The third task area, unified planning, continued to lag behind. In order to develop the full potential of this function, the Executive Agent again urged the Manager of the NCS to promote "an atmosphere of mutual support and joint planning" among the operating agencies.

Providing cost and funding information was added to the planning process at this time as a result of the Bureau of the Budget's decision, in September 1966, to apply its planning/programming/budgeting approach to the NCS program. Beginning with the Third Long-Range Plan, each operating agency was required to submit cost information on changes and improvements in their systems as a result of the NCS program.<sup>42</sup>

Also included, for the first time, was a list of modification projects being implemented by the operating agencies that had a potential

bearing on the development of the NCS. In addition, service improvements that could be attributed to the presence of the NCS program were flagged. The WASHFAX system, tidal-wave warnings, and communications tests were among the improvements identified. Considerable attention was also directed at important trends in telecommunications technology, particularly those concerned with digital communications and the "marriage" of computers and communications.

The Third Long-Range Plan was forwarded to the White House in March 1968, while the fourth plan, which contained only minor changes and additions, was submitted the following December. Despite the time and effort put into the documents, neither produced a final system concept for Presidential approval. In view of this failure, the President's Special Assistant renewed his call for an interim NCS System Concept Plan for the 1970s. Such a plan, said the Special Assistant, was now needed "as a matter of urgency."<sup>43</sup>

#### 8. Resistance to the NCS Program

Work on the interim NCS Concept Plan for the 1970s, which had commenced in 1967, led to a draft plan in early 1968. Again, as in the case of the annual plans, there was resistance from key agencies. Faced with the possible defeat of this second effort, the Manager of the NCS took it upon himself to offer each agency an in-depth review and assessment of the role and mission of the NCS, much in the manner that the President's Special Assistant for Telecommunications had done in January 1964. Something had to be done to move the program off dead center.

The basic Presidential charter, said the Manager in identical letters to each of the Operating Agencies, called for a unified Governmental communications system which would be established and developed by linking together, improving, and extending, on an evolutionary basis, the communications facilities and components of the various Federal agencies. The first step toward this goal required that there should be some degree of integration now; the second, an evolutionary interconnection capability worked into the system at the earliest feasible moment; and third, "a capability for complete interoperability (but not necessarily exercised on a continuous basis) at some point in the future."<sup>44</sup> He continued:

*The NCS, as originally activated, consisted of several completely separate systems and/or networks with a minimal ability to intercommunicate. This situation appears to have been the very reason for the establishment of the NCS. It is quite clear that precipitous steps to "unify" these systems would have been disruptive and very expensive. It is equally clear, however, that there are certain essential*

steps which should be completed promptly to bring these systems toward greater compatibility so that they could, in fact, "provide necessary communications for the Federal Government under all conditions ranging from a normal situation to national emergencies and international crises including nuclear attack...."

As to the operation of the NCS, I do not foresee any significant changes in the current responsibilities of either the Manager or the Operating Agency with respect to the actual day-by-day operation of the existing component networks of the NCS. I do not seek additional responsibilities at this time for at least two reasons. First, considering the major expense and trauma involved in a major change at this time, I do not believe it to be a desirable move; and secondly, I neither have, nor anticipate having, adequate resources to undertake day-by-day operational control of the several networks.

Recognizing our common charter, however, for responsiveness now to emergency situations, the commonality of standards, methods, and procedures must be further developed and implemented as rapidly as possible. They must continue to be exercised within the NCS and refined constantly to insure a knowledgeable and practical response to other-than-normal conditions. Sufficient current status information will also need to be provided on a continuing basis to the Manager, so as to be available in case of emergency.

Since we are in fact charged with the provision and operation of a "unified" system, our longer range objective must be the achievement of such a system.... NCS common concepts, doctrine, system design, planning, and engineering will form the path which all component network development must follow in departing from the present fragmentation to arrive at a National Communications System which provides the interconnection and ultimately the interoperability which the President should expect. In this regard, I intend to develop, in coordination with the NCS Operating Agencies, specific design concepts, standards, and criteria and technical and operational system planning guidance which will establish the parameters for NCS design, implementation and operation for the future NCS configuration. Necessarily, provisions must be made for component system plans to be checked against the NCS system design guidance to insure consonance and compatibility.

*Provision must also be made for the establishment of an overall implementation schedule.*

*In the aggregate, the steps outlined above will develop and specify the role which I will perform as Manager, NCS, in accordance with my current directives. Hopefully, agreement can be reached among all NCS Operating Agencies concerning current actions and the broad outlines of concept and planning. In the longer term field of technical system standards and design, leading to the future NCS, the engineering and feasibility aspects assume greater importance and some considered technical judgments may be essential, while at the same time satisfying the mutually agreed operational requirement. It seems to me that the actions I have outlined above will lead us to a "unified" system which takes into account the National requirement as well as the requirements of each of the component members of the NCS.<sup>45</sup>*

The letter could not have been reassuring to many of his readers. To carry out the Presidential mandate to create a unified system meant no longer "business as usual," but a radical departure from many separate systems to the adoption of "common concepts, doctrine, system design, planning, and engineering (to) form the path which all component network development must follow in departing from the present fragmentation to arrive at a National Communications System which provides the interconnection and ultimately the interoperability which the President should expect."<sup>46</sup> The only measure of reassurance offered was that the agencies would retain day-to-day operational and management control over their individual systems. Beyond that, there was a collective need to be responsive to emergency situations. To that end, the Manager, NCS, announced plans to develop, in coordination with the operating agencies, the necessary "design concepts, standards, and criteria and technical and operational system planning guidance which will establish the parameters for the NCS design, implementation and operation for the future NCS configuration."<sup>47</sup>

## 9. An Interim NCS Plan is Proposed

The report detailing an interim NCS plan for the 1970s was completed in the summer of 1968. In it, the task force described an "Integrated Government Communications System" under a single manager which provided for a single unified Government communications system consisting of an integrated trunking system and circuit switching services for all NCS networks. In addition, the existing networks were to be reconfigured ultimately on a basis other than current proprietorship; that is, they were to be reconstructed into multipurpose and special-purpose networks on

the basis of function or service performed. Where feasible, the special-purpose networks were to interface with and make use of general-purpose networks to assure an unimpeded flow of traffic.<sup>48</sup> The only thing lacking was an operational control center that, according to the NCS guidance documents, would be under the aegis of the Executive Agent.

The report, which had been approved by 10 of the 11 NCS agencies, was forwarded to the Manager without the approval of the Defense Department representative.<sup>49</sup> It was DOD's position that it was premature to adopt such a sweeping concept without further study of alternatives. The Executive Agent (Secretary of Defense) agreed with the DOD staff position and forwarded the report to the Special Assistant to the President for Telecommunications without his approval. In his letter of August 12, 1968, to the President's Special Assistant, the Executive Agent expressed his desire that before making any final decision on the acceptability of the proposal, he wanted to see the results of an AT&T study on AUTOVON/FTS integration.<sup>50</sup>

Responding to the Executive Agent, the Special Assistant to the President agreed that it was perhaps too early to decide on a specific NCS architecture without further study. However, he urged the essential logic that lay behind the report. "It seems clear," stated the Special Assistant,

*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 recommend, therefore, that the initial thrust of the follow-on studies be directed toward the analysis of the technical and operational feasibility and cost-effectiveness of this alternative.*<sup>51</sup>

By this time (October 1968), however, the Special Assistant was beginning to entertain doubts about achieving a unified NCS system, doubts which he expressed to the Executive Agent the following summer: "Although unanimous agreement on a system concept and its managerial arrangement would be desirable," remarked the Special Assistant, "I realize that it may not be possible. In either case, your recommendations together with any differing views, are solicited after reasonable attempts have been made to resolve any differences."<sup>52</sup>

Faced with the need to consider other alternatives, the Manager of the NCS, in his capacity as Director, DCA, authorized the expenditure of DCA resources to have an independent contractor examine the interim NCS Concept Plan. This study, begun in late 1968 and completed in the fall of 1969, offered corroboration of the original task force concept. Instead of an Integrated Government Communications System, however, the study

proposed a "National Communications Network," which would be the equivalent of a Government common carrier designed to satisfy the overall trunking needs of the Government.<sup>53</sup>

The staff of the Manager of the NCS continued work on the 1970s interim plan, detailing a conceptual framework for the "controlled evolution" of the NCS. Central to the proposal was the National Communications Network composed of Government-controlled nodal points, associated circuit switches, and long-haul transmission facilities configured to provide the bulk of the trunking requirements of the Government on a worldwide basis. The entire enterprise would be under the direction of a Federal Committee for National Communications System. This Committee, consisting of representatives from Federal departments and agencies, including the NCS Operating Agencies, would be responsible for the evolutionary development of the NCS leading to an unified Governmental communications system.<sup>54</sup>

#### 10. Work on the NCS Program Suspended

By early 1971 it was apparent to the Manager of the NCS and to others that further work on a 1970s NCS interim system concept or the annual long-range planning documents was futile. In the fall of 1970, the House Committee on Appropriations had deleted all funds for an NCS planning effort, noting that previous efforts had produced few positive results. What was really needed, concluded the Committee, "was a decision to either reorganize the existing management structure of the system and grant it sufficient authority to enforce policy decisions needed to make the system operate effectively or abandon the entire concept."<sup>55</sup> This action by Congress, plus continued opposition from the Major Operating Agencies, prompted the ad hoc study group working on the NCS interim concept plan for the 1970s to reassess its present role. "It is recognized," said the study group, "that for the foreseeable future, widely divergent organizational missions, imposing unique or special requirements, may effectively preclude both the possibility and desirability of total integration of all the telecommunications assets of the several federal entities into a unitary national system."<sup>56</sup> In September 1971, the NCS staff and Major Operating Agency representatives met and agreed to postpone work on both the interim plan as well as the next NCS long-range concept plan until the growing debate over the NCS was resolved.<sup>57</sup>

## CHAPTER II

### YEARS OF CONTROVERSY

The great expectations of a "unitary national system" evolving, as Secretary of Defense McNamara had confidently predicted in 1966, from a "bold concept to a growing organization, cutting across Federal Agency lines, and (with) an effective and viable management structure" finally collapsed in the crossfire of departmental and agency disagreements over roles, charters, and system concepts. These disagreements culminated in a round of high-level Government critiques of Federal telecommunications management in general and of the NCS in particular.

#### 1. Critiques of the NCS, 1965-1969

Calls for a comprehensive review of Government roles and responsibilities in communications management continued to be heard from various sources, both congressional and private, even after the Office of the Director Telecommunications Management and the post of Special Assistant to the President for Telecommunications had been created in the early 1960s. In 1965, the Holifield Committee of the House of Representatives criticized the White House arrangement for not giving the Director of Telecommunications Management a wider range of powers that would have enabled him to take the lead in developing the new field of satellite communications. The report recommended that the office of the DTM be strengthened by removing it from the Office of Emergency Planning and reconstituting it as a separate entity in the Executive Office of the President. In addition, said the committee, it should be funded and staffed at a level to permit studies of the advances being made in telecommunications, such as the application of satellites.<sup>58</sup>

Criticism receded after 1965, only to erupt with renewed force in 1968 as the United States and the international community began to realize the unexplored potential of communication satellites on domestic and global communications. In an effort to assess this impact, President Lyndon Johnson, in August 1967, appointed a task force to conduct a comprehensive study of U.S. communications policy, with emphasis on satellites.<sup>59</sup> At the same time, he directed the Bureau of the Budget "to make a thorough study of existing Governmental organization in the field of communications and to propose needed modifications."<sup>60</sup>

The findings of the President's communications task force, published in December 1968, called for a greatly expanded and centralized Government capability to provide long-range planning, policy formulation, coordination, and mission support of the Nation's communications activity.<sup>61</sup>

James D. O'Connell, the Director of Telecommunications and vice chairman and key management member of the President's Communications Task Force, issued a partial dissent to the committee's findings, noting that the proposed role for the executive branch's telecommunications function focused too heavily on operational matters and away from its primary responsibility for the development of policy. In regard to the National Communications System, O'Connell complained that this key aspect of our national telecommunications policy had not even been addressed in the committee's report.<sup>62</sup>

Shortly after the publication of the task force's report, the Bureau of the Budget (BOB) issued its findings. The Bureau was critical of the Government's handling of telecommunications, specifically recommending that the National Communications System be reorganized and strengthened. Agency response to BOB's proposal was generally approving, noting that stronger leadership at the top was needed in the area of policy-making and in guiding the orderly evolution of a national telecommunications capability. Also, a number of agencies agreed with the 1965 Holifield report and with the President's 1967 Communications Task Force report in urging a stronger analytic capability within the executive branch in order to achieve these goals.<sup>63</sup>

The departure of the Johnson administration in January 1969, followed by the Nixon administration (1969-1974), did not diminish official concern over the issue of Federal telecommunications management. In July 1969, nine months after the Bureau of the Budget report, the General Accounting Office offered its assessment, focusing on the National Communications System. "In the more than 5 years that have elapsed since the President directed that a unified NCS be established," said the GAO, "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." Moreover, continued the GAO, that

*Although the 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. 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.*<sup>64</sup>

The result had been, concluded the GAO, the continued proliferation of agency-oriented networks with little, if any, centralized direction and control in the interests of a truly national communications system. In its recommendations to the President, the GAO suggested that the President give consideration to the establishment of a new organization with the "stature, authority, and resources sufficient to provide a strong central focal point in telecommunications matters."<sup>65</sup> It also recommended that the present roles and functions of the Executive Agent, NCS, and the Manager, NCS, be assigned to this proposed organization as a way of concentrating policy, planning, and implementation.<sup>66</sup>

The GAO report and the BOB study which preceded it were followed by other high-level critiques and proposals. In the fall of 1969, the Secretary of Commerce proposed that a new office be set up in the Department of Commerce to take over the functions of the Office of Telecommunications Management. This suggestion was opposed by the Secretary of Defense on the grounds that integrating this national policy function into the Commerce Department could lead to serious interdepartmental conflicts which, of course, had been the identical position taken earlier by Commerce and other agencies relative to the Secretary of Defense's role as the NCS Executive Agent.<sup>67</sup>

By the time the Bureau of the Budget and the General Accounting Office were calling for a National Communications System with "sufficient authority" to plan and build an effective network, movement was under way in the White House to reorganize the executive branch's approach to the management of the Nation's communications resources, including the NCS. Perhaps feeling the frustration of years of fighting parochialism and a declining influence at the White House level, James D. O'Connell resigned his posts as Special Assistant to the President for Telecommunications and Director of Telecommunications Management in the fall of 1969. Shortly thereafter, in December 1969, the White House published its own assessment and solution.

Despite the rapidly growing importance of emergency telecommunications to the Nation, said the White House report, "there is no effective policy-making capability for telecommunications in the executive branch. The Administration is therefore largely unable to exert leadership or take initiatives...."<sup>68</sup> The history of the Director of Telecommunications Management, continued the report,

*Reveals that attempts by the DTM to exercise leadership in communications policy have been largely ineffectual. The responsibilities and authority of the DTM are questioned by agencies with operating responsibilities. This situation results from a number of factors including organizational location, inadequate staff, and lack of clear authority.*<sup>69</sup>

The solution, concluded the study, was to abolish the office of the Director of Telecommunications Management under the Office of Emergency Preparedness and to establish, in its stead, an independent office within the Executive Office of the President. The White House report did not agree with the GAO recommendation that the roles and functions of the Executive Agent, NCS, should be transferred to this new organization. Rather, it recommended that the present NCS organizational arrangements be retained until further studies could be made.<sup>70</sup>

## 2. The First Reorganization of the NCS, 1970: The Office of Telecommunications Policy

The result of this White House review was Reorganization Plan No. 1 of 1970, delivered by the President to the Senate and House of Representatives on February 9, 1970. In it, the President unveiled plans to abolish the Office of the Director of Telecommunications Management and the position of Special Assistant to the President for Telecommunications and to replace them with the Office of Telecommunications Policy (OTP), which was to be established as an independent office within the Executive Office of the President. These plans were implemented by Executive Order 11556, "Assigning Telecommunications Functions," September 4, 1970.<sup>71</sup>

Under this new Order, the visibility and role of the NCS was significantly reduced as the White House sought to move away from a single communications issue to a consideration of the broader problem of Government telecommunications policy and management. The Director, OTP, was to serve as the President's principal advisor on telecommunications and was responsible for developing and setting forth plans, policies, and programs which would promote U.S. national and international interests. He was to take executive branch leadership in such matters as standards, new technology, interoperability, privacy, security, mobilization, and spectrum use, as well as conduct economic, technical, and system studies of telecommunications issues. In addition, but without reference to the National Communications System, he was directed to develop plans for the mobilization and use of the Nation's telecommunications resources in any emergency, and to be prepared to "administer" these resources. Importantly, the Director was empowered to identify competing, overlapping, duplicative, or inefficient telecommunications programs and to make recommendations to appropriate agency officials and to the Director of the Office of Management and Budget concerning the scope and funding of these programs. The only specific mention of the NCS in E.O. 11556 was a reference directing the reader back to the Presidential Memorandum of August 21, 1963, for guidance.<sup>72</sup>

One hoped-for outcome of this reorganization from the White House's point of view was that the new office would enable the administration to speak with a clearer voice and to exercise appropriate leadership in

discussions with the Congress and the Federal Communications Commission regarding communications policy. This need for an ongoing intra-Government dialogue was receiving more and more attention within the Executive Office of the President, as the rapid pace of technological change spawned a rising number of Federal Communications Commission rulings and legislative proposals, many of which affected how the executive branch would manage the Nation's growing telecommunication resources.<sup>73</sup>

To assist him in restructuring the Government's telecommunications policy-making and leadership role, the Director of the Office of Telecommunications Policy, in early 1972, formed the Council for Government Communications Policy and Planning with membership from a number of agencies, including the NCS. A prime objective of the Council was to foster inter-agency cooperation and to arrive at a consensus approach concerning the coordination of Government communications activities. The Council was particularly concerned with soaring communications costs and the duplication of communication systems within the Federal establishment. To this end the Council stressed the importance of interagency forward planning in order to optimize the mix of networks and systems. Also, the Council underscored the need for awareness of technological change, particularly the interdependence of computers and communications transmission and data processing. Integrated computer-communications networks, said the Council, struck at the heart of telecommunications planning.<sup>74</sup>

In regard to the National Communications System, the Council identified four management options. The first option was to retain the NCS in its present form. The second was to keep the present NCS but identify two subsystems: a national security subsystem and a general executive subsystem, each under a separate Executive Agent. A third possibility was to keep the NCS but set up a number of "NCS Component Managers." The last option was to abolish the NCS, cancel the 1963 Presidential Memorandum, and place all coordinating responsibilities in the Office of Telecommunications Policy.<sup>75</sup> In offering his own assessment on the NCS, the Director, OTP, observed that the original role of the NCS had been misinterpreted. Its purpose, he said, was not to bring about total integration of all major Governmental communications systems but, rather, to accomplish joint agency planning and coordination for national security communications. This, said the Director, was the need which had sparked the establishment of the NCS in the first place. To underscore his position, the Director, OTP, formally vetoed the plan to interconnect the FTS voice network and AUTOVON.<sup>76</sup>

The proposed solution to the Government's telecommunications planning problem was set forth by the Director of the Office of Telecommunications Policy in OTP Circular 12, published in October 1973. In this circular, the Director proposed to divide communication services used by the Government into two general classes: administrative communications and mission-oriented communications. The administrative class would include

communication services which were used by several agencies and where economy and cost-effectiveness were the paramount design considerations. The General Services Administration would be responsible for planning such services. The mission-oriented services would include communications which support unique operational functions of a particular agency. In this instance performance and security would be the determining factors in system design and acquisition.

The four broad mission-unique areas identified in Circular 12 included:

1. National Security
2. Transportation
3. Environment
4. Law Enforcement

In each of these areas, the Director of OTP named a lead agency including the Department of Defense (national security), the Department of Transportation (transportation), Department of Justice (law enforcement), and the Department of Commerce (environment). Plans for communications system development in these four areas, as well as the administrative services area, would be closely coordinated and reviewed annually by OTP. Under this new arrangement, participants in the national security mission area would now include only the departments of State, Defense, and Transportation; the Central Intelligence Agency; and the General Services Administration. All of the other operating agencies, which previously reported to the NCS, would now report elsewhere.<sup>77</sup>

This proposed solution to Federal management of telecommunications was in line with the Director's strongly held view that "neither a single system for all Federal communications needs, nor a single manager for all Federal communication operations, is an appropriate means of achieving the above objectives."<sup>78</sup> Moreover, he saw this new lead agency approach as fostering economy and efficiency of operations, as well as stimulating the application of new communications technology and service concepts. In a letter to Members of Congress, the Director noted that the new management arrangements would also "eliminate many existing barriers to effective and coordinated planning, both within and across agency boundaries, and provide emphasis on planning in areas where it is most needed."<sup>79</sup> The real test, however, would come over the next year or two as the OTP began implementing this new policy.

### 3. The NCS Reassesses Its Role

While waiting directions from the new Office of Telecommunications Policy, the Executive Agent of the NCS and the NCS Manager continued work on the old agenda. The main unfinished business was the preparation of the fifth and sixth long-range plans for the NCS. The fifth plan, although drafted, was never published. The sixth plan was published and forwarded to the White House in July 1971. In it, for the final time, the Executive Agent and the Manager, NCS, would rationalize a "unified" national communications system as the system goal. In articulating this single system, one in which "NCS concepts, doctrine, system design, planning, and engineering should form the path which all component networks must follow...", an acceptable NCS concept plan had not been achieved. One reason for this, said the Executive Agent, had been the failure of the parties to reach agreement on interconnecting AUTOVON and the FTS voice networks. These two major common-user networks had been at the heart of the NCS plan from the beginning. Another issue, one which grew in importance with each passing day, was the explosive growth of telecommunications technology, particularly as it related to the computer. This high-tech development had, by the early 1970s, become an instrument of change, creating major system design challenges and opportunities in the world of automatic data processing and communications systems. Moreover, the complementary nature of ADP and telecommunications was raising a host of regulatory and policy issues, making the FCC a major player in the evolution of Federal telecommunications systems and policies. A third factor was the lack of progress in unified planning. Some agreement had been reached among the agencies concerning an NCS restoration priority system, but much remained to be done before an acceptable plan for the emergency operation of surviving NCS assets could be achieved.<sup>80</sup>

Not long after this final NCS long-range plan had been submitted, and in view of the growing chorus of criticism of the entire program, the NCS Manager concluded it was time to step back and reexamine the long-range goals of the NCS. The results of this reassessment led him to reverse the stand of his predecessors regarding a single universal system and to conclude that, whatever the NCS was supposed to be, it was not "a single integrated communications system and probably never will be."<sup>81</sup> During his review, recalled the Manager in a letter to the Executive Agent, ...

*... it became apparent that the uncertainties surrounding the operational, economic and organizational impact of a concept of a single integrated system raise serious doubts about the wisdom or feasibility of pursuing a deliberate planning effort aimed at such a far-reaching goal. We have concluded that the concept of a single integrated NCS is unrealistic and further expenditure of effort aimed at that goal would be unwarranted.*

*The President, in his 1963 memorandum on the NCS, recognized that achieving the goals stated for the NCS would be an evolutionary process. We feel that this remains the only valid and workable approach and that a significant degree of cost-effective integration can be achieved by a step-by-step evolutionary process whereby the benefits and impact for each step can be thoroughly evaluated.... We plan to continue the evolutionary development of the NCS, along these lines, implementing an appropriate degree of integration where it makes sense to do so. Added to this is the aggressive telecommunications standards program we are pursuing which is focused on the goal of achieving interoperability of functionally similar networks. This will enable functionally similar but separate NCS networks to be interconnected and function as a system to the degree needed for satisfying normal and emergency requirements.<sup>82</sup>*

Approving the conclusions reached by the Manager, the Executive Agent, in April 1972, informed the Director of the OTP, that the NCS was dropping the universal system approach. Instead, he proposed to concentrate "on the more modest but operationally worthwhile goal of interoperability--a lesser but understood level of integration."<sup>83</sup> From now on, the NCS would be viewed as a confederation of telecommunications networks run by a consortium whose goals would be achieved through coordinated planning, interoperability, and system standardization in an evolutionary environment. The decision to step back from what many of the agencies had seen as a totally unacceptable effort to create a single integrated system was widely applauded.<sup>84</sup>

In response to the letter from the Executive Agent, the new Director of the Office of Telecommunications Policy, Clay T. Whitehead, agreed with the Secretary of Defense that interoperability was an appropriate goal for the NCS to pursue, at least for the near term. But the overriding need, as far as the Director of the OTP was concerned, was the implementation of a new across-the-board telecommunications management policy and plan which was proposed by the Council for Government Communications Policy and Planning and set forth in OTP Circular 12.<sup>85</sup>

#### 4. Conflicting Views Between OTP and NCS

The Executive Agent and the Manager of the NCS strongly opposed the NCS solution offered in OTP Circular 12. The Executive Agent saw the move as the "fractionalization of the NCS," and held that without a change in the President's August 21, 1963, memorandum, OTP did not have the authority to unilaterally modify the NCS role.<sup>86</sup> For its part, the Office of Telecommunications Policy maintained that it was "well within the scope

of the Presidential Memorandum of August 21, 1963, for us to revise the objectives, priorities, and membership in the NCS...."<sup>87</sup>

Unable to reach an agreement with OTP, the Executive Agent, NCS, announced in July 1975 that OTP Circular 12 did not alter NCS's role of meeting the emergency communications needs of the Federal Government as set forth in the August 21, 1963, Presidential memorandum, which remained in effect under E.O. 11556 establishing OTP. The NCS would continue, as in the past, providing an annual report containing inputs from all the Major and Minor Operating Agencies which it had previously identified. However, it would also provide OTP with a report on the National Security Group in accordance with Circular No. 12.<sup>88</sup>

In 1974, NCS resumed its annual reports after a 3-year hiatus occasioned by the transition to the Office of Telecommunications Policy. The 1974 report, now entitled an "Annual Report," also included a separate section on the National Security Group of which the NCS was the lead agency. In 1975, a separate National Security Group (NSG) Summary Plan was issued in addition to the NCS Annual Report. After 1975, the NSG Summary Plan was made part of the NCS Annual Report until the former was discontinued in 1977. The annual report continues to this day.

The policy, organizational, and philosophical changes wrought by E.O. 11556 and by the Director of the Office of Telecommunications Planning in the 1970s, pushed the National Communications System further down the list of priorities. The organization lost much of the stature and visibility it enjoyed during the Camelot days of the 1960s. Nonetheless, the NCS, though operating under severe budget restrictions, determined to forge ahead and carry out the mandate it still retained under the Presidential Memorandum of August 1963. Research was resumed, this time taking a generic approach to communication issues such as interoperability, operational management, survivability, standards, circuit priority systems, and electromagnetic pulse. The following paragraphs summarize this research.

##### 5. The NCS Research Program During the 1970s

Despite the decision to discard the single system approach, interest remained high within the NCS staff on how to structure and implement operational management of communications during emergencies. Receiving particular attention was E.O. 11490 (October 1969) which assigned emergency preparedness functions to Federal departments and agencies without, in NCS's opinion, adequate attention to the integration of these functions and attendant communications systems.<sup>89</sup> Continuity-of-Government (COG) systems, said the NCS, were being planned and implemented by individual agencies without reference to the Government-wide requirement, leading the

NCS to conclude that E.O. 11490 needed to be amended in order to delimit the roles of the several agencies, including the NCS.<sup>90</sup>

Also, during the 1970s, the NCS's operational preparedness role responsibilities reached into new areas. One example was the Federal Emergency Plan D, prepared by the Office of Emergency Preparedness. Under this plan, the NCS Executive Agent was responsible for the operational management and control of the telecommunications resources of all Federal agencies in a war situation.<sup>91</sup> Closely linked to this responsibility was NCS's role in Presidentially declared domestic emergencies and major disasters. In 1971, NCS prepared a "Plan for Support in Natural Disasters," followed in 1977 by a new "System Plan for Communications Support in Emergencies and Major Disasters." During 1977, this latter plan was implemented in 34 emergencies and 22 major disasters.

By the end of 1977, as the Federal telecommunications activity faced yet another reorganization, the Executive Agent again raised questions about the lack of an overall plan to coordinate management of Federal telecommunications in emergencies. Recent developments, said the Executive Agent, pointed to the lack of adequately trained communications management personnel for emergencies. Also there was a need to significantly strengthen Federal and State coordination, as well as a need for a greater recognition of the role of emergency telecommunications in domestic crises.

The twin objectives of interoperability and survivability also continued to receive attention through a program of technical and procedural standards. In August 1972, the NCS was assigned responsibility for the development and coordination of Federal telecommunications standards under the Federal Standardization Program, administered by the General Services Administration. The Executive Agent of the NCS, in turn, delegated this responsibility to the Manager, NCS. As it turned out, the major contribution of the NCS during the period of the Office of Telecommunications Policy was in the area of standards.

The Federal Telecommunications Standards Program (FTSP) was to develop, coordinate, and promulgate the technical and procedural standards required to achieve operational compatibility among functionally similar telecommunications networks of the NCS. Another goal was to increase the cohesiveness and effectiveness of the Federal telecommunications community's participation in national and international standards programs, including the Federal Information Processing Standards Program. It was important that Federal telecommunications systems be compatible not only with each other, but also with those of State and local Governments, the private sector, and other nations. Accordingly, standards developed to meet Federal requirements should, to the extent practicable, be consistent with corresponding standards developed by the American National Standards

Institute (ANSI), the International Organization for Standardization (ISO), and the International Telecommunication Union (ITU).<sup>92</sup>

Between 1972 and 1978, the Federal Telecommunications Standards Program, under NCS leadership, published 11 standards aimed at improving interoperability and survivability. Three more standards were completed in 1979. Two of these standards, one dealing with bit-oriented data link control procedures and the other with specifying the interface between data terminals and modems, not only acknowledged significant technical advances, but also had the virtue of having compatible national and international standards counterparts. During 1980, 6 more standards were adopted, bringing to 20 the number of Federal standards adopted under the FTSP program since 1972.

Although the standards program was pursued vigorously by the NCS, it did not achieve the desired impact on interoperability among the NCS-designated networks. A number of Federal agencies failed to include the standards in their procurement specifications, prompting the NCS, in 1976, to urge the promulgation of a national policy addressing the use of these standards by Federal agencies. This position was again voiced in the 1978 Annual Report in which the NCS urged a role for the FCC by which the regulatory agency could set industry standards relative to national security and emergency preparedness telecommunication requirements.

In addition to operational management arrangements and interoperability and survivability objectives, the NCS also pressed for a realistic circuit restoration priority (RP) program, one which would provide assurance of the availability of critical circuits in national emergencies. During the 1960s, user agencies were authorized to assign appropriate RPs to their circuits, with the provision that the NCS staff would review them, after the fact, for conformance with established criteria. In 1969, the procedures were changed to require NCS review and certification of RP assignments prior to the issuance of certifications to the carriers. This step led to lowering of the number of RP-protected circuits from a system-high of 37,800 in 1969 to 22,500 in 1970. Yet even this number was too high, leading the Office of Technology Policy and the Executive Agent, in 1974, to direct the Manager of the NCS to review and recommend revision to the current RP system. The result was the establishment, within the Office of the Manager, of the NCS Circuit Restoration Priority Program and the NCS Data Base Maintenance System. The RP program was designed to ensure that only the most critical circuits would be selected for restoration. The Data Base Maintenance System was designed to ensure a complete and accurate file of all Federal Government circuits.

Throughout the 1970s, the NCS Restoration Priority review program continued to lower the percentage of RP circuits, until by 1980, at the close of the Carter administration, 9.95 percent of the Federal Government circuit file was designated RP circuits, down from a high of some

42 percent in 1969. In the meantime, however, the number of Government circuits had grown from approximately 90,000 in 1970 to over 117,000 at the end of 1979, thus diminishing, somewhat, the impact of lower percentages. In a related matter, the Federal Communications Commission, on October 8, 1980, adopted FCC Order 80-581. This order, which became effective on March 31, 1981, provided a uniform system of priorities for the restoration of vital private line services during emergency situations.

The final topic to be addressed by the National Communications System during the 1970s was the EMP phenomenon and particularly the EMP threat posed to the communications infrastructure by high-altitude nuclear bursts. In 1966, in the Second NCS Long-Range Plan, EMP was identified as presenting a major risk to common carrier systems. Five years later, in December 1971, the Executive Agent, NCS, was designated the focal point within the Federal Government for all EMP technical data and studies concerning telecommunications.<sup>93</sup> In 1973, he delegated this responsibility to the Manager of the NCS<sup>94</sup> and three years later, in 1976, the NCS published a report entitled Federally Funded Telecommunications EMP Test and Study Programs in which EMP test and study programs up to that date were summarized. AT&T's assessment of the EMP threat, said the 1976 report, was that the Bell System appeared to be relatively immune from damage or disruption due to EMP. However, AT&T said this situation could change as the microminiaturization of telecommunications system components progressed. Tests by the Defense Communications System (DCS), about the same time, while not entirely conclusive, indicated that it would be unwise to discount EMP as a potential threat to the functional integrity of the DCS and the NCS. In response to this potential danger, the NCS Manager, with advice from the Federal Telecommunications Standards Committee, initiated an effort to develop Federal standards to protect telecommunications facilities from EMP damage.

After 1978, the EMP study program followed two paths. As the Government's focal point for EMP information, the Manager of the NCS continued to publish annual reports on Government research into EMP effects. These reports were classified and the information tightly held within the Government. The second path led to the National Security Telecommunications Advisory Committee (NSTAC), formed in September 1982, and an NSTAC EMP Task Force charged with identifying options to enhance the survivability and reconstitutability of the national telecommunications networks in an EMP environment.

NSTAC concluded that EMP posed a serious threat to telecommunications facilities. However, through Government-industry cooperation, particularly in the standards area, NSTAC reasoned that a number of EMP-mitigation measures could be implemented which would greatly reduce the threat.<sup>95</sup> In pursuit of EMP standards, the NSTAC worked with the ANSI in developing electromagnetic protection standards for industry.<sup>96</sup>

All of these NCS-driven research programs--operational management, interoperability and survivability, standards, circuit restoration priority, electromagnetic pulse--were providing valuable data to be shared with the communications community. To this end, the Manager of the NCS, in March 1976, began publishing annual reports on current research findings.<sup>97</sup>

## CHAPTER III

### YEARS OF TRANSITION

#### 1. The Second Reorganization of the NCS, 1978

The middle years of the 1970s witnessed another leadership crisis in the United States with the resignation of President Richard M. Nixon in 1974, in the aftermath of the Watergate episode. During the turmoil of this period, several items on the national agenda, including the NCS, languished as the new administration sought to establish and affirm its appropriate leadership role. As support for the NCS continued to ebb, the Office of Telecommunications Policy paused to take an introspective look at its past as well as its future.

When the Office of Telecommunications Policy was established in 1970, said an OTP staff study, "it faced the task of relating its coordination and review mandate to the assigned responsibilities of the DOD (NCS) and GSA, and to OMB's roles in program coordination and ADP."<sup>98</sup> Two years later (1972), OTP promulgated OTP Circular 12 outlining a coordination concept in which various Government agencies would serve as lead agencies, responsible for particular mission-oriented systems. Overall, planning and coordination would be decentralized, with OTP responsible for reviewing progress and providing planning guidance.

This approach, said OTP, had not worked, at least not well, due primarily to the confusion and overlap among the roles and functions of OTP, OMB, DOD, and GSA with respect to the acquisition of separate telecommunications and automatic data processing capabilities. Moreover, the Defense Department continued to express reservations about the narrowed focus for NCS national security telecommunications planning. To resolve these conflicts, concluded OTP, would require a major realignment of telecommunications responsibilities and increased day-by-day involvement on the part of OTP. This implied a broader OTP charter, a larger budget, and a considerable increase in the size of OTP's staff.<sup>99</sup>

None of these changes were forthcoming, however. The Ford administration, which had followed the Nixon Presidency, left office in 1977, replaced by the Carter administration which launched its own analysis of the problem. The result was an executive order disbanding OTP and transferring its functions, including those associated with the NCS, to the executive agencies that had traditionally handled such matters. Under E.O. 12046 of March 1978, the NCS activity was transferred to the National Security Council which assumed responsibility for the development of policy, plans, programs, and standards for the mobilization and use of the Nation's telecommunications resources during emergencies. The Office of

Science and Technology Policy was given the task of implementing these functions under policy guidance of the National Security Council. Other telecommunication functions were transferred to the Commerce Department and to a new office within Commerce, the Assistant Secretary of Communications and Information, from which evolved the National Telecommunications and Information Administration (NTIA). Under the executive order, the Secretary of Commerce was to serve as the President's principal advisor on telecommunications policies and on the regulation of the telecommunications industry. The Secretary was also assigned responsibility for conducting studies and evaluations concerning the improvement and operation of Federal telecommunications systems, a research role he had been responsible for since the NCS was first formed in 1963. The OMB retained the powerful budget oversight function, serving as the President's principal advisor on the procurement and management of Federal telecommunications systems, including the NCS.<sup>100</sup>

Concomitant with the realignment of telecommunications assignments was renewed concern over changes in the strategic threat and the implications of that threat for communications planning. Significant increases in the number and accuracy of Soviet intermediate- and long-range nuclear missiles prompted the President's national security advisor to call once again for "leadership protection" through command, control, communications, and intelligence systems. He also expressed concern over the possible deregulation of the telephone industry and the near-total reliance of the Federal Government on AT&T for the provision of survivable and restorable communications networks. The 1978 NCS Annual Report echoed these concerns by urging the White House to promulgate a policy statement regarding national security telecommunications. A possible benefit of such a policy statement, said the NCS, would be to increase survivability of commercial networks by influencing how the private sector constructed its systems. Also, continued the NCS report, the Federal Communications Commission, should become an "active party" in the development of more survivable common-carrier networks.<sup>101</sup>

## 2. A Revitalized National Communications System

With national security telecommunications once again high on the White House agenda, the NCS was returned to a measure of its earlier prominence. A new tasking assignment for the NCS was outlined in an agreement between the National Security Council, the Office of Science and Technology Policy, and the Executive Agent, NCS, signed in June 1978.<sup>102</sup> In it the Manager of the NCS was directed to:

- o Develop a nationwide emergency management structure in support of the NCS telecommunications Management Plan for Annex C-X1 (Telecommunications) Federal Emergency Plan D.

- o Assume the communications responsibilities as set forth in the Disaster Relief Act of 1974.
- o Assist the Director, OSTP, in the administration of the Nation's telecommunications resources pursuant to Plan D.
- o Provide for the overall operational direction of Federal telecommunications assets provided for support of emergency and disaster activities.
- o Develop, under the GSA Federal Standardization Program, Federal telecommunications standards to achieve and maintain interoperability among functionally similar Federal telecommunications systems.
- o Be responsible for the management of the RP system as it applies to Federal Government activities.
- o Prepare, as necessary, technical studies, reports, and analyses that contribute to improving interoperability.<sup>103</sup>

### 3. A National Security Telecommunications Policy is Promulgated

At the same time a renascent National Communications System was emerging, the White House was preparing to act at the policy level. "I have reviewed the (1978) report of the National Communications System," said the President, "on the need for a national telecommunications policy. It is essential to the security of the United States, to have telecommunications facilities adequate to satisfy the needs of the Nation during and after any national emergency." Consistent with this position, the President signed, on November 15, 1979, Presidential Directive 53 (PD-53), "National Security Telecommunications Policy," calling for communications facilities adequate "to gather intelligence, conduct diplomacy, command and control our military forces, provide continuity of essential functions of Government, and to reconstitute the political, economic, and social structure of the Nation."<sup>104</sup> The Directive went on to outline an approach for achieving these goals including giving priority to continuity of Government telecommunications, enhancing interoperability, and consulting with the Federal Communications Commission on implementing these principles. PD-53 also directed the National Communications System to place "substantial reliance" upon the private sector for advice and assistance.<sup>105</sup>

#### 4. A Revised NCS Agenda: Concept Plan and PD-53 Initiatives

Although PD-53 left unclear as to who was to be in charge of implementing this new national telecommunications policy, the NCS soon emerged as the key coordinating organization. Within a few weeks of the publication of PD-53, the National Security Council formed the NSC PD-53 Steering Group to coordinate the implementation of this new policy statement. The chairman of the steering group was from the NSC and the vice chairman from the OSTP, with representatives appointed from the FCC, OMB, Office of the Manager of the NCS, 8 of the 11 National Communications System's Operating Agencies (DOS, DOD, DOT, GSA, CIA, FEMA, DOC, and DOE), and the Organization of the Joint Chiefs of Staff.

The first action of this interagency committee was to task the National Communications System to prepare a PD-53 National Security Telecommunications Policy Implementation Concept Plan and to act as the national coordinator for its implementation. By January 1980 the NCS, assisted by the NCS Operating Agencies, had prepared a draft plan and briefed it to the Federal Agencies serving on the Steering Group, as well as to common carriers, the FCC, and the National Industry Advisory Committee, the latter an industry advisory committee to the FCC. In May 1980, a draft of the NSTP Implementation Concept Plan was circulated to the PD-53 recipients for comment and approval.<sup>106</sup> From this point on the role of the NCS begins its transition from being viewed primarily as a communications system to becoming an organizational mechanism to coordinate the administration's requirement for a national security and emergency preparedness telecommunications capability.

The concept plan was general in nature, presenting an approach to planning. The contents of any final plan, said the Steering Group, would need to address such issues as:

- o Legal, regulatory, and policy constraints
- o Interconnect policies of individual common and specialized commercial telecommunications carriers
- o Influence of technology and standards on interconnection proposals
- o Economic and financial factors bearing on implementation strategy

In addition, the Steering Group envisioned a strategic planning process that would include the definition of specific essential emergency telecommunications needlines; the drafting of proposed legislative measures required to guide overall national telecommunications resource planning; and the issuance of unambiguous, authoritative PD-53 guidance to all Federal Agencies concerned with telecommunications matters. Coordinating the Government's role would be the NCS organization, which would serve

*as the Federal intermediary authority for Government and commercial telecommunications organizations for the discharge of responsibilities for PD-53 implementation by coordinating their mutual efforts, disseminating additional guidance, monitoring implementation progress, resolving minor conflicts, and referring major problems along with recommended solutions to higher authority for a decision.<sup>107</sup>*

Responses from the agencies to the Concept Plan were generally favorable. The Department of Commerce, however, while applauding the broad outline and purposes of the plan, questioned the leadership role assigned to NCS since PD-53 did not specifically assign implementation responsibility. Commerce also noted that the Concept Plan did not address potential jurisdictional conflicts involving the Interagency Radio Advisory Committee (under the National Telecommunications and Information Administration of the Department of Commerce) and the FCC's National Industry Advisory Committee. The Commerce Department was also concerned with the high costs implied in the Concept Plan and the potential conflict it posed with the Administration's and Congress' commitment to regulatory reform.<sup>108</sup> Despite these reservations, the PD-53 Steering Group, in the summer of 1980, approved the planning approach and directed the NCS to continue its effort to prepare a final strategic plan for implementing the national security telecommunications policy outlined in PD-53.<sup>109</sup>

Coordinating the technical, regulatory, and policy aspects of the PD-53 concept plan with the appropriate Federal agencies and common-carrier organizations proved to be a considerable challenge for the Manager of the NCS. Despite frequent urgings from the National Security Council that he assume executive branch leadership in this matter, the NCS Manager realized that, as in the case of the Director of the Office of Telecommunications Policy before him, he had no clear-cut management mandate. Presidential Directive 53 had simply not named the National Communications System or anyone else to be the lead agency. As a consequence, observed the Defense Department in a memorandum to the National Security Council, "some Government organizations do not recognize or accept the role of the NCS as implied in PD-53."<sup>110</sup> Perhaps the time was appropriate, continued the DOD memorandum, to once again announce to the community that the National Communications System was fully responsible for coordinating the implementation of the national security telecommunications policy within the Federal Government.<sup>111</sup>

Rather than attempt to force a final decision on an NCS planning concept or to seek unanimity among the agencies regarding NCS's role and authority, the National Security Council turned to more immediate problems confronting the evolution of the National Communications System--in particular, the economic and organizational changes taking place in the telecommunications industry.

## 5. Divestiture and the Changing Communications Environment

Up to the late 1970s, emergency communications for the President and key civilian and military officials in a major crisis had been seen mainly in terms of Government networks and the Bell System, with the latter functioning in a de facto role as the Government's system manager. But in view of the growing trend toward deregulation coupled with the Department of Justice's 1974 suit seeking the break-up of the Bell System, the possibility, if not probability, existed that this long-term and well-defined relationship was about to come to an end. Anticipating such an event, the National Security Council tasked the Executive Agent, in the fall of 1980, to review the Federal Government's dependence on common carriers.<sup>112</sup>

The Executive Agent's findings were briefed by the NCS to the PD-53 Steering Group on December 4, 1980, a little more than one month before the Carter administration was to leave office. In this report, the NCS confirmed what was already widely recognized--namely, the Government's overwhelming reliance on common and specialized carriers and the vulnerability of these carriers to a range of disruptions. To provide solutions to the technical, organizational, and operational problems identified in the study, the NCS member agency representatives developed a set of initiatives. These PD-53 initiatives, as they came to be called, became the building blocks of the NCS enhancement program in the 1980s.

The initiatives, which borrowed heavily from the issues identified in the NCS long-range planning documents of the 1960s, were grouped under three headings--technical, management, and policy. The technical initiatives focused on system survivability and interoperability, and included a reworking of the previously abandoned AUTOVON/FTS interconnect study. The management initiatives emphasized the need for a national security and emergency preparedness telecommunications focal point within Government, as well as the need for joint industry-Government planning. The final category, policy initiatives, stressed the importance of communications legislation then pending before Congress.

The drafting of the National Security Telecommunications Policy Implementation Concept Plan and the identification of a preliminary set of initiatives were important steps in implementing a credible national security and emergency preparedness telecommunications program. But, coming as they did in the waning days of the Carter administration, there was uncertainty as to how the new administration would receive and act upon them. The answer came shortly after the Reagan administration assumed office in January 1981 in a pledge to fulfill the PD-53 objectives and to strive for practical results as soon as possible.

## CHAPTER IV

### TOWARD A NEW BEGINNING

#### 1. The NCS in a Changing Environment

The momentum toward major improvements in national security and emergency preparedness (NS/EP) telecommunications, as this requirement was now becoming known, accelerated rapidly in the 1980s, as the Nation entered a period of unprecedented peacetime military buildup. Accompanying this renewed focus on emergency telecommunications, however, were a number of countervailing trends clouding the future of this requirement. Among those were the proliferation of Government-owned and -leased networks, the pace of technological change, divestiture and deregulation, and the resurgent role of the Congress, the courts, and the regulatory agencies in orchestrating a new economic and legal setting for telecommunications.

In January 1981, as a prelude to further actions, the Reagan administration endorsed PD-53, the national telecommunications policy statement, and E.O. 12046, transferring telecommunications authorities and responsibilities to the President from the Office of Telecommunications Policy. Next, the new administration increased the number of players. In addition to the National Communications System, the administration formed the Emergency Communications Working Group (ECWG), one of 12 working groups organized under the Emergency Mobilization Preparedness Board (EMPB).<sup>113</sup> This was followed, nine months later (September 1982), by the creation of the National Security Telecommunications Advisory Committee (NSTAC), consisting of some 30 chief executive officers from the Nation's leading telecommunications companies. Together, the ECWG and the NSTAC, along with the NCS, became the Government's initial focal points for developing NS/EP telecommunications in the 1980s.

#### 2. New NS/EP Telecommunication Entities: the ECWG and the NSTAC

##### 2.1 The Emergency Communications Working Group

The Emergency Mobilization Preparedness Board, chaired by the President's National Security Advisor and composed of representatives at the Under Secretary level from over 20 Federal departments and agencies, had been created by the White House in December 1981 to harness the mobilization potential of the Nation. The communications element was the particular concern of the Emergency Communications Working Group which had been charged with preparing plans for the use of communications in times of national emergencies.

ECWG's first assignment was to prepare a national policy statement on communications resources. This statement, subsequently approved by the EMPB and made part of the National Policy Statement on Emergency Mobilization Preparedness (NSDD-47) in July 1982, declared that it was "the policy of the United States to ensure that communications resources be available and adequate to respond to the Nation's needs."<sup>114</sup> To accomplish this, the ECWG developed a program to (a) assure viable communications operations concepts, (b) make information available on communications, (c) identify and correct communications deficiencies, (d) provide adequate communications planning guidance and the basis of funding, and (e) arrange for the smooth transition from normal to emergency operations.

The policy statement was followed by the ECWG plan of action, or work statement, which contained 8 implementation measures and 33 milestones. This work plan became part of the EMPB National Plan of Action approved by the President on March 30, 1983.<sup>115</sup> During the first year, about one-half of the 33 milestones were completed. Toward the end of 1983, however, the milestone program, as well as the ECWG as an organization, came under increased criticism. For one thing, the work program, centered around the 33 milestones, had no integrating authority to assure the timely submission of milestones reports and to bring the results into focus at the conclusion of the program. Without an oversight and integrating activity, the milestone schedule began to falter, forcing delays beyond the original completion dates.

Perhaps more significant for the future of the ECWG, however, was the growing opposition from within the executive branch to the working group itself. In early 1983, reports began to circulate that PD-53 was being revised to give the National Communications System a greater role in NS/EP telecommunications. These reports were later confirmed in June 1983 with the promulgation of NSDD 97, "National Security Telecommunications Policy," which replaced PD-53.<sup>116</sup> In July 1983, the NSDD-97 Steering Group, which had been established under the new directive, enlarged the membership of the NCS to 22 members and instructed it to function as the Emergency Communications Working Group, in addition to its own duties.<sup>117</sup>

This action by the NSDD-97 Steering Group, incorporating the Emergency Communications Working Group program under the NCS umbrella, was consistent with the overall trend since 1978 of making the National Communications System the focal point for integrating the Government's NS/EP telecommunications activities. As a consequence, the formal role of the ECWG came to a close. The last meeting of this body was held on March 11, 1983.

## 2.2 The NSTAC

Another area of major concern to the Reagan administration was the changing relationship between the Federal Government and the

telecommunications industry, made so by deregulation and the impending breakup of the Bell System. The White House, in 1979, had sought to insulate itself from such developments by promulgating PD-53 which, among other things, provided the FCC with the opportunity to take an activist's role in shaping the survivability posture of the expanding U.S. common-carrier industry. The directive also instructed the NCS to involve itself with the growing number of private-sector telecommunication companies and to seek their advice and assistance in achieving national security and emergency preparedness goals.

Earlier, the NCS had made known its opposition to the Justice Department's 1974 antitrust suit against AT&T, viewing the move as a blatant attempt "to fragment the integrated national aspects of the Nation's telecommunications networks." Moreover, said the NCS, the new common carriers coming into the industry did not appear to be considering survivability as an element in their system design. Following the signing of the Consent Decree in January 1982, divesting the Bell Companies from AT&T, the National Communications System, under the guidance of the National Security Council, moved quickly to fill the void left by the interruption of the Government/AT&T relationship. In March 1982, the Manager of the NCS initiated the first of two national security telecommunications conferences, inviting the chief executive officers of some 30 telecommunications companies. A second similar conference was held in July, followed by a series of industry-Government working group meetings at which three major issues were identified for future advisory committee attention: commercial satellite survivability, joint network planning, and automated information processing survivability.

The result of these conferences and meetings was E.O. 12382 of September 13, 1982, establishing the President's NSTAC.<sup>118</sup> This committee, composed of a maximum of 30 industry leaders, was to bring to the President (through his National Security Advisor) and to the Secretary of Defense, the knowledge, expertise, and insight available within the telecommunications industry on problems relating to the implementation of national security telecommunications policy outlined in PD-53.

To get its program moving forward as quickly as possible, the NSTAC named an Industry Executive Subcommittee (IES) and three working groups: the Resource Enhancements Working Group, the Emergency Response Procedures Working Group, and the Funding and Regulatory Working Group. In addition, ad hoc task forces were established to address specific issues.<sup>119</sup> Between December 1982 and February 1987, the NSTAC met 7 times adopting, studying, and making recommendations in 12 issue areas:

1. National Coordinating Mechanism (NCM)
2. Commercial Satellite Survivability (CSS)

3. Automated Information Processing (AIP) Survivability
4. International Diplomatic Telecommunications (IDT)
5. Electromagnetic Pulse (EMP)
6. Commercial Network Survivability (CNS)
7. Funding NSTAC Initiatives (FNI)
8. Telecommunications Service Priority (TSP)
9. Telecommunications Industry Mobilization (TIM)
10. Telecommunications Systems Survivability (TSS)
11. Industry Information Security (IIS)
12. National Telecommunications Management Structure (NTMS)

NSTAC I. The first formal NSTAC meeting was held in December 1982. At this meeting, the members, as indicated above, created the Industry Executive Subcommittee and working groups to assist in carrying out the functions and duties outlined in the executive order. The NSTAC members also reviewed the major issues, directing the IES, to:

- o Identify and establish the most cost-effective mechanism to coordinate industry-wide responses to national security and emergency preparedness requests.
- o Focus on and emphasize commercial communications satellite survivability initiatives as a matter of priority in addressing the overall telecommunications systems survivability issue.
- o Move beyond the commercial satellite communications survivability issue to investigate additional initiatives that, when undertaken, will improve total telecommunications survivability.
- o Assist the Government in bringing the automated information processing issue into sharper focus.<sup>120</sup>

NSTAC II. NSTAC working groups and task forces studied these four issues and prepared preliminary recommendations which were approved by the NSTAC II in July 1983 and forwarded to the President. In these recommendations the NSTAC sought the President's approval of (1) the national coordinating mechanism concept, (2) a Commercial Satellite Survivability program and program office, and (3) a plan for an in-depth study of the automated information processing survivability issue.<sup>121</sup> In

February 1984, the President approved all three recommendations. The near-term enhancements recommended by the NSTAC for Commercial Satellite Survivability would, said the President, be "addressed immediately," while the longer term satellite enhancements would be pursued on an evolutionary basis. The President also applauded the Committee's efforts in the area of Automated Information Processing (AIP) survivability. However, he opted to divide this issue into two parts to make it more manageable. NSTAC was assigned the task of looking at the vulnerabilities of AIP systems embedded in, and supporting, NS/EP communications networks, while the Emergency Mobilization Preparedness Board would concentrate on AIP data bases supporting national emergency decisionmaking.<sup>122</sup>

The President gave unqualified support to the proposed national coordinating mechanism, which was urgently and clearly the centerpiece of a joint industry-Government working relationship. "I fully support," said the President, "the requirements to establish a mechanism for coordinating industry and Government responses to national security and emergency preparedness (NS/EP) telecommunications needs."<sup>123</sup> Central to this requirement was a proposed National Coordinating Center (NCC) which was to be the operating arm of the national coordinating mechanism responsible for day-to-day planning and operating activities including, most importantly, responding to NS/EP telecommunications emergencies. Completion of work on the NCC, said the President was a matter of "urgent priority," and instructed the NCS to work with the NSTAC to establish this facility.<sup>124</sup>

NSTAC III. By the time of the third NSTAC meeting in April 1984, the President's advisory committee was working a very full agenda. Seven issues, involving 6 task forces, 2 working groups, the Industry Executive Subcommittee, and NSTAC itself were now being addressed, requiring the efforts of some 200 industry participants. This period also witnessed the first major achievement of this recently formed Government-industry effort with the opening, on January 3, 1984, of the National Coordinating Center.

Recommendations forwarded from NSTAC III addressed three current issues--the NCM, CSS, and AIP--plus one new one, International Diplomatic Telecommunications (IDT), which had been added to the agenda at the request of the Department of State. In the case of the latter, the IDT Task Force recommended that the State Department study the vulnerabilities of their international circuits using guidelines developed by the task force.<sup>125</sup> Also, NSTAC III adopted three new issues: Commercial Network Survivability (CNS), Electromagnetic Pulse (EMP), and Funding of NSTAC Initiatives (FNI). In adopting the funding issue, the NSTAC became involved in a problem that had been on the NCS's agenda since 1963, but had never been satisfactorily resolved. This time the NSTAC directed that the Industry Executive Subcommittee develop a methodology that the task forces could use in identifying costs, benefits, and the appropriate funding mechanisms.<sup>126</sup> Following the meetings, the IES explored new CSS initiatives, pushed efforts to find a working definition of the AIP issue,

and examined the feasibility of using overseas telecommunications resources owned by the U.S. companies.

In a related development, and in the same month NSTAC III was held (April 1984), the administration issued E.O. 12472, which, in addition to assigning telecommunications functions, also identified NSTAC and the NCC as integral parts of the Government's organizational structure to provide an NS/EP telecommunications capability.<sup>127</sup>

In December 1984, just prior to the NSTAC IV meeting, the President responded favorably to recommendations forwarded to him from NSTAC III. He approved the National Coordinating Mechanism Implementation Plan except for the General Forum, which was later dropped. He endorsed the Committee's Commercial Satellite Survivability recommendations, noting he had assigned a high priority to these CSS initiatives. Lastly, the President remarked that the Department of State welcomed NSTAC's suggestions for improving commercial communications support to the Diplomatic Telecommunications Service. At this point, however, and at the State Department's request, the NSTAC withdrew from the study.<sup>128</sup>

NSTAC IV. The NSTAC IV meeting on December 12, 1984, was a major watershed for the NSTAC program. The Committee had been in existence for two years and in that short span had, according to the President, "strengthened our national security and emergency preparedness telecommunications capabilities."<sup>129</sup> At the heart of these accomplishments was the National Coordinating Center, which had been in operation for nearly one year and which was soon to move into permanent facilities at the Headquarters of the Defense Communications Agency/National Communications System, Arlington, Virginia.

Briefings were presented on all seven issues being considered by the Committee. In addition, two new issues, Telecommunications Service Priority (TSP) and Telecommunications Industry Mobilization (TIM), were adopted. Recommendations were submitted to the President requesting that the Government (1) seek increased industry participation in NS/EP telecommunications planning, (2) establish a focal point for telecommunications automated information processing survivability, and (3) designate an appropriate Federal agency to serve as an industry point-of-contact for electromagnetic pulse mitigation studies.<sup>130</sup>

The President reviewed these recommendations and issued guidance through his National Security Advisor in October 1985, approving the recommendations made in all three areas. In reference to the National Coordination Mechanism, the Manager, NCS, was directed to take action to seek increased industry participation in NS/EP telecommunications planning through expanded information dissemination to, and participation in, existing industry organizations. Regarding the Automated Information Processing issue, the National Communications System was directed to serve

as the focal point for information on AIP survivability. Lastly, the Executive Agent, NCS, was designated as industry point-of-contact for dissemination of EMP information regarding commercial telecommunications.<sup>131</sup>

Following NSTAC IV in December 1984, there was a lessening of the work load. Except for two new task forces, the TSP and TIM, the main unresolved question was funding. To that end, each task force was asked to identify costs and benefits and to report back at NSTAC V. The two new task forces, TSP and TIM, were charged with preparing recommendations for consideration at the next NSTAC meeting.

NSTAC V. The NSTAC V, meeting on October 9, 1985, opened with a discussion of the National Coordinating Center charter and NS/EP Telecommunications Procedures. The NCC charter had been approved in April 1984 and now, after 21 months of operation, changes were proposed to clarify the NCC mission and role in circumstances less than a declared emergency. There was also a need to refine guidelines regarding the initiation and restoration of service, and to make clear that the request for communications should be made only after all normal channels had been exhausted. These changes were approved. In reference to the second document, NS/EP Procedures, the NSTAC and the NCS drew up guidelines for implementing NS/EP telecommunications in emergencies. These procedures were approved by the Committee and were then forwarded to the Federal Communications Commission for review. In addition to the NCC charter and procedures documents, the NSTAC also heard briefings on other NSTAC issue areas, including Commercial Network Survivability, Electromagnetic Pulse, Telecommunications Service Priority, Telecommunications Industry Mobilization, and funding.

The NSTAC's Commercial Network Survivability task force submitted a report to NSTAC V describing ways to improve the survivability and interoperability of the Nation's commercial telecommunications networks, focusing on initiatives to facilitate the use of telecommunications resources under conditions where Section 706 of the Communications Act of 1934 might be invoked. The NSTAC made the following recommendations to the President:

- o The Government should divide NS/EP services into categories by degree of criticality, specify survivability requirements for each category, and include these in procurement specifications.
- o The Government and industry should develop network architecture plans to facilitate system integrity and the interworking capabilities of the various commercial networks NS/EP services.

- o Industry and Government should jointly develop network operations plans and procedures to operate and test the networks supporting NS/EP services.
- o The Government, with industry support, should continue to acquire and maintain telecommunications data bases, including those for transportable resources, for use in survivability assessments and the allocation of resources in emergencies.
- o The Government should ensure that NS/EP interests are represented in international and national committees developing technical and operations standards in telecommunications, and take an active role in defending those interest.

NSTAC action on the Commercial Network Survivability initiative was completed; however, the IES was charged with providing continued assistance to the NCS in the implementation of the CNS initiatives.

The potential vulnerability of telecommunications facilities to nuclear events continued to be a major concern, and the NSTAC sought to develop initiatives to improve the ability of the Nation's telecommunications systems to survive a high-altitude electromagnetic pulse (HEMP) attack. In its initial report, the NSTAC EMP Task Force had reported that a large portion of the public telecommunications network would survive a HEMP attack without significant damage. Out of this study came an NSTAC recommendation to the President that industry and Government begin a joint program to reduce costs of existing techniques and to develop new techniques for limiting EMP transients to acceptable levels. This recommendation represented the culmination of NSTAC's investigation into the subject. However, as in the case of the CNS issue, the Industry Executive Subcommittee was directed to be prepared to assist the NCS if requested.

Also at the request of the Government, NSTAC's Telecommunications System Priority task force assisted the NCS in developing baseline requirements for a TSP system and the identification of TSP implementation issues. Similarly, NSTAC's TIM Task Force worked with the Government to bring the TIM issue into sharper focus and to develop recommendations regarding the future NSTAC role in this area. As a point of departure, the NSTAC approved a working definition of telecommunications mobilization: "The process of marshalling those telecommunications resources needed to make the transition from the normal state to state of readiness for war or other national emergency." With this definition in hand, the TIM task force began preparing plans to provide for the successful mobilization and continued operation of the Nation's telecommunications resources. On the list of items to be studied were telecommunications service surge requirements; personnel status, protection, and relocation; maintenance of stockpile and inventories; dependence on foreign sources; dependence on other infrastructure systems; Government and industry

mobilization management structure; and jurisdictional issues (Federal, State, local).

The NSTAC also completed its investigation of the AIP survivability issue, with its AIP Task Force providing a funding assessment. The object of the AIP Funding Assessment was to present cost and benefit information of value to the Government in planning telecommunications AIP survivability enhancements. The NSTAC concluded that AIP initiatives would yield a significant NS/EP benefit and that an evolutionary approach was essential. The NSTAC also noted that varying levels of survivability can be bought at reasonable cost.

In regard to the funding of NSTAC initiatives, there was no final resolution by NSTAC V except in the case of the National Coordinating Center in which Government and industry representatives agreed on a formula for cost sharing. All of the other task forces were instructed to use the NSTAC funding methodology prepared by the Funding and Regulatory Working Group in October 1984. What the task forces produced, however, were mainly order-of-magnitude costs with no agreement on cost-sharing between Government and industry. In the opinion of industry, most of the telecommunications enhancements benefitted Washington, and should be paid for by the Federal Government.

NSTAC VI. During its sixth meeting, which was held on May 22, 1986, the NSTAC reviewed four areas. The Industry Executive Subcommittee and its TSP Task Force continued to assist the Government in the development of the TSP system concept and to identify associated operational, technical, legal, and regulatory implications. At the request of the Government, the NSTAC referred its TSP system concept to the FCC for review and approval. Following NSTAC V, the TIM Task Force was disbanded and a Joint Industry/Government Telecommunications Industry Mobilization Group was formed. This new Joint TIM Group worked with the NCS in addressing three of the seven mobilization subjects, including personnel, telecommunications service surge requirements, and a Government and industry mobilization management structure.

The NSTAC responded to Government requests to assist in the development of a survivable and enduring National Telecommunications Management Structure by helping to develop a system concept to satisfy previously approved baseline requirements. In regard to Industry Information Security (IIS), the NSTAC agreed to provide the Government with advice and assistance regarding the implementation of measures to protect sensitive private sector information processing and communications systems.

NSTAC VII followed nine months later on February 18, 1987, and included an Executive Session with representatives of the President. NSTAC recommendations in two telecommunications industry mobilization

issue areas were approved and subsequently forwarded to the Executive Agent, NCS, and to the President on April 12, 1987.

The NSTAC recommended to the President that the overall Federal Government mobilization management structure be updated on a priority basis to ensure its effectiveness. In particular, it was urged that the interrelationships in the telecommunications mobilization management structure during emergencies must be documented and explained within the Government and within the telecommunications industry. In addition, the NSTAC recommended that the President order steps taken to mitigate the impact of the loss of foreign-source semiconductors on the telecommunications industry. This recommendation underscored the concern of many that the telecommunications industry is almost totally dependent on foreign-source semiconductors.

### 3. The National Communications System in the Early 1980s

The third and last of the organizations to which the Reagan administration had assigned major NS/EP telecommunications responsibilities was the National Communications System. Since 1963, the NCS had seen its fortunes rise and fall as the Executive Office of the President searched for ways to implement President Kennedy's goal of "a unified Governmental communication system which will be called the National Communications System (NCS)." After a period of obscurity in the 1970s, the Carter administration late in its term restored the NCS to a place of prominence by making it, once again, a focal point for national security and emergency preparedness telecommunication activities. Only this time, as indicated previously, the NCS was viewed more as an organization to facilitate and coordinate than as a discrete communications system.

#### 3.1 The NCS Organization, 1981

At the top, the organizational structure of the National Communications System at the beginning of the Reagan administration in 1981 looked much as it did in 1966 following the establishment of the NCS as a separate organizational entity within the Defense Communications Agency. The Secretary of Defense continued to serve as the Executive Agent, and the Director, Defense Communications Agency, as Manager. The Assistant Secretary of Defense for Communications, Command, Control, and Intelligence (ASD/C<sup>3</sup>I) functioned as deputy to the Executive Agent. Prior to this time, the role of deputy had been filled by various DOD offices, beginning in 1963 with the Assistant Secretary of Defense, Administration.<sup>132</sup>

Changes had been made in the Office of the Manager, NCS, expanding from a two-division configuration (plans and operations) to three divisions (plans and operations, technology and standards, and priority and data management). Staff size by the beginning of the Reagan

administration numbered approximately 24 DOD civilians, 5 military, and 4 agency representatives.

Another major change within the NCS organization was the restoration of two bodies that had fallen into disuse during the 1970s: the NCS Principals and the NCS Representatives. These entities were first employed in a substantial way by the Manager in late 1971 at the time the NCS was facing fundamental changes in concept and role. Up to that point, the Manager had treated the NCS more or less as a Department of Defense responsibility, interfacing with the operating agencies as the occasion dictated. But now he saw the importance of, and strength in, a collective position, and in his meetings with the Principals and Representatives in 1971 and 1972 he spoke of the potential influence of these two bodies in shaping national telecommunications policy. It was the Manager's expressed hope in 1972 that the NCS Operating Agency Principals and Representatives would provide leadership not only in defining a new concept, but also in providing advice on telecommunication standards and on the applications of new technology, particularly in the areas of satellites, computers, and digital communications. The Manager also took note of the increasing congressional attention to telecommunications and the need for the Principals and Representatives, as well as the Manager, to monitor and provide inputs to these deliberations.<sup>133</sup>

In 1978, the Manager reaffirmed the enhanced role of these two bodies by chairing periodic meetings of the Principals to obtain their advice and assistance. In addition the Deputy Manager began meeting regularly with the NCS Representatives.<sup>134</sup> By 1982, the NCS Operating Agencies were playing, according to the Manager, "a predominant role in the formulation of telecommunications policy and the solution of mutual problems...."<sup>135</sup> Nonetheless, the Operating Agency Principals remained outside the formal NCS administrative structure. It was not until 1984 that they would be given an official role.

### 3.2 Changes in NCS Membership and Communications Assets

Two other areas to receive careful review by the Manager in the post-OTP era were NCS operating agency membership and NCS communication assets. The original list of members and assets published in 1964 identified 6 Major Operating Agencies and 4 Minor Operating Agencies, along with 31 communications assets. Successive long-range plans in the 1960s continued to list the operating agencies and their assets. After 1970, however, the practice of regularly identifying and validating operating agencies and assets fell into disuse, and it was not until the reorganization of Federal telecommunications activities in 1978 that the practice of annually reviewing NCS membership and validating assets was resumed. At that time (1978), the designations "major" and "minor" operating agencies were dropped in favor of a single list.

The number of operating agencies remained fairly constant from 1963 to 1984, ranging from 9 to 12. However, following the publication of E.O. 12472 in 1984, rechartering the National Communications System, the number of agencies rose from 12 to 23.

#### 4. Work Continues on the Concept Plan and PD-53 Initiatives

Shortly after the new administration entered office in 1981, the National Security Council directed that the PD-53 program be given the "highest priority," and instructed the National Communications System to resume the PD-53 planning effort. In March 1981, a revised PD-53 Implementation Concept Plan was distributed for review. In this plan, the Manager of the NCS described the range of issues that would have to be addressed in the planning process. He then went on to emphasize the need for a coordinated planning effort among the executive agencies, common carriers, and the NCS staff. To this end the Manager of the NCS requested that the agencies establish a PD-53 point-of-contact to coordinate with the NCS staff.

Concomitant with working the planning process, the NCS launched a major push to research the PD-53 initiatives. A \$600,000 contract was awarded by the Defense Nuclear Agency (DNA) to study HEMP damage to the Nation's communications systems. Another contract was signed to examine the possibility of carrier interconnectivity utilizing class 4/5 switches. Next, the Military Satellite Communications Systems Office developed and published a study on communication satellites. It was hoped that the results of this last study would find application to the NCS commercial communication satellite architecture proposals. Finally, the NCS began monitoring legislative, regulatory, and judicial matters relative to telecommunications. By the close of calendar year 1981, all of the PD-53 initiatives were being addressed, some only in a very preliminary way, others in a more substantial manner.

Other telecommunications-related activities by the White House in 1981, as indicated previously, included the establishment of the Emergency Communications Working Group, plus the approval of an NCS program budget element within the DCA budget structure, and the implementation of the FCC Order 80-591 regarding restoration priorities. At the time the ECWG was proposed in the summer of 1981, concern was expressed over potential policy conflicts between ECWG and the NCS, and other agencies, particularly the National Telecommunications Information Agency (NTIA) of the Department of Commerce. The solution was to give ECWG the responsibility of reviewing the PD-53 initiatives from a policy and regulatory point of view, leaving planning, funding, and technical concerns to the PD-53 Steering Group and, through them, to the NCS. This arrangement continued until the National Communications System assumed ECWG responsibilities following the publication of NSDD-97 in June 1983.

The approval by the Department of Defense in October 1981 of the NCS request for an NCS Program Funding Element within the DCA budget provided the NCS with a management tool with which it could more adequately identify and justify personnel and funding requirements. The implementation of FCC Order 80-591 in 1981 greatly enhanced the management of the RP system by requiring common carriers to incorporate the RP system into their day-to-day operating procedures.

Work on the PD-53 initiatives remained the number one priority in 1982 as the NCS sought to carry out the National Security Council mandate to provide "telecommunications facilities adequate to satisfy the needs of the Nation during and after any national emergency." To strengthen the working relationship with the NCS and other PD-53 agencies, the PD-53 Steering Group in June 1982 established the PD-53 Working Group with a chairman from the Office of Science and Technology Policy and a vice chairman from the National Security Council staff. The purpose of this subordinate committee was to work the issues before they were brought to the Steering Group for decision. In addition to these organizational changes, steps were taken to focus PD-53 research by organizing tasks into three areas: survivability and interoperability, management, and policy. The following paragraphs summarize the accomplishments in these three areas.

Under the survivability and interoperability heading were six programs: commercial satellite survivability, common/specialized carrier transmission systems, a class 4 and 5 switch study, the AUTOVON/FTS interconnect, a national emergency amateur radio operations plan, and electromagnetic pulse. In June 1982, the PD-53 Steering Group approved an NCS recommendation to narrow the scope of the commercial satellite survivability initiative to encompass only commercial satellite communication systems. This latter initiative was also taken up by NSTAC as part of the joint industry-Government planning effort.

Six technical tasks were grouped under the common/specialized carrier transmission initiative. The goal here was to identify survivability and durability enhancements that could be built into the common and specialized carrier transmission systems. The technical studies included carrier interconnect, multiplex equipment survivability, decentralization of critical management and control functions, decentralization of critical circuits, assessment of mobile/transportable equipment to improve connectivity, and mobile/transportable program for connectivity. The Office of the Manager, NCS, addressed two of the six technical initiatives--carrier interconnect and decentralization of critical circuits--while work on the remaining four were to be addressed jointly by the NCS and the NSTAC.

In reference to the class 4/5 switch study, a second contract was let in January 1982 to undertake network design and engineering studies to determine how to route essential telephone traffic through the public

switched network (PSN) when large portions of the hierarchical routing feature of the PSN were damaged or no longer existed. This study later evolved into the Nationwide Emergency Telecommunications Service (NETS) program. Following approval by the Department of Defense to permit a limited cross of FTS traffic into AUTOVON, a contract was issued through the Defense Commercial Communications Office (DECCO) in December 1982, to implement the AUTOVON/FTS interconnect initiative, with an initial operational capability scheduled for September 1983.

In June 1982, the PD-53 Steering Group approved the NCS recommendation to develop the largely untapped resource of the Nation's 400,000-plus amateur radio operators. Close coordination was established with the American Radio Relay League (ARRL) and the Military Affiliate Radio System (MARS). Several tests were conducted in 1982. Studies also continued on the mitigation of exoatmospheric nuclear detonation effects on terrestrial power supplies and equipment.

There were six management initiatives that had been approved by the PD-53 Steering Group. Two of them--the PD-53 Steering Group and the Coordination of National Security Related Presidential Directives--were the responsibility of the National Security Council. Progress on a third initiative--the PD-53 National Security Telecommunications Policy Implementation Plan--had seen little movement because of the difficulty in developing and validating Federal Government emergency communications requirements. To this end, a list of prioritized requirements, being developed by the Federal Emergency Communications Working Group, was expected to provide a major contribution to the plan. A fourth management initiative, industry-Government joint planning, was implemented with the establishment of the President's National Security Telecommunications Advisory Committee on September 30, 1982. With the arrival of NSTAC, there now existed a formal mechanism to effect industry-Government joint planning for NS/EP communications improvements.

The final two management initiatives, physical security and the national electric power grid, were also addressed in 1982. The physical security of telecommunications facilities was addressed within the context of the Defense Industrial Facility Protection Program (DIFPP), which was a voluntary program on the part of industry. Contact was established with AT&T and other operating companies to learn about their physical security programs, with the goal of influencing the general direction of the program. Assessment of the National Electric Power Grid and the role this utility played in NS/EP telecommunications was undertaken by the Department of Energy at the request of NCS. In June 1982, DOE requested comments from the departments and agencies on their draft plan to assess the Nation's vulnerability to major disruptions of the electric power network.

In the area of congressional legislation, the Office of the Manager, NCS, provided staff support to the Secretary of Defense (in his role as

Executive Agent, NCS) in his efforts to obtain pro-NS/EP legislation. Testifying at congressional hearings on the impact upon the Department of Defense of the DOJ-AT&T antitrust suit settlement agreement, the Manager of the NCS suggested four pro-NS/EP legislative initiatives:

1. Pervasive recognition in the law of the critical importance of the telecommunications industry to national security and emergency preparedness.
2. Legislative safeguards for all telecommunications carriers to engage in joint network planning and management, and develop plans and procedures for protection and restoration of essential telecommunications, and prepare for the interconnection and interoperation of facilities and services when necessary to meet national security and emergency preparedness needs.
3. Statutory permission for any telecommunication carrier or separate affiliate/subsidiary to provide an end-to-end service during times of emergency.
4. Assurance of Congress that provisions of the law can be implemented in an industry environment free of unnecessary uncertainty and turmoil which would result from different and conflicting regulatory initiatives or from failure to resolve the jurisdictional conflicts and access disputes which exist today.

Neither H.R. 5158 nor S. 898, both of which dealt with the revision of the Communications Act of 1934, were enacted into law. After the withdrawal of H.R. 5158, the Department of Justice noted that there was still a need for telecommunications legislation addressing, among other things, defense and emergency telecommunications needs.

During the latter part of 1982 and into 1983, as indicated previously, NCS's scope of responsibility and involvement in NS/EP telecommunications matters began to broaden rapidly. As chairman of the ECWG, the Manager of the NCS and his staff had played a central role in developing the ECWG policy statement on emergency communications and in preparing a set of tasks to implement this policy. In a like manner, the NCS assumed a central role in developing the PD-53 agenda for the NSTAC.

The first three issues adopted by the NSTAC in December 1982--the National Coordinating Mechanism, Commercial Satellite Survivability, and the automated information processing survivability--had been formulated by the NCS as issues about which the Government sought information and advice from industry. As 1983 unfolded and NSTAC task forces were formed, the OMNCS assigned action officers to each task force. On selected issues, such as the NCC, the OMNCS formed separate task forces to work with their NSTAC counterparts. By the end of 1983, the NCS had been instrumental in

adding two more initiatives to the NSTAC agenda, EMP and International Diplomatic Telecommunications.

By 1983, it was clear that the National Communications System had become the administration's primary organizational vehicle for planning and coordinating the Nation's NS/EP telecommunications activities. It came as no surprise, therefore, when the NCS was assigned the task of drafting a new executive order addressing the age-old problem of sorting and assigning NS/EP telecommunication roles and responsibilities throughout the Federal establishment. This directive would radically redefine the National Communications System as an organization, if not as an emergency communications system.

## CHAPTER V

### THE NEW NATIONAL COMMUNICATIONS SYSTEM

#### 1. The Third Reorganization of the NCS, 1984

With the promulgation of E.O. 12472, "Assignment of National Security and Emergency Preparedness Functions," on April 3, 1984, the National Communications System program underwent fundamental changes. The original charter, signed by President Kennedy in August 1963, was revoked.<sup>136</sup> In its place was a new NCS with a mission, scope, and organization size considerably larger than before. Instead of being viewed as a single universal system, which was the goal of the NCS in the 1960s, the new NCS would be a forum for government agencies and the private sector to work together. Procedurally, the emphasis would be on consensus-building among the 23-member Committee of Principals and the 30-member National Security Telecommunications Advisory Committee. Technically the focus would be on interoperability and survivability involving a number of communications systems leading, hopefully, to an NS/EP "network of networks." Lastly, E.O. 12472 recognized the abiding reality of "statutory responsibilities and managerial prerogatives"<sup>137</sup> of those agencies and organizations comprising or supporting the National Communications System.

#### 2. The Revised NS/EP Telecommunications Mission and Organization

The mission of the National Communications System under E.O. 12472 was to assist the President, the National Security Council, the Office of Science and Technology Policy, and the Director of the Office of Management and Budget in the coordination, planning, and provision of an NS/EP telecommunications capability. The resources available to the NCS would be the telecommunication assets of the entities represented on the NCS Committee of Principals. Its administrative structure would include the Executive Agent (the Secretary of Defense), the Committee of Principals, and the Manager of the NCS. Those Federal departments, agencies, or entities, designated by the President, which lease or own telecommunication facilities or services of significance to national security and emergency preparedness, as well as other Federal agencies having relevant policy, regulatory, or enforcement responsibilities would comprise the Committee of Principals.

Unlike E.O. 10995 (1962), creating the Office of the Director of Telecommunications Management, and E.O. 11556 (1970) establishing the Office of Telecommunications Policy, both of which addressed the broad range of Federal telecommunications responsibilities, E.O. 12472 (1984)

focused exclusively on one area--national security and emergency pre-  
paredness telecommunications. Under this new order, the NCS would seek to  
utilize commercial, Government, and privately owned telecommunication  
resources to provide a network of networks in support of national leader-  
ship and continuity of Government. The goal was to upgrade the hardness,  
redundancy, mobility, interoperability, and restorability of these various  
networks, and through common operating procedures and computerized  
switching technology provide the Nation's leadership with the desired NS/EP  
telecommunications capability. Central to this capability was the  
establishment of the joint industry-Government National Coordinating Center  
capable of assisting in the initiation, coordination, restoration, and  
reconstitution of NS/EP telecommunications services or facilities under all  
conditions of crisis or emergency.

The role of the Secretary of Defense, as the Executive Agent for the  
NCS, remained as before, namely, to ensure that the necessary unified  
planning and operations was accomplished. He was also to recommend, in  
consultation with the NCS Committee of Principals, to the National Security  
Council, the Director of OSTP, and the Director of OMB, the assignment of  
implementation tasks to NCS members. These responsibilities would be  
accomplished largely through the Manager of the NCS (Director of the  
Defense Communications Agency) which the Executive Agent appointed. It  
would be the responsibility of the Manager to recommend an evolutionary  
telecommunications architecture, prepare plans and procedures for a circuit  
priority restoration system, develop alternative funding mechanisms, and to  
chair the NCS Committee of Principals.

Policy oversight and direction of the NCS under E.O. 12472 rested with  
the National Security Council, while the Director of OSTP was responsible  
for recommendations to the President regarding the technical adequacy of  
NS/EP telecommunications proposals. The Director of OMB was to prescribe  
general guidelines and procedures for reviewing the financing of the NS/EP  
capability within the budgetary process of the participating agencies.  
Collectively, the National Security Council, the Director, OSTP, and the  
Director, OMB, were to determine requirements.

Assignment of responsibilities to other departments and agencies was  
also made. The Federal Communications Commission had the task of review-  
ing the policies, plans, and procedures of all entities licensed or regu-  
lated by the Commission relative to NS/EP telecommunications services.  
Previously, during the 1960s and 1970s, the FCC had played a rather passive  
role. Then in the 1980s, in the face of deregulation and divestiture, the  
FCC began taking a more active part. In 1982, the position of FCC Defense  
Commissioner was established to address national security telecommunica-  
tions concerns and to coordinate with the NCS Manager. Also in that year,  
an FCC/NCS agreement was signed, which coordinated the complementary roles  
of the FCC's National Industry Advisory Committee (NIAC) and the and the

President's National Security Telecommunications Advisory Committee. This was followed by FCC's appointment to the NCS Committee of Principals.

In like manner, the Department of Commerce retained a prominent, if not overlapping, role, with responsibility for the development of plans and procedures concerning radio spectrum assignments, plus the authority to amend, modify, or revoke such assignments. This was in addition to the continuation of earlier mission assignments in which Commerce had been named (1970) the primary source of technical research in the telecommunication sciences. In 1978, the Office of Assistant Secretary for Communications and Information was established within the department, which led to the creation of National Telecommunications and Information Administration. This latter organization formulated policies in regard to the development, growth, and regulation of telecommunications industry, an assignment NTIA retained after the promulgation of E.O. 12472. Also, as a consequence of E.O. 12046 in 1978, the Secretary of Commerce continued to:

- o Serve as the President's principal advisor on telecommunications policies pertaining to the Nation's economic and technological advancement
- o Advise OMB relative to the procurement and management of Federal telecommunication studies and evaluations
- o Conduct telecommunications studies and evaluations
- o Provide for the coordination of telecommunication activities of the Executive Branch
- o Participate with the NSC and Director, OSTP, in carrying out their policy and planning responsibilities

The departments of State and Justice, as well as the CIA and the GSA performed important NS/EP telecommunications functions under E.O. 12472. The State Department was charged with planning and operating the Diplomatic Telecommunications System, while Justice was responsible for reviewing the legal sufficiency of plans and policies developed pursuant to E.O. 12472, including consistency with antitrust laws. The CIA retained responsibility for its own telecommunication services. Except as otherwise assigned by this order, the Administrator of GSA, consistent with policy guidance provided by the Director of the OMB, was to ensure that Federally owned or managed domestic communication facilities and services met the NS/EP requirements of the Federal civilian departments and agencies.<sup>138</sup>

Perhaps the most controversial assignment involved the Federal Emergency Management Agency. In 1978, prior to the creation of FEMA, the Executive Agent of the NCS sought to have the telecommunication assets of the proposed organization added to the NCS. The rationale behind this move

was that operational plans for two of FEMA's emergency communication systems had been prepared by the NCS, and, as such, were logical candidates for inclusion as NCS assets. The first was the NCS Telecommunications Management Plan for Annex C-XI, Federal Emergency Plan D, which provided for the operational direction and management control of all Federally owned and leased telecommunication resources during a Presidentially declared Plan D situation. The second was the NCS Plan for Communications Support in Emergencies and Major Disasters, which provided for communications support under provisions of the Disaster Relief Act of 1974.<sup>139</sup>

Backers of FEMA resisted the move and it was not until E.O. 12472 was signed in April 1984 that FEMA became a member of the NCS Committee of Principals, and its assets part of the NCS inventory. At the same time, however, FEMA retained a measure of independence being empowered by the new order to "Plan for and provide, operate and maintain telecommunications services and facilities...adequate to support its assigned emergency management responsibilities." In addition, FEMA was given a lead role in assisting the States in developing plans for satisfying the states' NS/EP telecommunications responsibilities.<sup>140</sup>

In summary, E.O. 12472 outlined a comprehensive, integrated Executive Branch approach to NS/EP telecommunications seeking to eliminate conflicts and overlapping roles among Federal departments and agencies and providing the framework for the development a relevant and effective NS/EP telecommunications capability.

### 3. Implementing the New Executive Order (E.O. 12472)

#### 3.1 Related Presidential Directives

Executive Order 12472 was but one directive--albeit the most important one--that had been or would shortly be issued by the White House outlining the organizational framework and management guidelines for developing an NS/EP telecommunications posture. Among the pre-E.O. 12472 orders were E.O. 12382 (September 1982) establishing the President's National Security Telecommunications Advisory Committee, and NSDD-97 (August 1983) creating the NSDD-97 Steering Group with oversight responsibilities for the NS/EP telecommunications program. Subsequent to E.O. 12472 were two additional directives: NSDD-188, signed in September 1985, establishing a new National Security and Emergency Preparedness Senior Interagency Group (SIG) to oversee all Federal Government NS/EP activities, including emergency communications, and NSDD-201, "NS/EP Telecommunications Funding," setting forth Federal funding guidelines.

The NS/EP SIG replaced the Emergency Mobilization Preparedness Board (formed in 1981) and, although it no longer maintained and monitored the

EMPB Plan of Action (NSDD-47, July 1982), the SIG advised participating agencies to complete the tasks identified in the plan. In response to this guidance, the NCS Committee of Principals approved a new version of the emergency communications section of the Plan of Action and forwarded it to the NSDD-97 Steering Group with the recommendation that the "NS/EP Telecommunications Plan of Action," as it had been retitled, serve as the "umbrella" or "framework" for developing an NS/EP telecommunications program. In reference to funding, NSDD-201 provided that each participating agency was to share in the implementation and recurring costs of NS/EP telecommunications improvements, as determined by each organization's share of NS/EP telecommunications requirements. The Executive Agent would continue to fund all development costs.<sup>141</sup>

### 3.2 Plans, Programs, and Fiscal Management

Tasking letters issued after E.O. 12472 focused on a comprehensive planning process which could effectively identify enhancements to domestic and international communications. These letters also called for the development of an acceptable funding approach as well as the structuring of a viable operational management mechanism. Responsibility for accomplishing these goals rested primarily with the NCS Committee of Principals and the NSTAC.

Relationships between these latter two bodies had grown steadily over the years and by the time E.O. 12472 was signed, channels of communication had been well established. The NSTAC, meeting every eight to nine months, provided advice and recommendations directly to the President through the Assistant to the President for National Security Affairs and to the Secretary of Defense as Executive Agent of the NCS. The Industry Executive Subcommittee met more frequently than the NSTAC and directed the activities of the working groups and task forces. As indicated previously, the Manager, NCS, provided staff support to the working groups and task forces as well as to the NSTAC itself.

On the Government side, the Committee of Principals functioned as an interagency forum for NS/EP telecommunications. Its subordinate body, the Council of Representatives met monthly to review, discuss, and debate issues for consideration by the more senior committee, which met quarterly. The members of the Council also served as the day-to-day points of contact between the member organizations and the Office of the Manager, NCS. To cope with a growing workload of pending items, the COR established a number of subcommittees to focus on specific topics and issues. Serving as a catalyst in this coordinated effort was the Manager of the NCS and his staff.

#### 4. The NS/EP Telecommunications Planning Process

On October 11, 1986, the Executive Office of the President announced its approval of the NSEP Telecommunications Planning Process report, prepared by the NCS in support of E.O. 12472.<sup>142</sup> Its purpose was to provide a steering mechanism for determining priorities, evaluating and selecting enhancement projects, and proposing funding solutions. The scope of this interagency planning document extended to the management and use of Government, commercial, and private-sector telecommunications under specified conditions, as well as planning for the development and maintenance of a national telecommunications infrastructure that incorporated the necessary combinations of hardness, redundancy, mobility, connectivity, interoperability, restorability, and security to obtain NS/EP telecommunications survivability goals.

To achieve these goals, four steps or elements were identified: capability objectives, deficiencies/priorities, candidate initiatives, and a National Level Program. The capability objectives were to define the capabilities necessary to meet the NS/EP telecommunications requirements of the Federal Government. The deficiencies/priorities element were to identify, and place in priority order, deficiencies or shortfalls in existing capabilities. Candidate initiatives would then be proposed to correct the deficiency or otherwise enhance NS/EP telecommunications capabilities. Only candidate initiatives of national significance would be selected for the National Level Program. In addition to the planning process, a separate, evolutionary NS/EP telecommunications architecture was to be prepared to serve as the blueprint for evaluating and integrating national-level NS/EP telecommunications initiatives.<sup>143</sup>

#### 5. Funding NS/EP Telecommunications

In establishing the NCS in 1963, it was the intent of the White House that each agency should pay for its own NCS-designated improvements.<sup>144</sup> In the absence of a viable NCS system plan, however, little progress was made in determining costs or who should pay for them. As a practical matter, national emergency communication requirements, since 1963, had been met largely by reliance on the survivability features added to the Bell System network. Costs of these enhancements were generally recovered from the telecommunications industry, from telephone users in the rate base, or through special tax provisions. Then came PD-53 in 1979 specifying greatly expanded survivability requirements at much higher costs. At this point it became apparent that reliance on this laissez faire arrangement to pay for NS/EP telecommunications enhancements was no longer appropriate.

A move away from this long-standing Federal Government-AT&T arrangement came in January 1981 when the PD-53 Steering Group directed the NCS

to provide NS/EP telecommunications funding out of its own budget. As time went on, the DOD became alarmed at the scale of PD-53 costs. An estimate by the NCS in 1982 projected PD-53 initiatives costs at \$481 million over the next 7 years. Of this amount, almost two-thirds (\$316 million) was above DOD fiscal guidance. The projected high costs, coupled with recently invoked administration budget constraints, prompted DOD officials to reconsider its commitment to the NCS program. The result was a July 1983 Defense Review Board decision to reduce the "guidance level" for the initiatives during fiscal years 1986-1989 by 50 percent. In addition, the Review Board recommended that the non-DOD agencies benefiting from these improvements should pay a "proportionate" share of the costs.

This multiagency approach to financing NS/EP telecommunications enhancements was incorporated into two documents. One was the National Plan of Action on Emergency Mobilization Preparedness (March 30, 1983); the other was NSDD-97, National Security Telecommunications Policy (June 8, 1983). The National Plan of Action called upon each department and agency to program and budget funds and personnel necessary to accomplish the measures described in the National Plan of Action, while the NSDD-97 Steering Group was called upon to address, in consultation with the operating agencies, the delegation of funding and implementation of approved NS/EP telecommunications enhancements. To achieve this, the Steering Group tasked the NCS to develop an initial set of NSDD-97 initiatives and programs, including estimates on the percentage to which each NCS agency would share in the benefits. As to the sources of funding to pay for these improvements, the Director of OMB made it clear that it was the "Government's intention to use direct appropriations to finance national security requirements affecting private carriers."<sup>145</sup> Alternative funding approaches, said OMB, which relied on the telecommunications industry, telephone users, or special tax provisions were deemed inappropriate.<sup>146</sup>

Again, there was no immediate application of the funding formulas, and it was not until the publication of E.O. 12472 in 1984 that the requirement again become an issue. At this time, the Committee of Principals directed the investigation of alternative NCS funding mechanisms. This move matched a similar action by the NSTAC to examine the funding issue from industry's standpoint.

### 5.1 Government Funding Studies

The OMNCS funding task force's assignment was to examine the pros and cons of various funding options. These alternatives included such mechanisms as private sector provider, industrial fund, delegate agency, industrial enhancement, consolidated program budget, executive agent, designated agency, and multiple agency. During discussions of these options, it became clear that the DOD and the nondefense agencies (as well as the private sector) held differing views as to who should pay for improvements. The nondefense agencies concluded that the benefits accrued

mainly to the defense establishment and that, therefore, the DOD should bear the costs. The DOD, on the other hand, held that the nondefense agencies had significant NS/EP telecommunications requirements and, therefore, should pay their fair share.

The issue was forwarded to the White House for resolution. In December 1985, the President approved and signed NSDD-201, "National Security and Emergency Preparedness (NS/EP) Telecommunications Funding,"<sup>147</sup> which, in principle, sided with the DOD/Joint Chiefs of Staff view that costs should be distributed among the various agencies. Implementation and recurring costs for national level NS/EP telecommunications programs (i.e., those benefitting multiple Federal departments, agencies, or entities), said the White House, shall be shared on a pro rata basis determined by each organization's share of NS/EP telecommunications requirements. The cost of developing programs, however, would be borne by the NCS Executive Agent. For the present, the DOD was to continue funding national level NS/EP programs. Beginning with fiscal year 1990 and beyond, other NCS members were to share in the implementation and recurring costs. The method of determining each organization's share would, initially, be based on the results of the ongoing NS/EP telecommunications requirements analysis.<sup>148</sup>

## 5.2 Industry Funding Studies

Industry's concern over how NS/EP telecommunications improvements and changes were to be financed first surfaced during the pre-NSTAC conferences in 1982. However, it was not until two NSTAC initiatives--the National Coordinating Mechanism (NCM) and CSS--reached the implementation stage that it became necessary to make decisions concerning costs and cost-sharing.

Responsibility for addressing the NSTAC funding requirement fell initially to the Funding and Regulatory Working Group (FRWG), one of the three working groups formed by the NSTAC at its inaugural meeting in December 1982. On June 17, 1983, the FRWG presented a report to the NSTAC Industry Executive Subcommittee (IES) in which it identified two generic costs: the cost of participation and the cost of services provided. The costs of participation, said the report, should, in general, be shared between Government and industry, with industry participants funding those costs which they considered their "normal costs of doing business," and the Government funding the remaining costs of NS/EP telecommunications requirements and enhancements. Also, where applicable, the costs of communication services provided should be paid by the customer.

The recommendations of the FRWG regarding cost sharing were successfully applied to the establishment of the National Coordinating Center, one of the key elements in the NCM program. However, as time went on and scope and complexity of the National Security Telecommunications Advisory

Committee NS/EP telecommunications recommendations grew, the Committee questioned the adequacy of its earlier funding solution. Thus, at its third meeting in April 1984, the Committee charged its Industry Executive Subcommittee to study and evaluate specific funding mechanisms to pay for the NSTAC initiatives now on the table. The result was an IES Funding and Regulatory Working Group report in October 1984 entitled, "NSTAC Funding Methodology." In this report, the FRWG described a funding methodology consisting of costs, benefits, and recommended funding mechanisms. The output would be an order-of-magnitude cost summary containing, but not limited to, specific types of costs; a benefit summary that identified, but was not limited to, categories of potential industry benefits; and a list of possible funding mechanisms.

The report was adopted by the NSTAC at its fourth meeting in December 1984. Subsequently, in February 1985, each active NSTAC task force was instructed to apply this funding methodology to its program and to provide the NSTAC with cost/benefit estimates and proposed funding approaches.

## Chapter VI

### CURRENT (1987) NS/EP TELECOMMUNICATIONS PROGRAMS

The national security and emergency preparedness telecommunications projects under way in 1987 fell under two headings: the National Level Program (NLP)--those projects which required significant Federal resources for their development, implementation, and recurring costs--and baseline studies from which candidates would be selected for implementation under the National Level Program.

#### 1. National Level Program

Because their nationwide significance, the Nationwide Emergency Telecommunications Service (NETS), the Commercial Network Survivability (CNS), and the Commercial SATCOM Interconnectivity (CSI) were all made part of the National Level Program, even though none of the three were a product of the new planning process, having been authorized previous NCS planning programs.

##### 1.1 Nationwide Emergency Telecommunications Service (NETS)

The Nationwide Emergency Telecommunications Service program is designed to increase survivability and connectivity of the public switched networks in support of NS/EP telecommunication requirements. The NETS approach is to utilize all surviving assets of the public switched networks and increase useful connectivity through innovative routing schemes and deployment of call controllers. The NETS program allows a phased implementation through a series of network configurations that provide increasing levels of capability.

The current acquisition plan calls for NETS to be acquired through a single prime contractor. The NETS prime contractor Request for Proposal is planned for issuance in 1988, with award in 1989. Additionally, contracts have been awarded to local and interexchange carriers (Bellcore, US Sprint, and AT&T) to obtain network data and recommended approaches for implementing NETS features in their respective networks.

##### 1.2 Commercial Network Survivability (CNS)

The Commercial Network Survivability program is designed to provide expanded opportunities for long-haul transmission. It provides a means to interconnect assets of multiple carriers physically and procedurally, thus increasing the capability to carry NS/EP traffic. The program's basic

thrust is to enhance survivability of commercial carrier terrestrial assets through increased interoperability.

In late fiscal year 1985, the NSTAC's CNS Task Force identified five initiatives to improve the survivability of terrestrial systems and facilities, and to enhance the emergency response capabilities among the commercial networks. In May 1986, the President approved the implementation of the five NSTAC recommendations. CNS implementation began during fiscal year 1987 with a prototype interconnect facilities of AT&T, US Sprint, General Telephone of California, and Pacific Bell. The interconnect was used to route around hypothetical earthquake damage.

### 1.3 Commercial SATCOM Interconnectivity (CSI)

The Commercial SATCOM Interconnectivity program seeks to capitalize on the proliferation of commercial satellite assets and to use them to improve Government emergency communications. The concept provides for long-haul, point-to-point connectivity, under postattack conditions, between potentially surviving "islands" in the public-switched networks using these satellite resources.

In fiscal year 1987, the implementation of communications interoperability was begun under a pilot program to demonstrate the use of satellite trunks to replace or supplement terrestrial capabilities and provide a means to perform tests and validate operational concepts. Also in fiscal year 1987, draft contingency plans and emergency procedures were developed to coordinate the actions of different commercial satellite communication carriers during a national emergency.

## 2. Baseline Program

The 1987 baseline program encompasses some 26 projects. Of prime interest are the National Telecommunications Management Structure (NTMS) program and the President's National Security Telecommunications Advisory Committee. The purpose of the NTMS is to provide a comprehensive, survivable, and enduring management structure capable of initiating, coordinating, restoring, and reconstituting the nation's telecommunications resources in the event of a national emergency, including war. Two key elements of the NMTS are the National Coordinating Center and the National Telecommunications Coordinating Network (NTCN), the latter providing a national order wire capability to be used in situations where Section 706 of the Communications Act of 1934 has been invoked. Other management initiatives being studied include an information processing and decision support component, a service priority system for providing priority treatment of NS/EP telecommunications known as SHARES (shared resources).

## 2.1 The National Coordinating Center

The National Coordinating Center, established in January 1984, was the Government's initial response to the void left by the demise of the Government-AT&T emergency communications arrangement. This newly formed joint industry-Government operations center had been established to assist in the initiation, coordination, restoration, and reconstitution of NS/EP telecommunication services and facilities under all conditions of crisis or emergency. By 1985, there were 12 industry representatives resident in the NCC, as follows:

- American Satellite Company
- American Telephone and Telegraph Company
- Bell Communications Research, Inc.
- Communications Satellite Corporation
- GTE Corporation
- ITT Corporation
- MCI Telecommunications Corporation
- Pacific Telecom, Inc.
- RCA Corporation
- TRT Telecommunications Corporation
- Western Union Corporation

The U.S. Telephone Association (USTA), the twelfth entity, provided a nonresident representative to the NCC. The State Department, the Federal Emergency Management Agency, the Federal Aviation Administration, the U.S. Coast Guard (representing the Department of Transportation), the Central Intelligence Agency, and the GSA are represented directly in the NCC. These Government organizations (and other Government entities having nonresident professionals assigned to the NCC) joined with the industry representatives to form the day-to-day NCC organization.

On March 25, 1985, the NCC staff moved into its new consolidated operating facility at the DCA Headquarters in Arlington, Virginia. This facility provides functional spaces for the NCC representatives, expandable spaces for up to 20 Government representatives, and a fully functional crisis coordination center. In January 1987, the Federal Communications Commission approved the NS/EP Telecommunication Procedures for the provision or restoration of commercially provided NS/EP telecommunications service. The procedures establish two qualifying criteria, emergency or essential, which must be met before NS/EP can be invoked. They also established a four-step process to expedite service initiation or restoration, and provide the rationale and justification for expediting the requested service if the qualifying criteria are met.

During fiscal year 1986, the NCC responded to 33 NS/EP invocations involving 168 critical circuits or services. During fiscal year 1987, there were an additional 174 NS/EP invocations, involving over

330 circuits or services. The majority of these requests originated with the White House Communications Agency (WHCA) and the Department of State (DOS).

## 2.2 The President's National Security Telecommunications Advisory Committee

Another baseline activity is the President's National Security Telecommunications Advisory Committee which has provided the President and the Executive Agent, NCS, with an impressive number of quality suggestions and recommendations. In the 5 years it has been in existence, as stated previously, the NSTAC has worked 12 major issues and made recommendations in over half of the issue areas. Currently (1987) there are five active NSTAC Task forces providing operational support to the NSTAC process. The issues addressed by these task forces include: Industry Information Security, National Telecommunications Management Structure, Telecommunications Industry Mobilization, Telecommunications Service Priority, and Telecommunications Systems Survivability.

## 2.3 Other Baseline Programs

Staying abreast of the many new technological improvements has long occupied the attention of the NCS, going back to 1966 when the Second Long-Range Plan proposed studies of the impact and import of satellite communications, electromagnetic pulse, and electrical power outages on the design of an emergency telecommunications system. The years that followed witnessed a steady increase in the number of technological developments being studied. In 1987, baseline technology studies include the examination of the applicability of low-cost satellites, electromagnetic pulse mitigation, common channel signaling, fiber optics, photonic switching, integrated services digital networks, digital signal processing, and transoceanic fiber optic cables.

Active participation by the NCS in national and international standards organizations during the 1980s continues to be a key component of NCS's baseline study program. Since 1972, when the NCS was placed in charge of the Federal Telecommunications Standards Program, over 20 Federal standards were adopted under the FTSP program. Most of these standards were aimed at improving interoperability and survivability. Following the publication of E.O. 12472, the NCS pursued the standards activity with renewed interest as it sought the adoption of standards which could influence the design of future commercial products.

During fiscal years 1986 and 1987, the FTSP program concentrated on standards development in the areas of new digital network interfaces, fiber optic systems, new two-way simultaneous modems, video conferencing, land mobile radio, and automatic establishment of HF radio links. Also,

OMNCS staff participated actively in international standardization work on the forthcoming integrated services digital network (ISDN).

### 3. Judicial, Legislative, and Regulatory Developments

Outside forces continued to exert a major influence on the development of a viable national security and emergency preparedness telecommunications capability. A key judicial development was the Modification of the Final Judgement ruling on August 11, 1982, which provided for a single point-of-contact within the post-divestiture Bell structure. This ruling was implemented by the Bell Regional Holding Companies with the establishment of Bell Communications Research, Inc. (Bellcore), initially called the Central Services Organization. Bellcore presently is a member of the NCC as the representative of the Regional Holding Companies.

In the regulatory field, the FCC extended the waiver of Computer II rules for 21 NS/EP systems to December 1984. In January 1985, the waiver was made permanent. This waiver makes AT&T Communications and the Bell Operating Companies (BOCs) solely responsible for furnishing customer premises equipment (CPE) to 21 designated Federal communication systems in an emergency. Under this arrangement AT&T Communications will be able to serve as the single point of contact for these 21 systems. What this arrangement effected was a qualified return to the predivestiture era in which AT&T acted as the Government's system manager in providing emergency communications during crises. In late July 1985, the FCC launched the Third Computer Inquiry, seeking comment on several specific proposed revisions to the Computer II rules, and also proposing a revised regulatory framework to replace Computer II.

Two legislative actions in 1984 which, if passed, would have significantly affected NS/EP telecommunications planning. The first action related to the recovery of local telephone cost and the second to international telecommunications competition. Neither the House nor the Senate bills to impose penalty fees for use of bypass technology or prohibiting bypass altogether was passed. DOD had been opposed to such legislation on the grounds that such penalties or prohibitions would adversely affect the Nation's command, control, and communication capability. Efforts to pass legislation amending the Communications Act of 1934 to provide for full and effective competition in international telecommunications markets also failed.

Of major interest was a bill introduced into the House of Representatives on January 24, 1985, calling for the establishment of the OTP in the Executive Office of the President (H.R. 642).<sup>149</sup> Apparently dissatisfied with delays in formulating an international satellite communications systems policy and concerned over the long-standing dissension among Executive departments regarding the evolution and management of Federal

telecommunications resources, a group of Congressmen introduced legislation to establish the Office of Telecommunications Policy. This new office would coordinate the work of all Federal agencies involved in telecommunications matters and (in language strikingly similar with E.O. 11556 setting up the first OTP in 1970) would (a) provide for the preparation of national telecommunications policy options; (b) serve as the President's principal advisor regarding telecommunications issues and policies; (c) assure that the executive branch views are effectively presented to the congress and to the FCC; and (d) monitor the development of new telecommunications technologies.<sup>150</sup>

On February 26, 1985, the bill was referred to the House Committee on Energy and Commerce and from there to the Subcommittee on Telecommunications. The bill died for lack of action by the 99th Congress.

A similar bill entitled the "Telecommunications Policy Coordination Act" (H.R. 323) was introduced into the 100th Congress on January 6, 1987.<sup>151</sup> This bill would also establish an Office of Telecommunications Policy in the Executive Office of the President with powers similar to the one proposed in the previous bill. In addition, the OTP would act as the arbiter of disputes and differences which may arise between or among Government agencies in connection with the development and implementation of national telecommunications policies. The Director, OTP, was also to monitor the development of new telecommunications technologies, study the effects of new telecommunications facilities, services, and systems, and make recommendations to the President and to the Congress with respect to the introduction of new technologies into the national economy. Both of these bills provided clear reminders that many in Congress are still not convinced that the executive branch had found the formula to provide the leadership necessary to manage the Nation's telecommunication resources.<sup>152</sup> H.R. 323 was referred to the Committee on Energy and Commerce. No further action has been taken on the bill (1987).

## CHAPTER VII

### SUMMARY AND OBSERVATIONS

*The establishment of the NCS is a major undertaking in government which will occupy the best of our abilities for a long time to come if it is to successfully meet all the objectives established by the President. The contributions that each organization can make to this success are much more important than the rights, prerogatives or ambitions of the agencies concerned.*

*Jerome B. Wiesner  
Special Assistant to the President  
for Telecommunications, 1964*

The National Communications System arrived on the national scene at a moment of high drama when the very survival of the Nation appeared sorely threatened. From President Kennedy on down through the higher echelons of Government there was a spontaneous realization that the communications available to the President during the Cuban missile crisis had been inadequate. Remedial steps needed to be taken, and promptly, if the Nation was to have an effective, reliable, long-term national security telecommunications capability.

Spearheaded by the Orrick Committee and the President's own National Security Advisor, a number of substantive measures were quickly taken. First, a Presidential memorandum, calling for the establishment of a National Communications System to provide the necessary communications for the Federal Government under all conditions ranging from a normal situation to national emergencies, including nuclear attack, was issued (August, 1963). Next, an NCS Executive Agent (the Secretary of Defense) and an NCS Manager (Director, Defense Communications Agency) were appointed to implement the directive. In addition, major Government operating agencies with significant telecommunications resources were made part of the team, followed by a program plan outlining the development steps. Providing overall guidance was the White House office of the Director of Telecommunications Management who also served as the President's Special Assistant for Telecommunications.

Great expectations accompanied these early developments. But before long, storm clouds appeared presaging difficulties, beginning with the assassination of President Kennedy in Dallas in November 1963. His death removed the program's key protagonist. Another, more subtle, yet in the long run more telling, hurdle was institutional resistance by agencies who

saw the National Communications System as a direct challenge to their individual communication charters and prerogatives. From the outset, these agencies took exception to the concept of a single, unified communications network in which some of their assets would be technically integrated and placed under outside control during crisis.

These circumstances and challenges notwithstanding, planning for the National Communications System forged ahead with the first long-range plan published in August 1964. In this report came the first hints of what the proposed system would look like, with the Defense Communications System designated the national security component and the Federal Telecommunications System named to supply the non-national security requirements. It was during this initial planning phase that a separate but related emergency communications capability--the Washington-Moscow Hotline--was completed. This leader-to-leader telegraphic link, which became operational in August 1963, had been built in response to the Cuban missile crisis to provide the heads of state of the two superpowers a way of heading off a nuclear war through direct communications. Over the years it was to be used on a number of occasions to clarify the other side's intent when nuclear-capable forces were involved.

The first annual NCS long-range plan of 1964 was followed by five more such documents as the Executive Agent, the NCS Manager, and the major operating agencies searched for solutions to satisfy not only the August 1963 presidential memorandum but also to provide answers to the reservations posed by Government departments and agencies. Also by this time, other considerations, particularly communication advances in such areas as satellites and computers and digital communication links were beginning to be factored into the planning process, altering the manner in which communication systems including the NCS were designed, built, and operated. The original view that the NCS would basically be a dedicated, hard-wired system was now beginning to be conceptualized as a "network of networks" built around a set of high-tech interoperable common-user systems, both commercial and Government.

Despite the amount of planning and study that went into the NCS program in the 1960s and the increasing number of agencies, committees, and task forces committed to the work, only halting progress was made toward a final NCS system solution. As delay piled on delay, criticism of the administration's handling of the Nation's communication resources became more vocal. Beginning in the late 1960s, the Congress, the Bureau of the Budget, and the General Accounting Office all published critical judgments on the Government's role, particularly as it applied to the National Communications System. The essence of this criticism was perhaps best summarized by the General Accounting Office which observed that, "In the more than 5 years that have lapsed 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."

To give new direction and momentum, the Nixon administration, in 1970, opted for a policy which embraced the entire spectrum on national telecommunications resources rather than focus almost exclusively on the National Communications System. The vehicle for implementing this new direction was Executive Order 11556, "Assigning Telecommunications Functions," signed by President Nixon in September 1970. This order established the Office of Telecommunications Policy whose director proceeded to separate the Government's communications services into two broad areas (defense and nondefense) each with a number of relatively equal subsystems, of which the National Communications System was one. With this new management arrangement in place, the Director hoped to eliminate some of the existing barriers to coordinated communications planning and provide for economies of scale. One result of this approach was to significantly diminish the high visibility role which the National Communications System enjoyed in the 1960s. For most of the remainder of the decade of the 1970s, the National Communications System operated on a small budget, a small staff, and with little voice in telecommunications policy planning. Utilizing the limited resources available to it, the NCS launched a modest research effort emphasizing interoperability and survivability. Key to these system goals was a standards program.

Toward the end of the decade, the pendulum began to swing back. The Carter administration, pointing to the lack of accomplishments of the Office of Telecommunications Policy, disbanded the agency and assigned its functions, including the National Communications System, to the National Security Council and other executive branch offices and departments. Part of the incentive for this reorganization came from the recent major Soviet nuclear missile buildup and the threat this development posed to the Nation's command structure. Faced with this new urgency, the President's National Security Advisor called for "leadership protection" of the President and other key decisionmakers through improved command and control communications, a move reminiscent of the Kennedy administration response to the Cuban missile crisis some 16 years earlier.

Perceiving the need for a step improvement in national security communications, the Carter administration in 1979 published PD-53 announcing a new national security telecommunications policy. This directive and the program plan which followed, particularly the PD-53 initiatives identifying the key issues and technical problems, formed the nucleus of the National Communications System program in the 1980s.

During the early 1980s, the National Communications System as an organization and as a program went through major changes. From a small cluster of operating agencies in the 1960s, under the leadership of a strong Executive Agent supported by a small staff and mandated to build a

unified communications system dedicated to the President, the NCS, by the mid-1980s, had evolved into a relatively large and complex organization emphasizing consensus-building and the utilization of in-place networks designed around high-tech switching and transmission capabilities. The operative term, during this period of intense defense restructuring, was national security and emergency preparedness telecommunications interoperability and survivability in which some 23 Government entities, constituting the NCS Committee of Principals and its subordinate body, the Council of Representatives, the National Security Telecommunications Advisory Committee and the Executive Agent and the NCS Manager and his staff of approximately 100 military and civilian personnel would work together towards these NS/EP telecommunications goals.

Further impacting the communications environment during this period of dynamic change was the on-going communications revolution coupled with Government steps to deregulate and divest the Bell telephone system. The consequence of deregulation and divestiture was the proliferation of long-distance carriers and an abrupt altering in the way Government conducted business with the communications industry. Instead of the AT&T Long Line Department acting as the Government's system manager in matters relating to emergency communications, a new structure--the 30-member National Security Telecommunications Advisory Committee--was created to take its place. Quite understandably, this multi-company approach emphasized the availability of many networks, commercial and Government, rather than the creation of a unique, dedicated system, such as was envisioned in the 1960s.

Most of these changes in NCS policy, organization, goals, and environment were codified and recognized by the Reagan administration in E.O. 12472 of April 1984. This order, assigning NS/EP telecommunication functions throughout Government, vacated the original NCS charter of August 1963, and provided a new framework. Under this new order, the National Communications System, along with the Committee of Principals and the National Security Telecommunications Advisory Committee, became the administrative mechanism, or forum, for assisting the President and the National Security Council in "the planning for and provision of national security and emergency preparedness communications for the Federal Government under all circumstances, including crisis or emergency, attack, recovery and reconstitution." To date, the most tangible NS/EP communications accomplishment has been the National Coordinating Center established as a joint Government-industry operation in January 1984. This new organization was to assist in the initiation, coordination, restoration, and reconstitution of NS/EP telecommunications services and facilities under crisis conditions. By the end of 1987, the NCC had responded to some 200 invocations involving some 500 critical circuits or services.

In retrospect, every Chief Executive since the Civil War has had the need, if not the desire, to have his "own" modern communications system in

order to carry out the responsibilities of his office. The sight of Lincoln, huddled in a small room adjacent to Secretary of War Stanton's office, reading and sending telegrams from and to his field commanders, is solemn testimony to the essential nature of electrical communications in crisis management at the White House. And so it was for John Kennedy who, 100 years later, turned to a mix of telephone, teletype, television, and radio in a flawed effort to orchestrate a national response to an incredibly complex, time-sensitive, and world-threatening nuclear confrontation with Nikita Khrushchev.

Today, the demand for reliable, real time control from the center in the nuclear age remains undiminished, making the mission of the new National Communications System to provide a national security and emergency preparedness telecommunications capability for the President and other key decision-makers an essential national security priority.

## CHRONOLOGY

### Eisenhower Administration (1953-1961)

- 1959 January Eisenhower cabinet considers proposal for a unified Federal Civilian Communications System.
- 1960 May Defense Communications System (DCS) and Defense Communications Agency (DCA) formed.
- December Report to President-Elect Kennedy underscores need for better coordination of Federal communication activities.

### Kennedy Administration (1961-1963)

- 1962 February Position of Director of Telecommunications Management established by Executive Order 10995. Purpose: to coordinate telecommunication activities of executive branch.
- June National Military Command System (NMCS) established by the President in NSAM 166.
- October Cuban Missile Crisis.
- October Subcommittee on Communications (Orrick Committee) formed by National Security Council to investigate communications shortcomings during Cuban missile crisis.
- 1963 February Federal Telecommunications System (FTS) established.
- July In response to Orrick Committee recommendations, President Kennedy signs NSAM 252 (classified), establishing National Communications System.
- August Presidential Memorandum (unclassified) establishing NCS published. Position of Special Assistant to the President for Telecommunications created.
- Secretary of Defense named Executive Agent, NCS. Director, Defense Communications Agency, named Manager, NCS.

	August	"Hot Line" between Washington and Moscow operational. One of the communication results of the Cuban missile crisis.
	October	The first NCS planning document, the Near-Term Plan, published. Inventories potential NCS communication resources.
	November	President Kennedy assassinated.
		<u>Johnson Administration (1963-1969)</u>
1964	January	Procedures for processing NCS telecommunication circuit requirements published.
	January	Institutional resistance to NCS surfaces as the General Services Administration voices opposition to a "single" NCS under control of Executive Agent (SecDef).
	August	First NCS Long-Range Plan published. Major and Minor Operating Agencies identified. Defense Communications System and Federal Telecommunications System proposed as two main components of NCS.
1964	December	<u>National Plan for Emergency Preparedness</u> repeats call for a "unified governmental communications system, responsive to a single Executive Agent."
1965	November	House Holifield Committee calls for a greater delegation of powers to Director of Telecommunications Management to strengthen his role in managing Government telecommunications.
1966	October	Second Long-Range Plan published. Debate over NCS technical design and management arrangements continues. Special Assistant directs preparation of Interim NCS Concept Plan for the 1970s, separate from the annual planning process.
	September	Bureau of the Budget asks all NCS Operating Agencies to submit program and cost information for inclusion in BOB's NCS planning and programming document.

1967	August	President Johnson appoints task force to study U.S. communications policy and organization.
1968	April	In the face of continued opposition to a unified system, the Manager of the NCS writes to all agencies seeking to balance individual agency prerogatives with requirements for a unified system ordered by the President.
1968	March	Third and Fourth Long-Range plans forwarded to the White House. Little progress made toward a final NCS concept. Separate task force established to prepare interim NCS Concept Plan for the 1970s.
1968	August	Executive Agent, NCS, forwards 1970s Interim Concept Plan to White House. Plan calls for an "Integrated Government Communications System." DOD resists and asks for further study.
	November	Bureau of the Budget issues report strongly critical of the Government's management of telecommunications. Urges a reorganized and strengthened NCS.
<u>Nixon Administration (1969-1974)</u>		
1969	July	General Accounting Office issues report critical of NCS. Recommends White House create a new organization with the "stature, authority, and resources sufficient to provide a strong central focal point in telecommunications matters."
	October	President signs E.O. 11490 seeking to clarify emergency preparedness assignments.
	December	White House study (Flanigan Report) calls for elimination of DTM and establishment of a new independent White House telecommunications office.
1970	February	President's Reorganization Plan No. 1 submitted to Congress. Calls for establishment of the Office of Telecommunications Policy (OTP) and elimination of DTM.

- September NCS suspends planning until dispute over role and prerogatives is resolved.
- September E.O. 11556 promulgated, establishing OTP as an independent office within the Executive Office of the President. DTM abolished. OTP begins review of the Government's telecommunication resources.
- October Congress deletes funds for further NCS planning studies. Warns executive branch to strengthen NCS management structure or "abandon the entire concept."
- 1972 April Executive Agent announces the elimination of single integrated NCS as a goal. To focus "on the more modest but operationally worthwhile goal of interoperability." Emphasis now will be confederation rather than single, unified system.
- 1973 October OTP Circular 12 makes major revisions in Government's approach to communications organization and planning. OTP rejects idea of a single system under a single manager for emergency communications. NCS to be "lead agency" in national security telecommunications only. Other lead agencies designated to handle other emergency communication needs.

Ford Administration (1974-1977)

- 1974 August First NCS Annual Report published. Published annually thereafter.
- 1975 July NCS announces OTP Circular 12 does not alter its responsibilities outlined in Presidential memorandum of August 21, 1963. Will continue to be responsive to both.

Carter Administration (1977-1981)

- 1978 March E.O. 12046 signed by President. Abolishes OTP and transfers telecommunications functions to National Security Council, Office of Science and Technology Policy, and elsewhere. Renewed emphasis on national security and emergency preparedness telecommunications.

	July	U.S. District Court Judge Green assigned Justice Department suit against AT&T.
	June	Memorandum of Understanding between NSC, OSTP, and NCS making NCS Government focal point for telecommunications program development.
1979	November	PD-53, National Security Telecommunications Policy, published. Restates policy objectives of August 21, 1963, Presidential memorandum but without end product (a National Communications System). PD-53 Steering Group set up to implement directive.
1980	January	Twenty-two PD-53 telecommunications initiatives identified by Steering Group.
		<u>Reagan administration (1981-1989)</u>
1981	January	Reagan administration takes office. Endorses PD-53 objectives and E.O. 12046 reorganizing Federal telecommunications management.
	July	Office of the Manager, NCS, launches major study of PD-53 initiatives.
	December	Emergency Mobilization Preparedness Board (EMPB) established by Presidential Directive with the Emergency Communications Working Group (ECWG) as one of 12 working groups.
1982	June	PD-53 Working Group established with Chair from OSTP and Vice Chair from NCS.
	July	National policy statement on emergency mobilization preparedness issued, including emergency communications (NSDD-47). Essentially a reiteration of PD-53 telecommunications policy statement.
	September	National Security Telecommunications Advisory Committee (NCTAC) established by E.O. 12382 providing for a new industry-Government organizational relationship for responding to emergency Government telecommunications needs.

	December	NSTAC I meets and approves three issues for study: National Coordination Mechanism, Commercial Satellite Survivability, Automated Information Processing.
1983	March	EMPB Plan of Action signed by President. Contains 32 ECWG milestones or tasks providing for an enhanced emergency communications capability. Milestones the responsibility of various departments and agencies.
	June	NSDD-97, National Security Telecommunications Policy, promulgated. Replaces PD-53. Speaks of a "survivable telecommunications infrastructure" as a national goal. Gives NCS enlarged coordination and planning role.
	July	NCS enlarged to include 22 Federal departments and agencies.
	July	NSTAC II approves establishment of the National Coordinating Mechanism program. The National Coordinating Center seen as symbol and instrument of the new Government/industry cooperation.
1984	January	Court-ordered divestiture of the Bell System implemented.
	January	Interim National Coordination Center (NCC) activated in DCA headquarters, Arlington, Virginia. Will provide Government agencies instant coordination capability with common carriers in emergencies.
	February	President approves NSTAC-recommended projects. Presses for establishment of a permanent National Coordinating Center.
	April	Management of Federal telecommunications reorganized under E.O. 12472, "Assignment of National Security and Emergency Preparedness Telecommunications Functions." Old (1963) NCS charter revoked. New NCS to coordinate establishment of an NS/EP telecommunications capability.
	September	NSDD-145, "National Policy on Telecommunications and Automated Informations Systems Security," promulgated.

	December	President approves NSTAC III recommendations.
	December	NSTAC IV convenes. Government-industry cooperation in the telecommunications field now on strong footing.
1985	January	Permanent Computer II NS/EP waiver granted to BOCs and AT&T. Latter two organizations to serve as single point of contact for 21 designated Federal systems in emergencies. This is in effect a return to pre-divestiture arrangements in which AT&T Long Lines was solely responsible for providing communications to the Government in emergencies.
	January	House of Representatives' Bill H.R. 642 introduced. Calls for establishment of Office of Telecommunications Policy in Executive Office of the President, similar to the one established in the early 1970s. Not passed.
	March	NCC moves into permanent quarters at DCA Headquarters, Arlington, Virginia.
	October	NSTAC V meeting held. Over past three years NSTAC has worked 10 major issues, made recommendation in 6 (NCS, CSS, AIP, IDT, CNS, and EMP), and received Presidential approval in 4 (NCM, CSS, EMP, and AIP). Two issues, TIM and TSP, still pending.
	December	President signs NSDD-201, NS/EP Telecommunications Funding, setting forth Government policy on funding NS/EP improvements. Development costs funded by Executive Agent, NCS. Implementation and recurring costs to be shared.
1986	May	NSTAC VI meeting.
	October	NS/EP Telecommunications Planning Process approved by the Executive Office of the President.
1987	February	NSTAC VII meeting.
	May	Department of Health and Human Services becomes 23rd member of the NCS Committee of Principals.

	November	NSTAC VIII meeting.
1988	March	NCC participated for first time in nationwide exercise of single sideband voice radio communications.
	May	NCC conducted HF radio teletype tests with NATO.
	July	NSTAC IX meeting.
	August	NCS celebrated its 25th Anniversary. A fully defined and implemented national security and emergency preparedness telecommunications capability yet to be realized.

## BIBLIOGRAPHY

### 1. General Literature

Koenig, Louis W. The Chief Executive. New York: Harcourt, Brace & World, 1964. See pp. 271-282 for an analysis of the Cuban missile crisis as an exercise in intensive presidential decisionmaking.

Kahn, David. The Codebreakers: The Story of Secret Writing. New York: MacMillan Company, 1967.

Sorenson, Theodore C. Kennedy. New York: Harper and Row, 1965.

Weintal, Edward & Charles Bartlett. Facing the Brink; An Intimate Study of Crisis Diplomacy. New York: Charles Scribner's Sons, 1967.

### 2. Executive Orders and Presidential Directives

Executive Order 10995 (E.O. 10995), "Assigning Telecommunications Management Functions," February 16, 1962.

Presidential Memorandum to the Heads of Executive Departments and Agencies, "Establishment of the National Communications System," August 21, 1963.

Executive Order 11490 (E.O. 11490), "Assigning Emergency Preparedness Functions to Federal Departments and Agencies," October 30, 1969.

Executive Order 11556 (E.O. 11556), "Assigning Telecommunications Functions," September 4, 1970.

Executive Order 12046 (E.O. 12046), "Relating to the Transfer of Telecommunications Functions," March 27, 1978 (replaces E.O. 11556).

Executive Order 12127 (E.O. 12127), "Federal Emergency Management Agency," March 31, 1979.

Presidential Directive/NSC 53 (PD-53), "National Security Telecommunications Policy," November 15, 1979.

Presidential Directive 57 (PD-57), "Industrial and Manpower Mobilization Policy," June 1980 (replaced by NSDD-47).

Presidential Memorandum, "Emergency Mobilization Preparedness Board," December 17, 1981.

National Security Decision Directive 26 (NSDD-26), "U.S. Civil Defense Policy," March 16, 1982.

National Security Decision Directive 47 (NSDD-47), "Emergency Mobilization Preparedness," July 22, 1982.

Executive Order 12382 (E.O. 12382), "President's National Security Telecommunications Advisory Committee," September 13, 1982.

National Security Decision Directive 85 (NSDD-85), "Eliminating the Threat from Ballistic Missiles," March 25, 1983.

Presidential Memorandum, "National Plan of Action on Emergency Mobilization Preparedness," April 27, 1983.

National Security Decision Directive 97 (NSDD-145), "National Security Telecommunications Policy," June 13, 1983.

Executive Order 12472 (E.O. 12472), "Assignment of National Security and Emergency Preparedness Functions," April 3, 1984.

National Security Decision Directive 145 (NSDD-145), "National Policy on Telecommunications and Automated Information Systems Security," September 17, 1984.

National Security Decision Directive 201 (NSDD-201), "National Security and Emergency Preparedness (NS/EP) Telecommunications Funding," December 17, 1985.

### 3. Memoranda

The White House, Memorandum, "Cabinet Agenda for Friday, January 23, Item B: The Development of a Unified Federal Civilian Communication System," January 20, 1959 (Robert Gray, Secretary to the Cabinet).

Secretary of Defense for Manager, NCS, "Report on Initial NCS Task 3," November 30, 1963.

Manager, NCS, for Executive Agent, NCS, "Submission of First Annual NCS Long-Range Plan," August 12, 1964.

National Communications System to Director, Joint Staff, "Manager, NCS, Final Report on NCS Initial Task 10," January 7, 1965.

Defense Communications Agency, Reorganization of the Office of the Manager, NCS," February 4, 1966.

Secretary of Defense (Robert S. McNamara) for the President, "Submission of the Second Long-Range Plan for the NCS FY 1968-1972," July 27, 1966.

National Communications System, Office of the Manager, to Task Manager, Long-Range Concept, "System Design Concept Description," February 27, 1968.

National Communications System, Office of the Manager, to the Major Operating Agencies, "NCS Long-Range Concept Follow-On Studies," November 15, 1968.

Military Communications-Electronics Board to Director, Joint Staff, "Representations on the Emergency Action Group (NEAG)," December 5, 1968.

Office of the Executive Agent to Distribution, NCS Memorandum No. 2-69, "Interim Procedures for Application for Planning-Programming-Budgeting System (PPBS) Features in the NCS Planning Process," October 31, 1969.

The White House, Peter Flanigan, Assistant to the President, to Melvin R. Laird, Secretary of Defense, December 6, 1969 ("Flanigan Report").

National Communications System, Long-Range Planning Study Group to Distribution, "Meeting on NCS Long-Range Concept, 14 September 1971," September 23, 1971.

National Communications System to Distribution, "Highlights of Manager, NCS/NCS Representatives Meeting, 20 December 1971," December 23, 1971.

National Communications System to Distribution, "Manager, NCS/NCS Agency Principals Meeting, 28 January 1972," February 7, 1972.

National Communications System, Manager, NCS (Lt Gen Gordon T. Gould, Jr.) to Executive Agent, NCS, "NCS Long-Range Planning," April 12, 1972.

National Communications System to Chairman, NCS Long-Range Planning Study Group, "Report of the NCS Long-Range Planning Study Group," July 3, 1972.

Office of the Secretary of Defense, Office of Executive Agent, NCS Memorandum 1-73, "Federal Government Focal Point for Electromagnetic Pulse (EMP) Information," November 16, 1973.

Memorandum of Understanding Between the National Security Council, the Office of Science and Technology Policy, and the Executive Agent, National Communications System, June 5, 1978.

The White House to Heads of the Departments, etc., "National Security and Emergency Preparedness Telecommunications Management and Coordination Responsibilities," July 5, 1978.

Executive Agent, NCS, to William Harsch, Chairman, FEMA Activation Group, OMB, "National Communications System (NCS) Role in NS/EP Telecommunications," December 6, 1978.

Zbigniew Brzezinski, National Security Council, to the Secretary of Defense, "Telecommunications and C<sup>3</sup>I Policy Issues," August 10, 1979.

Joseph Rose, Deputy Manager, NCS, to General Jacobsmeyer, "National Security Council Tasking to Assess Commercial Common Carrier Vulnerability and Develop Possible Guidance to Commercial Common Carriers and Government Agencies," September 25, 1980.

The White House to Federal Departments and Agencies, "National Communications System," October 7, 1983.

#### 4. Letters

Jerome B. Wiesner to Bernard L. Boutin, January 24, 1964.

James D. O'Connell, Jr., to Solis Horwitz, November 9, 1964.

James D. O'Connell, Jr., to Robert S. McNamara, October 1, 1965.

Charles L. Schultze to Robert S. McNamara, September 20, 1966.

James D. O'Connell to Robert S. McNamara, October 31, 1966.

James D. O'Connell to Solis Horwitz, March 20, 1968.

LTG Richard P. Klocko to William H. Goodman, April 12, 1968.

James D. O'Connell to Clark M. Clifford, April 24, 1968.

Solis Horwitz to James D. O'Connell, August 12, 1968.

James D. O'Connell to Solis Horwitz, October 9, 1968.

Solis Horwitz to James D. O'Connell, December 20, 1968.

James D. O'Connell to Melvin Laird, June 2, 1969.

Executive Agent, NCS to Clay T. Whitehead, Director, OTP, April 21, 1972.

Clay T. Whitehead to E. Rehtin, May 25, 1972.

Clay T. Whitehead to E. Rehtin, February 20, 1973.

Office of Telecommunications Policy to the Assistant Secretary of Defense, June 18, 1973.

Charles C. Joyce, Jr., to Thomas C. Reed, January 9, 1975.

Thomas C. Reed to John Eger, November 12, 1975.

David A. Stockman to Caspar W. Weinberger, August 19, 1982.

Rand V. Araskog to the President, August 19, 1983.

Ronald Reagan to Rand V. Araskog, February 21, 1984.

Joseph V. Charyk to the President, June 18, 1984.

Ronald Reagan to Joseph V. Charyk, December 10, 1984.

Joseph V. Charyk to Robert C. McFarlane, January 8, 1985.

#### 5. NSTAC Reports

Commercial Satellite Communications Survivability Report, prepared by CSS Task Force, Resource Enhancements Working Group, May 20, 1983.

Automated Information Processing Task Force Report, June 10, 1983 (revised June 30, 1983).

National Coordinating Mechanism Task Force Report, May 16, 1983.

Final Report--Telecommunications System Survivability Industry Responses to 13 May 1983 Questionnaire, prepared by the National Communications System Joint Secretariat, August 1983.

Addendum to Commercial Satellite Communication Survivability Report of May 20, 1983, prepared by the CSS Task Force, December 15, 1983.

Electromagnetic Pulse (EMP) Task Force: Status Report to the Industry Executive Subcommittee, January 12, 1984.

National Coordinating Mechanism Implementation Plan, prepared by the NCM Task Force, January 30, 1984.

Automated Information Processing Task Force Interim Report: Telecommunications Operational Support, (draft) February 15, 1984.

International Diplomatic Telecommunications Task Force Report, March 15, 1984.

Automated Information Processing (AIP) Task Force Final Report: Strategy and Recommendations for Achieving Enhanced NS/EP AIP Survivability, October 25, 1984.

Commercial Network Survivability Report, prepared by the CNS Task Force, October 1984.

Electromagnetic Pulse (EMP) Report, prepared by the EMP Task Force, October 1984.

Electromagnetic Pulse (EMP) Final Report, prepared by the EMP Task Force, July 1985.

National Security Emergency Preparedness Telecommunications Service Priority (TSP) System: TSP System Concept, (draft No. 3) March 1986.

## 6. Miscellaneous

Department of Defense Directive 5100.41, "Arrangements of the Discharge of Executive Agent Responsibilities for the National Communications System," October 5, 1963.

National Communications System Circular 70-1 (NCSC 70-1), "Operating Procedures for the NCS," June 22, 1964.

Executive Office of the President, Office of Emergency Planning, The National Plan for Emergency Preparedness, December 1964.

National Communications System Instruction 45-1 (NCSI 45-1), "NCS Operations Center Organizational Arrangements and Structure," July 28, 1965.

National Communications System Instruction 55-1 (NCSI 55-1), "Procedures for Placing into Effect the NCS Private Line Circuit Restoration Priority System," January 18, 1965.

National Communications System Circular 70-2 (NCSC 70-2) "Technical Control Procedures," October 1965.

National Communications System Circular 175-2 (NCSC 175-2), Technical Standards Manual, March 1968.

National Communications System Circular 70-3 (NCSC 70-3), "Performance Objectives for the NCS," August 13, 1968.

Final Report: President's Task Force on Communications Policy (established pursuant to the President's message on communications policy of August 14, 1967), December 7, 1968.

General Accounting Office, Review of Status of Development Toward Establishment of a Unified National Communications System, July 14, 1969.

Press Release, Department of Defense, regarding Department of Commerce's proposal to take over functions of DTM, October 13, 1969.

Press Release, the White House, "Telecommunications Reorganization," February 9, 1970.

MITRE Corporation, The Evolving Framework for Federal National Security Emergency Preparedness (NSEP) Telecommunications Management, MTR-85W00073, by George Erskine and Joan Sulek, June 1985.

National Communications System, NS/EP Telecommunications Planning Process, October 11, 1986.

U.S. House of Representatives, "Telecommunications Policy Coordination Act of 1987," H.R. 323, 100th Cong., 1st Sess., January 6, 1987.

## NOTES

1. The White House, National Security Action Memorandum No. 201 (NSAM-201), "Establishment of Subcommittee on Communications," October 26, 1962. For an account of the communication problems encountered during the Cuban missile crisis see: David Kahn, The Code-breakers, New York: MacMillan, 1967, pp. 713-716 and Theodore C. Sorenson, Kennedy, p. 279.
2. The White House, Memorandum to the Heads of Executive Departments and Agencies, "Establishment of the National Communications System," August 21, 1963. In this report, the August 21 presidential memorandum is referenced as the NCS charter document, rather than its classified version.
3. The White House, Memorandum, "Cabinet Agenda for Friday, January 23, Item B: The Development of a Unified Federal Civilian Communication System," January 20, 1959 (Robert Gray, Secretary to the Cabinet).
4. The White House, Executive Order 10995 (E.O. 10995), "Assigning Telecommunications Management Functions," February 16, 1962. The position of Director of Telecommunications Management was held by an Assistant Director of the Office of Emergency Planning.
5. Ibid. The assignments were made initially to the Director, OEP (by E.O. 10995) who reassigned them to the Director of Telecommunications Management (F.R. Doc. 62-1887 and 62-1889). In addition, the Director, OEP, delegated to DTM the telecommunication authorities given to him under E.O. 10705 of April 17, 1957, as amended (F.R. Doc. 62-1880).
6. Presidential Memorandum, August 21, 1963.
7. The White House, "Procedures and Working Relationships for the NCS," August 21, 1963; The White House, "Statement of Initial Tasks for the National Communications System," August 6, 1963.
8. Procedures and Working Relationships, August 21, 1963.
9. Ibid.
10. Presidential Memorandum, August 21, 1963.
11. Ibid.; Procedures and Working Relationships, August 21, 1963. Certain agencies, such as the DOD, GSA, FAA, NASA, and DOS were assigned responsibilities for budgeting and funding specific components of the NCS.

12. Statement of Initial Tasks, August 6, 1963.
13. Kahn, The Code-breakers, pp. 715-716.
14. Department of Defense Directive 5100.41, "Arrangements for the Discharge of Executive Agent Responsibilities for the National Communications System," October 5, 1963.
15. Ibid. The NCS charter extended to the Federal Telecommunications System (FTS) which had been established by E.O. 11093 (February 1963) and placed under the control of the General Services Administration. The FTS, said the President, was to be "implemented and developed in accordance with approved plans and policies developed pursuant to this [August 21, 1963] memorandum."
16. Procedures and Working Relationships, August 21, 1963.
17. Presidential Memorandum, August 21, 1963.
18. Ibid.
19. Manager, NCS, Memorandum for the Executive Agent, NCS, "Submission of First Annual NCS Long-Range Plan," August 12, 1964.
20. National Communications System, NCS Circular 130-2, "Interim Procedures for Processing NCS Telecommunications Circuit Requirements," January 24, 1964. This directive was in accord with a Defense Mobilization Order issued by the Office of Emergency Planning a few weeks prior outlining procedures for obtaining telecommunication resources during a national emergency. (Executive Office of the President, Office of Emergency Planning, Defense Mobilization Order 3000.1, "Procedures for Obtaining Telecommunication Resources for Use During a National Emergency," November 8, 1963.) This Order also enunciated a national telecommunications policy as follows:

*National Defense Policy. It shall be the policy of the United States in time of war or national emergency, as proclaimed by the President, to have available to the Government of the United States the total telecommunication resources of the Nation for utilization with due regard to the extent of the war or emergency and to the continuing operation services considered to be essential or desirable for the welfare and interest of the United States during such a time.*

21. Secretary of Defense, Memorandum for Manager, NCS, "Report on Initial NCS Task 3," November 30, 1963.
22. Ibid.
23. Letter, James D. O'Connell, Jr., to Robert S. McNamara, October 1, 1965.
24. Ibid.
25. Ibid.
26. Ibid. The issue of network interconnectivity received high level attention from the beginning. In November 1964, J. D. O'Connell, the President's Special Assistant for Telecommunications, requested a briefing on the subject from the Executive Agent, NCS. (Letter, J. D. O'Connell to Solis Horwitz, November 9, 1964.)
27. Executive Office of the President, Office of Emergency Preparedness, The National Plan for Emergency Planning, December 1964, p. 55.
28. Briefing, National Communications System to Office of Technology Policy, November 23, 1970; Defense Communications Agency Memorandum, "Reorganization of the Office of the Manager, NCS," February 4, 1966; National Communications System, Memorandum to Director, Joint Staff, "Manager, NCS, Final Report on NCS Initial Task 10," January 7, 1965.
29. Letter, Jerome B. Wiesner to Bernard L. Boutin, January 24, 1964.
30. Ibid.
31. Ibid.
32. Ibid.
33. Statement of Initial Tasks, August 6, 1963.
34. The National Plan for Emergency Preparedness, December 1964.
35. National Communications System Instruction 45-1 (NCSI 45-1), "NCS Operations Center Organizational Arrangements and Structure," July 28, 1965.
36. NCS Circular 70-1 (NCSC 70-1), "Operating Procedures for the NCS," June 22, 1964; NCSC 70-2, "Technical Control Procedures," October 1965; NCSC 70-3, "Performance Objectives for the NCS,"

- August 13, 1968; NCSC 175-2, Technical Standards Manual, March 1968; NCS Instruction 55-1, "Procedures for Placing Into Effect the NCS Private Line Circuit Restoration Priority System," January 18, 1965.
37. Holifield Report, 1965.
  38. Robert S. McNamara, Memorandum for the President, "Submission of the Second Long-Range Plan for the NCS, FY 1986-1972," July 27, 1966.
  39. Letter, J. D. O'Connell to Robert S. McNamara, October 31, 1966.
  40. Ibid.
  41. Ibid.
  42. Letter, J. D. O'Connell to Robert S. McNamara, October 31, 1966.
  43. Letter, J. D. O'Connell to Melvin Laird, June 2, 1969; see also, Letter, J. D. O'Connell to Clark M. Clifford, April 24, 1968.
  44. Letter, LTG Richard P. Klocko, Manager, NCS, to William H. Goodman, Deputy Assistant Secretary of State for Communications, April 12, 1968.
  45. Ibid.
  46. Ibid.
  47. Ibid.
  48. Memorandum, NCS, Office of the Manager, to Task Manager, Long-Range Concept, "System Design Concept Description," February 27, 1968. The study defined an Integrated Government Communications System as "A combination of government owned or leased general or special purpose communications networks possessing interconnectivity directly with each other or through an integrated trunking system to permit the unimpeded flow of traffic." This draft study, according to one of its authors, was essentially the same report which was forwarded to the Special Assistant on August 12, 1968. (Interview with George W. White, NCS, May 1, 1986.)
  49. Up to 1968, the DOD did not have a representative assigned to the NCS Manager's office. On July 3, 1968, in an agreement between David L. Solomon, OASD (A), LTG Klocko, and Lt Gen Harold W. Grant, USAF (Ret.), Director for Telecommunications Policy in DOD, a full-time DOD Agency Representative was accredited to the Manager, NCS, for the purpose of staffing and obtaining a coordinated DOD position on all NCS actions. (Memorandum of Understanding between Solomon,

Klocko, and Grant, July 3, 1968.) In addition, the DOD in 1968 formed the Joint National Communications System Panel (J/NCS) of the Military Communications-Electronics Board (MCEB). The purpose of the panel was "to review, develop, recommend, and/or coordinate study positions and reports for consideration by the MCEB concerning military communications matters relating to the National Communications System (NCS)." (Memorandum, Military Communications-Electronics Board to Director, Joint Staff, "Representation on the Emergency Action Group (NEAG)," December 5, 1968.)

50. Letter, Solis Horwitz to J. D. O'Connell, August 12, 1968.
51. Letter, J. D. O'Connell to Solis Horwitz, October 9, 1968.
52. Letter, J. D. O'Connell to Clark M. Clifford, June 2, 1969.
53. Memorandum, NCS Office of the Manager, to the Major Operating Agencies, "NCS Long-Range Concept Follow-On Studies," November 15, 1968. See also Briefing, NCS to OTP, November 24, 1970.
54. National Communications System, "National Communications System Long-Range Development Concept," February 11, 1971.
55. U.S. House of Representatives, Committee on Appropriations, "Department of Defense Appropriation Bill, 1971," October 6, 1970.
56. Ibid.
57. Memorandum, NCS Long-Range Planning Study Group, "Meeting on NCS Long-Range Concept, 14 September 1971," September 23, 1971.
58. Holifield Report, 1965.
59. Final Report: President's Task Force on Communications Policy, December 7, 1968, Tab A, "President's Message on Communications Policy."
60. Ibid.
61. President's Task Force on Communications Policy, Chapter 9, pp. 27-29.
62. Ibid. Tab B, "Statement of Partial Dissent by General J. D. O'Connell."
63. White House Memorandum, Peter Flanigan, Assistant to the President, to Melvin R. Laird, Secretary of Defense, December 6, 1969.

64. General Accounting Office, Review of Status of Development Toward Establishment of a Unified National Communications System, July 14, 1969.
65. Ibid.
66. Ibid.
67. Department of Defense, Press Release, October 13, 1969.
68. White House Memorandum, Peter Flanigan to Melvin R. Laird, December 6, 1970.
69. Ibid.
70. Ibid.
71. The White House, Press Release, "Telecommunications Reorganization," February 9, 1970.
72. The White House, Executive Order 11556 (E.O. 11556), "Assigning Telecommunications Functions," September 4, 1970.
73. Ibid.
74. Memorandum, Council for Government Communications Policy and Planning, "Coordination of Government Communications Activities," November 21, 1972.
75. Ibid.
76. Letter, Clay T. Whitehead to E. Rechtin, February 20, 1973.
77. Ibid. The White House, Office of Telecommunications Policy, "Government Communications Planning Program," OTP Circular No. 12, October 12, 1973.
78. The White House, Office of Telecommunications Policy, News Release, October 12, 1973.
79. Ibid.
80. Memorandum, National Communications System, "Highlights of Manager/NCS Representatives Meeting, 20 December 1971," December 23, 1971. Clifford D. May, Jr., Deputy Manager, NCS, who prepared this memorandum and who played a key staff role in developing the NCS in the 1960s and into the 1970s, wrote of this institutional resistance: "... our past experience has shown that we cannot expect

full agency cooperation in planning efforts which affect the resources and prerogatives of the individual operating agencies." (NCS Memorandum to Chairman, NCS Long-Range Planning Study Group, "Report of the NCS Long-Range Planning Study Group," July 3, 1972.)

81. Memorandum, Manager, NCS (LTG Gordon T. Gould, Jr.) to Executive Agent, NCS, "NCS Long-Range Planning," April 12, 1972.
82. Ibid.
83. Letter, Executive Agent, NCS, to Clay T. Whitehead, Director, OTP, April 21, 1972.
84. Ibid.
85. Letter, Clay T. Whitehead to E. Rehtin, May 25, 1972.
86. Letter, Thomas C. Reed to John Eger, November 12, 1975.
87. Letter, Office of Telecommunications Policy to Assistant Secretary of Defense, June 18, 1973. See also letter Charles C. Joyce, Jr., to Thomas C. Reed, January 9, 1975.
88. National Communications System, NCS Summary Plan, May 1972.
89. The White House, Executive Order 11490 (E.O. 11490), "Assigning Emergency Preparedness Functions to Federal Department and Agencies," October 30, 1969.
90. NCS Summary Plan, May 1972.
91. Ibid.
92. National Communications System Circular 175-1 (NCSC 175-1), "Federal Telecommunications Standards Program (FTSP)," June 6, 1973.
93. Executive Office of the President, Office of Telecommunications Policy, Telecommunications Circular 3300.5, "Federal Government Focal Point for Electromagnetic Pulse (EMP) Information," December 30, 1971.
94. Memorandum, Office of the Secretary of Defense, Office of Executive Agent, (NCS Memorandum 1-73), "Federal Government Focal Point for Electromagnetic Pulse (EMP) Information," November 16, 1973.
95. National Security Telecommunications Advisory Committee, Electromagnetic Pulse (EMP) Final Report, prepared by the NSTAC EMP Task Force, July 1985.

96. LTG Winston D. Powers to John Rankine, April 10, 1985; Donald L. Peyton to LTG Winston D. Powers, June 12, 1985, w/enclosure.
97. National Communications System, Office of the Manager, NCS Instruction 205-1, "Reporting of Significant Telecommunication Research and Development activities of the NCS Operating Agencies," March 29, 1976.
98. Executive Office of the President, Office of Telecommunications Policy, "Ad Hoc Review Group for Organization for Telecommunications Within the Executive Branch," February 9, 1976, prepared by Charles C. Joyce, Jr., p. 35.
99. Ibid, pp. 33-37.
100. The White House, Executive Order 12046 (E.O. 12046), "Relating to the Transfer of Telecommunications Functions," March 27, 1978.
101. Memorandum, National Security Council (Zbigniew Brzezinski) to Secretary of Defense, "Telecommunications and C<sup>3</sup>I Policy Issues," August 10, 1979.
102. Memorandum of Understanding Between the National Security Council, the Office of Science and Technology Policy, and the Executive Agent, National Communications System, June 5, 1978. See also the White House, Memorandum for the Heads of the Departments, etc., "National Security and Emergency Preparedness Telecommunications Management and Coordination Responsibilities," July 5, 1978.
103. Ibid.
104. The White House, Presidential Directive/NSC53 (PD-53) "National Security Telecommunications Policy," November 15, 1979.
105. Ibid.
106. Office of the Manager, NCS, "PD-53 Implementation Concept," May 1, 1980.
107. Ibid.
108. Letter, Department of Commerce, June 19, 1980.
109. President Carter's National Security Advisor, Zbigniew Brzezinski, was particularly anxious that the NCS assume a Federal coordinating role for providing emergency communications. The national level plans, said Brzezinski, "for providing telecommunications resource

management and telecommunications support in emergency situations will continue as the formal U.S. Government documents applicable to all Federal Departments and Agencies. The Executive Agent, NCS, is hereby tasked as the coordinating authority for the National Security Council in these functional areas." Memorandum, the White House to Heads of Department, July 5, 1978.

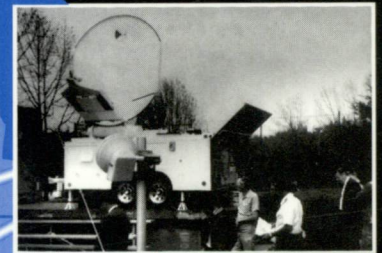
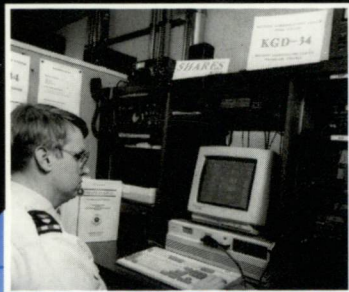
110. Memorandum, Department of Defense to National Security Council (July 1980).
111. Ibid.
112. Memorandum, Joseph Rose, Deputy Manager, NCS, to General Jacobs-meyer, "National Security Council Tasking to Assess Commercial Common Carrier Vulnerability and Develop Possible Guidance to Commercial Common Carriers and Government Agencies," September 25, 1980.
113. The White House, Presidential Memorandum, "Emergency Mobilization Preparedness Board," December 17, 1981.
114. The White House, National Security Decision Directive 47 (NSDD-47) "Emergency Mobilization Preparedness," July 22, 1982.
115. Presidential Memorandum, "National Plan of Action on Emergency Mobilization Preparedness," April 27, 1983, to accompany the national policy statement on Emergency Mobilization Preparedness, NSDD-47, dated July 22, 1982.
116. The White House, National Security Decision Directive 97 (NSDD-97), "National Security Telecommunications Policy," June 1983.
117. The White House, memorandum to Federal Departments and Agencies, "National Communications System," October 7, 1983.
118. The White House, Executive Order 12382 (E.O. 12382), President's National Security Telecommunications Advisory Committee," September 13, 1982.
119. Ibid.
120. National Security Telecommunications Advisory Committee, "Executive Summary of Inaugural Meeting of the National Security Telecommunications Advisory Committee," December 14, 1982.
121. Letter, Rand V. Araskog to the President, August 19, 1983.
122. Letter, Ronald Reagan to Rand V. Araskog, February 21, 1984.

123. Ibid.
124. Ibid.
125. Letter, Joseph V. Charyk to the President, June 18, 1984.
126. Ibid.
127. The White House, Executive Order 12472 (E.O. 12472) "Assignment of National Security and Emergency Preparedness Telecommunications Functions," April 3, 1984.
128. Letter, Ronald Reagan to Joseph V. Charyk, December 10, 1984.
129. Ibid.
130. Letter, Joseph V. Charyk to Robert C. McFarlane, January 8, 1985.
131. Letter, Ronald Reagan to Joseph V. Charyk, October 1, 1985.
132. Department of Defense Directive 5137.1, "Assistant Secretary of Defense (Communications, Command, Control, and Intelligence), March 11, 1977. In 1964, DOD Directive 5110.1 of July 11 named the Assistant Secretary of Defense for Administration to the post of staff assistant to the Executive Agent. On May 11, 1970, DOD Directive 5148.6 named the ASD for Telecommunications to the post, followed by DOD Directive 5135.1 of January 17, 1974, naming the Director, Telecommunications and Command and Control Systems.
133. National Communications System, "Highlights of Manager/Representatives Meeting, 20 December 1971," December 23, 1971; Manager NCS/NCS Agency Principals Meeting, 28 January 1972, February 7, 1972.
134. National Communications System, Organization and Functions Manual, Office of the Manager, NCS, August 1978.
135. National Communications System, "NCS Organization and Functions," June 1982.
136. E.O. 12472. The Order did not revoke the classified version of the August 21, 1963 Memorandum (NSAM 252, July 11, 1963).
137. E.O. 12472.
138. Ibid.

139. Executive Agent, NCS, Memorandum for William Harsch, Chairman, FEMA Activation Group, OMB, "National Communications System (NCS) Role in NSEP Telecommunications," December 6, 1978.
140. E.O. 12472.
141. NSDD-201, National Security Emergency Preparedness (NSEP) Telecommunications Funding, December 17, 1985.
142. National Communications System, "National Security Emergency Preparedness (NSEP) Telecommunications Planning Process," October 11, 1986.
143. Ibid.
144. Letter, Charles L. Schultze to Robert S. McNamara, September 20, 1966; Assistant Secretary of Defense (Administration), Memorandum for Manager, NCS, "The NCS Long-Range Plan (FY 1969-1973)," May 17, 1968; Executive Agent, NCS Memorandum to Executive Departments and Agencies, "Interim Procedures for Applications of PPBS Features in the NCS Planning Process," October 31, 1969.
145. Letter, David A. Stockman to Caspar W. Weinberger, August 19, 1982.
146. Ibid.
147. NSDD-201.
148. Ibid.
149. U.S. House of Representatives, "Telecommunications Policy Coordination Act," H.R. 642, January 24, 1985.
150. Ibid.
151. U.S. House of Representatives, "Telecommunications Policy Coordination Act of 1987," H.R. 323, 100th Cong., 1st Sess., January 6, 1987.
152. Ibid.



# FY92 National Communications System's Annual Report



All rights reserved. No part of this book  
may be reproduced, in any form or by any  
means, without permission in writing  
from the National Communications  
System.



# NATIONAL COMMUNICATIONS SYSTEM

OFFICE OF THE MANAGER  
701 SOUTH COURT HOUSE ROAD  
ARLINGTON, VIRGINIA 22204-2198

NCS 2852/1

IN REPLY  
REFER TO: NP

2 April 1993

## MEMORANDUM FOR NCS PRINCIPALS AND REPRESENTATIVES

SUBJECT: National Communications System's Annual  
Report, FY92

1. Enclosed is the National Communications System's (NCS) Annual Report, FY92, which was forwarded to the Executive Office of the President by the Executive Agent, NCS. Submitted in accordance with provisions of Executive Order 12472 and National Security Decision Directive 97, the report presents an overview of the Nation's national security and emergency preparedness (NS/EP) telecommunications posture, summarizes NCS programs and activities, and contains recommendations in regard to NS/EP goals.
2. Please direct any questions or comments you may have on this report to SFC Michael Lutz, USA, Office of Plans and Programs, telephone (703) 692-9854.

1 Enclosure:  
NCS Annual Report

  
B. E. MORRISS  
Deputy Manager

.....  
**TABLE OF CONTENTS**  
.....

.....

	<b>PAGE NUMBER</b>
<b>EXECUTIVE SUMMARY</b>	<b>ES-1</b>
<b>I. INTRODUCTION</b>	<b>1-1</b>
<b>BACKGROUND</b>	<b>1-1</b>
<b>REPORT ORGANIZATION</b>	<b>1-1</b>
<b>ENVIRONMENT FACING THE NCS</b>	<b>1-1</b>
<b>GOALS AND CHALLENGES</b>	<b>1-2</b>
<b>II. NCS NS/EP TELECOMMUNICATION PROGRAMS AND ACTIVITIES</b>	<b>2-1</b>
<b>NCS COMMITTEE OF PRINCIPALS/COUNCIL OF REPRESENTATIVES INTERAGENCY COORDINATION AND CONSULTATION</b>	<b>2-1</b>
<b>OFFICE OF THE MANAGER, NCS, SIGNIFICANT ACTIVITIES</b>	<b>2-4</b>
<b>NATIONAL SECURITY TELECOMMUNICATIONS ADVISORY COMMITTEE</b>	<b>2-5</b>
<b>NS/EP TELECOMMUNICATION PLANS AND ARCHITECTURE</b>	<b>2-8</b>
<b>NATIONAL LEVEL NS/EP TELECOMMUNICATIONS PROGRAM</b>	<b>2-10</b>
<b>PUBLIC SWITCHED NETWORK SECURITY</b>	<b>2-16</b>
<b>NATIONAL TELECOMMUNICATIONS MANAGEMENT</b>	<b>2-18</b>
<b>TECHNOLOGY AND STANDARDS</b>	<b>2-26</b>
<b>BASELINE MOBILIZATION PROGRAM</b>	<b>2-35</b>
<b>NATIONAL TRANSPORTABLE TELECOMMUNICATIONS CAPABILITY (NTTC)</b>	<b>2-35</b>
<b>ADVANCED INTELLIGENT NETWORK</b>	<b>2-36</b>

**NATIONAL TRANSPORTABLE  
TELECOMMUNICATIONS CAPABILITY (NTTC)**  
.....

The NTTC was deployed to Europe in FY92 to demonstrate its capabilities to the North Atlantic Treaty Organization and the United States European Command observers so that they could assess the potential applications of this technology in support of future European contingency deployments. The OMNCS has also developed an NTTC deployment guide, brochure, and video that describe the procedures for its deployment and operation. In response to Hurricane Andrew, the OMNCS deployed NTTC to South Florida to support the communication needs of the National Disaster Medical System. It was deployed at the request of the Federal Emergency Communications Coordinator on behalf of the Department of Health and Human Services.

**MOBILE SATELLITE EXPERIMENT  
AND ADVANCED COMMUNICATIONS  
TECHNOLOGY SATELLITE**  
.....

The National Aeronautics and Space Administration (NASA) will support the OMNCS experiments, including the mobile satellite experiment (MSAT-X) and the Advanced Communications Technology Satellite (ACTS). MSAT-X and ACTS will give the OMNCS state-of-the-art technology to use as potential backup communications for crises and war.

**INTERNATIONAL EMERGENCY  
TELECOMMUNICATIONS PLANNING ACTIVITIES**  
.....

The OMNCS engaged in international emergency telecommunications planning with the following organizations:

- U.S./Canada Civil Emergency Preparedness Committee for Telecommunications
- NATO Civil Communications Planning Committee.

**NS/EP TELECOMMUNICATION POLICY  
AND REGULATORY DEVELOPMENTS**  
.....

Several executive, judicial, regulatory, and legislative developments occurred during FY92. The Assistant to the President for National Security Affairs reaffirmed NSDD 97 and E.O. 12472 as the primary policy guidance for the NLP, including specific functional requirements for NS/EP telecommunications service. The Modified Final Judgment restrictions are being softened due to Regional Bell Operating Company (RBOC) and congressional pressure. Specific judicial areas that were addressed this year include inter-LATA (local access and transport area) service, information services, video services, and the manufacture of telecommunications equipment. In the regulatory arena, the Network Reliability Council (NRC) addressed questions of public switched network reliability. The World Administrative Radio Conference convened in Spain and focused on spectrum allocation for low earth orbit satellites. The Federal Communications Commission published a personal communication services (PCS) policy and announced plans to allocate PCS frequencies. Legislation during FY92 covered the following areas: auctioning and reallocation of spectrum, allocating funds for developing and deploying a broadband fiber optic network nationwide, encouraging competition in the provision of electronic information services, establishing and enforcing telecommunications network reliability standards, shifting oversight of RBOCs to the U.S. Attorney General, and setting goals and priorities for Federal high-performance computing (HPC) research, development, and networking.

**NS/EP TELECOMMUNICATIONS SUPPORT AND  
ACTIVITIES OF NCS MEMBER ORGANIZATIONS**  
.....

NCS member organization submissions to the annual report, which review members' financial, policy, and technical concerns, continued to show a growing trend towards consolidation of telecommunication services. Reports also reflect the importance members place on survivable telecommunication resources for uninterrupted performance of their essential emergency functions.

**NS/EP TELECOMMUNICATION ISSUES**  
.....

NCS member organizations identified the following issues for Executive Office of the President review and consideration: Radio Frequency Spectrum Allocation, Joint Industry-Government Planning, Public Switched Networks Security, and Enhanced Call Completion Services.

**INTRODUCTION**

**INTRODUCTION**

**BACKGROUND**

**T**he fiscal year (FY) 1992 *National Communications System (NCS) Annual Report* is produced by the Office of the Manager, NCS (OMNCS), in cooperation with the NCS Committee of Principals (COP), an interagency confederation of 23 Federal departments and agencies. The report summarizes and highlights national security and emergency preparedness (NS/EP) telecommunication capabilities and activities and provides insight into the NS/EP telecommunication posture of the Nation. Major NCS interagency plans, programs, and initiatives, along with significant internal and external factors affecting the NCS, are reviewed in this report. The NCS Annual Report fulfills the reporting requirements of Executive Order (E.O.) 12472, "Assignment of National Security and Emergency Preparedness Telecommunications Functions;" and National Security Decision Directive (NSDD) 97, "National Security Telecommunications Policy."

**REPORT ORGANIZATION**

The FY92 NCS Annual Report has five sections. Collectively these sections represent the coordinated efforts of the NCS over the past year. Section I describes the present planning environment and the major challenges facing the NCS. Section II summarizes major NCS NS/EP telecommunication programs and activities. Section III examines external factors influencing the NCS, including significant executive, judicial, regulatory, and legislative developments and major NS/EP incidents. Section IV reviews the NS/EP-

telecommunication activities of the NCS member organizations. Section V details ongoing NS/EP telecommunication issues for consideration by the Executive Office of the President (EOP).

**ENVIRONMENT FACING THE NCS**

Profound changes in the geopolitical landscape coupled with technological advances in the telecommunications infrastructure have affected the focus of NCS activities. The threat of a massive nuclear attack on the U.S. is greatly diminished, but the threat of a single or coordinated nuclear attack remains. In accordance with national policy guidance of June 1992, the provision of survivable telecommunications to support the recovery and reconstitution of the Nation continues to be an essential function of Government even with this diminished threat.

While the nuclear threat has been diminishing, other threats have been increasing in importance because of the high reliance of the Nation on telecommunications, the increasing complexity of the networks, and the movement toward a global economy. Both disruptive threats and destructive threats short of nuclear war have the potential to seriously affect the national security posture of the Nation. Disruptive threats could include the technological complexity of large-scale systems, unauthorized electronic intrusion, and network congestion. Destructive threats include natural disasters, sabotage and terrorist attack, and wartime activities.



As is clear from Operation Desert Storm, regional tensions, concerns over the proliferation of nuclear, biological, and chemical weapons, and continuing terrorist activity demonstrate that the multipolar world is still a dangerous place. While U.S. defense policy adjusts to this dynamic environment, one factor has already emerged. Telecommunications and information services will expand in importance to meet the needs of flexible response forces and multinational coalitions and to respond to changing demands of U.S. domestic and economic policy.

Concomitant with changes in the external threat are the dynamics taking place domestically. Technological advances such as digital cellular, advanced intelligent networks, wireless technologies, and private network resources are expanding the capabilities of the national infrastructure. The rapid digitalization of the public switched network (PSN) is permitting the dispersal of information processing power and control throughout the Nation. The widespread deployment of fiber optics as the enabling technology will greatly increase the transmission capacity of the PSN's. These technological innovations will make available a wide range of new services to the NS/EP community and increase the availability and robustness of the network. However, with these advances come increased risks. The blurring of the boundaries between information systems and telecommunication technologies and the reliance of the PSN's on

automated network management systems increase the vulnerability of the network to unauthorized intrusion. The "hacker" danger is real and the NCS must continue to work with industry to devote sufficient resources to ensure that NS/EP telecommunications are protected from this growing threat.

Expansion of the capabilities of the PSN's and changes in the U.S. economy have dramatically increased the industrial reliance on telecommunication services. From manufacturing to financial services, telecommunications is playing an increasing role in the competitive success of industries. Our growing reliance on it can be translated into enormous economic losses if telecommunications is degraded or disrupted. Given today's emphasis on industrial capacity and competitiveness, national security issues clearly must expand to include continuity of economic activity in the global marketplace.

Yet with the backdrop of these factors, the NCS will be challenged to accomplish its multifaceted mission in a resource-constrained environment. Budgetary resources for national security programs will face increasing competition from other national priorities and joint funding arrangements for NS/EP telecommunications will remain austere.

.....  
**GOALS AND CHALLENGES**  
.....

Against this dynamic backdrop, the NCS has positioned itself to meet the following primary goals:

- Define and implement enhancements to the national telecommunications infrastructure.
- Put into place effective management mechanisms that facilitate the direction and operation of national telecommunication assets during emergencies.

Achievement of these two goals relies on effective coordination between industry and Government as well as better utilization of government resources at the Federal, State, and local levels. Underlying these goals are several strategic elements:

- Provide a balanced consideration of the full spectrum of threats, vulnerabilities, and potential operating conditions — international and domestic
- Plan and program for an integrated set of capabilities that will permit rapid and effective operational responses across a wide spectrum of emergency conditions
- Monitor, study, and “internalize” emerging technical developments and standards within the telecommunications industry and the global telecommunications infrastructure
- Facilitate greater cohesion and cooperation among NCS member organizations for essential telecommunication requirements in a time of budget reductions
- Ensure that OMNCS architectures and standards incorporate emerging technologies to support NS/EP telecommunication needs.

The participation of the NCS member organizations and consistent support from the telecommunications industry have greatly contributed to the overall success of the NCS. The NCS COP builds consensus on NS/EP telecommunication issues among departments and agencies having NS/EP telecommunication responsibilities. Along with its subordinate organization, the Council of Representatives (COR), the COP plays a critical role in achieving the necessary interagency coordination on the full range of NCS issues and responsibilities.

The participation of the telecommunications industry in the NS/EP telecommunications arena is achieved through the President’s National Security Telecommunications Advisory Committee (NSTAC). Established in 1982, the NSTAC has worked closely with the NCS to recommend several NS/EP telecommunication programs designed to prepare the Government for telecommunication emergencies and to augment networks if they are damaged. Over the years, the NSTAC has

adapted to the changing NS/EP telecommunications environment and a viable NSTAC process is essential for the continued success of the NCS in the fulfillment of its mission.

In summary, the operating environment of the NCS has undergone rapid, fundamental change. Many of the fundamental precepts that have guided NS/EP telecommunication policies for nearly 3 decades are shifting. However, with these changes have come new challenges, and the guiding principles of industry cooperation and government coordination remain as true today as they did in 1963 when the NCS was established. Typifying the NCS’s responsiveness to the new environment is the recent evolution of the National Level NS/EP Telecommunications Program (NLP). Designed to support the NCS in meeting its mission of ensuring the availability of NS/EP telecommunication capabilities under all conditions, the NLP is structured to take advantage of technological and service enhancements in the networks as they are implemented by the telecommunication industry. These changes reflect the Federal Government’s growing reliance on data communications and other high capacity services. In response to new threat scenarios that involve a multinational response, the NCS is investigating NLP support to critical international gateways. Through these efforts and others, the NCS continues to adapt, thus strengthening its ability to meet its critical mission functions in a rapidly changing world.

**PROGRAMS AND ACTIVITIES**

.....

- Network Security of the Public Switched Network (PSN)
- NCS Vision 21
- The TSP System Oversight Committee.

**SUMMARY OF COUNCIL OF REPRESENTATIVES**

**INTERAGENCY ACTIVITIES**

In addition to the key programs considered by the COP, the COR reviewed the following NS/EP telecommunication activities in FY92:

- NS/EP Telecommunications Candidate Initiatives
- Government Emergency Telecommunications Service (GETS)
- Shared Resources (SHARES) High Frequency (HF) Radio Program
- TSP System Program
- National Plan for Telecommunications Support in Non-Wartime Emergencies
- NCS Issuance System.

**ACTIVITIES OF INTERAGENCY SUBCOMMITTEES**

The interagency subcommittees established by the COP/COR address issues and concerns demanding a high degree of analysis and discussion. By devoting its efforts to a specific NS/EP telecommunications matter, each subcommittee focuses on generating viable recommendations. The subcommittees are discussed below.

- The Telecommunications Planning Process Subcommittee (TPPS) was established to assist the Manager, NCS, in developing the four key elements of the NSEP Telecommunications Planning Process: Capability Objectives, Deficiencies and Priorities, Candidate Initiatives, and the NLP. The General Services Administration (GSA) chairs and the Joint Staff (JS) vice chairs

the TPPS. During FY92, the TPPS completed a survey of NCS member organizations to solicit potential candidate initiatives that could mitigate deficiencies (identified and documented in the *NS/EP Telecommunications Deficiencies and Priorities Report* [NCS 1997/2]) in existing NS/EP telecommunications capabilities. The results of the survey were documented in the proposed *National Security and Emergency Preparedness Telecommunications Candidate Initiatives Report* (NCS 2352/1). This fiscal year, the TPPS also supported the COR by providing input to the *FY94 National Level National Security and Emergency Preparedness Telecommunications Program* document (NCS 2495/5). At the August 27, 1992 COR meeting, the COR accepted the TPPS Plan of Action to review its Terms of Reference (TOR), review the Planning Process document (NCS 326/8), and review the scope of the TPPS TOR. The COR also charged the TPPS to implement the Plan of Action and report its findings to the COR.

- The SHARES HF Interoperability Working Group was established to implement and maintain the SHARES HF Radio Program and to foster HF radio interoperability through the examination of regulatory, procedural, and technical issues. FY92 activities included updating and approving the SHARES user manual and directory (NCS Manual [NCSM] 3-3-1 and NCS Handbook [NCSH] 3-3-1). The revised editions of these documents were distributed to more than 1,300 holders of the SHARES workbook, including nearly 1,000 SHARES stations, COP/COR members, and Federal emergency planning and response personnel. The SHARES Working Group focused on spreading awareness of the SHARES program in FY92. Activities included periodic briefings to emergency planning groups and development of an information video on the SHARES program. The SHARES Working Group also successfully conducted two national SHARES readiness training exercises during FY92.

The SHARES Working Group continued to address HF interoperability issues, including Automatic Link Establishment (ALE), antenna testing, Federal HF standards, and SHARES coordination procedures.

**Special Meetings.** The COP and/or COR participated in the following special meetings:

- On November 5, 1991, the COP held a special meeting to discuss the recommendations and findings of an independent Panel of Experts' report on the NLP, and to consider the revised FY93 NLP.
- On June 3, 1992, a special information meeting to present a GETS program review was held for the COP/COR.

**NCS Vision 21.** NCS Vision 21 is a Total Quality Management (TQM) approach established by the COP that focuses the purpose, mission, and vision of the NCS into the next century. Five major focus area (MFA) groups are working to identify NCS growth and enhancement strategies. Each MFA group meets periodically to implement its plans and to refine its topical areas. The groups streamline their tasks and eliminate overlapping responsibilities through coordination of their activities. The chairs of the five MFAs meet quarterly to manage the overall objectives of the Vision 21 initiative and report the status of their work to the COP.

### **Government Network Security**

**Activities.** Government and industry are concerned with the potential for attacks by hackers on the software controlling the PSN's switches and automated support systems; these attacks can interrupt or deny service to NS/EP users or extract sensitive NS/EP information.

- The Chairman, PCC-NSTIS, tasked the Manager, NCS, with determining what actions are required from the Government and industry to address the hacker threat to the PSN.

- The Manager established the Government Network Security Subgroup (GNSS), which worked closely with the NSTAC Network Security Task Force to establish separate Government and NSTAC Network Security Information Exchanges (NSIE).
- The NSIEs meet jointly approximately every 2 months to identify issues involving unauthorized penetration or manipulation of software and data bases affecting NS/EP telecommunications.
- The GNSS and the Network Security Task Force established an Alert, Warning, and Recovery function in the National Coordinating Center for Telecommunications (NCC) to receive and disseminate network security information to the NSIEs and the NS/EP community. Procedures for the Alert, Warning, and Recovery function were issued by the NCC on July 25, 1991.

**Information Presentations.** COP and/or COR members received the following informational briefings:

- The National Telecommunications and Information Administration (NTIA) presented *The NTLA Infrastructure Report: Telecommunications in the Age of Information*.
- The Department of Energy (DOE) briefed a proposed program plan for electric service priority restoration.
- The Department of Agriculture (USDA) discussed meteor burst communications.
- The Federal Emergency Management Agency (FEMA) briefed the Graduated Mobilization Response effort.
- FEMA briefed the Federal Response Plan and the telecommunications support that FEMA provided during the Andrew, Iniki, and Omar disasters.

**EXHIBIT 2-2**

**STATUS OF NCS NLP FUNDING MOA/IFA  
FOR FY92**

<b>ORGANIZATION</b>	<b>MOA SIGNED BY NCS</b>	<b>SIGNED BY ORGANIZATION</b>	<b>IFA SIGNED BY ORGANIZATION</b>	<b>FY92 NLP FUNDING SHARES</b>
<b>DOS</b>	<b>July 21, 1987</b>	<b>July 28, 1987</b>	<b>September 19, 1991</b>	<b>\$59,502</b>
<b>TREAS</b>	<b>March 11, 1987</b>	<b>May 11, 1987</b>	<b>October 9, 1991</b>	<b>38,506</b>
<b>DoD/JS/NSA</b>	<b>September 16, 1987</b>	<b>November 4, 1987</b>	<b>N/A</b>	<b>6,568,727</b>
<b>DOJ</b>	<b>March 11, 1987</b>	<b>May 12, 1987</b>	<b>October 25, 1991</b>	<b>79,176</b>
<b>DOT</b>	<b>March 11, 1987</b>	<b>April 6, 1987</b>	<b>September 30, 1991</b>	<b>2,183,485</b>
<b>DOE</b>	<b>October 19, 1987</b>	<b>October 1, 1987</b>	<b>September 30, 1991</b>	<b>33,878</b>
<b>DVA</b>	<b>March 11, 1987</b>	<b>March 27, 1987</b>	<b>September 27, 1991</b>	<b>32,415</b>
<b>NASA</b>	<b>July 7, 1987</b>	<b>August 27, 1987</b>	<b>October 1, 1991</b>	<b>51,398</b>
<b>FEMA</b>	<b>April 27, 1988</b>	<b>April 19, 1988</b>	<b>December 18, 1991</b>	<b>89,213</b>
<b>TOTAL</b>				<b>\$9,136,300</b>

**NSTAC MEETINGS**

- **NSTAC XIII.** The 13th meeting of the President's NSTAC, held October 3, 1991, received status reports from the IES, the Network Security Task Force, and the Enhanced Call Completion (ECC) Task Force. The NSTAC also received and approved final reports and recommendations to the President from the Wireless Services Task Force and the Intelligent Networks Task Force. NSTAC XIII also established and charged an Energy Task Force to assist the OMNCS, the DOE, and the NSC in developing criteria and a process to identify critical industry NS/EP telecommunication facilities requiring priority electric service restoration and fuel distribution. The NSTAC Chairman forwarded the NSTAC XIII executive report to the President and the Executive Agent, NCS, on January 22, 1992.
- **NSTAC XIV.** The 14th meeting, held July 17, 1992, began with a special National Security Issues Briefing Session at the Pentagon's National Military Command Center. At the business session,

the NSTAC received and approved final reports and recommendations to the President from the Network Security and Enhanced Call Completion Task Forces. To continue the focus on network security issues, the NSTAC tasked the IES to establish a steering committee to oversee all network security activities. The NSTAC also received an overview of IES activities, including the status of the Energy Task Force and the joint IES-OMNCS ad hoc issues group. The ad hoc group plans to identify potential NSTAC issues and report its findings and recommendations at NSTAC XV.

**NSTAC IES WORKING GROUP PROGRESS**

During FY92, the following working groups provided ongoing analyses of issues affecting NS/EP telecommunications:

- **Plans Working Group.** The Plans Working Group (PWG) convened two meetings to discuss topics that could potentially generate NSTAC issues requiring support from NSTAC task forces, such

as international telecommunications, spectrum management, open systems architecture, network security, and interoperability.

- **Operations Working Group.** The Operations Working Group (OWG) met with the PWG to identify potential new NSTAC issues. The OWG's NS/EP Panel completed its study of emergency preparedness command center capabilities and concluded that existing capabilities are adequate for meeting current stress levels. They also found that the command centers were adequate during and immediately following Hurricane Hugo and the Loma Prieta earthquake. The NS/EP Panel, in conjunction with the OMNCS, is also initiating work for the FCC Network Reliability Council to develop "special facility" outage reporting procedures. The IES transferred the OWG's responsibility for the New Technology Panel to the PWG, citing that one of the panel's purposes, generating new issues, coincides more with the PWG's purpose.
- **Funding and Regulatory Working Group.** The Funding and Regulatory Working Group (FRWG) worked with the NSIE, the OMNCS Counsel's office, and attorneys from NSTAC member companies that developed the initial Non-Disclosure Agreement (NDA), to reach consensus on changes to the NDA's wording that would allow industry and Government to exchange information related to network security intrusions.

#### **NSTAC IES TASK FORCE PROGRESS**

.....  
During FY92, four task forces considered a range of issues affecting NS/EP telecommunications:

- **Enhanced Call Completion.** The ECC Task Force issued its final report in July 1992, focusing on identifying and assessing technologies that would enhance call completion for NS/EP users of the PSN. At NSTAC XIV, the Committee approved the task force's final report and deactivated the task

force. However, the Committee also charged the IES to establish an ECC ad hoc group to work with the Government to: (1) advocate and support the approval of the High Probability of Completion (HPC) standard, (2) investigate potential ECC regulatory issues with the FRWG, and (3) implement ECC network capabilities.

- **Network Security.** The Network Security Task Force issued its final report in June 1992, focusing on threats to the PSN. The report contains a risk assessment that concludes that the threat to the PSN is higher than originally reported in the November 1990 status report. The task force also evaluated government research and development in relation to network security standards development, and identified areas requiring continued Government involvement. At NSTAC XIV, the Committee approved the task force's final report and deactivated the task force. However, the Committee also charged the IES to establish a steering committee to oversee all network security activities. The NSTAC also charged the IES to establish a Network Security Standards Oversight Group to provide guidance and motivation to existing standards bodies toward developing and accepting industry-wide standards concerning network security.
- **Energy.** The NSTAC reactivated the Energy Task Force in October 1991 and charged it to develop criteria for identifying critical industry NS/EP telecommunication facilities that qualify for priority electric service restoration and fuel distribution and to develop a process for applying the criteria. At the December 1991 IES meeting, the Energy Task Force was also tasked to review the President's National Energy Strategy (NES) from the perspective of benefits to NS/EP telecommunication enhancements and consider the submission of recommendations to the 1993/1994 NES publication. The task force will present its final report to NSTAC XV.

- **Wireless Services.** A follow-on Wireless Services Task Force was established at the December 11, 1991 IES meeting to support the newly established government focal point and was charged to: (1) develop, in conjunction with the Government focal point, a plan of action to identify Government requirements, (2) identify and assess solutions that will ensure interoperability for Government NS/EP communications among wireless services and between wireless and non-wireless systems, (3) survey the current environment for wireless services to determine future goals, and (4) establish an ongoing relationship with the government focal point.

.....  
**NS/EP TELECOMMUNICATION PLANS  
 AND ARCHITECTURE**  
 .....

The NCS NS/EP telecommunication plans and architecture effort is the basis for the design, evaluation, and integration of baseline activities and the NLP. During FY92, the Manager, NCS, continued to develop a standards-based, technology-rich architecture that is responsive to the economic and national security interests of the country.

As an integral part of NS/EP planning, the architecture effort entails requirements analyses, telecommunications technology assessment, and strategy development; network optimization based on quantitative analysis and performance modeling; communications network design and specification; and implementation planning. Exhibit 2-3 depicts the relationship of the evolutionary architecture to the NSEP Telecommunications Planning Process.

.....  
**NS/EP TELECOMMUNICATION REQUIREMENTS**  
 .....

- The Manager, NCS, maintains a data base of NS/EP telecommunication requirements for the peacetime, crisis/mobilization, and late trans-attack and early post-attack time periods. The data base contains information

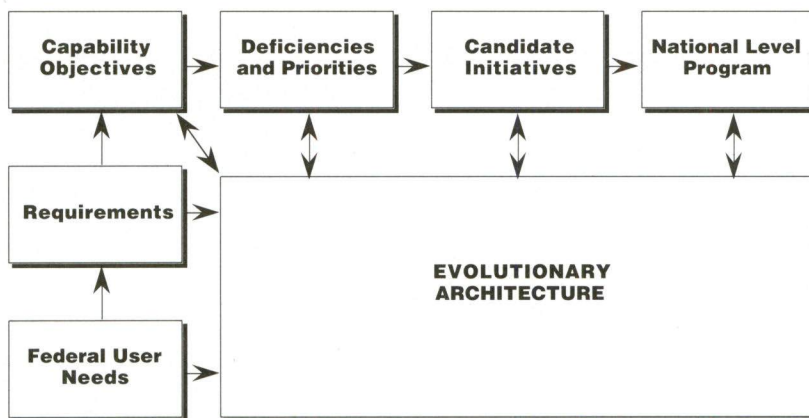
submitted by NCS member organizations and is used for planning and implementing the NLP and NCS baseline programs.

- During FY92, the Manager, NCS, assisted member organizations in updating their NS/EP telecommunication requirements and essential emergency functions (EEF).

**NS/EP TELECOMMUNICATIONS  
 EVOLUTIONARY ARCHITECTURE**  
 .....

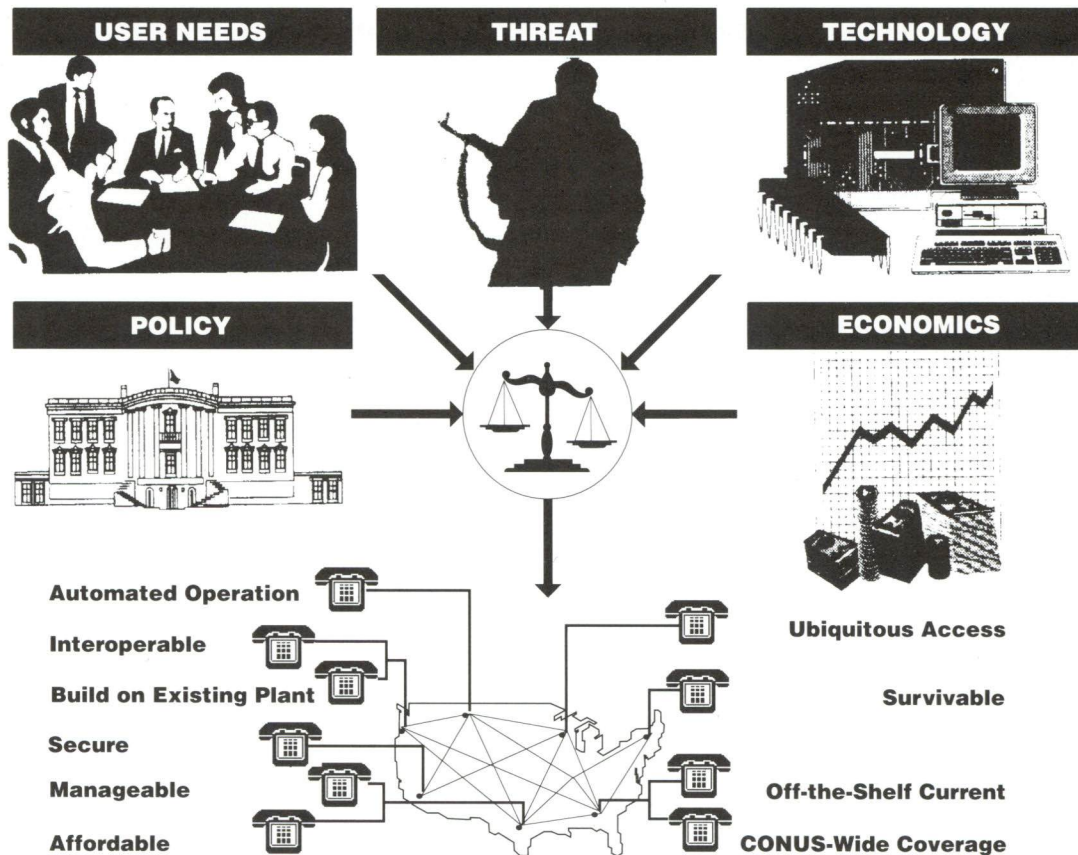
- National policy mandates that the Manager, NCS, develop and maintain an evolutionary telecommunications architecture that is responsive under all circumstances to the NS/EP needs of the Federal Government and, increasingly, the Nation.
- The Manager, NCS, is developing a standards-based, technology-rich architecture that can continue to meet these changing requirements (see Exhibit 2-4).

**EXHIBIT 2-3  
 NS/EP TELECOMMUNICATIONS PLANNING  
 PROCESS**  
 .....



**EXHIBIT 2-4**

**EVOLUTIONARY ARCHITECTURE**



**NS/EP TELECOMMUNICATIONS PLANNING**

**PROCESS**

Throughout FY92, the NCS continued to implement the NSEP Telecommunications Planning Process. The process includes the formulation, documentation, review, and COP/COR consideration of four key planning elements:

- **Capability Objectives.** Capability Objectives define the set of capabilities needed to meet the NS/EP telecommunication requirements of the Federal Government.
- **Deficiencies and Priorities.** The Deficiencies and Priorities planning element identifies and places, in priority order, deficiencies or shortfalls in the national telecommunications infrastructure that inhibit or preclude the satisfaction of Federal NS/EP telecommunication requirements.
- **Candidate Initiatives.** The Candidate Initiatives planning element describes actions selected to mitigate identified deficiencies and to achieve the overall enhancement of NS/EP telecommunication capabilities. FY92, efforts continued in identifying possible candidate initiatives through a survey of the NCS member organizations.
- **National Level NS/EP Telecommunications Program.** The NLP specifies the NS/EP telecommunication programs benefiting multiple departments and agencies that are to be undertaken annually within the NCS structure and the accompanying

provisions for their shared funding and implementation. The FY94 NLP was forwarded to the PCC-NSTIS, through the Executive Agent, NCS, for approval in July 1992.

.....  
**NATIONAL LEVEL NS/EP**

**TELECOMMUNICATIONS PROGRAM**  
.....

The NLP includes national level programs that are conducted within the NCS structure and require significant government resources for their pre-implementation, implementation, and recurring costs. These programs are designed to provide a robust and survivable voice channel information transfer capability, and are expected to result in the significant nationwide enhancement of existing PSN services. These services, as directed by E.O. 12472, are designed to be responsive to the NS/EP needs of the President, Federal departments and agencies, and other entities, under all circumstances including crisis or emergency, attack, recovery, and reconstitution.

As a result of the changing world situation, emerging technologies, and recommendations submitted by the Committee of Principals, the White House directed the Manager, NCS, to delay the implementation of the Nationwide Emergency Telecommunications Service (NETS) pending a review of alternative technologies that could reduce program cost. An independent Panel of Experts was established to review the changing threat to telecommunications, underlying policy guidance, requirements for an NS/EP telecommunications service, and concerns regarding energy continuity for telecommunications. The panel compared five alternative technical approaches and the existing NLP on the basis of the functional requirements, risks, and costs for an NS/EP telecommunications service.

The panel deliberated for 5 months in early 1991 and in consideration of the changing threat, the panel recommended the following:

- The NCS select programs that could adapt to the changing threat and that would not provide small numbers of clearly identifiable targets for destruction or disruption.

- The NCS takes a leadership role in the investigation and mitigation of the network security threat to our Nation's telecommunications and information systems.
- A governmentwide NS/EP telecommunications program is needed and the panel affirmed that voice communications was the primary requirement during emergency situations. (Concurrently, in mid-October 1991, the PCC-NSTIS confirmed a set of six functional requirements for an NS/EP telecommunications service, including a requirement for voice band service.)
- Programs should not be delayed in meeting NS/EP telecommunication requirements pending the development of enduring power solutions.

The panel's technology assessment included review of the following technical alternatives:

- Very small aperture terminal satellite (VSAT) technology
- HF radios
- Packet-switched Message-based Emergency Telecommunications Service (METS)
- Low earth orbit satellite (LEOSAT)
- New Public Switched Network-based approach
- Current NLP.

The panel concluded that the new PSN-based approach's performance, low risk, and opportunity to decrease costs made it the most viable alternative. The panel also noted that the VSAT, HF, METS, and LEOSAT approaches could offer end-to-end performance improvements in the future and should continue to be considered for future implementation. The new PSN-based approach, now called the GETS, was recommended to be the foundation of the NLP.

Subsequently, the FY94 NLP was forwarded to the PCC-NSTIS in July 1992. It identifies three integrated national level NS/EP telecommunication programs, the GETS program, the Commercial Network Survivability (CNS) program, and the Commercial SAT-COM Interconnectivity (CSI) program, and provides for their funding and implementation.

*Telecommunications*, which analyzes and defines the electronic intrusion threat to the PSN. It provides a baseline description of the threat posed by members of the computer underground (hackers, phreakers) to the PSN and associated telecommunications.

**NS/EP TELECOMMUNICATIONS**

**SUPPORTING ANALYSIS**

Each year, the OMNCS analyzes the PSN to quantify the effects of various threats on NS/EP telecommunications and to show the enhanced performance offered by the NLP. The following activities were performed during FY92:

- An assessment of the five alternative technical approaches and the NLP was performed by the Panel of Experts.
- A supporting analysis summary describing the survivability and performance benefits of GETS, CNS, and CSI over the PSN accompanied the FY94 NLP.
- The estimated effects of phenomena such as nuclear blast, fallout radiation, and electromagnetic pulse (EMP) were used to assess the survivability and availability of current and planned PSN resources in support of NS/EP requirements.
- As a continuation of last year's efforts and to support analyses of other threats to NS/EP telecommunications, the supporting analysis task is examining the effects of natural disasters on the PSN. The OMNCS developed an earthquake model to characterize the damage effects of seismic events on the PSN and NS/EP user locations for the known faults in northern California.
- Publication of a document, *Electronic Intrusion Threat to National Security and Emergency Preparedness (NS/EP)*

**GOVERNMENT EMERGENCY**

**TELECOMMUNICATIONS SERVICE**

Based on guidance received in February 1991, implementation of NETS was delayed 2 years. In January 1992, as a result of the Panel of Experts recommendations and other government reviews, a modified technical and acquisition approach for NS/EP telecommunication services was developed and incorporated into a new program named GETS, which replaced NETS. The benefits realized by this restructured program enable the Government to reduce program costs, better utilize technological alternatives, and acquire NS/EP telecommunication services with greater flexibility. Exhibit 2-5 shows the capabilities provided by GETS when the final operational capability (FOC) is attained. The GETS program encompasses the following:

- GETS is planned to provide a nationwide capability for switched voice and voice-band data communications by exploiting the surviving switching and transmission facilities of commercial and selected Government networks.
- The GETS acquisition strategy has been revised to allow the Government increased flexibility in planning and implementing incremental service capabilities in a timely and cost effective manner.
- GETS calls will be afforded priority treatment and enhanced routing in the PSN, as well as CNS and CSI augmentations and interconnections. This service will be accessed nationwide and from overseas locations through a special GETS access number and user authentication through personal identification numbers (PIN).

- Two major components of the GETS program are Enhanced Real Time Network Routing (E-RTNR) and the Survivable Signaling Network (SSN) in the AT&T network.

The following milestones were reached during FY92:

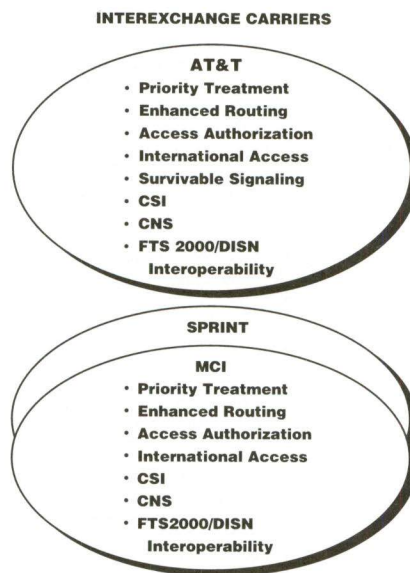
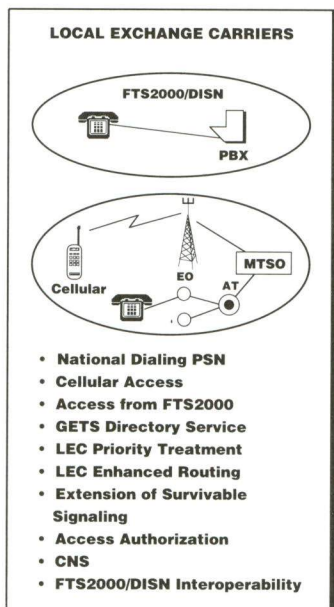
- A GETS Integration Contractor Industry conference was held.
- The Government released three Requests for Proposals (RFP). RFP's were released to AT&T, MCI, and Sprint for procurement of similar GETS services in the interexchange carrier (IEC) networks. A fourth RFP was prepared for release in October 1992 for the acquisition of an integration contractor.

- An in-plant and in-service demonstration of local exchange carrier (LEC) Non-Hierarchical Routing (LNHR) was completed in the US West network in Denver, Colorado, and a subsequent demonstration of LNHR was presented to the COP/COR in Washington, D.C.

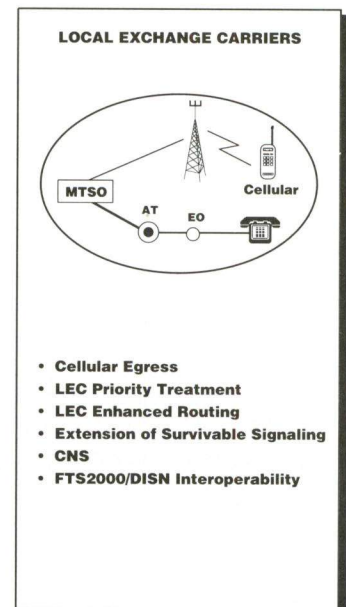
- An annual Robust Non-Hierarchical Routing (RNHR) redesign was completed to reflect changes in the AT&T network and increase the number of CSI links to 28.

**EXHIBIT 2-5**

**GETS CAPABILITIES**



LEGEND	
EO	End Office
AT	Access Tandem
MTSO	Mobile Telephone Switching Office
PBX	Private Branch Exchange



The following activities continued in FY92:

- The GETS/FTS2000 Interoperability Working Group continued to meet to identify interoperability requirements for GETS initial operating capability (IOC).
- The Government continued coordination with telecommunication standards organizations to obtain approval for a high probability of completion subscriber priority parameter to support priority treatment of NS/EP traffic.
- The OMNCS opened discussions with the North American Numbering Plan administrator, Bell Communication Research (Bellcore), and the United States Telephone Association (USTA), which continued throughout the year and forwarded requests to open the GETS nationwide 710 numbering plan area (NPA) code in all commercial carrier networks including cellular.
- Three IEC's continued to support the Government by providing data on their networks and technical approaches for processing NS/EP traffic.

On September 24, 1992, the Department of Defense (DoD) Inspector General officially closed the audit report that began on July 25, 1990, on the original NETS program. As noted previously, the NETS program was restructured and renamed GETS. The Inspector General indicated that the "most fundamental concerns about NETS — its practicality and cost — were partially alleviated when . . . the program was restructured." The Inspector General added, "we consider the audit report closed."

#### **COMMERCIAL NETWORK SURVIVABILITY**

The CNS program enhances short-haul terrestrial connectivity of commercial and government terrestrial networks in support of NS/EP telecommunication needs. CNS enhancements improve the diversity of NS/EP access and egress connectivity through the inte-

gration of emerging communication technologies. Network enhancements obtained under the CNS program will be integrated with GETS as it is implemented. Exhibit 2-6 depicts potential CNS network enhancements.

The CNS program encompasses the following:

- The OMNCS has engineered and installed 17 permanent interconnect services to provide alternative routes for NS/EP use. Acquisition of additional services was suspended in FY92 during an analysis of the ability of CNS services to support the revised GETS program.
- As part of the Panel of Experts review of the NLP, CNS has begun studying the implementation of network augmentations using alternative technologies and services such as LEC disaster recovery services, advanced intelligent network-based services, and cellular networks.
- The OMNCS supports CNS activities through data acquisition contracts with four contractors, and data collection and service acquisition contracts with an additional contractor. The major focus of current data collection efforts comprises cellular networks and facilities, LEC networks, experimental PCN's, and proposed emergency restoral assets.

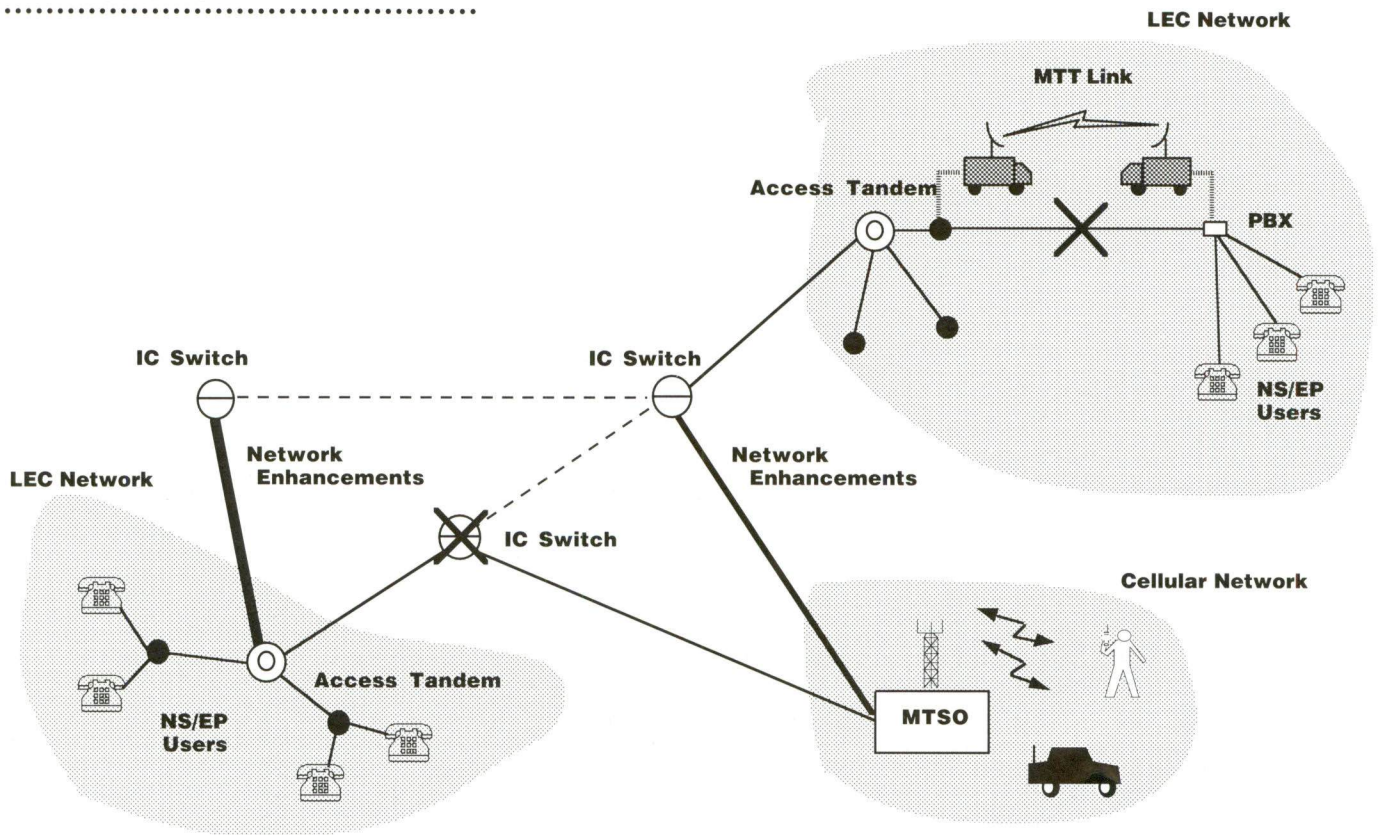
Additional efforts during FY92 pertained to the following:

- Analysis of telecommunication systems and assets, and developing survivability enhancement recommendations.
- Evaluation of priority treatment capabilities of cellular systems and system designs for wireless communication networks to determine opportunities for improving NS/EP telecommunications. The OMNCS tested and evaluated the ability of cellular switches to provide a load shedding capability.

- Data gathering from LEC's by meeting with individual carriers to identify current and planned telecommunication networks and services available for NS/EP use. These meetings included discussions of the use of official corporate networks, network survivability, advanced intelligent network deployments, and disaster recovery assets.
- Meetings with the cellular subsidiaries from each LEC to discuss their network operations, priority services, and future data collection efforts.

The Mobile/Transportable Telecommunications (MTT) component of the CNS program seeks to restore and extend PSN links for NS/EP telecommunications using government or commercial transportable communications equipment. The OMNCS is supporting a DoD/JS initiative that will assign an NS/EP link restoral mission to communication units of the National Guard. Joint policy guidance is being established to make MTT systems available to provide NS/EP communications support in emergencies. An ongoing effort of the MTT program is the maintenance of the data base of AN/TRC-170 and 173 tactical radios. These data include location, quantity, fielding dates, and commanding authority.

**EXHIBIT 2-6**  
**CNS ENHANCEMENTS**  
 .....



**COMMERCIAL SATCOM INTERCONNECTIVITY**  
 .....

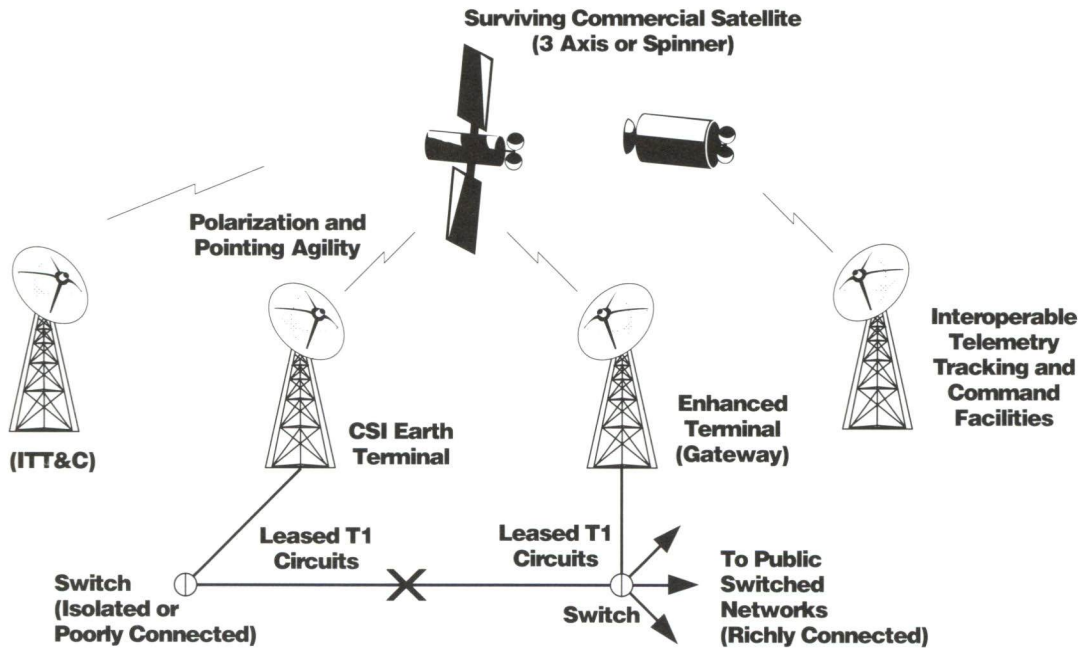
As shown in Exhibit 2-7, the CSI program uses surviving commercial C-band satellites to enhance the long-haul connectivity of the PSN during national emergencies. The CSI network consists of two interoperable telemetry, tracking, and control (ITT&C) facilities that allow interoperability within the two satellite families (three-axis-stabilized and spin-stabilized). CSI earth stations provide T1 connectivity using standard CSI modems and are linked by a terrestrial tail circuit to a designated PSN switch. By the end of FY92, contracts were awarded for 19 communications earth stations; 18 have passed acceptance testing and are operational.

The following activities were performed in FY92:

- The Manager, NCS, successfully conducted the fourth annual test and exercise of the CSI network. Several proof-of-concept tests were successfully demonstrated, including interconnecting MCI switches and providing outside contiguous United States (OCONUS) access to NS/EP users in Panama.

**EXHIBIT 2-7**

**CSI NETWORK ELEMENTS**  
 .....



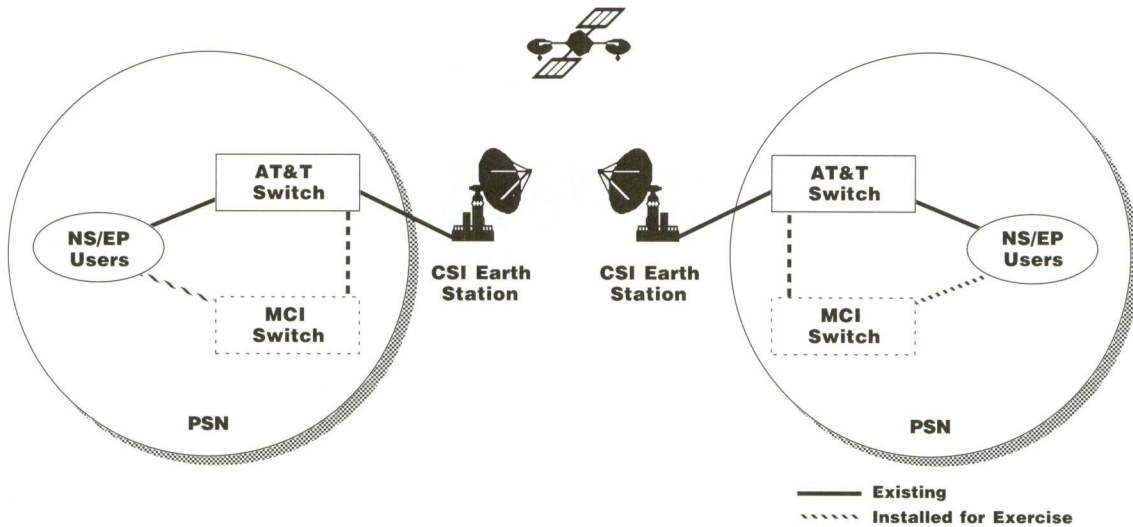
- As illustrated in Exhibit 2-8, the MCI demonstration involved extending tail circuits from existing CSI earth stations to local MCI switches. The OMNCS is studying the feasibility of extending tail circuits to MCI and Sprint switches permanently to support NS/EP telecommunications in accordance with the Panel of Experts' recommendations.
- The CSI program also demonstrated the capability to use CSI assets as gateways to the PSN for OCONUS NS/EP users, as illustrated in Exhibit 2-9.

.....  
**PUBLIC SWITCHED NETWORK**

**SECURITY**  
 .....

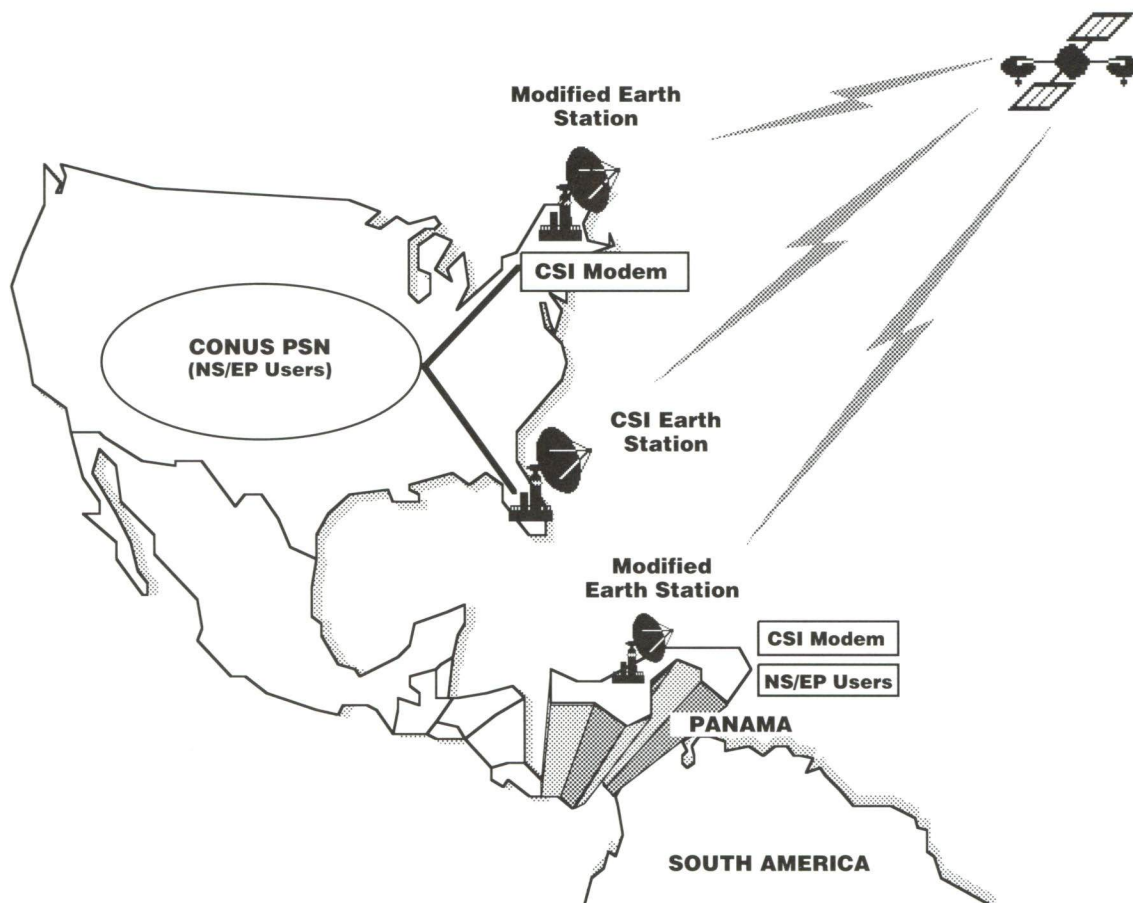
The network security issue was first identified in the National Research Council's (NRC) 1989 report, *Growing Vulnerability of the Public Switched Network: Implications for National Security Emergency Preparedness*. Industry and Government participants in the network security process have focused their effort on the unauthorized access to or manipulation of PSN software and data bases that could affect NS/EP telecommunication users. Specifically, the participants are interested in intrusions that result in denial or interruption of service to NS/EP users or in the extraction of sensitive data from network elements. Senior industry and Government executives continued to place a high priority on mitigating this problem during FY92.

**EXHIBIT 2-8**  
**MCI INTERFACE DEMONSTRATION**  
 .....



**EXHIBIT 2-9**

**PANAMA OCONUS DEMONSTRATION**



The GNSS and the Network Security Task Force (NSTF) have worked together during FY92 to address the issues surrounding network security and to establish mechanisms to solve the problem. The GNSS and NSTF also formed separate but closely coordinated NSTAC and Government NSIE groups. The NSIE's provide a forum for identification and exchange of issues involving penetration and manipulation of network software and data bases affecting NS/EP telecommunications. The NSIE groups met bimonthly during FY92 to exchange information regarding hackers and to assess vulnerability of the PSN to hackers.

In support of the NSIE process, the OMNCS has initiated three projects to foster improvements in the security of the Nation's telecommunications infrastructure. These projects include an assessment of the hacker threat to the PSN, a research and development project to develop a tool to analyze PSN software vulnerabilities, and a program to collect and analyze PSN software vulnerability data.

.....  
**NATIONAL TELECOMMUNICATIONS**

**MANAGEMENT**  
.....

During a crisis, the Federal Government relies extensively on the Nation's NS/EP telecommunication resources. To ensure that the telecommunications system meets national leadership requirements, the NCS is developing a survivable and enduring telecommunications management capability. The following sections describe this effort.

**NATIONAL COORDINATING CENTER FOR TELECOMMUNICATIONS**  
.....

The NCC assists the NCS in initiating, coordinating, restoring, and reconstituting NS/EP telecommunication services or facilities under all conditions of crisis or emergency.

During FY92, the following companies were members of the NCC: AT&T, Bellcore, COMSAT, GE American Communications, GTE, ITT Corporation, Martin Marietta, McCaw Cellular Communications, MCI, Pacific Telecommunications, Inc., United States Telephone Association, and Sprint. Government staff changes included the addition of representatives for the Department of Veterans Affairs (VA) and the Department of the Treasury, and the departure of the representative from the Nuclear Regulatory Commission.

**Changes to the NCC.** FY92 was a year of organizational change within the OMNCS, Office of Emergency Preparedness. The TSP Program Office received a new program manager and the office was integrated into the NCC as an NCS operational program. Responsibilities formerly associated with operational readiness were reassigned from the NCC and placed in a new Operational Readiness and Exercise Division. This action positions the NCC to accept development programs within the NLP that are nearing an operational status.

During FY92 there were 54 Major Disaster declarations and one Emergency declaration by the President. They involved NCS regional support to FEMA in all 10 Standard Federal Regions with Region 9 (San Francisco) bearing the brunt of the response requirements. Natural disasters and man-made crises ranged from hurricanes, earthquakes, floods, fires, and mud slides, to tornadoes and even a drought in Micronesia. In total, 18 States and five territories suffered from nature's onslaught during this past year. Unique this year has been the amount of support required by our Pacific Ocean Territories, Commonwealths, and possessions: American Samoa (Typhoon Val, \$72 million), Guam and Micronesia (Typhoon Yuri, \$11 million), Marshall Islands (Typhoon Zelda and Tropical Storm Axel, \$10 million), and Micronesia for a drought (\$3 million).

In 1992, two devastating hurricanes struck Florida and Louisiana (Hurricane Andrew) and Hawaii (Hurricane Iniki). The response and recovery support activities of the NCC were intense for more than a month, from the initial impact of Hurricane Andrew until conditions had stabilized on the island of Kauai, Hawaii. The details of the response to these two disasters will be the subject of a detailed after-action report.

During FY92, the NCC continued to provide international support and assistance to a large number of U.S. programs in areas not previously envisioned. NCC support has been given to the following: Operation SEA ANGEL — rescue and support to Bangladesh victims following a typhoon and severe flooding; Operation PRODUCTIVE EFFORT — evacuation of U.S. and non-Ethiopian foreign nationals from Ethiopia during its civil war; Operation FIERY VIGIL — eruption of Mt. Pinatubo in the Philippine Islands, with the closing of Clark AFB and Subic Bay naval facility. The following operations are ongoing: Operation PROVIDE COMFORT — an effort in support of Iraqi Kurds; DESERT STORM, though no hostilities are involved; Operation PROVIDE HOPE — food and humanitarian support to the former Soviet Union now Commonwealth of Independent States; Operation PROVIDE PROMISE — current support under the United Nations to

provide food and humanitarian support to Yugoslavia; and Operation GTMO — Haitian refugees and boat people interned at Guantanamo Bay, Cuba.

**NATIONAL TELECOMMUNICATIONS  
MANAGEMENT STRUCTURE**

The National Telecommunications Management Structure will provide a comprehensive, survivable, and enduring management capability for initiating, coordinating, restoring and reconstituting the Nation's telecommunication resources in the event that Section 706 of the Communications Act of 1934, as amended, is invoked. The NTMS is a crucial element of U.S. deterrence and will ensure that the functions performed by the NCC can continue throughout any contingency. The operational elements of the NTMS consist of three levels of telecommunications management teams made up of experts from Government and industry. (Exhibit 2-10 illustrates the operational elements.)

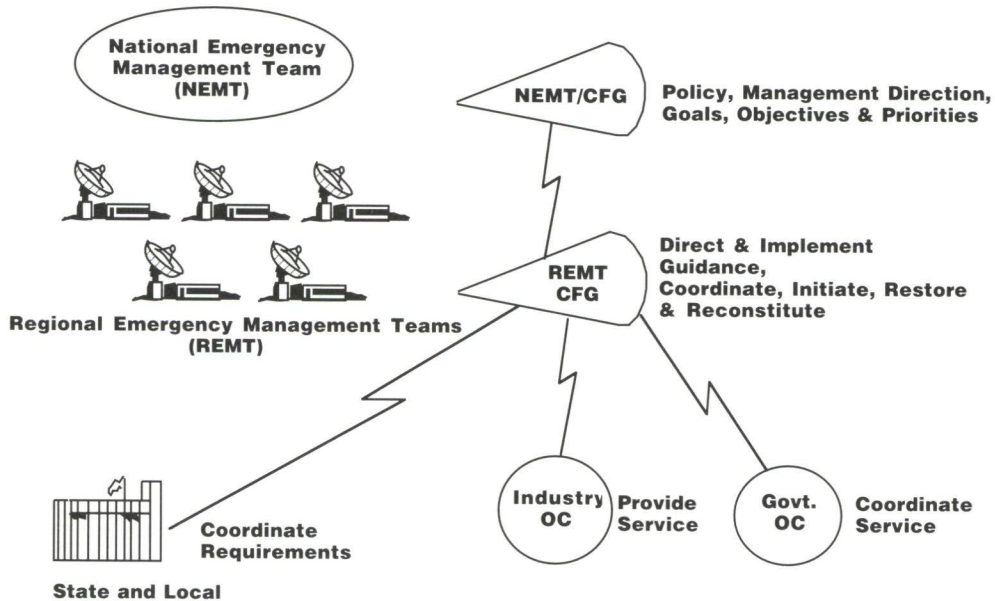
NTMS IOC was achieved in October 1990 at Maynard, Massachusetts, when the first joint Government-industry Regional Emergency Management Team Communications Functional Group (REMT CFG) became operational and supporting Operating Centers (OC) were identified in the northeast region. In FY91, REMT CFGs were validated at Bothell, Washington, and Denton, Texas.

FY92 NTMS activities included the following:

- Training for National Emergency Management Teams (NEMT) and REMT CFG teams
- Production of several NTMS training videos
- Publication and distribution of two NTMS newsletters

**EXHIBIT 2-10**

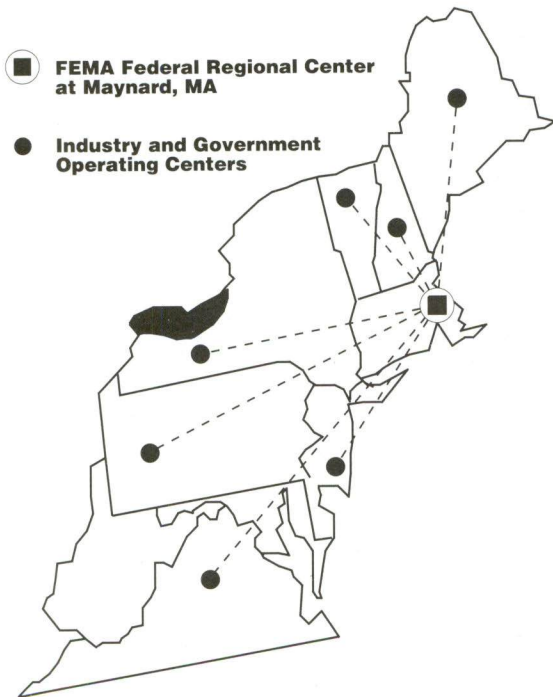
**THE OPERATIONAL ELEMENTS OF THE NTMS**



- Identification of REMT CFG team members and supporting OC's for Battle Creek, Michigan, and Thomasville, Georgia
- Completion of agreements with carriers supporting NTMS
- Validation of Battle Creek and Thomasville REMT CFG teams. (Scheduled for September 1992, postponed due to Hurricane Andrew.)

**National Telecommunications Coordinating Network.** The National Telecommunications Coordinating Network (NTCN) supports the NTMS by providing communications connectivity to exchange minimum essential telecommunications management information among NTMS elements. Exhibit 2-11 illustrates NTMS Regional Connectivity.

**EXHIBIT 2-11**  
**NTMS NATIONAL REGIONAL CONNECTIVITY**  
.....

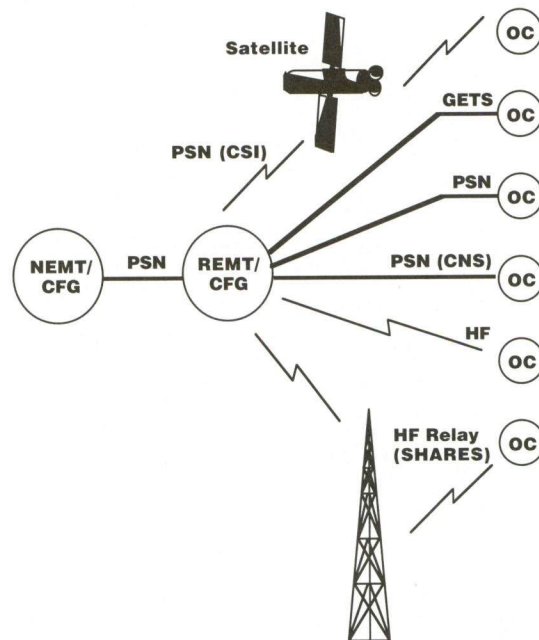


The NTCN relies on existing multimedia telecommunications equipment and capabilities that can be readily accessed to assist the NTMS mission. Exhibit 2-12 illustrates NTCN conceptual connectivity. The NTMS Program Office acquired HF radios in FY91 to serve as a "last ditch" means of communication if other means are not available.

FY92 NTCN activities included the following:

- Completed all engineering site surveys for HF radio and antenna installations at OC's
- Commenced HF installations in northeast region
- Drafted NTCN operating and maintenance procedures.

**EXHIBIT 2-12**  
**THE NTCN CONCEPTUAL CONNECTIVITY**  
.....



**Telecommunication Emergency Decision Support System.** TEDSS provides information processing and decision support to the Manager, NCS; NCC; NCS Regional Manager; the NTMS; and the OSTP. TEDSS, through its extensive telecommunications data base, supports the emergency information requirements for these entities.

The NEMT's and the REMT's were provided automation support using TEDSS for test, training, and exercise events throughout the year. The TEDSS portable component hardware platform was replaced with an advanced, lightweight integrated 486 computer to enhance emergency response capabilities. The future of the TEDSS program is under review.

**NS/EP INFORMATION RESOURCE MANAGEMENT**  
.....

The role of information management within the OMNCS is to administer the automation of information systems to enhance the capability of the organization to fulfill its mission requirements. This administration includes office automation activities and mission-specific applications.

The following activities were performed in FY92:

- The Automated Systems Branch was restructured as the Information Systems Division to more efficiently support the automated information requirements of the OMNCS, other Federal departments and agencies, industry, and the NCS community.
- The successful transition to a new electronic mail (e-mail) system was accomplished.
- An analysis of the organization information requirements was initiated to assist in the preparation of an OMNCS Automated Data Processing (ADP) Strategic Plan.

- An analysis of the integration of Windows/Graphical User Interface into the OMNCS resulted in a hardware and software upgrade to the OMNCS office automation infrastructure.
- Maintenance and procurement of ADP resources for the operational integrity of the OMNCS was continued.
- Mission-specific application support as amplified in each project's accomplishments was continued.

**NS/EP TELECOMMUNICATIONS SERVICE PRIORITY SYSTEM**  
.....

The TSP System establishes the regulatory, administrative, and operational framework to authorize the priority provisioning and restoration of NS/EP telecommunication services. TSP allows service vendors to initiate, restore, or otherwise act on a priority basis to ensure effective NS/EP telecommunications. In November 1988, the FCC issued a Report and Order establishing the TSP System. This Report and Order required approval of the TSP implementation procedures before the IOC. At the same time, the President declared implementation of the TSP System as the Nation's highest NS/EP telecommunications priority.

The TSP Oversight Committee met five times during FY92. The Oversight Committee is made up of seven Federal, seven industry, and two State and local representatives. The Oversight Committee's Issues Working Group identified 10 issues for the TSP Program Office (TSP PO) to address. The issues deal primarily with State and local concerns relative to the administration and costs associated with the program. The TSP PO has developed a strategic plan to resolve those areas of concern. The strategic plan will be executed throughout FY93.

In FY92, the TSP PO was reorganized as an operational element and placed in the NCC for reporting purposes.

By March 1993, the Restoration Priority System will be completely replaced by TSP. All services that required a restoration priority under the old system and continue to require restoration priority treatment will have to be transitioned to the TSP System. The transition has been underway since September 1990.

TSP has ensured its viability in the post-706 environment by replicating the invocation process for provisioning and oversight of restoration priorities in the NTMS program.

SHARES is available full time for use by Federal emergency planning and response personnel to support both intra-agency and interagency NS/EP requirements. Prior coordination is unnecessary and SHARES "activation" is not required. As long as the criteria for using SHARES are met, a user need only contact the nearest SHARES station listed in the "SHARES HF Radio Program Directory" (NCSH 3-3-1) for assisting in processing emergency message traffic. More than 1,300 SHARES Workbooks have been distributed nationwide.

SHARES support to NS/EP during Hurricane Andrew consisted of the following:

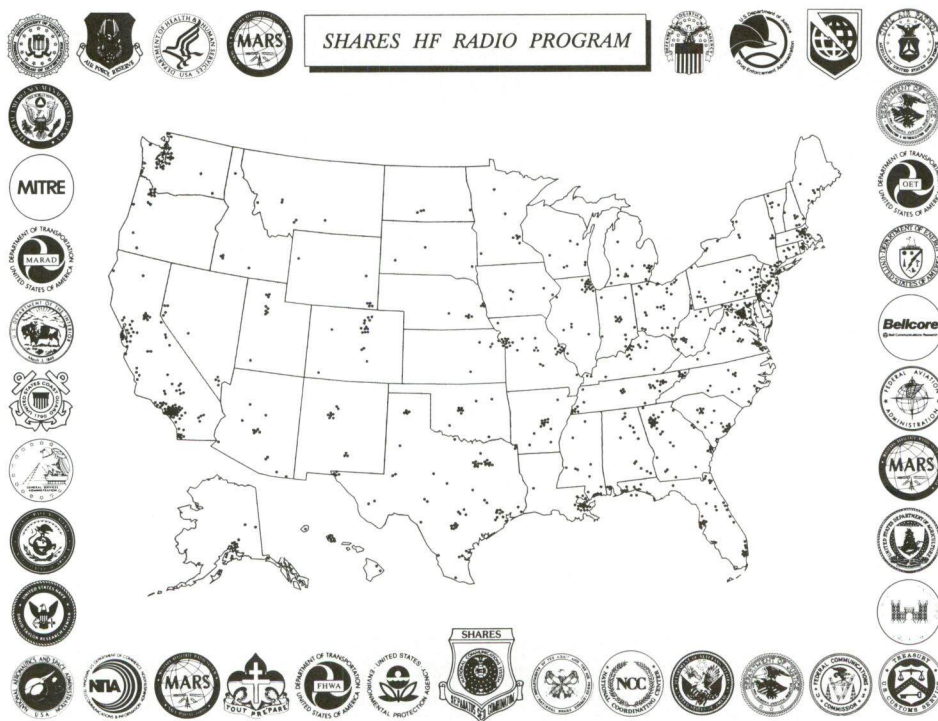
- During FY92, Hurricane Andrew provided the first sustained test of SHARES capability to support NS/EP since it was fielded in April 1991. More than 400 SHARES stations located throughout the United States were on the air and available to provide SHARES support during the emergency.

**SHARED RESOURCES HIGH FREQUENCY RADIO PROGRAM**

The SHARES HF Radio Program is an initiative by the NCS to provide a backup high frequency radio network in support of NS/EP requirements. The SHARES program currently consists of nearly 1000 HF radio stations, representing 36 Federal and federally affiliated organizations. Exhibit 2-13 shows the SHARES network and participating organizations.

**EXHIBIT 2-13**

**SHARES HF RADIO STATIONS**



- Of the 53 SHARES stations located in the immediate impact area of Hurricane Andrew, 36 were available to support SHARES.
- Thirty-three of the 36 Federal and federally affiliated departments and agencies participating in the SHARES program reported stations on the air and available.
- The SHARES Emergency Coordination Team was activated in the NCC and four SHARES Advisory Notices were issued.
- During the critical hours of emergency, Federal departments and agencies reported using SHARES to process emergency message traffic. In one, SHARES was used to locate the Monroe County (Florida) Emergency Coordinator for the Governor of Florida and to provide an HF radio/patch link between them. Exhibit 2-14 shows the location of the stations that were available to provide SHARES support during the emergency.

**EXHIBIT 2-14**  
**SHARES HF RADIO PROGRAM STATION**  
**PARTICIPATION - HURRICANE ANDREW**  
 .....



Additional efforts during FY92 pertained to the following:

- Continued to conduct periodic nationwide exercises to maintain and assess SHARES capability. The exercises were designed to provide training on SHARES radio operating and message formatting procedures, and to expand awareness of SHARES throughout the Federal emergency planning and response community.
- Conducted two SHARES exercises, on December 3, 1991, and April 21, 1992, which involved more than 200 operators from 93 HF stations and represented 24 separate organizations. Of the 280 SHARES messages processed during the exercises, 95 percent were successfully completed.

**JOINT TELECOMMUNICATIONS RESOURCES BOARD (JTRB)**  
.....

The JTRB did not meet during FY92. However, a JTRB task force, under the leadership of OSTP, met three times to develop and approve a series of documents that describe the procedures to transition from a peacetime to a war environment. A JTRB reference manual was distributed to the Director, OSTP and all JTRB principals.

**NATIONAL PLAN FOR TELECOMMUNICATIONS SUPPORT IN NON-WARTIME EMERGENCIES**  
.....

The revised National Plan for Telecommunications Support in Non-Wartime Emergencies was released for distribution in February 1992 by OSTP. This revision was prepared in coordination with and approved by the member organizations of the JTRB.

**OPERATIONAL READINESS AND EXERCISE SUPPORT**  
.....

The NCS and NCC successfully participated in the following exercises:

**Exercise I.E. Zelda.** Exercise I.E. ZELDA was a FEMA Region 3-sponsored exercise. The exercise scenario depicted significant damage resulting from a hurricane, requiring Federal response under the Federal Response Plan (FRP). Regional communications response personnel were activated in accordance with the Emergency Support Function 2 Annex (Communications) of the FRP. The NCC provided response cell support and technical assistance throughout the exercise.

**Regional Emergency Management Team Communications Functional Group Training.** During June 1992, the OMNCS, in coordination with the OSTP and FEMA, conducted a series of 2-day training sessions at four Federal Regional Centers (FRC). The training was provided to Government and industry members of the CFGs. The first day of training was dedicated to informational briefings provided by the OMNCS training team. Subjects included status of the NTMS implementation; the evolving role of the CFG and the FRP; the TSP System; and the role of the CFG, CSI program, and TEDSS. A tabletop exercise was conducted during the second day. The exercise allowed the team to examine various issues that could arise during the activation of the REMT in response to a limited nuclear laydown on the United States. More than 100 Government and industry representatives participated in the four training events.

**Federal Field Exercise 3.** The OMNCS is assisting in the planning of a major exercise of the Federal Radiological Emergency Response Plan (FRERP). FFE-3 is jointly sponsored by the Nuclear Regulatory Commission, Department of Energy, State of Pennsylvania, Pennsylvania Power and Light, and FEMA. The scenario depicts the release of radioactive material at a Pennsylvania nuclear power plant that requires emergency response as directed by the FRERP and the FRP. The exercise is scheduled for February 1993. NCS plans for participation in the exercise include activation of a communications support team at the Federal Radiological Monitoring and Assessment Center, an Emergency Support Function (ESF) 2 Communications Support Team at the Disaster Field Office, and ESF 2

support to the Emergency Support Team and the Catastrophic Disaster Response Group at FEMA Headquarters and to the NCC.

**FEDERAL RESPONSE PLAN**  
.....

In early 1992, the new FRP was signed by all of the plan's primary and support agencies. Under the plan, the NCS is charged as the primary agency for the Communications Annex, ESF 2. ESF 2 was revised to reflect the January 1992 National Plan for Telecommunications Support in Non-Wartime Emergencies (National Plan). Additional changes were incorporated in midyear. The resulting document was forwarded to FEMA for inclusion in the FRP. This effort concludes a 2-year effort by the Federal community to adopt an all-hazards response plan.

**FEDERAL RADIOLOGICAL EMERGENCY RESPONSE PLAN**  
.....

The FRERP is undergoing minor changes before distribution to the Federal radiological community for final approval. The NCS communications section of the FRERP was completed previously in 1992 after collaboration between the GSA and NCS.

The Federal Response Subcommittee is working on the language to a new annex to the FRP. This annex, entitled "Radiological Emergency Annex," will provide the bridging language between the FRERP and the FRP. Once completed, the FRP can be activated to provide assistance in a radiological emergency. This allows a broader Federal response and recovery assistance than could be provided by the FRERP alone. The new annex and the revised FRERP are due for completion late in 1992.

**OTHER FEDERAL PLANNING ACTIVITIES**  
.....

The Environmental Protection Agency (EPA) requested that the NCS provide representation on the Communications Subcommittee of the National Response Team. This group of Federal representatives is tasked with addressing communications issues

that would arise while responding to National Contingency Plan activities. The NCS was invited to participate because of the broad array of knowledge and capabilities available to the OMNCS by the NCS member organizations.

**CALVERT CLIFFS NUCLEAR POWER PLANT INGESTION PATHWAY EXERCISE**  
.....

The NCS provided an observer to the FEMA Region III Radiologic Emergency Preparedness (REP) exercise at the Calvert Cliffs nuclear power plant. This afforded NCS personnel the opportunity to observe, comment on, and assist in a nonwartime radiologic incident. Functioning as observers allowed NCS representatives to visit a number of sites during the exercise, including the Baltimore Gas and Electric Emergency Operations Facility (EOF), Media Operations Center (MOC), and Prince Georges County Office of Emergency Preparedness. The exercise proved to be a valuable tool to assist the NCS planners in preparing the upcoming FFE-3.

**OPERATIONAL COMMUNICATIONS CAPABILITIES**  
.....

**Interdepartment Radio Advisory Committee.** The NCS participates in the Interdepartment Radio Advisory Committee (IRAC) as an observer. During this year, the NCS and FEMA sponsored a request for 10 frequencies in the 162 to 172 MHz government VHF-FM band. The National Telecommunications and Information Administration (NTIA) had called for a new band plan incorporating new narrowband radio operations for this portion of radio spectrum. This initiative would allow a greater number of channels for government use. FEMA and the NCS asked that 10 channels be set aside for joint Federal/State use during a disaster. The NTIA approved this request and the frequencies have been assigned. The use of these frequencies is pending development of a channel use plan by FEMA, coordinated with the IRAC and the NCS.

**United States Military Communications Electronics Board.** This year the United States Military Communications Electronics Board (USMCEB) changed its mission and charter. The board decided that it should narrow its focus and address only issues regarding interoperability. This change was approved by the USMCEB principals in April of this year. Summarily, a new charter and membership is going to be drafted for review by the USMCEB principals.

**NCS Frequency Management.** In 1992, the NCS requested HF and very high frequency (VHF) spectrum through the U.S. Army. These requests, once granted, will support a number of NCS initiatives including SHARES and the NTMS missions. In response to the NCS need for frequencies during emergencies, the U.S. Navy MARS program supplied two temporary use frequencies to the NCS. These frequencies are for emergencies and are under the NCS Navy MARS call sign (NNNONCS). These frequencies may be used by any SHARES member desiring to contact the NCC.

#### **OMNCS AUGMENTEE PROGRAM**

The development of the augmentee program, which was formalized in 1988, continued during FY92. This program is composed of the National Defense Executive Reserve (NDER) and the U.S. Department of the Army's Individual Mobilization Augmentee (IMA) Program. The augmentees serve within the OMNCS during national emergencies or crises.

**National Defense Executive Reserve.** The NDER's are highly qualified business executives and other civilian personnel trained to serve in key government positions during periods of national emergency. The Manager, NCS, unit had 32 members during FY92. NDER's have telecommunications or emergency management expertise. They participated in a number of Manager, NCS-sponsored training activities at the national and regional levels. One participated in Global War Game 1992.

#### **Individual Mobilization Augmentees.**

The IMA program provides U.S. Army Reservist personnel to augment the staff of the OMNCS during emergencies or crises. The OMNCS is authorized 49 IMA positions. In addition to performing inactive duty and annual training, the IMAs participated in the OMNCS and FEMA-sponsored regional training sessions at Bothell, Washington; Denver, Colorado; Denton, Texas; and Maynard, Massachusetts. A milestone was achieved this year with the first annual IMA conference held 17 to 19 July 1992, in Reston, VA. The conference focused on the definition of the IMA duties in support of the OMNCS and FEMA regions.

### **TECHNOLOGY AND STANDARDS**

The NCS Office of Technology and Standards (NT) conducts technical analyses and performs standards work in telecommunications technical areas that affect NS/EP. Technical staff develop Federal telecommunication standards to address key NS/EP areas such as interoperability. These personnel also participate in the work activities of commercial standards forums, both nationally and internationally. Participation enables staff personnel to effectively gain insight into evolving technology and provide NS/EP guidance during the formulation of commercial standards.

#### **TECHNOLOGY**

##### **Analysis of the Implications of Digital Cellular Communications for NS/EP.**

Cellular analog mobile phone service was developed in the 1960's and introduced approximately 10 years ago to overcome the problem of radio spectrum overcrowding. Cellular techniques greatly improve radio spectrum efficiency. However, due to rapid growth in some urban areas, demand for cellular service exceeds service capacity. Consequently, the cellular industry initiated development of digital techniques to provide solutions to the service capacity shortfall. These digital techniques should improve NS/EP capabilities. Some of the improvements in digital technology expected in the near future include:

- Increased radio frequency spectrum efficiency with significantly reduced noise and interference.
- Lighter, more compact equipment with decreased power consumption.
- Enhanced service feature capabilities, such as priority treatment.
- Improved security services. Digital signals are more conducive to authentication, message encryption, and voice privacy than analog. Reference Page 2A-7 for a detailed standards information source.

**NS/EP WIRELESS SERVICES**  
.....

Recent developments in the rapidly growing and evolving wireless digital telecommunications industry have the potential to adversely affect the ability of the national telecommunications infrastructure to support NS/EP wireless users. These developments have caused concern within Government and industry. Therefore, as a result of measures taken by senior-level government personnel and NSTAC recommendations, the OMNCS became the Government focal point for wireless services. This office began work with three major objectives:

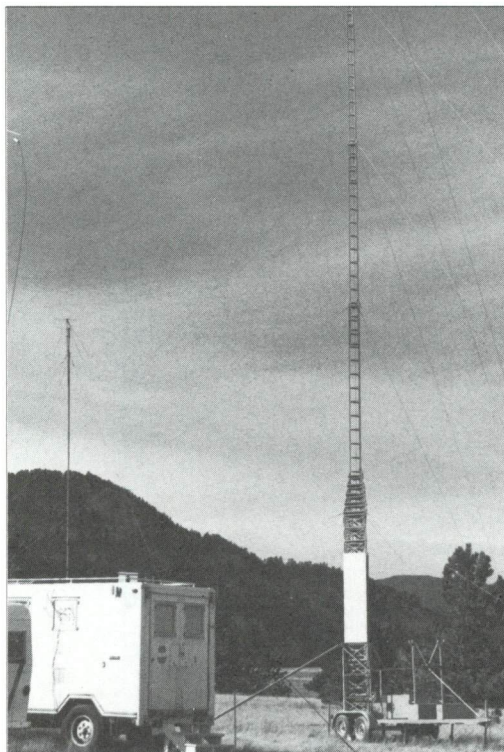
- Identification and evaluation of NCS NS/EP wireless service needs
- Identification of potentially adverse effects on NS/EP needs due to the emerging technology of wireless services
- Utilization of standards, policies, procedures, and initiatives to address and satisfy NCS NS/EP wireless service needs.

**Modeling of Radiation Effects in Complementary Metal Oxide Semiconductors.** Complementary Metal Oxide Semiconductors (CMOS) technology is used extensively in electronic equipment. The extremely low power consumption of CMOS is its key quality. However, CMOS is vulnerable to fallout radiation. This vulnerability was addressed through a special work effort that centers on:

- A workable model to accurately depict radiation effects on CMOS
- Preliminary analysis to determine if CMOS can be made radiation hard without requiring changes in the manufacturing process.

**Universal Personal Telecommunications Technology Assessment.** An assessment of Universal Personal Telecommunications (UPT) and related technology trends was conducted. The concept of personal communications includes the ability to communicate from person to person, while allowing both terminal and personal communications mobility. A key feature is the association of a telephone number, the UPT number, with the user rather than with a piece of terminal equipment. UPT will allow access to universal telecommunication services with complete personal mobility.

**ITS HF RADIO INTEROPERABILITY TEST FACILITY**  
.....



The concept for UPT originated within the International Telegraph and Telephone Consultative Committee (CCITT) in 1990. Due to widespread United States interest, a new T1 technical subcommittee (TSC) was established for personal communication service and UPT. The concept of UPT would not be possible without the advent of the Intelligent Network (IN) and its extension, Advanced Intelligent Network (AIN). UPT is a service concept independent of the network and able to take advantage of new developments in telecommunications.

UPT can provide some important functionalities that will likely affect NS/EP. These include:

- Flexibility
- Transportability
- Interoperability
- Security.

UPT features needed for NS/EP include safeguards:

- To lower the probability of detection of NS/EP locations by unauthorized personnel
- To protect network hardware and software supporting NS/EP communications from accidental or malicious manipulation and destruction
- To reduce or eliminate potential electronic penetration of the network to prevent corruption of NS/EP data.

UPT is expected to evolve over a long period of time. It is totally dependent upon the implementation of other technologies and systems, including evolving market needs.

### **Telecommunications Industry**

**Dependence on Foreign Sources.** The U.S. telecommunications industry dependence on foreign sources relative to the mobilization needs of the U.S. telecommunications infrastructure remains a significant NS/EP concern. Therefore, work commenced to assess effects on U.S. telecommunications if foreign industry

sources are denied or significantly reduced to the U.S. telecommunications industry. This work included:

- A survey of foreign telecommunications, information products, and services that affect the United States
- Establishment of an assessment mechanism to define the degree of U.S. dependence on foreign sources
- Analysis of foreign-supplied items that highly affect U.S. mobilization.

Preliminary conclusions reached from the analysis include:

- Foreign source vulnerability is real
- Foreign source information is guarded by manufacturing companies
- Global foreign source information can only be obtained by mail survey — a survey cannot be used to identify specific problem components
- A technical understanding of foreign source dependence remains paramount.

Additional analysis work for future tasking will encompass the critical foreign dependence areas of:

- Fiber optic products
- Wireless products
- Telecommunications factory equipment
- Semiconductor components/assemblies.

**Electromagnetic Pulse.** The OMNCS sponsors the Electromagnetic Pulse (EMP) Mitigation Program in response to E.O. 12472 and NSDD-97. The program goals include:

- Identification of PSN assets critical for restoral
- Estimation of EMP effects on these assets and the networks in which these assets are embedded

- Determination of hardening measures to minimize effects due to upset and damage.

So far the entire EMP Mitigation Program has demonstrated that physical damage to telecommunications equipment subject to simulated EMP testing has been minimal. However, the program has revealed that the switching and digital cross connect equipment subject to simulated EMP is affected by “software upset,” a condition that requires manual reloading and reinitialization of switch software. These results were taken into account during network analysis work. This work focused on network evaluation techniques while addressing point-pair connectivity and grade of service in telecommunication networks. The OMNCS will remain the focal point within the Federal Government for EMP technical data and studies that concern EMP effects on telecommunications, although simulated EMP testing of major hardware concluded. Reference NCSD 4-2, page 2-4.

**Harris Radios.** Data analysis from simulated EMP on the Harris single sideband (SSB) HF R3200 transceiver was completed. This transceiver can serve as an alternative means of communication for elements of the NCS if landline service is severely disrupted. This particular transceiver was selected for simulated EMP testing because of its compatibility with installed operating equipment. Data analysis indicated:

- The Harris system may be high altitude electromagnetic pulse (HEMP) survivable.
- Survivability is directly affected by antenna coupling protection.

Initial test results indicated that the Harris transceiver was not hard to simulated HEMP-induced transients when coupled to an antenna during a simulated HEMP event. A recommendation was made to retest the Harris system under structured conditions using data from the first test. The transceiver and radio frequency coupler were input/output protected by in-line current-limiting capability protection devices in a successful system retest.

### **Fiber Optic Transmission (FT) Series**

**G.** Performance of the AT&T Series G system under an EMP event remains crucial to the NCS because this system is the dominant transmission system used in the AT&T network. Consequently, the OMNCS selected this critical telecommunications asset for simulated EMP tests. Simulated EMP tests on the Series G system revealed two responses to unmodified system exposures above a field strength of 25 kV/m:

- Protective shutdown of repeater and end-office power packs
- End-office interface packs losing ability to synchronize signals for transmission through the Series G system.

Almost all end-office buildings provide sufficient EMP attenuation to reduce field strength below 25 kV/m during EMP events. Therefore, end-office power packs that benefit from attenuation from end-office structures should not inhibit the Series G system during an EMP event. In contrast, however, repeater housings of the Series G system do not possess sufficient inherent EMP attenuation to reduce EMP field strength below 25 kV/m for repeater power electronics. Mitigation methods include electronic modification of the repeater power supply.

**Northern Telecom FD-565.** Simulated EMP tests of the Northern Telecom FD-565 fiber optic communications system were conducted simultaneously with the AT&T FT Series G system. The Northern Telecom FD-565 system did not experience any protective shutdowns or loss of signal ability during simulated EMP tests.

### **Management of Stressed Facility**

**Networks.** The goal of the distributed facilities restoration activities is to understand the effects of network management controls on the performance of intelligent facility networks, particularly with regard to the ability of such networks to provide telecommunication services under emergency conditions. “Intelligent” in this context, refers to the fact that the networks are able to adapt to unpredictable network damage because of their message-based

signaling and programmed distributed restoration algorithms. Facility networks can also be used for rapid provisioning of new high data rate services that would be robust under a variety of damage scenarios. The functional cornerstone of this effort is the DCS system.

The motivation for the study of distributed facilities restoration is that there is no industry standard for handling large-scale communication failures. Individual carriers may spend hours or days trying to reconfigure or repair their networks, and no plans are in place that would help transfer essential failed services from one carrier to another in an emergency. In addressing these issues, this study will recommend restoration procedures within a single carrier's network that may be generalized to operations between carriers. The issues concerning the access between a customer and the point of presence (POP) of a common carrier will not be directly addressed by this program. Communication failures caused by earthquakes, hurricanes, floods, large-scale fires, and terrorist sabotage will be addressed by this program.

Digital Cross-Connect Systems (DCS), the switches that cross connect digital trunks such as DS-1 or DS-3 to each other, are playing an increasingly significant role in ensuring reliability and survivability of the PSN. Originally conceived as an electronic alternative to manually wire cross-connect systems, DCS now plays a critical role in self-healing networks. DCS is also emerging as the principal means by which asynchronous digital transmission facilities connect with the rapidly emerging Synchronous Optical Networks (SONET).

AT&T introduced the first DCS's, known as the Digital Access and Cross-Connect System (DACCS), in 1981. As early as 1986, the flexibility and responsiveness of the DACCS were recognized and used in the Defense Commercial Telecommunications Network to provide flexibility to switch wideband transmission facilities required by video conferencing services.

**Network Management of Stressed Intelligent Networks.** Analysis was performed on the AT&T switch and facility networks with respect to the dynamic stress factors of damage and overload. The resultant recommendations for network management controls focus on:

- AT&T switching and signaling
- AT&T facility networks.

**Related Analysis Efforts.** Improved understanding of EMP and other nuclear effects on the PSN's through analysis. Mathematical and computer modeling tools to predict congestion performance and the conductivity of the PSN during stressed conditions were employed. Two computer modeling tools utilized were:

- Queuing Traffic Congestion Model (QTCM)
- Network Connectivity Analysis Model (NCAM).

**Basic Immunity From High Altitude Electromagnetic Pulse.** A project proposal, Electrical Protection for Central Offices and Similar Facilities from HEMP, was submitted to a major forum (Standards Committee T1). The OMNCS anticipates American National Standards Institute (ANSI) approval of this proposal early in FY93. This proposal stems from work originally recommended by the NSTAC EMP Task Force.

**Single Mode Fiber Fabrication Factors and Radiation Response.** In addition to studying the effects of EMP on telecommunications equipment, an analysis of the effects of fallout radiation was performed. The radiation response of single-mode fiber was tested and evaluated. The most stressing environment for fiber optic transmission systems consists of fallout subsequent to a nuclear attack because the long lengths of fiber possess a potential for exposure to high total doses of radiation. The susceptibility of some types of commercially available fiber optic cable to optical darkening (and therefore increased signal loss and bit error rate) after exposure to ionizing radiation raises questions about the use of fiber optics following a nuclear conflict. The radiation hardness of fibers has improved in recent years.

Nevertheless, an optimum radiation resistance for single-mode fiber optics remains desirable for NS/EP purposes. Analysis work included:

- Establishing an optimum method for performing fabrication and fiber drawing to minimize radiation sensitivity of matched clad single-mode fibers.
- Planning for experiments to determine, with statistical confidence, parameters critical for fiber radiation hardness.

## STANDARDS

### Federal Telecommunications

**Standards Program.** E.O. 12472 assigns the Manager, NCS, responsibility for the Federal Telecommunications Standards Program (FTSP). Therefore, the Manager, NCS, established the FTSP. This program addresses Federal telecommunications interoperability issues through development and coordination of Federal telecommunication standards. Whenever feasible, the FTSP uses existing or evolving industry, national, and international standards as the basis for Federal telecommunication standards. The Federal Telecommunications Standards Committee (FTSC), chaired by the Assistant Manager, OMNCS Office of Technology and Standards, serves as the primary mechanism for NCS member organizations to participate in FTSP work.

The FTSC meets monthly. The committee determines relevance and priority of standardization proposals, and recommends positions that should be supported by Federal Government members of national and international standards committees. The committee also rules on the technical adequacy of draft Federal telecommunication standards before formal coordination within Government and industry. The FTSC establishes subcommittees to work on specific projects. The subcommittees informally coordinate proposed draft standards, attempt to resolve issues with recommendations to the FTSC, and document any unresolved issues for appropriate FTSC action.

## FTSC SUBCOMMITTEE ACTIVITIES

**Fiber Optics.** Work included participation in the work of the FTSC's subcommittee on fiber optics. Technical areas of concern to the user community addressed by the subcommittee included:

- Components and systems for on-premises applications
- Long-haul transmission requirements.

**Voice Communications and Interoperability Standards.** Work included participation in an accredited specialized voice and data processing working group of technical subcommittee TIA1. Evaluations were conducted on the promotion of standards for:

- Contemporary speech coding techniques
- The quantization distortion unit (QDU), a principal voice quality performance measure used for digital network planning.

### Meteor Burst Communication

**Standards.** Finishing touches were applied to a family of three meteor burst communication draft standards. These three draft standards (proposed Federal Standards 1055, 1056, and 1057) should be approved in early FY93.

A study of advanced meteor burst communication techniques, as they relate to standardization, was conducted. Such advanced techniques hold the promise of improving throughput by one to two orders of magnitude. These advanced techniques include:

- Adaptive antennas
- Advanced network topology and routing
- Adaptive data rates
- Advanced modulation techniques.

**Land Mobile Radio.** The FTSC Land Mobile Radio (LMR) Subcommittee continued to closely monitor the work of Project 25 (see next paragraph) and make key contributions to the Project 25 effort. NSA briefed the subcommittee on the Federal Government-unique Type 1 encryption standards development

work that it has undertaken. These Type 1 encryption standards will ensure that manufacturers are able to implement interoperable Type 1 (e.g., classified) encryption in new land mobile radios for those Government users who require it.

Significant progress was made toward the development of basic standards for next-generation LMR. The Project 25 Steering Committee (of which the OMNCS is a member) decided on the vocoder, IMBE (Improved Multi-Band Excitation), an aggregate data rate of 9,600 bits/s (of which 7,200 bits/s would be reserved for the vocoder and vocoder error protection), and the QPSK-C family of modulation techniques (one requiring a linear amplifier and 6.25 kHz of bandwidth and the other not requiring a linear amplifier and requiring 12.5 kHz of bandwidth).

**High Frequency Radio.** During FY92, the OMNCS participated in the work of the FTSC's subcommittee on HF radio in which HF automated radio features and functions were addressed.

#### OTHER FTSP ACTIVITIES

**Interoperability/Standards Acquisition Information Source.** NT has tracked standards and associated recommendations for a number of years. This office has often been the focal point for government entities seeking standards-related information. Recently, work was initiated on a specialized computer-based interoperability and standards acquisition information source. This source supports telecommunication services and equipment acquisitions. Acquisitions for complex systems often involve the specification of numerous hardware and software components. Interoperability can only be ensured by the designation of a set of standards that define performance requirements and system-specific interfaces. The interoperability and standards information source facilitates this process for the Federal telecommunications user in the development of statements of work.

**HF Adaptive Radio Systems.** Work covered advanced features of HF adaptive radio systems and the respective interfaces to multi-media transmission systems. These systems included:

- Fiber optic cable
- VHF/ultra high frequency (UHF) radio
- Meteor burst and satellite.

**HF Radio Simulator.** Work began on enhancing the existing wideband HF channel modeling simulation capability. Channel simulators permit the testing of equipment over the full range of propagation conditions. In contrast, actual over-the-air tests include only those propagation conditions that happen to be present at the time tests are performed.

**Grounding and Bonding.** Work included participation with industry to develop telecommunications grounding and bonding standards for buildings. The work effort stemmed from a request by some NCS member organizations. The post-AT&T divestiture lack of industry and Government standards for telecommunication grounding and bonding in buildings has caused various contractual difficulties for government planners. As a result of the NT efforts, the FTSC facilitated Government planning and adopted three Federal standards (1090 Series) to address telecommunications grounding and bonding.

**Teleconferencing.** FTSC approval was obtained for a video compression algorithm standard. This new standard further defines several CCITT recommendations dealing with algorithms, data rates, and audiovisual services. Technical areas cover:

- Video coding and multiplexing
- Electronic handshaking, control, indication, and terminal interfacing.

Significantly, the new Federal standard provides the Federal community with the necessary methodology to address interoperability among video users.

**High Definition Television.** A general trend exists that will ultimately result in adoption of a U.S. High Definition Television (HDTV) transmission standard. At least four separate U.S. business teams advocate HDTV systems based on coding techniques of a CCITT recommendation. Implementation of an all-digital transmission capability likely will occur. The U.S. communications infrastructure is already positioned to exploit HDTV technology for various broadband integrated services digital network (B-ISDN) applications. The following are prime applications for HDTV:

- Teleconferencing
- Videophones.

Some key HDTV issues concern the NCS. These issues center on whether the future U.S. HDTV standard will be interoperable, scalable, and extensible with other telecommunication standards. The future HDTV will significantly affect information gathering capability for decision makers in the NS/EP community.

**Modem Standards.** Modem standards were addressed through Federal information processing standards (FIPS) publications. (FIPS 162-170.) These FTSC-approved standards were approved and published by NIST. (Reference page 2A-7.) Relevant CCITT recommendations were extracted to formulate the Federal standards.

**Modems.** Work was conducted with industry on development of a new high-speed modem called "V.fast." "V.fast" is designed to operate at data rates up to 28 kbits/s over telephone circuits consisting of 64 kbit/s pulse code modulation (PCM) digital "backbone" facilities with analog "tails." It is planned that a facsimile version of "V.fast" will be adopted for use with Group 3 facsimile equipment.

**Patents and Publications.** Work involved the development and filing of two telecommunication patents. Expertise was applied to author and co-author some commercial telecommunication publications. Refer to page 2A-1 for additional information on these patents and publications.

**Color Test Chart For Facsimile.** NT produced black and grey-scale bilevel image (facsimile) test charts. These test charts will be used to test fax equipment for conformance to CCITT recommendations. The transmission of accurate images of photographs, maps, etc., provides additional information resources for government decision makers during NS/EP events.

**Investigation of Store and Forward Facsimile.** Work included investigating capabilities of store-and-forward facsimile that directly affect NS/EP. Examples of these capabilities include:

- A single image (fax message) that can be transmitted once for delivery to many recipients. Therefore, the sender's terminal remains available for sending or receiving other communications.
- Images that can be encrypted for security purposes. Sensitive images can be denied to unencrypted terminals and unauthorized eavesdroppers.
- Image deliveries that can be deferred to take advantage of noncongested periods. Automatic retry can be used if a recipient's terminal is busy or off-line.

**Commercial Standards.** As in previous years, work continued with respect to participation in activities of commercial voluntary advanced standards forums. NT worked with national and international standards telecommunication experts in a number of standards forums. (Reference Exhibits 2A-1 through 2A-4 for more information on standards participation.) These experts represent manufacturers, vendors, service providers, and users. The experts apply engineering techniques to develop telecommunication products and services, based on anticipated commercial marketplace demands. New technology often surfaces in the forums 4 to 5 years before the technology appears in publications. Therefore, planners benefit directly by participation in commercial standards forums because valuable insight into future commercial offerings emerges. Technical work areas covered:

- The Integrated Services Digital Network (ISDN), including B-ISDN
- Asynchronous Transfer Mode (ATM)
- Synchronous Optical Network
- Signaling System 7
- Telecommunications Management Network.

#### **NATIONAL STANDARDS PARTICIPATION**

**Committee T1.** The NCS, through the OMNCS, maintains voting membership in the Exchange Carriers Standards Association (ECSA), which sponsors Committee T1, Telecommunications. This committee, accredited by ANSI, creates technical standards for interconnection and interoperability of telecommunication networks. Committee T1 also develops positions on technical standards submitted by the U.S. Department of State for international consideration. Work activities included participation in eight technical subcommittees within Committee T1.

**Committee X3.** Work included participation in four subcommittees within ANSI accredited Committee X3. The NCS maintains voting membership in this committee, which develops, reviews, approves, and maintains American national standards and technical reports in the area of information technology. Committee X3 focuses on computers, information processing systems, and office systems. The committee also develops standards that provide for interoperability of hardware and portability of software, and acts as a Technical Advisory Group to many international standards activities.

**Telecommunications Industry Association.** The NCS, through the OMNCS, maintained voting membership in ANSI accredited TIA, and participated in the work of four TIA subcommittees. TIA plays a significant role in the formulation of standards for various telecommunication products. TIA was formed in April 1988, when United States

Telecommunications Suppliers Association (USTSA) and the Information and Telecommunications Technologies Group (ITTG) of the Electronics Industries Association (EIA) merged. Some of TIA's functions include:

- Providing effective liaison between industry and governmental bodies
- Sponsoring or cosponsoring trade shows and conferences
- Providing a forum for the discussion of technical issues of concern to members, and for the development of industry standards for telecommunications product sectors.

#### **INTERNATIONAL STANDARDS PARTICIPATION**

**International Telegraph and Telephone Consultative Committee.** The CCITT, a part of the International Telecommunications Union (ITU), an agency of the United Nations, headquartered in Geneva, Switzerland, (see Exhibit 2A-3) produces Recommendations that generally become world standards. These Recommendations provide guidance on the operational methods and techniques to use in the international telecommunications network. The bulk of CCITT Recommendation work takes place in CCITT technical study groups.

**Commercial Standards Plans.** Plans call for additional OMNCS technical personnel participation in commercial standards forums. Examples include the subcommittees of Committee T1, the study groups of the CCITT, and the Xth CCITT Plenary Assembly. Additions to technical staff, begun in FY92, will enable the OMNCS to increase commercial contacts and gain additional insight into evolving telecommunications technology. More NCS guidance on NS/EP issues will be provided during formulation of national standards and international Recommendations to focus an appropriate level of attention on NS/EP needs and concerns.

.....  
**BASELINE MOBILIZATION PROGRAM**  
.....

The NCS Baseline Mobilization Program, designed by the OMNCS, implements the recommendations of the Joint Industry-Government Telecommunications Industry Mobilization (TIM) Group. In July 1990, the Assistant to the President for National Security Affairs requested that the Manager, NCS, coordinate with NCS member organizations to implement the specific telecommunications mobilization recommendations of the Joint TIM Group.

In response, the OMNCS developed an implementation approach that includes identification of task responsibilities, a time-phased work plan, and a schedule of status reports. The program will extend over 3 years, with 38 tasks distributed among NCS member organizations. The OMNCS briefed the COP and COR on the status of the program and worked with individual member organizations to complete their implementation plans in accordance with the TIM recommendations.

**STATIC DISPLAY OF NTTC SYSTEM**  
.....



.....  
**NATIONAL TRANSPORTABLE**  
.....

**TELECOMMUNICATIONS**

**CAPABILITY (NTTC)**  
.....

NTTC is a rapidly deployable, integrated satellite and cellular telecommunications system. NTTC can be used to fulfill the immediate, short-term communication needs of isolated government NS/EP users (military and civilian) during a wide range of emergency situations. Exhibit 2-15 illustrates the NTTC program. The NTTC consists of a single cell site with a collocated mobile telephone switching office, digital microwave system, Ku-band satellite earth station, and other support equipment. The NTTC is a leased telecommunications service using commercial, off-the-shelf equipment. The system, which is ground and air transportable to disaster and emergency areas, can reconnect isolated NS/EP users to each other and to the PSN. Two deployment exercises were conducted during FY91 to test operational procedures and system transportability. The NTTC was deployed to Europe in FY92 to demonstrate its capabilities to the North Atlantic Treaty Organization (NATO) and United States European Command observers to enable them to assess the potential applications of this technology in support of future European contingency deployments. Exhibit 2-16 shows the NTTC European deployment configuration. Also in FY92, the OMNCS deployed the NTTC system to South Dade County, Florida, to support the communications needs of the National Disaster Medical System. It was deployed at the request of the Federal Emergency Communications Coordinator on behalf of the Department of Health and Human Services to provide emergency telecommunication services to the medical staff for their disaster recovery efforts after Hurricane Andrew. A revised NTTC deployment guide, brochure, and video that describe the procedures for the deployment and operation of NTTC have also been developed and distributed.

.....  
**ADVANCED INTELLIGENT NETWORK**  
 .....

The OMNCS has recently created the AIN Program Office to evaluate IN and AIN technologies. AIN technology is an evolving, service independent architecture that allows telecommunications service providers to quickly and economically create, modify, and implement new and existing services for their customers. AIN technology has significant potential to quickly and cost-effectively develop advanced services that meet the telecommunication requirements of the NS/EP community.

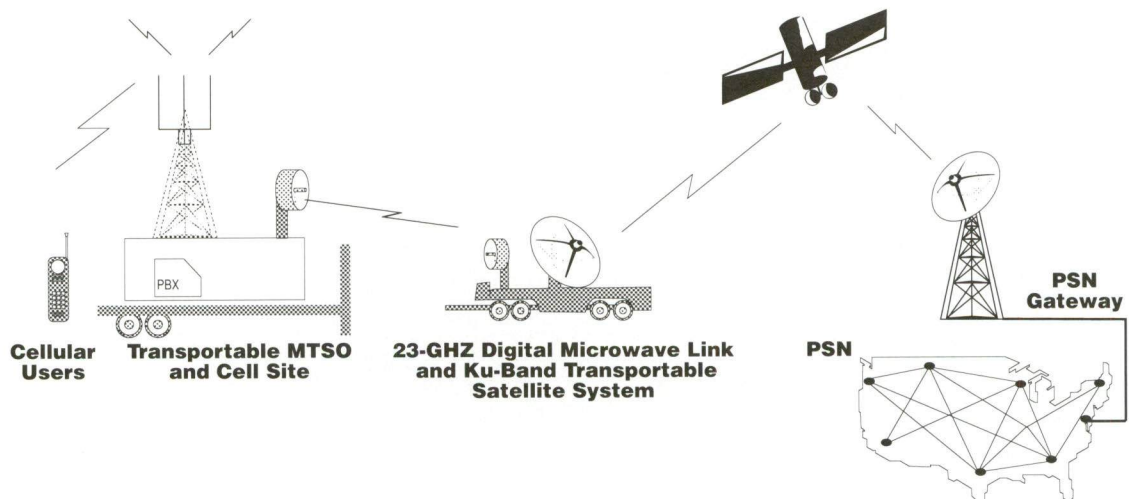
The AIN Program Office has been charged with influencing the direction of the technology's implementation to ensure that NS/EP requirements are taken into consideration in the deployment of the technology by the LEC's and IEC's. The Program Office has participated with industry through:

- A Bellcore contract to support AIN assessments and service demonstrations
- Bell Atlantic technology demonstrations
- Informational briefings at joint Government and industry forums.

The AIN Program Office will continue to assess AIN technologies, further define NS/EP requirements, determine potential NS/EP AIN services, and work with industry and members of the NS/EP community to further influence the direction of future AIN deployments.

**EXHIBIT 2-15**

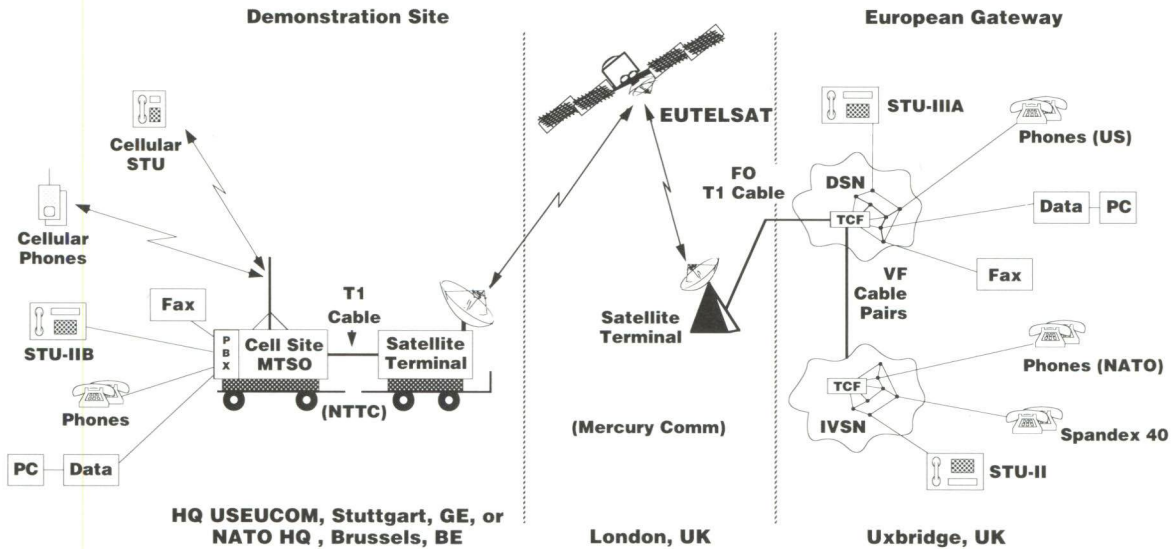
**NTTC PROGRAM**  
 .....



**EXHIBIT 2-16**

**NTTC EUROPEAN DEPLOYMENT**

.....



.....  
**MOBILE SATELLITE EXPERIMENT AND**

**ADVANCED COMMUNICATIONS**

**TECHNOLOGY SATELLITE**  
.....

Under two MOAs, the National Aeronautics and Space Administration (NASA) will support OMNCS experiments involving the Advanced Communications Technology Satellite (ACTS) and the Mobile Satellite Experiment (MSAT-X). Both programs support NSDD-97 and E.O. 12472, which reference using satellite systems to support NS/EP requirements. ACTS and MSAT-X experiments will provide the NCS with hands-on experience in state-of-the-art technology to use as potential backup communications during crises and emergencies.

ACTS will provide the following:

- Communications in a high microwave frequency band (e.g., Ka)
- Rain fade compensation
- On-board processing and switching
- Spot beams.

Under the ACTS program, the NCS funded the following:

- Two T-1 Ka-band VSAT satellite earth stations to support several experiments involving NS/EP user access
- Priority/precedence features
- Secure communications.

Additional experimentation will be performed using the Jet Propulsion Laboratory (JPL) developed ACTS Mobile Terminal to demonstrate Ka-band secure communications on the move.

The NCS MSAT-X effort includes the following:

- Influencing a major satellite carrier's architecture to include NS/EP requirements
- The development of secure and survivable mobile satellite assets
- Participation in testing and analysis of the mobile satellite capabilities.

The NCS is funding the JPL to develop a link simulator of the envisioned MSAT service. The simulator will allow preliminary analysis of various equipment under anticipated conditions to determine applications to NS/EP requirements. Both of these experimental programs enable the NCS to influence the commercial implementation of these new technologies to ensure NS/EP user requirements are addressed.

.....  
**INTERNATIONAL EMERGENCY**

**TELECOMMUNICATIONS PLANNING**

**ACTIVITIES**

.....  
**UNITED STATES AND CANADA**

**TELECOMMUNICATIONS PLANNING**  
 .....

Two working group meetings of the U.S./Canada Civil Emergency Preparedness Committee for Telecommunications were held during FY92 under the co-chairmanship of the Manager, NCC. Additionally, Canadian members of the committee attended the U.S. earthquake exercise RESPONSE 92B conducted in the Pacific Northwest. The committee continues to exchange information on cross-border telecommunication issues and prepared a report to be delivered to the U.S./Canada Civil Emergency Preparedness Consultative Group. This latter body met in Vancouver, British Columbia, in June 1992, under the co-chairmanship of the Director, FEMA and the Director General, Emergency Preparedness-Canada. The Manager, NCC, represented the Committee for Telecommunications at this meeting. A proposal to establish four regional committees was adopted. These regional committees will be composed of members from the four U.S. FEMA Regions bordering on Canada, and from the associated Canadian Provincial governments. Telecommunications and other technical representatives will be invited to participate as required.

**NATO CIVIL COMMUNICATIONS**

**PLANNING COMMITTEE**  
 .....

The OMNCS and NCC represent the United States on the NATO Civil Communications Planning Committee (CCPC) and its working group (CCPCWG). For this forum, the NCS and NCC are considered the U.S. Post, Telephone and Telegraph (PTT). The CCPC also has two other groups reporting to it, the Exercise Planning Team and the Electromagnetic Pulse Expert Group. The NCS provides leadership and representatives in both of these groups that also make up a part of the U.S. delegation. The Department of State detailee to the OMNCS is the U.S. representative to the CCPC and to its working group and heads the U.S. delegation to the CCPC when it meets in Plenary Session. The CCPC met in Plenary Session twice during this reporting period, once in Oslo, Norway, and once at The Hague, the Netherlands.

The United States successfully introduced a new generation of secure voice/data equipment into the NATO environment. The equipment, Secure Telephone Unit-II/B (STU-II/B) has now been ordered by most NATO nations and delivery has begun. The STU-II/B will be used in both the civil and military community.

Studies conducted by the NCS in cooperation with the National Security Agency have yielded the following:

- Production of a prototype secure X.400 encryption/decryption system that has been demonstrated to the NATO community. The secure process uses current X.400 networks to transfer encrypted information via commercial e-mail systems.
- International testing of the prototype capability using AT&T's Easy Link and British Telecom's Gold e-mail systems. France, Germany, and the Netherlands have agreed to join the international test phase when the United States and the United Kingdom have achieved success.

FY92 saw tremendous change in the European political and military environment. NATO has reexamined its purpose and its member nations have agreed to a new NATO strategic concept and to establish mechanisms for cooperation with the former Soviet Union and the central and eastern European countries. As a result of this major change, the CCPC has done the following:

- Reviewed its previous plans and activities
- Recommended revisions
- Proposed to the military side of the alliance how the civilian telecommunication infrastructure could provide support hitherto only provided by the military community

As a result of the new environment, the NATO CCPC conducted the following activities in FY92:

- Revised the CCPC's Compendium to reflect its and NATO's new requirements
- Prepared NATO civil communications planning concepts to support NATO's New Strategic Concept
- Presented a civil telecommunication capabilities symposium to the NATO Communication and Information Systems Committee and other interested NATO organizations
- Provided communication proposals to support new crisis management arrangements for NATO and for its Senior Civil Emergency Planning Committee
- Reviewed and modified, as required, current and future communications improvement plans for NATO Civil Wartime Agencies
- Monitored development of the revised NATO Command, Control, and Communications Master Plans

- Continued to analyze priority preference schemes and systems for access to public switched telephone networks in all alliance countries
- Studied selected member nations' civil emergency telecommunication systems
- Completed NATO plans for support for the movement of priority mail during crises and war
- Submitted completely revised postal and telecommunication sections of the NATO Civil Emergency Planning Questionnaire
- Reduced the activities and status of the CCPC's expert groups.

.....  
**APPENDIX TO COMMERCIAL**

**STANDARDS**

.....  
**PATENTS (DEVELOPED AND FILED)**  
.....

- (1) Amplitude Adaptive Vector Quantization Algorithm (new)
- (2) Modification to Patent # 4,703,362 on Symbol Removal/Hybrid Algorithm

**PUBLICATIONS**  
.....

- (1) Facsimile Transmission Via HF Radio, IEEE Vehicular Technology, Fall 1991
- (2) National Telecommunications Infrastructure Delivers Service in Stressed Environments, IEEE Spectrum, Fall 1991
- (3) Subjective and Objective Testing of Video Teleconferencing/Videotelephone System, IEEE Communications Society Globecom Conference, December 1991

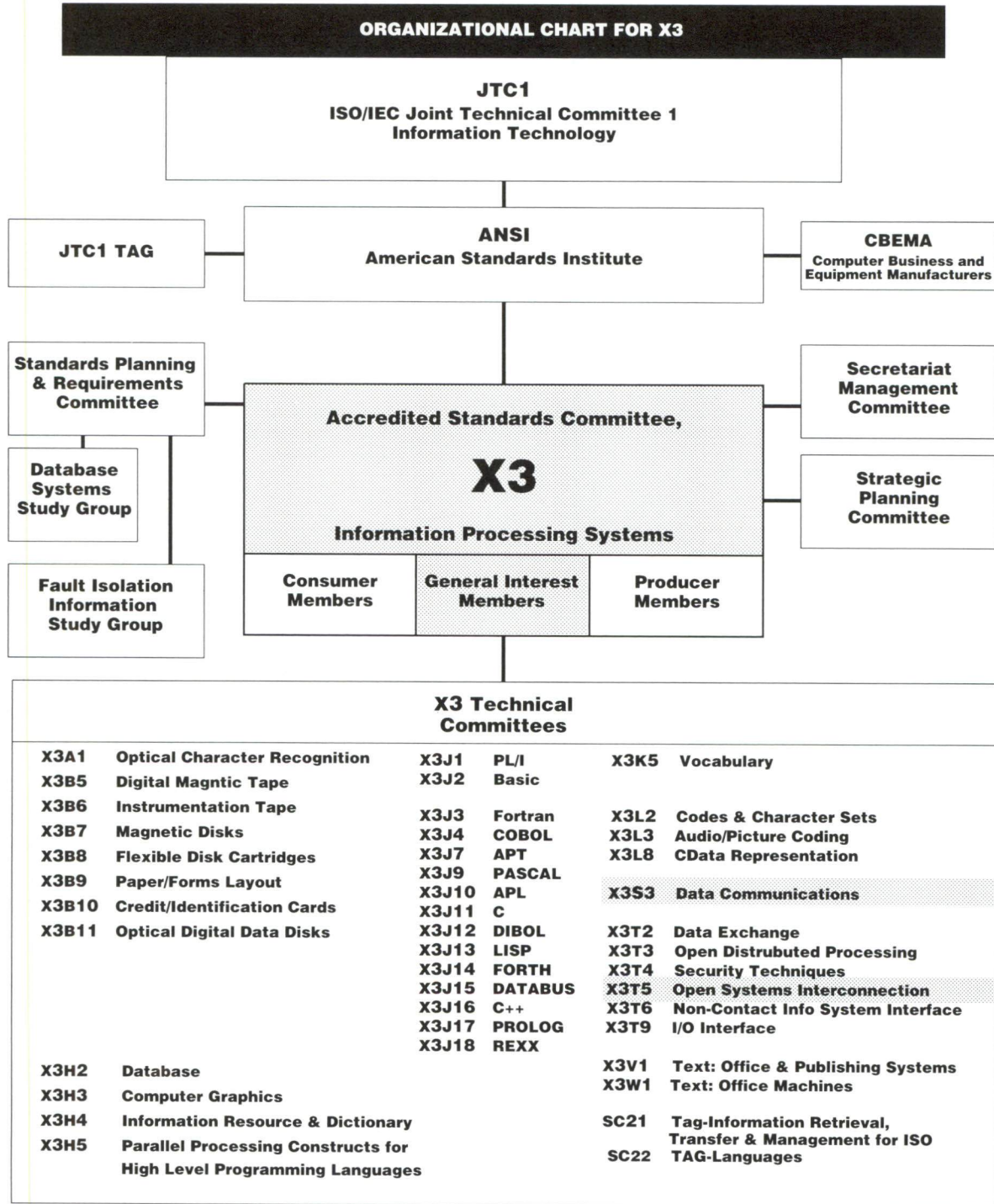
**LIST OF REFERENCES**  
.....

Electronics Industry Association (EIA)  
Technical Requirements Committee TR 45.2,  
IS-41 Revision A, Cellular Radiotelecomm-  
unication Intersystem Operation.

Electronics Industry Association Technical  
Requirements Committee TR 45.3,  
International Standards (IS) 54 Revision B, Dual  
Mode Cellular System.

**EXHIBIT 2A-1**

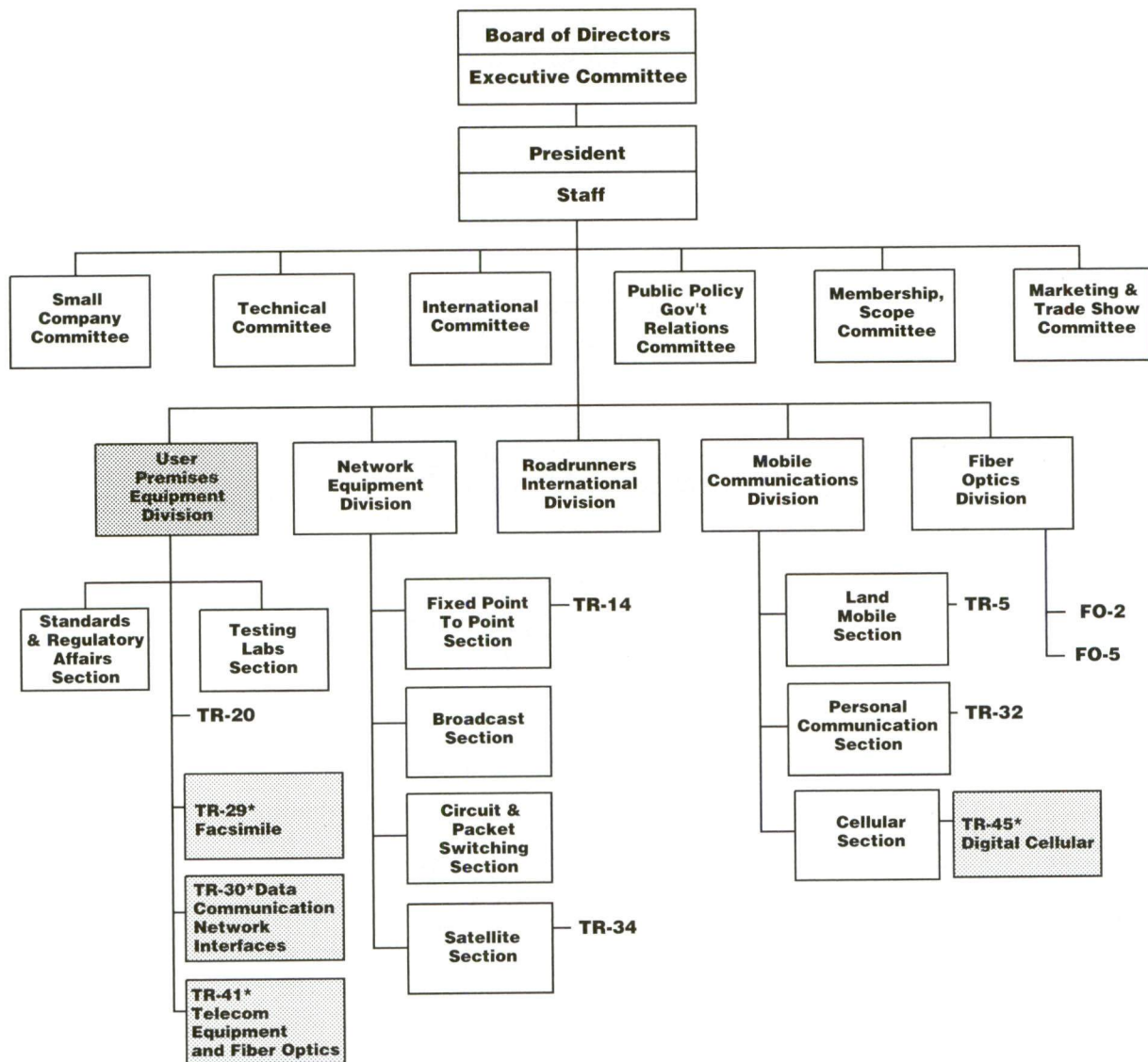
**X3 ORGANIZATIONAL CHART**



**FY92 NT PARTICIPATION**

**EXHIBIT 2A-2**

**TIA ORGANIZATIONAL CHART**

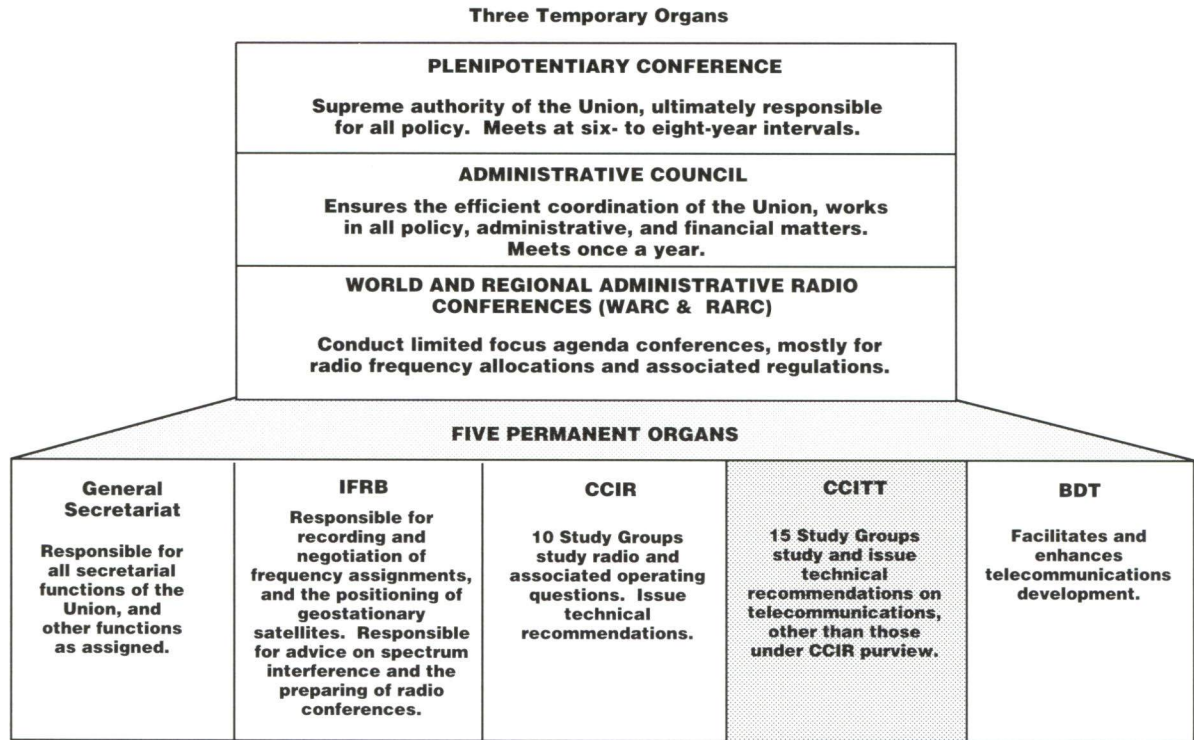


**\*NT PARTICIPATION**

**EXHIBIT 2A-3**

**INTERNATIONAL TELECOMMUNICATIONS**

**UNION (ITU) STRUCTURE**  
 .....



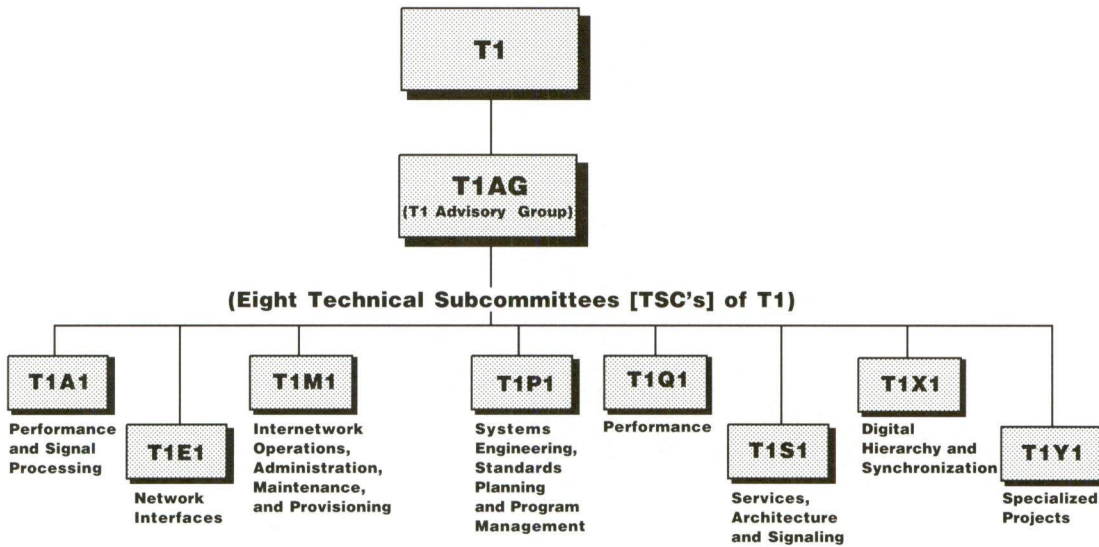
**FY92 NT PARTICIPATION**

The ITU was founded in 1865 and as such is the oldest intergovernmental organization. In 1947, the ITU became a specialized agency of the United Nations and has a membership (as of July 1992) of 172 countries, including nine republics of the former Soviet Union. The ITU's official and working languages are: Arabic, Chinese, English, French, Russian, and Spanish.

The ITU is the international organization responsible for the regulation and planning of telecommunications worldwide. The ITU is also responsible for the establishment of equipment and systems operating standards. Other responsibilities include the coordination and dissemination of information required for the planning and operation of telecommunications services. The ITU promotes and contributes to the development of telecommunications and the related infrastructure within the United Nation's system.

**EXHIBIT 2A-4**

**STRUCTURE OF COMMITTEE T1 (FY92)**



FY92 PARTICIPATION BY NT PERSONNEL.

**CCITT STUDY GROUPS FOR THE 1988-1992**

**STUDY PERIOD**

Designation	Title	Study Group X	Languages for Telecommunication Applications
Study Group I	Services	Study Group XI	Switching and Signaling
Study Group II	Network Operation	Study Group XII	Transmission Performance of Telephone Networks and Terminals
Study Group III	Tariff and Accounting Principles	Study Group XV	Transmission Systems and Equipment*
Study Group IV	Maintenance	Study Group XVII	Data Transmission Over the Telephone Network*
Study Group V	Protection Against Electromagnetic Effects	Study Group XVIII	ISDN
Study Group VI	Outside Plant		
Study Group VII	Data Communications Networks*		
Study Group VIII	Terminals for Telematic Services*		
Study Group IX	Telegraph Networks and Telegraph Terminal Equipment		

\* FY92 NT Participation

**EXHIBIT 2A-5**

**LIST OF FY92 TECHNICAL INFORMATION**

**BULLETINS (TIB's)**

<b>TIB #</b>	<b>Title</b>	<b>Date</b>	<b>AD #</b>
91-11	Correlation of Single Mode Fiber Fabrication Functions and Radiation Response	Nov 1991	A247 301
91-12	Basic Protection Against High Altitude Electromagnetic Pulse for Telecommunications Central Offices and Similar-type Facilities (an Above-Baseline Standard)	Nov 1991	
91-13	Investigation of Group 3 and Group 4 Store and Forward Facsimile Switching Service	Dec 1991	
91-14	Modification of the Group 4 Validation System Supersedes NCS TIB 89-13	Dec 1991	
91-15	Standardization of End-to-End Performance of Digital Video Teleconferencing/Video Telephony Systems	Dec 1991	
91-16	Color Test Chart for Facsimile Superseded by NCS TIB 92-10	Dec 1991	
92-1	Details to Assist in Implementation of Federal Standard 1016 CLEP	Jan 1992	
92-2	Modeling of Radiation Effects in CMOS	Jan 1992	
92-3	Investigation of High-Definition Television for Application to Teleconferencing	Feb 1992	
92-4	Not Used	Sept 1992	
92-5	The Effects of High Altitude Electromagnetic Pulse (HEMP) on Telecommunications Assets Supersedes NCS TIB 91-8	Feb 1992	
92-6	Network Level EMP Effects on the PSNs	Feb 1992	
92-7	Optical Fiber Fallout Radiation Effects Study	Feb 1992	
92-8	HEMP Survivability Assessment of Harris RF3200 Transceiver	Feb 1992	
92-9	Network Level Fallout Radiation Effects Assessment Supersedes TIB 91-10	May 1992	
92-10	Color Test Chart for Facsimile Supersedes NCS TIB 91-16	Aug 1992	
92-11	AT&T FT Series G EMP Assessment Volume I: System Description & Results	Aug 1992	
92-12	AT&T FT Series G EMP Assessment Volume II: Mitigation Measures	Aug 1992	
92-13	Management of Stressed Switched Networks, Level I Report Extension	Sept 1992	
92-14	Management of Stressed Facility Networks, Level II Report Extension	Sept 1992	

**EXHIBIT 2A-6**

**STATUS OF FEDERAL STANDARDS**

No.	Title	Date	Final/ Draft	POC	Sub- committee	Public & Industry Comments	Govt & Agency Comments	Approval by FTSC	Executive Agent	Publication
1005A	Coding and Modulation Requirements for 2,400 Bit/Second Modems FIPS PUB 163 & 164 CCITT V.22bis, V.26, V.26bis	2Apr92	Final	Fenichel						
1006A	Coding and Modulation Requirements for 4,800 Bit/s Modem FIPS PUB 165 & 166 CCITT V.32, V.27bis, V.27ter	2Apr92	Final	Fenichel						
1007	Coding and Modulation Requirements for Duplex 9,600 Bit/s Modems FIPS PUB 167 CCITT V.29	2Apr92	Final	Fenichel						
1008	Coding and Modulation Requirements for Duplex 600 and 1,200 Bit/s Modems FIPS PUB 162 CCITT V.22	2Apr 92	Final	Fenichel						
1044	Interoperability Requirements for Trunked Land Mobile Radio Systems Operating with Analog & 25 KHz Channel Digital Radios	Undated	Draft	Fenichel		Federal Register Notice 20Mar90 (90 days)	Approved by FTSC 14Nov91 Ltr to Fed Std Coord List 6Jan92 (90 days)			
1045A	High Frequency (HF) Radio Automatic Link Establishment	Undated	Draft	Rekstad		Approved by FTSC 14Nov91 Federal Register Notice 26Dec91 (90 days)	Ltr to Fed Std Coord List 24Jan92 (90 days)			
1046	HF Radio Automatic Networking	Undated	Draft	Rekstad		Approved by FTSC 14Nov91 Federal Register Notice 26Dec91 (90 days)	Ltr to Fed Std Coord List 24Jan92 (90 days)			
1047	HF Radio Automatic Message Store-and-Forward	Undated	Working Stage	Rekstad						
1048	HF Radio Automatic Networking to Multimedia	Undated	Working Stage	Rekstad						
1049 Sect. 1	HF Radio Automatic Operation in Stressed Environment Mil-Std 187-110	Undated	Draft	Rekstad		Approved by FTSC 14Nov91 Federal Register Notice 13Mar92 (90 days)	Ltr to Fed Std Coord List 24Jan92 (90 days)			
1050	HF Radio Baseline Parameters	Undated	Working Stage	Rekstad						
1051	HF Radio System Control Interface	Undated	Working Stage	Rekstad						
1052	HF Modem	Undated	Working Stage	Fenichel						
1055	Interoperability Requirements for Meteor Burst Communications Between Conventional Master & Remote Stations	Undated	Draft	Fenichel		Federal Register Notice 25Jul89. Approved by FTSC 12Mar 92 Federal Register Notice Re-issued 7Apr 92 (90 days)	Approved by FTSC 12Mar92			
1056	Interoperability Requirements for Encryption of Meteor Burst Communications	Undated	Draft	Fenichel		Federal Register Notice 7Apr92 (90 days)	Approved by FTSC 12Mar92			
1057	Interoperability Requirements for Meteor Burst Communications Between Conventional Internetwork Gateway Master Stations	Undated	Draft	Fenichel		Federal Register Notice 7Apr92 (90 days)	Approved by FTSC 12Mar92			

**EXHIBIT 2A-6**

**STATUS OF FEDERAL STANDARDS**

**(CONTINUED)**

No.	Title	Date	Final/ Draft	POC	Sub- committee	Public & Industry Comments	Govt & Agency Comments	Approval by FTSC	Executive Agent	Publication
1058	Encryption of 1057 Systems	Undated	Working Stage	Fenichel						
1080	Video Coder/Decoder for Audiovisual Services at 56 to 1,920 kbit/s CCITT H.261, Mil-Std 188-131	Undated	Draft	Rekstad		Approved by FTSC 13Dec90 Federal Register Notice 4Jan91 and 26Jun91 (90 days)	Ltr to Fed Std Coord List 3Jun91 (90 days)	10Oct91	Jan92	NIST for publication
1081	Frame Structure for 56 to 1,920 kbit/s Channel in Audiovisual Teleservices CCITT H.221, Mil-Std 188-131	Undated	Draft	Rekstad		Approved by FTSC 9May91 Federal Register Notice 26Jun91 (90 days)	Ltr to Fed Std Coord List 3Jun91 (90 days)	10Oct91	Jan92	NIST for publication
1082	Systems for Establishing Communications between Audiovisual Terminals Using Digital Channels up to 2 Mbit/s CCITT H.242, Mil-Std 188-131	Undated	Draft	Rekstad		Approved by FTSC 9May91 Federal Register Notice 26Jun91 (90 days)	Ltr to Fed Std Coord List 3Jun91 (90 days)	10Oct91	Jan92	NIST for publication
1083	Frame Synchronous Control & Indication Signals for Advanced Systems CCITT H.230, Mil-Std 188-131	Undated	Draft	Rekstad		Approved by FTSC 9May91 Federal Register Notice 26Jun91 (90 days)	Ltr to Fed Std Coord List 3Jun91 (90 days)	10Oct91	Jan92	NIST for publication
1084	Narrowband Visual Telephone Systems and Terminal Equipment CCITT H.320, Mil-Std 188-131	Undated	Draft	Rekstad		Approved by FTSC 9May91 Federal Register Notice 26Jun91	3Jun91	10Oct91	Jan92	NIST for publication
1090	Federal Building Telecommunications Wiring Standards - EIA 568 FIPS PUB 174	21 Aug 92		Andre						
1091	Building Standard for Telecommunications Pathways & Spaces - EIA 569 FIPS PUB 175	21 Aug 92		Andre						
1092	Residential & Light Commercial Telecommunications Wiring Standard - EIA 570 FIPS PUB 176	21 Aug 92	Working Stage	Andre						
1093	Grounding & Bonding Requirements for Telecommunications & Federal Buildings	Undated	Working Stage	Andre						
1094	Telecommunications Administration Standard for Federal Buildings - PN 2290	Undated	Working Stage	Andre						
1095	Backbone Wiring TIA - PN 2416	Undated		Andre						

**EP TELECOMMUNICATIONS**

**POLICY AND REGULATORY**

**DEVELOPMENTS**

---

## NS/EP TELECOMMUNICATION POLICY

## AND REGULATORY DEVELOPMENTS

.....

**T**his section highlights significant executive, judicial, regulatory, proposed legislation, enacted legislation, and major operational events that affected National Communications System (NCS) activities during fiscal year (FY) 1992.

.....  
**EXECUTIVE**  
.....

By White House Memorandum, dated October 15, 1991, the President's National Security Advisor reaffirmed National Security Decision Directive (NSDD)-97 and Executive Order (E.O.) 12472 as the primary policy guidance for the National Security and Emergency Preparedness (NS/EP) Telecommunications Program. Specific functional requirements for an NS/EP telecommunications service that were issued over the past two administrations were also reaffirmed. Exhibit 3-1 illustrates those functional requirements and their definitions as state in the White House Memorandum.

.....  
**JUDICIAL**  
.....

**MODIFIED FINAL JUDGMENT UPDATE**  
.....

The 1984 Modified Final Judgment (MFJ) settlement divested 22 wholly owned local exchange carriers (LEC) from AT&T, grouped them into seven Regional Bell Operating Companies (RBOC), and placed restrictions on their operations. Specifically, the MFJ prohibits the RBOCs from carrying telephone traffic on an inter-LATA (local access and transport area) basis, providing news or information services, and manufacturing telecommunications equipment.

**EXHIBIT 3-1**

**FUNCTIONAL REQUIREMENTS FOR NS/EP  
TELECOMMUNICATIONS SERVICE**  
.....

<b>VOICE BAND SERVICE</b>	<b>The service must provide voice band service in support of presidential communications.</b>
<b>INTEROPERABILITY</b>	<b>The service must interoperate with and use the resources of selected other government or private facilities, systems, and networks through the application of standards.</b>
<b>SURVIVABILITY/ ENDURABILITY</b>	<b>The service must provide for the interconnection of surviving users under a broad range of circumstances from wide spread damage from natural or manmade disaster up to and including nuclear war.</b>
<b>INTERNATIONAL INTERFACE</b>	<b>The service must provide access to and egress from international service.</b>
<b>NATIONWIDE COVERAGE</b>	<b>The service must provide readily available nationwide coverage to support national security leadership and inter/intraagency emergency operations.</b>
<b>INTRA/INTERAGENCY EMERGENCY OPERATIONS</b>	<b>Common user service must provide NS/EP traffic with priority service.</b>

Over the past year, however, in the face of growing RBOC and congressional pressure, these restrictions have begun to erode. Developments in specific areas are described in the following paragraphs:

**Inter-LATA Service.** In early 1992, the District of Columbia (D.C.) Circuit Court of Appeals heard arguments addressing a 1990 District Court ruling prohibiting RBOCs from delivering common channel signaling information across LATA boundaries. Although the signaling network is not a customer service, many believe that a reversal of the D.C.

District Court decision would strike at the very heart of the MFJ. The RBOCs, who are pressing the appeal, are currently required to install separate signaling interfaces between every LATA.

The source of the appeal is an agreement between the RBOCs and the Department of Justice that would have lifted restrictions on the provision of common channel signaling information across LATA boundaries. Under U.S. District Court Judge Harold Greene, the District Court struck down the agreement on grounds that it violated the MFJ (a decision is not expected until December 1992 or January 1993).

**Line of Business Restrictions.** A central component of the MFJ was the line of business restrictions imposed on local exchange carriers. Specifically, under the MFJ, these carriers were prohibited from participating in certain areas of business because the court feared they would stifle competition. Over the last year, however, these restrictions have been eroded in several areas described below:

- **Information Services.** In July 1991, the U.S. Supreme Court upheld a lower court's decision allowing the RBOCs to offer electronic information services. This decision, however, has far from settled the issue, as a round of new legislation pending in Congress is continuing to influence this area. Specifically, both the "The Telecommunications Act of 1991" and the "Antitrust Reform Act of 1992" attempt to mitigate the impact of the Supreme Court decision by placing restrictions on the ability of the RBOCs to enter this new market.
- **Video Services.** In July 1992, the Federal Communications Commission (FCC) voted to allow RBOCs to partner with program providers to offer new video services. Under the new provisions, telephone companies can provide video transmission services within their territories only if the programs are developed by an outside firm. In addition, the RBOCs are allowed to provide a variety of support services for video programming, including video

gateways, video processing, billing and collection, order processing, and consulting. Local carriers will also be allowed to provide video customer premises equipment and perform the home wiring needed to carry programs.

- **Manufacturing Telecommunications Equipment.** In January 1992, Judge Greene rejected a Justice Department request to allow RBOCs to profit from the sale of telecommunications equipment developed with RBOC financial support by third-party companies. The Justice Department sought a ruling that would allow RBOC financing and/or royalty arrangements, provided the RBOC has less than a one-twentieth equity interest and does not substantially control the third-party company.

**NS/EP Implications.** The erosion of line of business restrictions will help the RBOC's diversify their sources of revenues in an increasingly competitive environment. It is also hoped that their participation will speed network modernization. Consumer advocates, however, warn that network maintenance may suffer as a result because resources formerly earmarked for it may be diverted to more revenue-generating areas. While there is no statistical information to bear this out, the NS/EP telecommunications community will have to carefully monitor the situation to be certain that network service quality standards are maintained.

#### **CALLER IDENTIFICATION**

.....

Caller identification provides the called party with the directory number of the calling party and enhances the privacy of call recipients by allowing them to identify the caller in advance. Currently, there are approximately 20 States that allow caller ID services. However, opponents including some State legislatures assert that caller ID violates the privacy rights of the calling party. In a decision that may have implications for other States considering the issue, the Pennsylvania Supreme Court in March 1992, ruled that caller ID service violates the State's wiretap laws and, therefore, it would be illegal for Bell Telephone Company of Pennsylvania to offer the service. The FCC

issued a notice of proposed rulemaking that suggests per-call blocking may be the best way to address the privacy needs of both the calling and called parties.

.....  
**REGULATORY**  
.....

Several developments in the regulatory area over the last year will have important ramifications for NS/EP telecommunications, include continuing FCC efforts in the area of network reliability and spectrum allocation. These developments are described below.

**FCC NETWORK RELIABILITY COUNCIL**  
.....

The first meeting of the FCC Network Reliability Council was held on February 27, 1992. The Council is composed of representatives from the FCC, industry user groups, telecommunications service vendors, and equipment manufacturers. The NCS is also a member of this group. It was established by the FCC to address overarching questions of network reliability in the wake of recent major telephone outages.

At the time it established the Council, the FCC also issued rules requiring carriers to report outages of 30 minutes or greater that affect 50,000 customers. These reports are made directly to the FCC. One of the Council's first actions was to form a working group to develop recommendations on FCC-mandated outage reporting requirements. This group, the Threshold Reporting Working Group (TRG), revisited the 50,000 threshold and at the April 29, 1992 meeting of the Council, recommended that for a 6-month investigatory period the FCC lower the reporting threshold to include outages that affected 30,000 customers for 30 minutes or more. Additionally, the group recommended the adoption of reporting procedures for "Special Facilities" such as major military installations, key government facilities, nuclear power plants, 911 tandems, and large or medium-size commercial service airports. Outages affecting these facilities must be reported regardless of the number of customers affected. Due to confidentiality requirements, reports of these out-

ages are made directly to the Manager, NCS, who must make a final report to the FCC within 30 days.

The Council's Network Reliability Steering Committee, also established in February, identified seven potential areas for consideration by the Council including Signaling System 7 (SS7), fiber optic cable cuts, power system weaknesses, and difficulties associated with E-9-1-1 systems, fire prevention, digital cross connect systems, and switching systems. Seven focus groups have been formed to identify best practices in each of the areas. Focus group reports are to be completed for presentation to the Network Reliability Council (NRC) in the spring of 1993. Mutual aid arrangements may also be explored within a focus group.

**WARC 1992**  
.....

The World Administrative Radio Conference (WARC) convened in Torremolinos, Spain for a month-long session in the winter of 1992, the first general meeting of the body since 1979. The WARC was organized by the International Telecommunications Union (ITU), a specialized agency of the United Nations, responsible for developing and periodically revising international radio regulations.

U.S. emphasis at the conference centered around the spectrum allocation for Low Earth Orbit Satellites (LEOS) global phone systems. The United States pressed hard for LEOS allocations, in part because nearly all the industry players are U.S.-based. European representatives were opposed to the U.S. position because they sought to protect spectrum for proposed Future Public Land-Mobile Telecommunications Systems (FPLMTS), primarily terrestrial systems that would be used to provide extensive personal communications networks throughout Europe. Although their systems are only in preliminary stages of development, European representatives were seeking to reserve 240 Megahertz (MHz) for their eventual use.

The Europeans prefer terrestrial systems because Europe is densely populated and is therefore better and more economically served by a land-based system. In the United States, however, it is more economical to deploy satellite-based global communications systems because of sparse population concentrations in large portions of the country. Global phone systems, such as Motorola's Iridium, would allow owners of pocket-size phones to have domestic and international calling capabilities. Both the United States and Europe were also seeking to bolster their respective satellite telecommunications industries.

These agreements have paved the way for Motorola, Loral, Ellipsat, TRW, and others to submit licensing applications for their systems with the FCC. A major concern of opponents to the U.S. proposal was that signals from the LEOS systems would interfere with those of existing and future terrestrial systems. To accommodate these concerns, the WARC adopted resolutions under which technical, legal, and operational studies would be conducted. The goal of these studies will be to develop standards governing the operation of LEOS systems to "ensure equitable and standard conditions of access for all ITU members, and to guarantee proper worldwide protection for existing services and systems."

Other issues addressed at the conference include spectrum allocation for shortwave high frequency (HF) broadcasting and frequency set asides for digital audio broadcast (DAB) used for direct satellite audio broadcasts to the home. Delegates failed to reach agreement on a worldwide frequency allocation for High Definition Television (HDTV).

#### **LOW EARTH ORBIT SATELLITES**

Regulatory hurdles evaporated in FY92 as the FCC and the WARC arrived at spectrum allocation decisions for certain mobile and positioning services, clearing the way for LEOS operations. LEOS have become popular for several reasons. First, as geosynchronous orbital slots fill, alternative satellite positioning schemes must be developed. Second, because

LEOS operate at altitudes of fewer than 600 miles, transmission delays that often interfere with voice conversations are reduced. Finally, development and launch costs of LEOS systems are significantly lower than today's geosynchronous satellites.

Two service areas likely to employ LEOS technologies are radio direction satellite service (RDSS) and voice and data transmission services. RDSS provides simple one-way messaging for navigation and tracking purposes. Voice and data transmission services provide two-way simultaneous communications. Examples of this two-way service will be provided through Motorola's Iridium worldwide satellite cellular system and Ellipsat Corporation's cellular system. Both firms have applied for licenses with the FCC.

#### **PERSONAL COMMUNICATION SERVICES**

Personal Communication Services (PCS) are a form of wireless communications that equip users with personalized, portable, wireless telephone handsets with two-way voice and data communications. In FY92, the FCC published a PCS policy and announced its plan to allocate PCS frequencies in the 1.8 to 2.2 Gigahertz (GHz) band in 1992. In addition, the FCC granted QUALCOMM, Inc., an experimental license to conduct field trials and studies in the 1.850 to 1.990 GHz band because it is considering opening up portions of this spectrum for PCS use. Studies of the 1.8 to 2.2 GHz band indicate that there is unused spectrum. QUALCOMM's experimentation should determine whether existing 1.8 to 2.2 GHz users can coexist with new PCS providers. QUALCOMM currently provides advanced communications systems and products based on digital wireless technology.

In March 1992, delegates at the WARC formally agreed that up to 60 MHz should be allocated for the use of PCS and 170 MHz for conventional mobile communications including mobile telephony. In a related matter, the European community adopted the Global System for Mobile Communications (GSM) PCS standard for digital cellular communications. More than 20 European countries have

signed a memorandum of understanding to provide GSM service on the main transport routes between European capital cities by 1995.

In July 1992, the FCC established a new deployment plan for PCS. The FCC proposed allocating three frequency bands for the service, including a band set aside for data transmissions. As part of the allocation proposal, the FCC suggested setting aside frequency bands from 1910 MHz to 1930 MHz for nonlicensed, computer-oriented PCS. Additionally, the FCC set aside three 1-MHz allocations in the lower 900 MHz frequency for narrowband PCS such as paging.

State and local public safety authorities have strenuously opposed these allocations on the grounds that they would interfere with frequencies they currently use for police, fire, and other emergency service communications. They also argue that, given their tight budgetary constraints, the costs of transition to a new frequency would be too high.

**COMPETITION FOR INTERNATIONAL SWITCHED SATELLITE SERVICES**

The FCC has approved the recommendations of the Department of State and Department of Commerce to allow unrestricted competition in the provisioning of international switched services via satellite. Competition is scheduled to begin in 1997. Previously, U.S. regulations required U.S. carriers to use INTELSAT satellites to carry switched international satellite traffic. This ruling by the FCC paves the way for private satellite systems, such as Alfa-Lyracom Communications, Inc., to enter the switched international service market. The ruling also allows independent operators to enter the lucrative international private line market for traffic using the public network, thus ending COMSAT's virtual monopoly on U.S. satellite communications services.

**COMPUTER III UPDATE**

In late 1991, the FCC ruled that RBOCs could offer unregulated enhanced telecommunication services through subsidiaries that also offer regulated telephone services. This decision reflects rules originally issued after the FCC's Third Computer Inquiry in 1986, which established open network architecture (ONA) requirements and allowed AT&T and the RBOCs to combine regulated and unregulated services and offer enhanced services through their local networks. RBOCs may offer services such as voice mail, electronic yellow pages, and information databases through their telephone companies. Combining regulated and unregulated activities requires separate accounting procedures to guard against cross-subsidization.

**PROPOSED LEGISLATION**

**EMERGING TECHNOLOGIES ACT OF 1991 (LINKAGE TO THE NATIONAL TELECOMMUNICATIONS INFRASTRUCTURE ACT OF 1991)**

The Emerging Technologies Act of 1991 (H.R. 1407) would require the FCC to auction and reallocate spectrum below the 6 GHz range through a competitive bidding process. H.R. 1407 frees 200 MHz of Federal Government spectrum. The money raised through competitive bidding would fund the National Telecommunications Infrastructure Act of 1991 (H.R. 3701), which calls for the establishment of a trust fund to finance private telecommunication network projects that will ultimately enhance the PSN by adding fiber optic and other broadband technologies at the local level. The revenue generated from the bidding process would be administered by the Department of the Treasury to fund local projects to enhance the PSN.

H.R. 3701 also calls for the National Telecommunications and Information Administration (NTIA) to establish a five-member advisory panel. The panel, which will include at least one member from private industry and one from a government agency other than NTIA, will advise the head of NTIA in selecting projects eligible for funding under this plan.

**THE COMMUNICATIONS COMPETITIVENESS  
INFRASTRUCTURE AND MODERNIZATION ACT OF  
1991**  
.....

The Communications Infrastructure Modernization Act (H.R. 2546) would allocate funds for developing and deploying a broadband fiber optic network nationwide. The bill targets the year 2015 for the availability of fiber optic networks to the home. More than half of the States in the United States now offer some form of "incentive" regulation to encourage telephone companies to implement fiber optics in phone company networks. New Jersey, for example, has legislation to allow the New Jersey Bell Telephone Co. to vary its pricing in advantageous ways and, in return, the telephone company is expected to be involved in a \$1 billion project that aims to implement fiber statewide by the year 2010. State regulators now have the opportunity to implement policies that do not simply regulate their industries but also encourage the economic development of a State's communications infrastructure. States have an opportunity to shape their telecommunications futures and many of them are moving to do so.

**TELECOMMUNICATIONS ACT OF 1991**  
.....

In October 1991 the House of Representatives introduced the Telecommunications Act of 1991. In November 1991, the Senate introduced companion legislation entitled the Information Diversity Act of 1991. Both bills contain similar provisions and have received bipartisan support. However, throughout FY92, both the House and Senate continued to debate the merits and impact of the legislation. The purpose of the act is to encourage competition in the provision of electronic information services, to foster the continued diversification of information sources and services, and to preserve the universal availability of telecommunications services.

The Telecommunications Act of 1991 contains two primary components. The first area is designed to encourage infrastructure development and provides for the establishment of a Federal-State Joint Board to impose and enforce network quality standards on common

carriers to ensure the continued evolution of network facilities and services. Under the act both the FCC and the State commissions will support the Board in ensuring compliance. The act also requires each LEC to provide interconnection on a reasonable and nondiscriminatory basis to providers of telecommunications and information services consistent with the ONA requirement, cited in the FCC's Computer Inquiry III section. This continues the trend toward legislative support of full and open competition in the telecommunications industry.

The second primary component of the act addresses the area of common carrier participation in the information services industry. The issue has been hotly debated with the RBOCs and information providers (i.e., cable TV operators) each aggressively lobbying its position. The act prohibits RBOC participation in the information services industry unless a number of market conditions designed to ensure competition are met. It should be noted that the Anti-Trust Reform Act of 1992 introduced in May also addresses this issue.

**THE TELEPHONE NETWORK RELIABILITY  
IMPROVEMENT ACT OF 1992 (H.R. 4789)**  
.....

In another move to address the FY91 outages, Rep. Edward Markey (D-MA) introduced H.R. 4789, the Telephone Network Reliability Improvement Act of 1992. The bill would require the FCC to establish and enforce telecommunications network reliability standards. Provisions of the bill would require service providers to pay compensatory damages to consumers for loss of service. The bill would also clarify the FCC's role in overseeing network reliability and quality. Network Reliability Council Chairman Paul Henson criticized H.R. 4789 as counterproductive to the goal of the Council, which is to develop reasonable industry regulations.

**THE ANTI-TRUST REFORM ACT OF 1992  
(H.R. 5096)**

In May 1992, The Anti-Trust Reform Act of 1992 (H.R. 5096) was introduced in Congress. The bill calls for shifting oversight of the RBOCs from the U.S. District Court's Judge Greene, who currently administers the MFJ, to the U.S. Attorney General. Most important, the bill would require RBOCs seeking lines of business previously restricted by the MFJ to first pass a uniform entry test administered by the U.S. Attorney General. This test would allow the RBOCs to enter new lines of business only upon demonstrating that there is "no substantial possibility that [it] will be able to use its monopoly power to impede competition in the market it seeks to enter." An exception to this requirement will be allowed, however, if there are no potential competitors in a given market, especially when the service will benefit handicapped or otherwise disadvantaged citizens. H.R. 5096 would also establish several competitive safeguards that would prevent RBOCs from using their monopoly power to discriminate between themselves and other entities or to subsidize information, long-distance, or equipment manufacturing activities with monopoly proceeds.

The bill was approved by the House Judiciary Committee in July 1992, over the objections of House Energy and Commerce Committee Chairman John Dingell (D-MI), who unsuccessfully claimed jurisdiction over the legislation. It is unlikely that further action will be taken before the end of this Congress. But the pace at which the bill has progressed and the reaction it has provoked indicate that the H.R. 5096 will receive serious consideration when the next Congress convenes.

**ENACTED LEGISLATION**

**HIGH PERFORMANCE COMPUTING ACT OF 1991**

On December 9, 1991, the President signed into law the High Performance Computing Act of 1991. This legislation, spawned by a growing recognition that the development of an advanced technological infrastructure in the United States is key to the country's economic future and national security, authorizes 5 years of funding for a coordinated Federal program to

ensure continued United States leadership in the area of high-performance computing (HPC). The program sets forth goals and priorities for Federal high-performance computing research, development, and networking. The cornerstone of this program is the development of the National Research and Education Network (NREN). NREN will be a national, high-bandwidth, fiber-based research and education computer network scheduled for operation in 1996. Broad objectives for the HPC program include improving software development, accelerating high-performance computer system development, providing technical support to address fundamental problems in science and engineering, educating undergraduate and graduate students, and providing for security.

The act specifically gives the President full authority and responsibility for developing and implementing the High Performance Computing program. Assisting the President in coordinating the interagency activities associated with the program is the Director, Office of Science and Technology Policy (OSTP).

**MAJOR OPERATIONAL EVENTS**

**HACKER INDICTMENT**

In July 1992, five men were indicted by a Federal grand jury in New York on charges of breaking into computers, networks, and switches owned by regional telephone companies, credit reporting services, and educational institutions.

The "Masters of Disaster" or "Masters of Deception," as they are known, were indicted for computer tampering, computer fraud, wire fraud, illegal wiretapping and conspiracy. The investigation, conducted jointly by the U.S. Secret Service and the Federal Bureau of Investigation, was authorized to use, for the first time, wiretaps to monitor computer traffic on phone lines.

In a related matter, the OMNCS has published a document entitled *The Electronic Intrusion Threat to National Security and Emergency Preparedness (NS/EP) Telecommunications*. This document discusses the potential impact of hackers on the public switched network. (See page 2-16, "Public Switched Network Security.")

**NS/EP TELECOMMUNICATIONS**

**SUPPORT AND ACTIVITIES OF NCS**

**MEMBER ORGANIZATIONS**

.....

NS/EP TELECOMMUNICATIONS

SUPPORT AND ACTIVITIES OF NCS

MEMBER ORGANIZATIONS

OVERVIEW

The National Communications System (NCS) is a confederation of the telecommunication assets of the 23 Federal departments and agencies represented on the Committee of Principals (COP). The NCS's administrative structure consists of an Executive Agent, COP, and Manager, NCS. The COP is composed of high-level government officials representing Federal operational, policy, regulatory, and enforcement organizations. Its diverse representation embraces the full spectrum of Federal telecommunication assets and responsibilities. The COP provides a unique interagency forum for understanding and responding to national security and emergency preparedness (NS/EP) telecommunication issues.

This section presents reports submitted by the 23 NCS member organizations concerning their NS/EP telecommunication activities during fiscal year (FY) 1992. These reports review members' financial, policy, and technical concerns associated with NS/EP telecommunications. Review of the individual reports discloses meaningful trends in federal telecommunications management, operation, and planning. Member reports are organized in the following format:

- NS/EP Telecommunications Mission
● Telecommunications Staff Organization
● Significant Accomplishments
● Current and Ongoing NS/EP Telecommunication Activities
● Pending Issues (where applicable).

Member reports continue to show a trend toward growing consolidation of telecommunication services and NS/EP requirements. Reports also reflect the importance members place on survivable telecommunication resources for uninterrupted performance of their organizations' essential functions during emergencies, disasters, and war. Member organizations' active participation in the COP and Council of Representatives (COR) and their subcommittees allows them to upgrade and expand their existing systems and resolve pending NS/EP telecommunication issues.

In addition to the reports presented, the Department of State (DOS) and Central Intelligence Agency (CIA) reports are available in a CLASSIFIED supplement, which can be obtained upon request.

NCS PRIMARY ASSETS

The following is an UNCLASSIFIED list of selected NCS primary assets, arranged in protocol order by NCS member organization and then alphabetically by asset.

DEPARTMENT OF STATE

- Diplomatic Telecommunications Service
● Nuclear Risk Reduction Center

DEPARTMENT OF THE TREASURY

- Consolidated Data Network
● Treasury Enforcement Communications System
● Digital Telecommunications System

.....  
**DEPARTMENT OF DEFENSE**  
.....

- Advanced Research Project Agency Network
- Defense Data Network
- Defense Message System
- Defense Satellite Communications System
- Defense Switched Network
- Direct Communications Link (Washington-Moscow Hotline)
- Future Secure Voice System
- Joint Chiefs of Staff Alerting Network
- National Military Command System
- Washington Area Wideband System
- Worldwide Military Command and Control System

.....  
**DEPARTMENT OF JUSTICE**  
.....

- Automatic Data Processing Teleprocessing System
- Drug Enforcement Administration Nationwide VHF Radio System
- Drug Enforcement Agency Secure Voice System
- Immigration and Naturalization Service Tactical Radio System
- INS Integrated Network Communications
- Justice Network
- Justice Telecommunications Service
- National Crime Information Center

- U.S. Marshals Service Communications System (USMS)
- USMS Special Operations Group

.....  
**DEPARTMENT OF THE INTERIOR**  
.....

- Boise Interagency Fire Center Transportable Radio Cache

.....  
**DEPARTMENT OF COMMERCE**  
.....

- Automation of Field Operations and Services
- NOAA Weather Radio

.....  
**DEPARTMENT OF TRANSPORTATION**  
.....

- Emergency Transportation Radio Network

.....  
**FEDERAL AVIATION ADMINISTRATION**  
.....

- Aeronautical Fixed Telecommunications Network
- Aeronautical Message Circuits (Service B)
- Electronic Tandem Network
- Emergency Voice Communications System
- Integrated Communications Switching System
- National Airspace Data Interchange Network
- National Airspace System Network
- National Radio Communications System
- Radar Microwave Link Trunking
- Radio Communications Link
- Television Microwave Link
- Voice Switching and Control System

**UNITED STATES COAST GUARD**  
.....

- Hybrid Data Network
- Long-Range Aid to Navigation
- Message Transfer and Distribution System
- OMEGA
- Operations Information System
- Radio Communications Systems
- MF and HF Long-Range Radio: MF-SSB Distress System
- VHF and UHF: National VHF-FM Distress System
- Search and Rescue Telephones
- Secure Command and Control Network
- Transportable Communications Centers
- Vessel Traffic Services

**FEDERAL HIGHWAY ADMINISTRATION**  
.....

- FHWA Emergency Communications Systems

**DEPARTMENT OF ENERGY**  
.....

- Nuclear Emergency Search Team/Aerial Measuring System
- Secure Automatic Communications Network

**DEPARTMENT OF VETERANS AFFAIRS**  
.....

- Emergency Command Control Radio Network
- Network Resource Information System

- VA High-Frequency Emergency Radio Network
- VA Selective Signaling Voice Conference System

**JOINT STAFF**  
.....

(see Department of Defense)

**GENERAL SERVICES ADMINISTRATION**  
.....

- Federal Telecommunications System (FTS2000)
- Federal Secure Telephone Service
- Washington Interagency Telecommunications System
- 125 Government-owned Centrex Service Arrangements
- Aggregated System Procurements
- 199 Regional Consolidated Local Centrex Service Arrangements

**UNITED STATES INFORMATION**  
.....

**AGENCY**  
.....

- Voice of America

**NATIONAL AERONAUTICS AND SPACE**  
.....

**ADMINISTRATION**  
.....

- NASA Operational Communications System
- NASA Tracking and Data Relay Satellite System
- NASA Program Support Communications Network

.....  
**FEDERAL EMERGENCY**

**MANAGEMENT AGENCY**  
.....

- FEMA Interagency Communications System
- Federal Emergency Response Capability
- Direction, Control, and Warning System
- Mobile Air Transportable Telecommunications System
- Information Display System
- FEMA Switched Network
- FEMA National Automated Message System
- FEMA Facsimile and Record System
- DEC VAX Computer Systems
- LAN/WAN Development Project
- FEMA Secure Voice Program
- FEMA National Radio System
- National Warning System
- Emergency Broadcast System
- Emergency Education Network
- FEMA Frequency Management System

.....  
**NUCLEAR REGULATORY COMMISSION**  
.....

- Emergency Notification System

.....  
**UNITED STATES POSTAL SERVICE**  
.....

- USPS Data Network

.....  
**NATIONAL SECURITY AGENCY**  
.....

(See Department of Defense.)

.....  
**NATIONAL TELECOMMUNICATIONS**

**AND INFORMATION**

**ADMINISTRATION**  
.....

(See Department of Commerce.)



.....  
**DEPARTMENT OF STATE (DOS)**  
.....

This report is included as part of the  
CLASSIFIED supplement to the FY92 NCS  
Annual Report.



.....  
**DEPARTMENT OF THE TREASURY**

**(TREAS)**

**NS/EP TELECOMMUNICATIONS MISSION**  
.....

**T**he essential functions of Treasury requiring NS/EP telecommunications are summarized as follows:

- Protecting the President, Vice President, their families, and other dignitaries
- Managing the economic activities of the United States, including all monetary, credit, and financial systems
- Administering the laws pertaining to customs, taxes, alcohol, tobacco, and firearms
- Serving as principal economic advisor to the President
- Accomplishing international economic and monetary control as it pertains to the well-being of the Nation
- Manufacturing currency, coins, and stamps, and establishing methods of exchange.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

Departmental telecommunications are managed through the Office of the Deputy Assistant Secretary for Information Systems, under the Assistant Secretary of the Treasury for Management. Under this office, the Director, Office of Telecommunications Management (OTM), oversees NCS liaison and NS/EP support activities. The Director, OTM, also exercises program management authority over the

telecommunications operation activities of the departmental offices and Treasury bureaus.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

During FY92, Treasury realized the following NS/EP telecommunication achievements:

- Strengthened Treasury's telecommunication capabilities through the virtual completion of the departmentwide implementation of all Federal Telecommunications System (FTS2000) services, including the transition of Treasury's Consolidated Data Network (CDN) circuitry to FTS2000 services. FTS2000 provides enhanced continuity of intercity switched telecommunication services and maintenance of survivability objectives.
- Continued expansion and implementation of the CDN, an encrypted, redundant data communications network, which is a significant enhancement to the department's NS/EP capabilities. The departmentwide service includes the U.S. Customs Service; Internal Revenue Service; the Bureau of Alcohol, Tobacco, and Firearms; Financial Management Service; and Departmental Offices.
- Issued a request for proposal for the Treasury Communications System (TCS). The TCS, a successor contract to the CDN, will provide communication services between Treasury locations, between Treasury and non-Treasury Government locations, and between Treasury and non-Treasury commercial locations in the continental U.S., Alaska, Hawaii, Puerto Rico, Guam, the Virgin Islands, Bermuda,

the Bahamas, and selected sites in Canada. The TCS contract is scheduled to be awarded in the second quarter of FY93.

- Instituted a Wireless and Radio Support Service (WRSS) program to develop and incorporate digital radio and wireless communications technological advances into future Treasury systems. This program will examine how Treasury bureaus can utilize the new digital very high frequency/ultra high frequency (VHF/UHF) radio technology for integration with emerging telecommunication services such as Integrated Services Digital Network (ISDN), the TCS, FTS2000, cellular mobile satellite, and personal communications systems (PCS).
- Completed the implementation of the Treasury Digital Telecommunications System (DTS), an all-digital, advanced technology local switching system that provides services to Main Treasury and bureau locations in the Washington Metropolitan area. DTS has multiple access routes to the FTS2000 network to enhance telecommunications survivability.
- Awarded nine Department of the Treasury Telecommunication Systems (DOTTS) contracts to provide for the nationwide procurement and management of fully digital local telecommunication systems, electronic key telephone systems, and data switching systems and services. Improved local telecommunication services will enhance connectivity to wide area network services and permit the development of improved network access during NS/EP periods.
- Completed the staffing of an Office of the Manager, NCS (OMNCS) position in the National Coordinating Center (NCC) with a full-time Treasury employee to meet its NCS support requirements specified in Executive Order (E.O.) 12472.

- Executed an Interagency Funding Agreement (IFA) for FY92 in support of the National Level NS/EP Telecommunications Program (NLP).

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

The continuing development of a department-wide telecommunications strategy, the expansion of the CDN, the institution of the WRSS, and the acquisition of the TCS are significant ongoing activities that will significantly enhance the department's NS/EP posture. In FY91, Treasury actively participated in the NCS Vision 21 planning process through its membership on the Major Focus Area II (Interoperability) and III (Focus) teams. Additionally, Treasury supported the Telecommunications Planning Process Subcommittee (TPPS), and Federal Telecommunications Standards Committee (FTSC) through the OTM, and the NCS Shared Resources (SHARES) High Frequency (HF) Interoperability Working Group through the U.S. Customs Service and OTM.



.....  
**DEPARTMENT OF DEFENSE (DoD)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**U**nder the provisions of E.O. 12472, DoD is assigned the following NS/EP telecommunication responsibilities:

- Provide, operate, and maintain the telecommunication services and facilities to support the National Command Authorities, and execute the responsibilities assigned by E.O. 12333, United States Intelligence Activities, December 4, 1981
- Ensure that the Director, National Security Agency (NSA), provides the technical support necessary to develop and maintain adequate plans for the security and protection of NS/EP telecommunications
- Execute the functions listed in Section 3(i) of E.O. 12472.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

DoD includes the Office of the Secretary of Defense (OSD), the military departments and the services within them, the unified and specified commands, and other agencies established to meet specific United States military requirements. The NSA is a separate agency within DoD that protects United States communications, produces foreign intelligence information, and provides computer security for DoD. The Defense Information Systems Agency (DISA) is a separate DoD agency

under the direction, authority, and control of the Deputy Under Secretary of Defense (Acquisition). DISA responds directly to the Chairman, Joint Chiefs of Staff (JCS), on operational matters and communication requirements associated with joint planning.

The principal staff positions concerned with NS/EP telecommunications in the OSD are the Under Secretary of Defense for Policy, and the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (C<sup>3</sup>I). C<sup>3</sup> systems are the concern of a directorate of the Joint Staff (JS).

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

During FY92, DoD continued to transfer certain telecommunication requirements to the General Services Administration (GSA) managed program known as FTS2000 in compliance with appropriate statutes and regulations:

**DEFENSE SWITCHED NETWORK (DSN)**  
.....

- Assumed Single System Management role for the Pacific (PAC) DSN.
- Successfully tested and implemented Common Channel Signaling 7 (CCS 7) in Japan.
- Converted all Korean Telephone Upgrade (KTU) System switches to world-wide CCS 7 point code address.
- Initiated an engineering and testing program to ensure an interoperable tactical interface, i.e., DSN to various AN-TTC-39 configurations.

- Deactivated two Automatic Voice Network (AUTOVON) 490L switches in the Southern Region of Europe.
- Developed a plan to deactivate the final AUTOVON 490L switch during FY93.
- Supported Army and Air Force draw-down efforts by deactivating 8 DSN switches in Europe.
- Planned relocation of Torrejon Air Force Base (AFB), Spain, DMS-100 DSN switching node to Rota Naval Base in Spain.
- Deactivated two of the three remaining AUTOVON 490L switches in the Southern Region of Europe during FY92. The last switch, Mount Vergine, Italy, is scheduled for deactivation in early FY93.
- Reconfigured the DSN in Europe consistent with military department force reductions.
- Reconfigured the DSN in the Pacific in response to the Mount Pinatubo disaster and the subsequent withdrawal of United States forces from the Philippines.
- Increased Continental United States (CONUS)-Europe interswitch trunks by 60 percent while reducing leased costs by \$1 million per year.
- Merged the majority of the CONUS circuits of the AUTOVON and the Defense Commercial Telecommunications Network (DCTN) to DSN during FY92. This project is on schedule and will be completed during the second quarter of FY93. This network will be a fully state-of-the-art digital network, still offering the same unique military features as the old AUTOVON.
- The DCTN video teleconferencing (VTC) community grew by 26 studios to 111. This includes a second studio at Wright Patterson Air Force Materiel Command (AFMC), Ohio, and at Ft.

Monroe, Alabama, and a large studio at headquarters (HQ) DISA. There are still two contractor access points (CAPS), which act as gateways to other networks.

- Implemented the Network Enhancement Plan, Phase I (NEP-I), which transitioned the satellite-based network to a terrestrial fiber-based network. This enhancement has greatly improved system reliability.

#### **DEFENSE DATA NETWORK (DDN)**

- Provided critical DDN military network (MILNET) support in the Philippines during the Mount Pinatubo volcano eruption. The Clark AFB MILNET was totally shut down. The Subic Bay MILNET node was urgently installed and activated in 1 week. All of Clark's hosts were rehomed to Subic Bay the following week.
- Blacker Front End (BFE) was installed in defense secure network (DSNET) 1 host Anti-drug Network (ADNET) at Makalapa, Hawaii.
- Initiated a three-phased implementation plan of corrections, improvements and enhancements to the Information Display System-Management Information System (IDS-MIS) Master Schedule subsystem to bring immediate standardization and automation to worldwide scheduling, tracking, and reporting of DDN installation requirements.
- Initiated a DDN Quality Assurance Program that will collect and analyze data to evaluate network performance.
- Planned and implemented a program to upgrade MILNET Terminal Access Controller (TAC) dial-in-modems to 9.6 kbps throughout CONUS, Alaska, and Panama. This aggressive effort is well underway and consists of the replacement of 1100 low-speed modems. Estimated completion date is the end of calendar year (CY) 92.

## **DEFENSE MESSAGE SYSTEM (DMS)**

.....

- The DMS Program Plan was validated by the Joint Staff. This document provides DoD Services and agencies with fiscal guidance to aid in the preparation of program objective memorandum submissions.
- Completed first draft of the DMS Required Operational Messaging Characteristics. This document quantifies and qualifies the generic requirements stated in Multi-Command Required Operational Capability (MROC) 3-88 into specific messaging requirements to support development of detailed architectures and components specifications.
- Completed final draft of STANAG 4406 (Military Message Handling System). This document will be used as the standard interface between North Atlantic Treaty Organization (NATO) nations for X.400 based military messaging.
- Completed the first draft of Allied Communications Publication 123, "Common Messaging Strategy and Procedures," which will serve as the international implementation agreement for allied transition to Open Systems Interconnection (OSI) protocols.
- Developed the draft DMS-Message Conversion System (MCS) Transition Implementation Plan to provide guidance for implementation of the DMS-MCS and central directory component. These transitional components will enable phase-out of manpower-intensive telecommunication centers.
- Completed installation and hardware acceptance testing of the CONUS automatic digital network (AUTODIN) DMS Transition prototype suite, which will allow DISA to use the same software in both CONUS and outside CONUS (OCONUS) AUTODIN Switching Centers (ASC), resulting in major cost savings.
- Established a DMS joint project under Air Force management to provide message distribution terminal (MDT) software to DoD Services and agencies. This MDT is a key DMS transitional component that provides a low-cost means of replacing aging telecommunication centers that are expensive to operate and maintain.
- Selected the Air Force as lead Service for 1988 X.400 components and DMS extension components. The Air Force will do the product engineering and specification effort to enable purchase of DMS compliant products. Initial Operating Capability (IOC) is October 1993.
- Selected the Navy as lead Service for the 1992 version of X.500 directory components. The Navy will do the product engineering and specification effort to enable purchase of DMS compliant products. IOC is October 1993.
- Completed procurement and installation of an inter-Service DMS X.400 network for testing NSA prototype Message Security Protocol (MSP) units. This network will be used to prove DMS concepts that will enable phaseout of the AUTODIN system.

## **DEFENSE SATELLITE COMMUNICATIONS SYSTEM (DSCS)**

.....

- Deactivated, removed, and recovered two Army Navy/Ground Satellite System (AN/GSC)-39 satellite earth terminals and associated signal processing equipment from Clark AFB.
- Completed installation and activation of GSC-52 in Riyadh, Saudi Arabia, 3 T-1's to CONUS containing 48 DSN Inter-Switch Trunks (IST) and 6 data circuits, 1 T-1 to Ramstein, Germany, containing 18 DSN IST's to Europe.

- Launched two new DSCS III satellites to replace aging elements of the DSCS constellation. Devised a plan to relocate the existing satellites in conjunction with new launches to provide effective long-term communications support in all global DSCS satellite positions.
- Initiated fielding of the new semi-automatic control system for the Jam Resistant Secure Communications (JRSC) system to improve operational capacity and network performance.
- Initiated planning and implementation of the Integrated Digital Network Exchange (IDNX) as the standard smart multiplex that will allow integration of the DSCS with terrestrial communications networks.
- Developed and initiated the implementation of advanced DSCS utilization concepts to provide improved support for Navy ship-to-shore and shore-to-ship communications. This development will provide a large improvement in day-to-day and antijam capabilities over ocean areas.
- Initiated the implementation for the Distributed Military Satellite Communication (MILSATCOM) Conferencing Project to serve the Secure Survivable Communications Network (SSCN) with voice and data coordination circuits between missile warning sensors and correlation centers.
- Completed the upgrade of 38 existing satellite terminals with antijam modem equipment for mitigation of nuclear effects. An additional 28 modems will be modified.
- Deactivated the Onizuka AFB DSCS Operations Center (DSCSOC) facility. Began installation of control equipment in DSCS Operations Center, Ft. Buckner, Japan. Activation is planned for late 1992. Ft. Buckner will become the fifth DSCSOC, replacing Clark AFB, Republic of the Philippines (RP), which was closed in 1991 because of the Mt. Pinatubo eruption.

- Added more DSCS satellite terminals to U.S. Navy ships as part of the QuickSAT program.
- Provided funding and guidance for the development and evaluation of state-of-the-art multiple beam antennas using monolithic microwave integrated circuit technology.

**JAM RESISTANT SECURE COMMUNICATIONS (JRSC)**  
.....

- The JRSC Program provides end-to-end survivable communications in both a nuclear scintillated and electronically jammed environment. It supports the National Command Authority, Commanders-in-Chief, and deployed military commanders by providing critical decision-making voice conferences and data transfer via the Integrated Tactical Warning/Attack Assessment (ITW/AA) network, the SSCN, and survivable and enduring Commanders-in-Chief Network (CINCNET).
- Planned for the implementation of the Survivable Communications Integration System (SCIS) data and man-in-the-loop contracting requirements as part of the ITW/AA. Existing JRSC circuits activated in the Tactical Warning/Attack Assessment (TW/AA) continued to perform with more than 99 percent availability.
- Phase I and phase II installation continuing for modifications to 64 U.S.C.-28 JRSC systems to protect them from nuclear atmospheric effects (contractual and noncontractual). Initiated phase III contract to modify remaining 10.

**DEFENSE COMMUNICATIONS SYSTEM (DCS) TERRESTRIAL TRANSMISSION**  
.....

- DISA is continuing to implement T-1's under the circuit bundling program and smart multiplexers in the Defense Information Systems Network Near Term (DISN-NT) to realize immediate cost

savings to its customers. DISA is taking full advantage of competitive pricing in commercial satellite and fiber optic cable facilities in providing users with diversity, reliability, responsiveness, and significant cost savings. Most of the T-1's have been implemented with the exception of EuroSat and the Pacific Consolidated Telecommunications Network (PCTN).

- The CONUS Circuit Bundling Project provides satellite and fiber optic cable T-1 connectivity as required in CONUS to bundle economically existing leased services. This action has been rolled into the DISN-NT effort and is being implemented as required. Services include integration of the Navy Network (NAVNET), Air Force Network (AFNET), Streamlining of Information Services Operations Consolidation Study (SISOCS), and the Defense Logistics Agency Communications Network (DLA DCN) bundling effort.
- As part of DCS Mediterranean Improvement Plan (DMIP) Phase I, activated the satellite-based leased links in Turkey under contract with the Turkish Post, Telephone, and Telegraph (TPTT). Three terrestrial-based leased links will provide a mix of media to complete the digital bulk-encrypted system in Turkey. Deactivation of the United States-owned terrestrial links in Turkey will occur as the leased links are activated. Two terrestrial-based leased links were activated to provide connectivity from Turkey to Italy and Germany. The satellite-based leased link from Turkey to Italy will be activated by summer 1992.
- Pacific Terrestrial DCS: Activated two new digital bulk 6 Mbps leases in Japan to replace and consolidate obsolete analog broadband and circuit leases; activated submarine fiber optic system interconnecting mainland Japan to Okinawa; implemented digital conversion in Hawaii, Korea, Japan, Guam, and the Philippines. However, the U.S. Air Force (USAF) radio links have

been deactivated and the remaining U.S. Navy (USN) radios will be removed by December 1992 from the Philippines.

- Pacific HF Entry Program: Because the Clark HF entry station was deactivated, Commander-in-Chief, Pacific (CINCPAC) J6 called for early activation of Diego Garcia and Anderson AFB, Guam, HF facilities. Diego Garcia reported the HF station is ready and DISA-PAC requested testing to verify HF entry capability before offering service to users. The estimated early activation date for Andersen HF entry station is December 1992. The possibility of Finegayan HF station providing earlier HF entry service is under study.
- HF Upgrade Programs: The Services were scheduled to brief the Joint Staff in June 1992 on the HF Mission Area Review. The outcome of the review is expected to significantly impact HF programs.

#### COUNTER-DRUG INTEGRATION CENTER

- Provided technical and engineering support to DoD and Federal Law Enforcement Agencies (LEA).
- Development of the initial National Information Resource Management Plan (NIRMP) was completed in FY92 and a regional Information Management Plan (IMP) for the southwest border of the United States, will be completed in FY92. A requirement for an IMP for Federal agencies across the Northern Border (Project North Star), is in for validation by the Joint Staff for start this calendar year. A Joint Task Force (JTF)-4 C4 architecture has been started and will be completed in FY93, as will an agency-specific information resources management (IRM) plan for Drug Enforcement Administration (DEA).

- Provided system engineering and design of a prototype system to improve information sharing throughout the southwest border States for JTF-6 and Forces Command (FORSCOM). Supported the required Independent Validation and Verification (IV&V) of counter-narcotic (CN) architecture development and prioritization. Began work on data element standardization and development of a standard data dictionary; this will continue through at least FY93.
- Efforts included Tiger Team visits and the resulting recommendation reports to California and Mexico City for U.S. FORSCOM and to U.S. Atlantic Command (LANTCOM) for Commander-in-Chief, Atlantic (CINCLANT). Tiger Team visits to DEA and Federal Aviation Agency (FAA) for Office of National Drug Control Policy (ONDCP) were culminated with recommendations forwarded to agencies.
- Began the FORSCOM Automated Intelligence Support System upgrade, which will be completed in FY93, as will the ongoing upgrade to the Mexico City Intelligence Analysis Center. The operational evaluation of communications supporting the President's National Drug Control Strategy, to evaluate improvements made to security and interoperability of LEA's counter-drug interdiction missions, and the El Paso Intelligence Center (EPIC) improvement program midterm upgrade will both be finished in FY92.
- DISA worked directly with ONDCP and Federal LEA's to implement the DoD-funded portion of the Drug Enforcement Telecommunications Implementation Plan (DETIP). These procurements significantly enhanced interagency telecommunication capabilities and improved the protection of sensitive and classified information. Included in this project were Secure Telephone Units (STU-III), secure mobile radio units, modifications to existing radios to make them voice privacy capable, a secure voice satellite network supporting Caribbean Basin radar facilities, automated HF radio systems, and AUTODIN connectivity for DEA's EPIC facility.
- The DoD centralized procurement of telecommunications equipment worth \$135 million over 3 years ends with the FY92 obligation of \$910 thousand of FY91 procurement funds. The Communications Interoperability Working Group (CIWG) has approved spending these funds for additional Advanced Narrowband Digital Voice Terminals (ANDVT) for the U.S. Customs Service, DEA, and U.S. Marshals Service, and VHF Over-The-Air-Rekey (OTAR) radios for the U.S. Coast Guard. The final project is a contribution to the multiagency coordination network like the one used by Operation Alliance, but covering the northern border States. Its implementation will be an extension of the U.S. Customs VHF radio network. A system was developed to track these expenditures, and report and inventory the procured equipment, which is DoD property on permanent loan to supported LEA's.
- ADNET progress has accelerated during FY92. The Joint Staff has continued program definition and implementation. Additional required and updated operations, configuration management, and security documentation have been produced and disseminated. Two ADNET Users' Conferences and four Configuration Control Boards have been held, which allow ADNET users to provide inputs to the growth and improvement of ADNET. Supported integrating the data base of the Joint Staff's ADNET with those of the Defense Intelligence Agency's Emerald Intelligence Net and the U.S. Coast Guard's Joint Maritime Information Element system.

- ADNET installations have proceeded smoothly (averaging two or three per month) despite expanding requirements and unanticipated network growth. The Joint Staff receives new requests for ADNET workstations each month from DoD and LEA civil defense (CD) elements. To date, 111 ADNET workstations have been installed and are operational.
- Information passed by ADNET has been an integral part of numerous large successful interdiction efforts in foreign countries. Both DoD and LEA ADNET operators have been enthusiastic about the capabilities provided by ADNET. For example, a DoD official in a U.S. embassy credited the interagency cooperation provided by ADNET with the seizure of 33,000 kilograms of cocaine worth \$1 billion, 25 aircraft, 30 land vehicles, and 25 illegal drug smugglers. New data sources and further expansion will allow ADNET to contribute even more during years to come.
- Supported JTF 4 with the installation of satellite connectivity.

**OPERATIONS DESERT SHIELD/STORM**  
.....

- Completed microwave radio link between Bahrain and Dhahran, Saudi Arabia.
- Completed fiber optic link between Riyadh and Dhahran.
- Provided on-site personnel in Saudi Arabia to coordinate the engineering, installation, and activation of the transmission and switching components of the Southwest Asia Telecommunications System (SATS).
- Provided staffing for the DISA Central Area Field Office and established an Area Communications Operations Center in support of Commander-in-Chief, Central Command (CINCCENT). The deployed personnel coordinated the installation and activation of CINCCENT-validated communication requirements.

- Continued support of temporary DSNET1 packet switched network (PSN) in Saudi Arabia. Conducted final site survey for a permanent DISA PSN installation to support MILNET and DSNET1 requirements in that theater.

**DEFENSE COMMUNICATIONS SYSTEM DATA NETWORKS OPERATIONS**  
.....

- Defense Commercial Communications Office (DECCO) has scheduled the USAS Project Simpson Restoral HF AUTODIN interface device (HFAID) acquisition contract award for December 1992. This acquisition includes the Government of Australia HFAID requirement.

**RED SWITCH**  
.....

- Expanded the scope of the Defense Red Switch Program at JCS direction, February 11, 1992, to include more than 50 locations as part of the network. This network is expected to evolve into a global network.
- Completed cutover of the Red switches at Whitman and Yokota.
- Installed Red switches at LANTCOM and the Alternate Military Command Center.

**TELECOMMUNICATIONS PROVISIONING**  
.....

- Reduced recurring leased communications costs on the DDN backbone by \$10 million per year. Savings originated from a variety of DISA Telecommunications Certification Office (TCO) initiatives that improved the quality of service while reducing DISA costs and made the maximum use of the Defense Communications System transmission.
- Reduced recurring leased communications costs in support of DISA requirements by \$1 million per year. Savings originated from review and revalidation of existing services, which resulted in re-award or discontinuation of existing leased actions.

- Activated the first year option to the new provisioning contract in support of HQ DISA, DISA Europe, DISA Pacific, and DISA Telecommunications Management and Services Office (TMSO) in support of Telecommunications Service Requests (TSR)/Telecommunications Service Orders (TSO) provisioning efforts. This action will result in contractor work of 43,500 DCS TSR/TSO actions.
- Processed a total of 26,000 TSR's/TSO's under the new provisioning contract in support of HQ DISA, DISA Pacific, DISA Europe, and DISA TMSO.
- Completed the program of Telecommunications Service Priority (TSP) certification in support of DISA requirements, AUTODIN and DDN backbone.
- Initiated procedures to accelerate identification and accountability of government-owned equipment installed in Western Hemisphere DCS facilities. Equipment is validated by military unit designation, post, camp, station, geographical location, building and room number. This initiative involves more than 270 locations.
- Developed and published communications service orders establishing the Defense Advanced Research Projects Agency's (DARPA) domestic and international wideband communications network.
- Revised the DISA Worldwide Geographical Locations (GEOLOCO) to recognize the changes taking place in Germany, Russia, and parts of Europe. Also, revised over 500 GEOLOCO's that were improperly identified in the Worldwide On-Line System (WWOLS) data base. This information is necessary to the Department of Defense and military units to designate and accurately determine the location of temporary and permanent communications facilities.

- Assisted various Government organizations in preparing TSR's to gain access to the International Marine Satellite (INMARSAT) contract administered by DECCO. This effort reduces the Government's cost of these commercial satellites from more than \$11.00 to under \$7.00 per minute.

#### **IMAGE PROCESSING**

- Provided recording support for the Chairman, JCS. Produced and facilitated 14 programs, recorded in the Visual Recording Facility studio or on location.
- Provided television production support for politico-military war games and disaster scenarios for the Joint Staff, Department of Defense, and other Federal branch departments.

#### **NETWORK MANAGEMENT OPERATIONS**

- Installed the AT&T Accumaster Integrator in support of network management of the DISN. This tool provides the DISA Network Operation Center (NOC) with the ability to monitor several Tier I data networks. It will eventually be expanded to provide the capability to monitor the voice networks and other data networks.
- Installed the visual display units, Barco graphics projectors, in support of displaying network information and Cable News Network. This has provided the NOC with an excellent capability that allows the entire operations floor to visually monitor network status and monitor world situations that may impact the defense information system (DIS).
- Installed the Smart Multichannel Terminal, Version II (SMCT-II), in support of satellite operations. This provides the NOC with a more reliable and flexible order-wire capability to manage and control the functions of the DSCS.

**DEFENSE INFORMATION SYSTEMS NETWORK  
(DISN)**  
.....

- Established a DISN JTF to address issues and participate in the accelerated implementation of the DISN.
- Formed DISN Executive Steering Group to guide the JTF in developing and implementing DISN.
- The Office of the JCS released Memorandum of Policy No. 70, which established DoD Services' and Agencies' responsibility for DISN and gives operational direction and management control to DISA.
- The Director, DISA, released the DISN Implementing Document, which directs Service and Agency support and use of DISN.
- Eight previously disparate Service and Agency networks were identified to be integrated under a single network management concept. The integration of DISN-NT networks (DISN Pilot, AFNET, NAVNET, DCN, Corps of Engineers Automation Program [CEAP], Marine Corps Data Network [MCDN], SISOCS, and DDN-MILNET), begun in FY92, formed the initial operating DISN network.
- DISN Level 1 Network Management Center (NMC) at HQ DISA and Level II NMC's at Scott AFB, Columbus, Ohio were created. These centers, under the operational direction and management control of DISA, signaled the beginning of DISN Network Operations.
- DISA and the NSA jointly developed a security architecture for DISN. The security architecture was validated by the Joint Staff and forwarded to OSD for implementation.
- The existing DDN MILNET X.25 network was downsized to reduce operating expenses.
- Efforts continued in preparation for the eventual far-term acquisition contract, scheduled for FY96.



.....  
**DEPARTMENT OF JUSTICE (DOJ)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**

**T**he NS/EP telecommunications mission to DOJ is to provide telecommunication facilities and services in support of DOJ NS/EP essential functions. The NS/EP responsibility is centralized in the Justice Management Division for all Department entities except the Federal Bureau of Investigation (FBI) and the DEA. These bureaus maintain separate secure network facilities.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**

The Telecommunications Services Staff (TSS) under the Deputy Assistant Attorney General for IRM operates and manages DOJ's message processing system and the Telecommunications Service Center. TSS also provides networking and technical assistance to DOJ's offices, boards, and divisions. Secure message transmission is offered through separate facilities. The Emergency Planning Group and the Information Security Policy Group of the Security and Emergency Planning Staff manage the STU program of all DOJ organizations (except FBI and DEA).

.....  
**SIGNIFICANT ACCOMPLISHMENTS**

DOJ realized the following NS/EP telecommunication achievements:

- Provided staffing support to the OMNCS with a full-time DOJ employee to meet its

NCS support requirements specified in E.O. 12472.

- The Department and its bureaus (DEA, FBI, and Immigration and Naturalization Service [INS]) participated in SHARES HF Radio Exercises 91-2, 91-3, and 92-1. These SHARES exercises offered participating Federal departments and agencies the opportunity to develop and improve skills for passing NS/EP traffic. A mix of departmental HF radio stations, with and without prior SHARES experience, participated in the exercises.
- DOJ continued its active participation in the NCS activities of the COP/COR.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**

The following current/ongoing activities support NS/EP objectives:

- TSS provides operational telecommunication services by managing, engineering, and operating the DOJ nationwide data telecommunication systems serving all DOJ offices except the FBI.
- DOJ's active participation in the FTSC standards process continues to promote interoperability of telecommunication services and to strengthen NS/EP communications.
- DOJ continues its active support of the SHARES HF Radio Program.
- DOJ continues its active support of the CIWG.

- DOJ continues its active support of the FTSC's HF Radio Subcommittee and the Standards Development Working Group, the Statement of Requirements Working Group, and the Test and Evaluation Working Group.
- DOJ is participating in the White House Communications Interoperability Working Group (WHCIWG) which is chartered to conduct studies and make recommendations concerning interoperability of telecommunications between the White House Communications Agency and other agencies and organizations in the Federal Government.
- Continued participation in the TSP system and related NS/EP initiatives.

.....  
**PENDING ISSUES**  
.....

- Review of DOJ telecommunications staffing constraints with expanded NCS activities and work loads.



.....  
**DEPARTMENT OF THE INTERIOR (DOI)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**D**OI has few telecommunication assets identified in support of NS/EP objectives because the agency's primary mission is to efficiently manage United States natural resources. Only mobilization and relocation circuitry are included as NS/EP telecommunication requirements because the DOI NS/EP mission is minimal.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

Telecommunications program management resides at both the departmental and bureau levels. The Telecommunications Systems Division, Office of Information Resources Management, has departmentwide responsibilities. These responsibilities include assessing existing policies, procedures, guidelines, and standards to determine their continued appropriateness to managing and using telecommunication facilities; developing telecommunication plans, policies, and procedures; and representing departmental interest in governmentwide activities. Bureau telecommunication managers and their staff are responsible for communications operational support. Many telecommunications management responsibilities within the Department are handled by personnel on a collateral duty basis.

The Telecommunications Systems Division coordinates the sharing and acquisition of telecommunication facilities, equip-

ment, and services; prepares departmental policy and strategic telecommunication plans; approves system procurement and installation actions; serves as liaison with the GSA, the National Telecommunications and Information Administration (NTIA), and the NCS; provides technical assistance to bureaus and offices; and reviews or develops specifications and/or solicitation documents for obtaining the services or facilities required by bureaus and offices.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

During FY92, the Office of Information Resources Management realized the following NS/EP and telecommunications management accomplishments:

- Issued a Departmental Manual Chapter (377 DM 1) that establishes policies and responsibilities for managing and using telecommunication systems, networks, equipment, and services within the Department.
- Established guidelines for implementing video conferencing facilities.
- Sponsored a 4-day departmental radio communications conference where operations, policy, and engineering issues were discussed.
- Represented the Department at Joint Telecommunications Board meetings of the Federated States of Micronesia and the Republic of the Marshall Islands. Issues included civil and military radio frequency assignment and management procedures, development of supporting infrastructure for internal use, and international notification of ships and radio stations.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

Multiple nationwide data communication networks have been implemented over the past several years and upgraded during our transition to the FTS2000 network. Interconnection of those networks is now being pursued. The use of frame relay technologies and the implementation of departmentwide electronic mail access are being investigated.

.....  
**PENDING ISSUES**  
.....

Departmental reliance and emphasis on information resources continue to grow. The development of new functional applications, enhancement of existing systems, and the redesign and replacement of obsolete systems all reflect this growth. Despite necessary budget, personnel, and regulatory constraints; technology advances must continue to be exploited to further increase productivity. Continued improvement in managing and using of information resources must be supported by applying new data management techniques. Participation will be required on interagency committees developing national standards for telecommunications interoperability. Dependence on the FTS2000 network and the use of digital telephone systems, local area networks, mobile communications, and very small aperture satellite terminal service are critical to DOI.



.....  
**UNITED STATES DEPARTMENT OF  
AGRICULTURE (USDA)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he USDA has several essential functions requiring NS/EP telecommunications:

- Provide the domestic distribution of seed, livestock, poultry feed, fertilizer, and farm equipment
- Manage the use of lands and facilities under USDA jurisdiction
- Direct the rural fire control activities regarding national forests in coordination with local authorities
- Inspect livestock and poultry, and the products thereof, to ensure safety and wholesomeness
- Implement plans using water in food production and processing.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

While there is no formal organization within the USDA dedicated to NS/EP telecommunications support, policy and expertise on NCS matters are provided by the Office of IRM as required and as a collateral duty.

Telecommunications management resides at the department and agency level. The Telecommunications Policy Division has departmentwide responsibilities that include

representing departmental interests in governmentwide activities such as liaison to the GSA and NCS.

The Telecommunications Policy Division is responsible for providing departmental telecommunications policy and guidance; supporting USDA and governmentwide telecommunication programs; developing and maintaining departmental long-range telecommunication plans; implementing telecommunication standards and security programs; conducting agency reviews; and evaluating the implementation of telecommunication policies, standards, and long-range plans.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

During FY92, the USDA realized the following NS/EP telecommunication accomplishments:

- Reviewed the USDA Office of Emergency Programs directive from the telecommunications perspective
- Reviewed a departmentwide NS/EP telecommunications survey supporting the essential emergency functions (EEF)
- Streamlined the staffing and coordination process by developing procedures for improved responsiveness to the needs of the Manager, NCS. Provided a full-time employee to serve on the staff of the Manager, NCS.
- Transferred communications security account and identified new requirements for the STU-III. Participated in National Security Agency communications security training.

.....  
**CURRENT/ONGOING NS/EP**

.....  
**TELECOMMUNICATION ACTIVITIES**  
.....

- Participate on COP/COR, the National Security Telecommunications Advisory Committee (NSTAC), and the Industry Executive Subcommittee (IES)
- Represent USDA as NCS member organization in Manager, NCS, activities
- Participate in the SHARES HF Program, the CIWG, and the Meteor Burst Communications (MBC) Working Group
- Support the Diplomatic Telecommunications Service (DTS)
- Participate in the NCS TPPS, the Interoperability Radio Subcommittee, FTSC, and other working group activities as necessary
- Implement STU-III's
- Evaluate implementation of the Government Emergency Telecommunications Service (GETS) telecommunication policies
- Participate in the NCS Vision 21/Total Quality Management (TQM) process to assist the President in ensuring that the Federal Government has the telecommunication services needed during emergencies.

.....  
**PENDING ISSUES**  
.....

- Monitor long-term approved methodology for "pro rata shared" funding by which the Manager, NCS, telecommunication initiatives can be funded and implemented (i.e., funding of the NLP)
- Participate in developing and implementing the TSP System, which replaced the restoration priority (RP) system and related NS/EP initiatives
- Review USDA telecommunication resources and staffing constraints with expanded NCS activity and workload
- Monitor the GETS for its impact on the Department (i.e., Panel of Experts Report on GETS)
- Monitor communications security (COMSEC) and Department requirements to implement the NLP.



.....  
**DEPARTMENT OF COMMERCE (DOC)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he DOC is the chief organization in the Federal Government responsible for the commercialization of trade, and its impact on commodities, invention, and technology. The DOC also maintains a strong position in the analysis of economic trends through census, business, and standards. The Commerce role in technology also involves the gathering, monitoring and analysis of environmental data for reporting of weather and oceanic and other geophysical information, if sufficiently critical to require early warning of expected emergencies.

The above DOC functions are key responsibilities and involve several missions that are on-going during national security emergencies. These missions and functions are performed during the three identified NS/EP stress periods: (1) peacetime, (2) crisis and mobilization, and (3) late trans-attack and early post-attack (LTA/EPA), and are supported by NLP and agency-level NS/EP telecommunication services.

The key responsibilities during national security emergencies require DOC to implement plans during peacetime, and activate planned controls during crisis/mobilization and LTA/EPA periods. E.O. 12656 establishes the emergency preparedness functions for DOC identified in Items 1 through 13 below, while E.O. 12472 specifies items 14 and 15.

1. Develop control systems for priorities, allocation, production, and distribution of materials and other resources that will be

available to support both national defense and essential civilian programs in a national security emergency. Control the production and distribution of all manufactured goods and processed materials. Agency Related Activities: International Trade Association/Bureau of Export Administration/Economic and Statistics Administration (ITA/BXA/ESA) Programs

2. Identify those industrial products and facilities that are essential to mobilization readiness, national defense, or post-attack survival and recovery, in cooperation with the Secretary of Defense and departments and agencies. Control the use of all production facilities except those of DoD and Department of Energy (DOE). Agency Related Activities: ITA/BXA/ESA Programs

3. Analyze potential effects of national security emergencies on actual production capability, taking into account the entire production complex, including shortages of resources. Develop preparedness measures to strengthen capabilities for production increases in national security emergencies in cooperation with the Secretary of Defense and departments and agencies. Control all construction materials and the furnishing of basic industrial services (except those under the jurisdiction of DOE, USDA, NCS, Federal Communications Commission [FCC], Department of Health and Human Services [DHHS], DoD, FAA, Department of Transportation [DOT], and DOI). Agency Related Activities: ITA/BXA/ESA Programs

4. Perform industry analyses to assess capabilities of the commercial industrial base to support the national defense, and develop policy alternatives to improve the international competitiveness of specific domestic industries and their abilities to meet defense program

needs in cooperation with the Secretary of Defense. Implement Machine Tool Trigger Order Program. Agency Related Activities: ITA/BXA/ESA Programs

5. Develop plans for providing emergency assistance to the private sector through direct or participation loans for the financing of production facilities and equipment in cooperation with the Secretary of the Treasury. Implement emergency assistance programs essential to small business in coordination with Small Business Administration. Agency Related Activities: ITA/BXA/ESA Programs

6. Prepare plans to regulate and control exports and imports in national security emergencies in cooperation with the Secretaries of State, Defense, Transportation, and Treasury. Regulate and control exports and imports. Agency Related Activities: ITA/BXA Programs

7. Provide for the collection and reporting of census information on human and economic resources, and maintain a capability to conduct emergency surveys to provide information on the status of these resources as required for national security purposes. Implement emergency plans regarding census functions, and coordinate services essential to Federal organizations regarding census data. Agency Related Activities: Census Programs

8. Provide overall plans and programs to ensure that the fishing industry continues to produce and process essential protein in national security emergencies. Control fishing industry activities for protein production. Agency Related Activities: National Oceanic and Atmospheric Administration (NOAA)/National Marine Fisheries Service (NMFS) Programs

9. Develop plans to provide meteorological, hydrologic, marine weather, geodetic, hydrographic, climatic, seismic, and oceanographic data and services to Federal, State and local agencies, as appropriate. Coordinate scientific and technological services essential to Federal departments and agencies, particularly meteorological and related services, map and related data production for non-DoD

purposes, standards activities, and census data. Perform functions that may involve monitoring potential radiological hazards, including weather forecasting, geodetic, hydrographic, climatic, seismic, and oceanographic data. Agency Related Activities: Technology Administration (TA)/National Institute of Standards and Technology (NIST)/ESA/NOAA/ National Weather Service (NWS) Programs

10. Represent the United States in industry-related international (NATO and allied) civil emergency preparedness planning and related activities in coordination with the Secretary of State and the Director of the Federal Emergency Management Agency. Agency Related Activities: ITA/BXA Programs

11. Assist the Secretary of Defense in formulating and carrying out plans for stockpiling strategic and critical materials. Agency Related Activities: ITA/ESA/BXA Programs

12. Support the Secretary of Agriculture in planning for the national security management, production and processing of forest and fishery products. Agency Related Activities: ITA/BXA and NOAA/NMFS Programs

13. Assist the Secretary of the Treasury in the formulation and execution of economic measures affecting other nations in consultation with the Secretaries of State and Defense. Agency Related Activities: ITA/ESA Programs

14. Develop plans and procedures concerning radio spectrum assignments, priorities and allocations for use by Federal departments, agencies and entities in national security emergencies. Manage Federal Government's share of radio spectrum. Agency Related Activities: NTIA Programs

15. Develop, maintain and publish policy, plans and procedures for the control and allocation of frequency assignments, including the authority to amend, modify or revoke such assignments in those parts of the electromagnetic spectrum assigned to the Federal Government in national security emergencies. Control the allocations of frequency assignments. Agency Related Activities: NTIA Programs

.....  
**TELECOMMUNICATIONS STAFF**

.....  
**ORGANIZATION**  
.....

The principal DOC organizations performing the above functions that rely on NS/EP telecommunications support are NTIA, NIST as part of TA, ESA, BXA, ITA, the Census Bureau as part of Economic Affairs (EA), the Patents and Trademarks Office (PTO), NOAA which includes the NWS, the Office of Oceans and Atmospheric Research (OAR), the National Environmental Satellite Data and Information Service (NESDIS), the National Oceanic Service (NOS), and the NMFS. (See Exhibit 4-1.)

Although some of these organizations provide direct support to the DOC for carrying out emergency functions, other DOC operating units provide support to these components.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

The DOC and its operating units are continuing to make significant accomplishments in supporting the above emergency functions by providing communication resources vital to the flow of information; these accomplishments are listed below:

- NTIA developed a computer-based program that facilitates coordination of emergency broadcast information among the FCC, Federal Emergency Management Agency (FEMA), and NTIA.
- NTIA's management of the radio spectrum was enhanced substantially with the implementation of computer capability to analyze Federal spectrum use and allocations, complementing Government Master File data now distributed to departments and agencies via compact disk.
- NIST converted its backbone network to use of FTS2000 data network and connected local networks at Gaithersburg, Maryland, and Boulder, Colorado.
- ITA upgraded its networks for processing information associated with domestic and

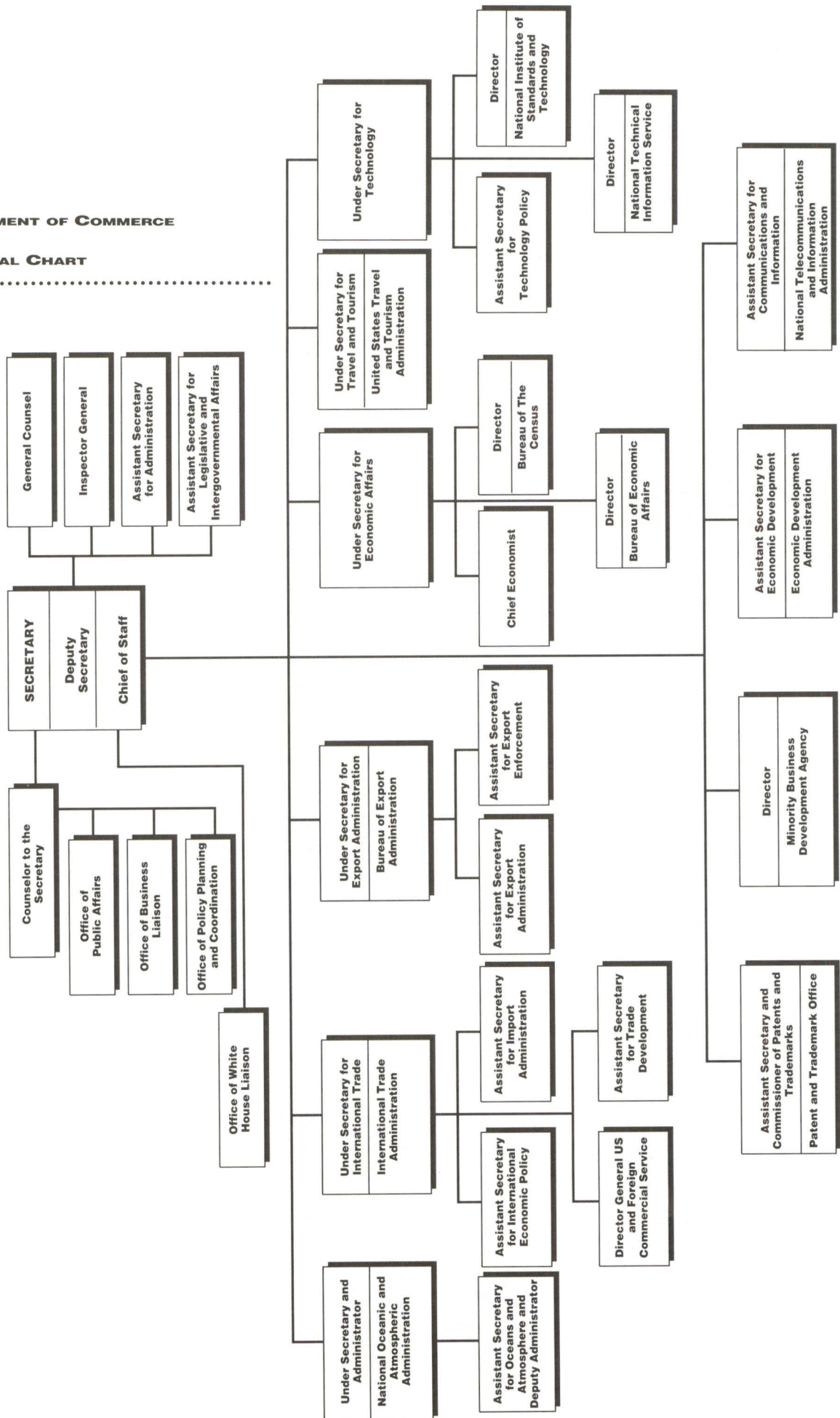
foreign commercial services, international trade development, and antidumping and countervailing duty investigation and enforcement.

- The Census Bureau upgraded its networking capability by connecting its nationwide operating facilities to the FTS2000 data network and implementing redundant links for support of statistical data collection and processing.
- The Census Bureau upgraded its nationwide telecommunications network to accommodate high-speed file transfers to support statistical data collection and dissemination.
- NOAA/NWS upgraded their networks using FTS2000 links to support connectivity at the National Severe Storms Forecast Center for high-speed transfer of forecast data.
- NOAA/NMFS upgraded their networks using FTS2000 links to support connectivity between all National Marine Fisheries Service centers and field locations by providing high-speed access to fisheries management information.
- NOAA/OAR upgraded their artificial intelligence projects to improve solar and weather predictions.
- The NOAA/NWS implemented a new satellite service to disseminate warnings, forecasts, and data to the news media for broadcast to the public.
- The DOC Headquarters enhanced its automated telecommunications management capability to manage department-wide voice and data communication systems.
- The DOC Headquarters enhanced the Department backbone network to improve the information flow among the field administrative offices and department data centers using System Network Architecture (SNA) upgrade with the communications resources of FTS2000.

**EXHIBIT 4-1**

**U. S. DEPARTMENT OF COMMERCE**

**ORGANIZATIONAL CHART**



.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

The DOC operating units are continuing to upgrade and expand several agencywide telecommunication services for the transfer of essential information to support their missions/functions, including:

- NTIA is implementing a computer-based management information system for its emergency spectrum management activities, replacing plans that offered no real-time capability.
- NIST is continuing to develop several networks and related standards for the communications of scientific information using new technology, such as ISDN and fiber optics to provide integrated computing and information exchange.
- ITA is continuing to implement new networks to enhance the flow of information to support the Trade Policy Information System.
- ITA is implementing international communications services to all foreign ITA commercial services offices to provide a capability for exchange of trade opportunity information with the help of the Department of State.
- NOAA/NWS are continuing to upgrade their telecommunication facilities that support the collection and distribution of weather data among field weather observation offices, and rapidly disseminate public warnings and forecasts.
- NOAA/NWS are upgrading their communications digital facsimile capability of aeronautical weather maps to airports and pilots using satellite communications services.
- NOAA/NWS are upgrading their telecommunication capabilities for advanced weather interactive processing systems for the 1990's.
- NOAA/NWS are upgrading their telecommunication facilities to transfer weather data under the new next-generation weather radar program.
- NOAA/NWS are upgrading their telecommunication facilities to use international weather satellite information as a backup to the domestic service through a bent-pipe agreement with the European countries, thus decreasing the risk of losing a source of weather observations data.
- NOAA/NESDIS are upgrading their telecommunication networks for the communications of environmental data throughout NOAA and other Federal Government organizations.
- NOAA/NESDIS are implementing an international communications capability to allow the gathering and processing of weather observation data from internationally available satellites.
- NOAA/NOS are continuing to install a capability to create and disseminate digital aeronautical data in a totally electronic format.
- NOAA/NOS are continuing to upgrade their shipboard communications services with more reliable ship-to-shore satellite telecommunication services.
- NOAA/NWS are continuing to evaluate doppler radar as an effective weather information gathering and communications platform to automate and improve weather information collection and monitoring.
- DOC offices are upgrading the local communications services at their facilities to accommodate better voice and data communications services using the consolidated/aggregated services programs provided by GSA.

The Department of Commerce relies on the use of governmentwide communications services where possible to support the communication of information during peace-time and

emergencies. In almost all instances, the Commerce operating units have shifted to the GSA-provided FTS2000 services for long distance voice communications and to the GSA local services program for intracity voice communications. This trend over the last 5 years is a shift in usage toward aggregated voice-grade communications services and a dependance on these service providers during emergencies. The dependance on data communications services is still reliant primarily on privately provided commercial communications services. Some move of data services toward aggregated Government services, however, can be expected in the future as can a movement toward the FTS2000 programs. The Commerce scientific missions, such as satellite and earth sensing technology, will probably remain independent technical communications solutions.



.....  
**DEPARTMENT OF HEALTH AND HUMAN SERVICES (DHHS)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**

**T**he DHHS NS/EP telecommunications mission is to support the department's NS/EP responsibilities assigned under E.O. 12656. DHHS maintains a functioning National Disaster Medical System and social services delivery system that requires a level of survivable telecommunications capability.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**

Telecommunications program management is a departmental and operating division function. The Assistant Secretary for Management and Budget (ASMB) has overall departmental responsibility for telecommunications policy and management. The operating divisions are responsible for acquisition and operation of telecommunication services and facilities to satisfy their programs' mission requirements.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**

The Secretary of the DHHS assigned responsibility for the Department's emergency preparedness program to the Assistant Secretary for Health. The ASMB assigned the Department's NS/EP telecommunications program to the Deputy Assistant Secretary, Office of Information Resources Management (OIRM). OIRM personnel now represent the DHHS on the COP/COR.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**

DHHS established a departmental/operating division committee of emergency preparedness and telecommunications personnel to define the telecommunication services needed to support the Department's explicit and implicit responsibilities under E.O. 12656.



.....  
**DEPARTMENT OF TRANSPORTATION**

**(DOT)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**D**OT has a wide range of missions including the safety of travelers in transit at sea, in the air, and on the ground. Communications support varies from administrative to command and control, using methods that range from the PSN to advanced dedicated systems. DOT incorporates NS/EP considerations into its telecommunications planning, management, and operational programs.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The DOT telecommunications program is administered by the OIRM, Office of the Secretary of Transportation. The director of this office serves as the DOT representative to the NCS COP. NS/EP telecommunications policy and planning are managed by the Chief, Telecommunications Division. A senior telecommunications policy analyst from the Telecommunications Division serves as the DOT representative to the NCS COR. DOT is a participant in a number of NCS activities at the working level. In addition, DOT plays an active role on the TPPS, TSP Oversight Committee, SHARES Working Group, and the Vision 21 process. DOT telecommunications staff in the field often take part in NCS-sponsored exercises to maintain proficiency and evaluate program efforts. Most important, DOT telecommunication field components

continually demonstrate the ability to provide communications in support of actual NS/EP-related missions.

The Department's operating administrations provide systems and networks to support their mission needs. The efforts of the United States Coast Guard (USCG), FAA, Federal Highway Administration (FHWA), Research and Special Programs Administration (RSPA), and Maritime Administration (MARAD) are included in DOT's input to the FY92 NCS Annual Report.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

DOT components played a key role during Operations Desert Shield/Storm. Mission support included the transportation of vital military cargo, environmental protection, and enforcement of trade sanctions against Iraq.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

DOT has a number of NS/EP-related telecommunication initiatives underway. Many of these are highlighted in the following text.

.....  
**UNITED STATES COAST GUARD (USCG)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

USCG NS/EP objectives are threefold: to provide essential communications for the command and control of Coast Guard forces, to reconstitute the National Maritime Distress and Safety System, and to provide telecommunication assets, as required, to DoD in support of the National Command Authority.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The Office of Command, Control, and Communications (G-T) is the program director for the Command, Control, and Communications (C<sup>3</sup>) support program. (See Exhibit 4-2 for an organizational chart.)

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

The USCG is conducting the following activities:

- VINSON (KY-58). VINSON provides a wideband, secure UHF capability to USCG ships, aircraft, and selected shore units. VINSON installations are effectively complete for those units with secure UHF requirements.
- ANDVT. As the replacement for PARKHILL, ANDVT is being fielded to all USCG units that are PARKHILL capable for secure HF communications.

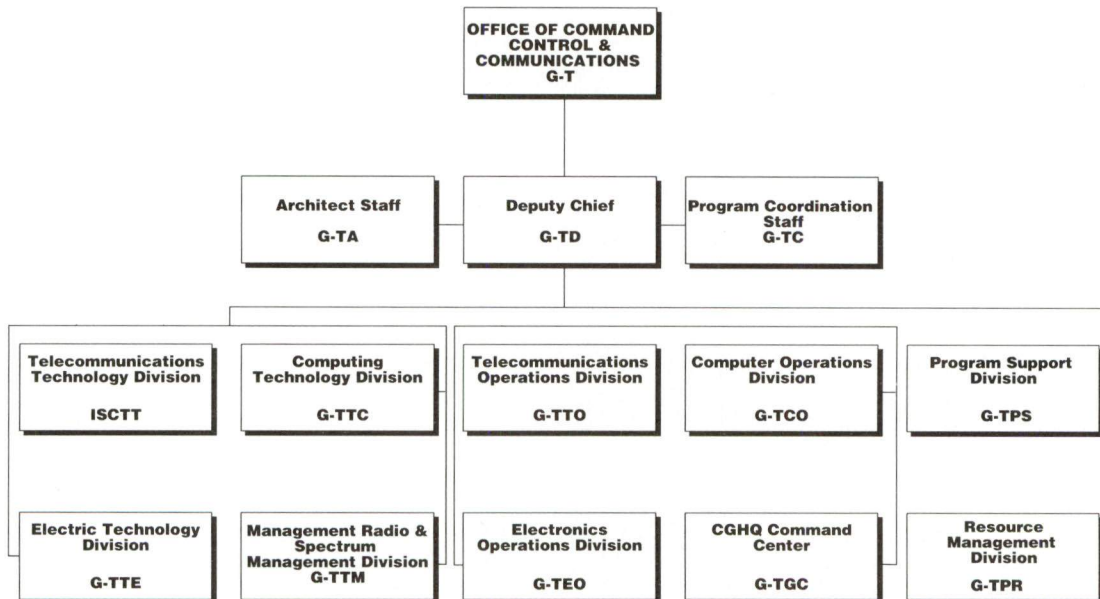
Complete PARKHILL replacement is expected by the end of FY92.

- Maritime Defense Zone (MDZ). Command center upgrades are in progress and will continue through FY92. These upgrades will provide enhanced DOT interoperability in support of MDZ to a much lower echelon than is currently available.
- Global Maritime Distress and Safety System (GMDSS). GMDSS was adopted as a treaty requirement at the 1988 Safety of Life at Sea Convention. GMDSS entered into force internationally on February 1, 1992, and is expected to be completely phased in on February 1, 1999. GMDSS is a "concept," not an actual system. GMDSS uses a variety of electronic equipment and communications systems to provide better distress and safety alert reporting for mariners at sea. Associated GMDSS equipment and systems include: Navtex, Emergency Position Indicating Radio Beacon's (EPIRB), digital selective calling (VHF and Multifrequency [MF]/HF), Simplex Teletype Over Radio (SITOR), public data networks and satellite communications (SATCOM). Coast Guard implementation of these and other systems will continue throughout the remainder of this decade.

- INMARSAT A. STU-III compatible INMARSAT terminals are being fielded to selected medium- and high-endurance cutters. Continued procurements depend on fund availability.
- UHF SATCOM. The Coast Guard is procuring tactical, portable UHF satellite terminals for selected ships and shore units to enhance law enforcement and DoD interoperability.
- Automatic Link Establishment (ALE). ALE HF voice prototype is in Phase II testing at Group Miami. Results of Phase I (completed in May 1992) are being compiled by Information Systems Center (ISC). The 1 week test included Group Miami as Net Control and eight vessels (110's and 82's) that made scheduled contacts with Net Control and one another. Phase II includes 6 months of normal operations utilizing ALE where possible. The ALE HF system will enhance interoperability with Federal law enforcement agencies when Customs moves to Federal Standard 1045.
- Coast Guard Data Network (CGDN). The Coast Guard is interconnecting all shore Federal Information Processing Standards (FIPS) equipment via a packet switched network called the Coast Guard Data Network (previously referred to as the Hybrid Data Network). The major network nodes exist at Headquarters and Area and District Offices, and are connected by high-speed circuits. Secondary nodes located at major operational units, such as Groups, Air Stations (Airstas) and Marine Safety Offices (MSO), are linked to major nodes with low-speed circuits. Some 450 shore units will be connected to the CGDN by the end of FY92. Plans are being developed to connect all remaining shore units and in-port cutters.
- VHF-frequency modulated (FM) Coastal Distress and Safety System. The Coast Guard is evaluating the operational requirements for short-range communications (command and control as well as coastal distress). Concurrently, selected high-level sites in the VHF-FM Coastal Distress and Safety System are being refurbished and upgraded. The upgrade will include Digital

**EXHIBIT 4-2**

**ORGANIZATION OF THE OFFICE OF COMMAND, CONTROL, AND COMMUNICATIONS (C<sup>3</sup>)**



Selective Calling (DSC), an encrypted Coast Guard command and control network, and possibly VHF Direction Finding (DF).

- High Frequency Radio Wire Interface (HFRWI). HFRWI provides secure HF phone patches using ANDVT to any shore STU-III unit. All six installations have been completed. Sites include Communications Area Master Station, Atlantic, (CAMSLANT), Communications Area Master Station, Pacific (CAMSPAC), and Communications Stations (COMMSTA) Kodiak, Honolulu, Miami, and New Orleans. The Coast Guard is also evaluating data transmission over HF using the data port on the Radio Wire Interface (RWI) ANDVT. Field testing will be conducted in September-October 1992.
- Secure Data Network (SDN). The Coast Guard has implemented a secure data network using its standard workstation and STU-III Access Control System (SACS) to provide a low-cost means of delivering secure record message traffic between Coast Guard District Telecommunication Centers and subordinate commands (Groups, Air Stations, Marine Safety Offices). SDN is now operational.
- OTAR. The Coast Guard has implemented an OTAR broadcast originating from COMMSTA Boston. Keying material is transmitted over the HF broadcast to suitably equipped cutters. This is the first step towards electronic COMSEC and elimination of paper keys and codes.
- STU-III. The Coast Guard has more than 2,700 STU-III's. One hundred SACS STU-III's were purchased to implement the SDN.

.....  
**FEDERAL AVIATION ADMINISTRATION**

**(FAA)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

The primary NS/EP objective of FAA is to ensure continued safe and efficient operation of the National Air Space System (NAS) during periods of stress. This involves both the required operational telecommunication assets and those telecommunications essential for the C<sup>3</sup> functions.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The Associate Administrator for Airway Facilities is responsible for all telecommunication policies and standards. All operational and administrative telecommunication management activities are performed within the Telecommunication Management and Operations (TM&O) Divisions. The Associate Administrator for Administration is responsible for overall compliance with Federal Information Resource Management Regulations (FIRMR).

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

National Radio Communications System (NARACS). NARACS is a voice and data communications system that provides minimum essential communications capability to support DOT, DoD, and FAA missions during emergencies. NARACS assets contain HF/Single Side Band (SSB), VHF/FM, and microwave relay facilities. NARACS will interoperate with DoD, the National Command Authority, USCG, FEMA, and other Government organizations. The FAA is a member of the SHARES Interoperability Working Group and uses NARACS to participate in the SHARES program at 42 locations. The NARACS Program, as an NAS project, is still ongoing. Upon its completion, FAA will have 46 HF/SSB fixed ground stations. Additionally, 20

to 25 flight check and administrative aircraft will be equipped with compatible HF/SSB radio equipment.

Under the NARACS program, all FAA regional offices, technical centers, and Air Route Traffic Control Centers (ARTCC) have DCS AUTODIN equipment. This provides a secure data interface between all major FAA facilities, the DoD, and civil U.S. Government agencies.

During FY92, the FAA installed the following technologies to support NS/EP telecommunications:

- **Phototelesis system** — provided by the FBI for FAA security use. One system, used by all of FAA for official business is installed at each Operations Center at the Regions, Aeronautical Center, Technical Center, and Washington Operations Center. It is a computerized system used to transport still photographs over telephone lines to another facility with the same equipment. Some of its features are:
  - Image processing — adjustable contrast, zoom, flip image (180 degrees), and negative image
  - Storage — image may be stored on and retrieved from the hard disk or a floppy disk
  - Camera — attached to the unit and can be focused on a photograph or item in the viewing range (frozen and used as a still image)
  - Color printer.

This equipment can be connected to the phone lines through a STU-III to enable transmission of images over secure modes. Images can be transmitted and/or printed.

- **Canon Photo Equipment** — photo equipment that digitally stores the image on a 2.5 inch disk. The image can then be transmitted over telephone lines to any Canon receiver type unit. This

equipment was purchased for use with the Contingency Communications Support Team (CCST). It includes:

- Camera, flash, and disk
- Transmitter/transceiver — transmits the image stored on the disk to a receiver or transceiver. The CCST consists of a Canon Photo transmitter unit only. Washington Operations Center has a transceiver.
- Color printer — located at the Washington Operations Center to print images received from the field.

When the CCST is deployed to a remote site, images may be sent to the Washington Operations Center and printed if necessary for use by other offices (Security, Accident Investigation, National Transportation Safety Board [NTSB], etc.).

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

- TSP. During FY92, the FAA identified critical circuits that qualify under the TSP program. The FAA established a process by which regional offices can initiate a TSP assignment through the TSP process. A complete listing of qualifying circuits was made. Regions have completed a formal circuit evaluation and are assigning TSP requirements. Additionally, engineering and contractual efforts are continually being developed and implemented to reduce single points of failure.
- Leased Inner-Facility NAS Communications System (LINCS). The FAA awarded its LINCS contract on March 13, 1992, to MCI Telecommunications Corporation. All new, full-period private line (dedicated) circuit requirements will be provided under this contract. Existing circuits will be transferred to LINCS as soon as possible. The LINCS contract has provisions for TSP

assignments and circuits that undergo transition to the LINCS network will retain their original assigned TSP codes.

- Satellite Communications. The FAA Telecommunications Satellite (FAAT-SAT) System will improve the overall performance of operational air traffic telecommunications and aid in the elimination of single points of failure. Satellite-based services will be provided among domestic air traffic control facilities. FAATSAT includes mobile services to the Traffic Management Systems and the Meteorologist Weather Processor system and circuit diversity to facilities needing highly reliable NAS communications where geography or other constraints preclude diverse terrestrial alternatives. The FAATSAT acquisition plan has been completed and approved. Specifications and statement of work are also completed. The request for proposal is in review and approval cycle.
- The CCST. Developed in 1990, the CCST continued to provide the FAA with a communications capability for emergency use. The CCST, which uses two satellite transceivers with other communications equipment, was deployed for four aircraft accidents in 1991 and 1992: the Continental accident at Eagle Lake, Texas; the USAir accident at LaGuardia Airport, New York, the Panamanian COPA accident in Panama, and the Adventure Airlines crash near Grand Canyon, Arizona. Improvements continue on the system to enable it to better serve the needs of the FAA.
- STU-III. The FAA's STU-III installation program will continue. Approximately 580 additional installations are planned for FY92 and FY93.

.....  
**PENDING ISSUES**  
.....

Although improved last year, the approval process for telecommunications outside CONUS remains time consuming and difficult. This has impeded the FAA's progress in meeting national security-related telecommunication requirements overseas. Future installations in foreign countries should be approved and accomplished more expeditiously.

.....  
**FEDERAL HIGHWAY  
ADMINISTRATION (FHWA)  
NS/EP TELECOMMUNICATIONS  
MISSION**  
.....

As prescribed by E.O. 12656, FHWA and State Highway Agencies (SHA) will ensure the operation and maintenance of the highway network during national emergencies, to include national defense, and natural and man-made emergencies.

.....  
**TELECOMMUNICATIONS STAFF**  
.....

**ORGANIZATION**  
.....

The FHWA consists of the Washington, D.C., headquarters, nine regional offices, and a division office in each State. Each division office works daily with its respective SHA. The normal administrative organization is also used during a national emergency. Telecommunication responsibilities are primarily a collateral duty of the overall organization.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

FHWA provided pagers to key executives involved in the organization's Operations Desert Shield/Storm efforts to provide immediate response to any highway transportation needs throughout the period. As a result of the loss of communications with the FHWA Division Office in Puerto Rico during Hurricane Hugo, an HF radio station is being established to provide the division with essential communications. In addition, FHWA began a limited program to replace existing HF transceivers that are no longer operationally reliable (as funding permits). Some equipment employing the new Federal Standard 1045 ALE criteria is also being purchased and installed as funding permits. The ALE HF capability will enhance FHWA's interoperability with

other transportation modal agencies such as the Coast Guard and FAA, as well as other Government agencies. FHWA is also an active participant in the SHARES program.

.....  
**CURRENT/ONGOING NS/EP**  
.....

**TELECOMMUNICATION ACTIVITIES**  
.....

An FHWA HF radio is available at the headquarters for use by the Office of Emergency Transportation (OET) and other DOT agencies. The FHWA participates in the SHARES interagency emergency HF radio communications system exercises.

Because FHWA uses telephone services to provide voice and hard copy for daily communications, any interruption of telephone service leaves the agency without its primary means of communication. To alleviate this situation, FHWA installed a national HF emergency radio communications system with a transceiver in the Headquarters, and in each region and division location. STU-III's are installed in Regions 3, 5, 7, 8, and the FHWA Headquarters Emergency Coordinator's office.

.....  
**PENDING ISSUES**  
.....

A program to install STU-III units in Regions 1, 4, 6, 9, 10, and the FHWA Headquarters Emergency Operating Facility is continuing pending the availability of funds and equipment. The HF radio installation in Puerto Rico is scheduled to be completed during the first quarter of FY93.

.....  
**RESEARCH AND SPECIAL PROGRAMS**

**ADMINISTRATION (RSPA)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

The OET is responsible for the overall development and management of the departmental civil emergency preparedness policies, plans, procedures, systems, and programs. It also ensures the integration of emergency preparedness activities by various departments and agencies to discharge the Secretary's emergency preparedness responsibilities. The OET responsibilities cover a broad spectrum, but can be divided into the following general areas:

- Departmental emergency policies and plans for natural and technological disasters, economic crises (e.g., strikes and fuel shortages), and national security crises
- Coordination of the emergency preparedness programs of the Department's elements to ensure effectiveness
- Development of an infrastructure to support emergency operations, including operating facilities and communications
- Management of the Department's response to emergencies
- Training, exercises, and emergency preparedness evaluations.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The functional responsibility for telecommunications management within OET is assigned to the Operations Readiness Program Manager. The 10 Regional Emergency Transportation Coordinators (RETCO) are responsible for regional-level DOT/OET emergency communications management.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

The Department's Emergency Transportation HF Radio Network provides the Secretary with a standby capability to carry out statutory and administrative emergency responsibilities during crises. The system consists of 12 one-kilowatt HF radios that supplement landline communications and are installed in the Secretary's Situation Center, at DOT Headquarters, and emergency operational facilities throughout the country. Both voice and data capabilities are provided. This network uses frequencies and operating procedures developed and published in cooperation with the FHWA.

DOT/OET upgraded its HF system capabilities through acquisition of data controllers and by replacing the obsolete teletype printers with personal computers. The system, using commercial off-the-shelf software, is fully compatible with the DOT Emergency Transportation data base. The data controller also provides a facsimile receipt and transmission capability.

The secure voice and data capacity for OET-supported missions was expanded; the NSA-managed Intermediate Nuclear Forces (INF) STU-III Loan Program made available 24 STU-III's. Incidental use of the STU-III's for non-INF purposes is permitted. The additional secure sets were distributed to other Headquarters' offices and field installations including one industry facility.

In FY92, OET further developed its STU-III secure communications network with RETCO's to include a secure facsimile and secure data capability through the use of existing equipment and technology. All RETCO's and other key field offices now have secure telecommunications capability. In addition, limited upgrading of obsolete equipment in the HF radio system was scheduled. An exercise of the HF radio system was held in conjunction with FHWA.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

In FY93, OET will focus on improving intra-administration communications within DOT's model administrations, emergency alert and notification procedures, and situation tracking and reporting. With recent changes in the global geopolitical environment, OET will incrementally shift some additional emphasis to better command, control, and communications, to support the Federal Response Plan, which addresses catastrophic emergencies. Support to DOT regional elements and to the overall response coordination of FEMA will be given within DOT/OET.

.....  
**MARITIME ADMINISTRATION (MARAD)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

One of MARAD's vital NS/EP telecommunication missions is to ensure that U.S. merchant ships of the Ready Reserve Force (RRF), a part of the National Defense Reserve Fleet, can communicate with the U.S. Navy. In addition, the MARAD Telecommunications Center provides recorded message NS/EP support to the Secretary and much of the DOT Headquarters.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

Responsibilities are handled as a collateral duty by the overall organization.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

- Exercise EXPANDED SEA 92. MARAD supported the agreements with the CINC's for Atlantic Fleet and Pacific Fleet by jointly conducting communications interoperability exercises in the Naval Control of Shipping (NCS) Exercise EXPANDED SEA 92. This exercise involved more than 140 United States and foreign-flag merchant ships. The successful communication tests were designed to test procedures for merchant ships to communicate with NCS organizations and to exercise emergency communication procedures.

- Defense Communications Course. MARAD and the U.S. Merchant Marine Academy's Continuing Education Department have developed a Defense Communications Course. This three-and-one-half-day course is part of the 2-week program entitled the "National Sealift Training Program." The course was developed with Navy, Coast Guard, FCC, and private sector input to better prepare senior deck officers to perform communication functions during a national emergency. Lessons learned from Operations Desert Shield/Storm were incorporated into this program.

- INMARSAT. MARAD has effectively tested an INMARSAT land transportable terminal, which is utilized on a scheduled test basis. This unit will allow for voice and message communications to vessels and other public switched networks on an emergency backup basis to existing means. Staff members are routinely trained in setting up and operating this unit.

.....  
**CURRENT/ONGOING NS/EP**

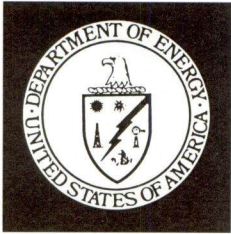
**TELECOMMUNICATION ACTIVITIES**  
.....

MARAD has had the U.S. Merchant Marine Academy vessel Kings Pointer designated as a SHARES station. The vessel serves as part of the Federal Highway Administration high frequency telecommunication network. Equipment tests will continue throughout FY93.

.....  
**PENDING ISSUES**  
.....

A major concern of the U.S. Navy and MARAD is the lack of communications interoperability among naval forces and merchant ships, both RRF and U.S. flag vessels in active service. However, the increased carriage of INMARSAT terminals aboard U.S. Navy warships and fleet support vessels does offer a future medium for interoperability.

The adoption by the International Maritime Organization (IMO) of the GMDSS and the pending FCC changes to the 1934 Communications Act will cause large-scale changes in communication to vessels at sea, equipment carriage requirements, and radio officer requirements. Crew members responsible for communications aboard vessels must be technically and operationally capable. The Defense Communications Course provides some training in this area. The FCC will specify exact training requirements for GMDSS. GMDSS is designed to provide ship-to-shore alerting for emergencies, and ship-to-ship or ship-to-rescue forces communication. The new system emphasizes more automated and satellite-based equipment. These changes are to be phased in between 1992 and 1999.



.....  
**DEPARTMENT OF ENERGY (DOE)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he DOE NS/EP telecommunications mission is to provide secure and reliable emergency communications to support these essential DOE NS/EP functions:

- Provide information on energy supply and demand conditions and on requirements for and the availability of materials and services critical to energy supply systems.
- Identify energy facilities essential to the mobilization, deployment, and sustenance of resources to support national security and welfare, and to develop energy supply and demand strategies to ensure continued provision of minimum essential services in national security emergencies.
- Ensure the security of nuclear weapons or devices in the custody of DOE, as well as all other DOE programs and facilities.
- Manage all emergency planning and response activities pertaining to DOE nuclear facilities.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

DOE is organized along programmatic and functional lines. Major systems with NS/EP responsibilities, such as those

supporting the Power Marketing Administrations and the Nuclear Emergency Search Team, are the operational responsibility, respectively, of the individual Power Marketing Administrations and the Assistant Secretary for Defense Programs.

- The Director of Administration and Human Resources Management has the overall responsibility for NS/EP policy and telecommunications management and ensures compliance with pertinent national and international regulations.
- The Director of IRM, through the Director of IRM Policy, Plans, and Oversight, develops DOE NS/EP policy and plans, and coordinates the Department's NS/EP telecommunication activities, ensuring that they are consistent with national directives.
- The Information Technology Operations Division manages the Department's internal TSP program. The Office of Energy Emergency Operations manages the Energy Industry TSP Sponsorship Program.
- The Director of IRM Policy, Plans, and Oversight provides departmental policy direction for NS/EP telecommunication matters and representation on the NCS emergency management teams.
- The Director of IRM Policy, Plans, and Oversight is the DOE representative to the NCS COP.
- The Director, Communications, Emergency Management and Standards Division, is the DOE representative to the NCS COR.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

**EMERGENCY OPERATIONS CENTERS (EOC)**  
.....

The Albuquerque Field Office has installed and upgraded its EOC Private Automatic Branch Exchange. Currently, it has limited trunking capabilities; however, when the digital switched services of the Albuquerque Disaster Avoidance Telecommunications Network are delivered, it will provide a survivable, stand-alone capability for network access.

**TSP SYSTEM**  
.....

The Department identified 125 circuits with RP codes, and 122 (98 percent) have been transitioned to the TSP program. The remaining circuits with RP codes will be transitioned in CY92. By June 11, 1992, DOE Headquarters had processed 151 TSP assignment requests.

**DIVERSE ROUTING**  
.....

- During this year, the Albuquerque Disaster Avoidance Telecommunications Network (DATN) was designed and engineered. The network consists of leased diverse route microwave, point-to-point hot lines, and diverse route terrestrial local exchange carrier and FTS2000 digital switched services. The leased microwave has been deferred to FY93 due to funding shortfalls; however, the digital switched services and hotline circuits will be completed this fiscal year. The DATN is intended to avoid a disaster rather than recover from it. It will support all of the Department's EEF's performed by the Albuquerque Field Office.

- The Schenectady Naval Reactors Office installed alternate routes between their Knolls (Niskayuna, New York) and Kesselring (West Milton, New York) sites (T-1 link) and their Knolls and Windsor, Connecticut, sites (FTS2000 dedicated data service).
- Fifty-six foreign exchange lines are routed from the Knoxville, Tennessee, Central Office to the Oak Ridge Field Office. Some of these lines are routed through Clinton, Tennessee, to Oak Ridge, Tennessee; while the others are routed through West Knoxville, Tennessee, to Oak Ridge. The cable/carrier systems providing switching service to all Oak Ridge plant sites and downtown locations are routed to provide physical diversity where possible.
- The 15 PBX's composing the Idaho National Engineering Laboratories' (INEL) system were linked by a fiber transmission network routed through a main hub switch at the Idaho Field Office. To prevent a single point of failure, key locations have been provided with direct inward dial trunks.

**STU-III PROGRAM**  
.....

DOE continues to expand its STU-III capabilities increasing the Department's installed units to approximately 4,800.

**SATELLITE**  
.....

The DOE Albuquerque Field Office has procured two mobile satellite terminals to support both the Accident Response Groups and Radiological Assistance Program's deployments.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

**INTERAGENCY ACTIVITIES**  
.....

In addition to its active membership on the NCS COP/COR, DOE extensively supports the TSP Oversight Committee, including chairing its main subgroup, the TSP Issues Working Group.

**EMERGENCY OPERATIONS CENTERS**  
.....

- Studies are in progress, including preparation of plans and cost data, to provide enhanced communication services to the Savannah River Field Office Emergency Operations Facility (EOF). This is part of the overall plan for realignment of the EOF into a consolidated emergency response facility.
- The Oak Ridge EOC is acquiring T-1 access for Tennessee Emergency Management Association circuits. Termination will be at the Knoxville, Tennessee, Central Office, with routing directly to Oak Ridge. Service is expected to be fully operational by the end of 1992.
- The Chicago Field Office is developing technical data needed to support installing terrestrial and very small aperture terminal (VSAT) equipment that will provide an emergency communications link between the Chicago and DOE Headquarters EOC's.
- The EOC at the Richland Field Office is being redesigned to increase its functionality, improve operations, combine functions of the Occurrence Notification Center, and comply with the findings of the DOE Headquarters Final Report on the Compatibility of EOC Communications and Information Processing Systems.

**TSP SYSTEM**  
.....

The Department of Energy will review and sponsor TSP applications from private industry, including electric power, natural gas, petroleum, and coal. DOE has surveyed the energy industry and estimates that it may receive up to 60,000 requests for TSP assignments. To support these assignments, the Office of Energy Emergency Operations contracted for development of an automated energy industry TSP application processing system. In addition, the Department has begun an outreach program to provide information on the appropriate application procedures and to encourage the energy industry to request TSP priorities.

**NCS SHARES PROGRAM**  
.....

The Department continues its support of the NCS SHARES Program with nine active stations.

**DIVERSE ROUTING**  
.....

- The Schenectady Naval Reactors Office has initiated a program to install diverse routing to the local serving central office. Fiber optic cable has been installed between the Knolls site and the Schenectady central office. Half of the Knolls site trunks will be placed on this cable this year. A similar arrangement will be installed at the Kesselring site next year.
- At the Savannah River Field Office, coordination is continuing with the local telephone company to provide true alternate routing (physical separation) of off-site trunking cables that service Savannah River incoming and outgoing commercial trunks, individual business lines, FTS2000 traffic, private line circuits/services, and miscellaneous services. Extenuating circumstances have caused this effort to be delayed, but the service should be completed within the next year.

- The Department's Nevada Field Office is actively pursuing the diverse routing capability offered through FTS2000. Implementation of this feature will alleviate the possibility of a single-point failure.

**CELLULAR TELEPHONE SERVICES**  
.....

Idaho continues to monitor offerings regarding availability of cellular telephone service for use at the INEL desert sites. Cellular telephones would provide acceptable communications for coordinating disaster, backup, and recovery activities between the desert sites and Idaho's command and control elements.

**SECURE AUTOMATIC COMMUNICATIONS NETWORK (SACNET)**  
.....

The major upgrade of the SACNET system continues. All field office terminals have been replaced with new equipment. Planning for replacement of the central switch is in progress. This phase of the upgrade will obviate problems related to the obsolescence of existing equipment.

**MUTUAL AID (FEDERAL/STATE COMMUNICATIONS)**  
.....

Only 14 States have filed their plans for the emergency use of the five 800 MHz frequency pairs reserved for public safety (mutual aid). The State of New Mexico is working on its plan in which the Albuquerque Field Office's interests will be represented. Due to the occurrence of a vehicular accident resulting in the release of radioactive gases, Albuquerque is proceeding with attempts to obtain spectrum certification, regardless of the State's planned submission.

**HF RADIO**  
.....

- Implementation of Continuity of Government HF Radio for connectivity between the Albuquerque Field Office, FEMA regional headquarters, the State of New Mexico Department of Public

Safety, and four other States, which compose Albuquerque's Radiological Coordination Center, was delayed. It is still pending identification of a site for erection of the rotatable log periodic antenna.

- At the San Francisco Field Office, the Lawrence Livermore National Laboratory (LLNL) is reviewing requirements for a Multi-Site Trunked Radio Communications System for LLNL and LLNL Site 300, with extensions to other Bay Area DOE facilities, including Sandia National Laboratory, Lawrence Berkeley Laboratory, and San Francisco. This system is intended to bring the laboratory into compliance with upcoming spectrum conservation legislation while relieving channel congestion and providing expansion capability to LLNL and DOE programs.

**PRIVATE BRANCH EXCHANGE (PBX)**  
.....

The Western Area Power Administration (WAPA) acquisition of a new digital PBX is pending the move to the new WAPA Headquarters location. The new PBX will improve both voice and data transmission communications within WAPA Headquarters.

**ELECTRIC SERVICE PRIORITY (ESP) RESTORATION**  
.....

- The Telecommunications System Survivability Task Force of the President's NSTAC identified an extended power outage as a major vulnerability of the telecommunications industry. DOE and NCS are working with a telecommunications industry Energy Task Force to address this problem. The Energy Task Force is considering the following recommendations to be presented to NSTAC XV in May 1993:

- ESP Restoration: The task force recommends that the Government continue to support DOE's tele-communications ESP program to ensure that the Nation's electric utilities recognize that telecommuni-cations provide essential lifeline and national security services and should be considered among the highest priority categories in restoring electric power following a disruption.
- Priority access to fuel for emergency backup generators: The task force recommends that States authorize telecommunication companies' access to set-aside fuel supplies for refueling critical telecommunications facility backup generators, and that States not take over telecommunication companies' fuel stocks/contracts for backup generation during a disruption.
- Access to disaster areas: The task force recommends that States modify their State emergency plans to instruct security personnel to admit telecommunications, electric utility, and fuel supply personnel to impacted areas, and provide them protection when available security resource permit.
- FHWA Regulations and Waivers: The task force reviewed FHWA Federal Motor Carrier Safety Regulations (FMCSR), which regulate matters such as drivers' maximum hours of service. In July 1992, the FHWA published its final rules amending the FMCSRs. The task force reviewed the amended FHWA regulations and determined they adequately addressed its concerns. As a result, it decided no further action was necessary.
- DOE, with NCS support, has conducted a field assessment of the feasibility of including NS/EP telecommunication facilities in the electric utilities' ESP restoration plans. The field assessment concluded that inclusion of these facilities is both feasible and desirable. Actual implementation of the initiative will await consideration of the Energy Task Force report and discussion with the Policy Coordinating Committee for National Security Telecommunications and Information Systems, which includes the DoD, FEMA, NCS, National Security Council (NSC), and the Executive Office of the President (EOP).



.....  
**DEPARTMENT OF VETERANS**

**AFFAIRS (VA)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he VA NS/EP mission involves the following major functional areas:

- Emergency inpatient and outpatient care and treatment in VA medical facilities, and participation with the DHHS as provided by interagency agreement
- Emergency compensation, pension, rehabilitation, education, and insurance payments consistent with overall Federal plans for the continuation of Federal benefit payments
- Emergency insurance and loan guarantee functions in accordance with various emergency conditions
- Primary health care adjunct to DoD during a war or national emergency
- Emergency planning and response activities as assigned in the Federal Response Plan
- Emergency planning and response to radiological emergencies as assigned in E.O. 12657.
- In addition, the VA provides representation to the appropriate NS/EP organizations responsible for the

national system for emergency coordination, and meets the support responsibilities assigned by E.O. 12656.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The VA Office of Telecommunications supports the NS/EP requirements of the Department, which includes the Veterans Health Administration, Veterans Benefits Administration, National Cemetery System, and the VA staff support organizations.

- The function of directing VA-wide NS/EP programs is assigned to the Assistant Secretary for Acquisition and Facilities.
- The VA Office of Telecommunications, under the Deputy Assistant Secretary for IRM, through the Assistant Secretary for Finance and Information Resource Management, is charged with providing all aspects of telecommunication support to enable VA to carry out its mission.
- The primary contact for all aspects of VA NS/EP telecommunication activities is the Associate Deputy Assistant Secretary for Telecommunications.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

**THE INTEGRATED DATA COMMUNICATIONS**

**UTILITY (IDCU)**  
.....

- Efficient management of VA communications requires managers to continually seek ways to improve VA telecommunications. The IDCU has become operational and is now the VA's primary wide area data communications vehicle. The IDCU provides many significant enhancements to VA telecommunications.
- The rapid growth that had been experienced on the previous VA packet switched network is now being experienced by the IDCU. The IDCU is one of the largest private networks in the country and provides enhanced telecommunications end-user support, as well as improved security and emergency operations capabilities.
- State-of-the-art network management tools in IDCU provide network managers and end-users with real-time and historical data on network status. These tools help to create a proactive management environment in which both the VA and the IDCU vendor can quickly identify existing and potential problem areas and take steps to correct them. The Telemanagement Information System (TIS) provides network operation oversight and requirements definition and implementation, and supports VA and individual end-user IRM network information needs.

**SECURE TELEPHONE USED IN VA NS/EP**  
.....

- Eighty-three STU-III's are placed at strategic VA locations in support of its essential emergency functions. These units provide the capability to pass secure information within the VA and with other Government agencies involved in NS/EP operations.

.....  
**CURRENT/ONGOING NS/EP**  
.....

**TELECOMMUNICATION ACTIVITIES**  
.....

VA maintains three major telecommunication systems to support its NS/EP requirements during a national emergency: IDCU, the VA Nationwide Teleconferencing System (VANTS), and the VA HF Emergency Radio Network. Considerable attention was given to NS/EP-related matters in developing and implementing the IDCU.

**VANTS**  
.....

- The VANTS replaced the Selective Signaling Voice Conferencing System (SS-4) and provides 200 ports of interactive voice conferencing. The system will allow one large 200-port conference or any number of smaller conferences using up to the 200-port maximum capability. The system operates over the commercial Sprint network. VANTS was expanded to 400 ports and migrate to the FTS2000 network during CY92. The VANTS operations center is at the VA Medical Center, Martinsburg, West Virginia.

**CALIFORNIA EMERGENCY RADIO**

**COMMUNICATION**  
.....

There are 28 VA facilities in California interconnected through an Emergency Command Control Radio Network (ECCRN); and a radio telephone patching capability is available at all sites. VA is a member of the Los Angeles Federal Executive Board Emergency Radio Network at the VA Medical Center, West Los Angeles, California (Wadsworth Division).

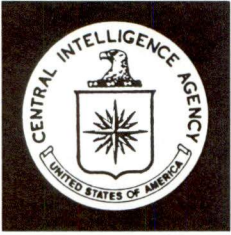
**VA NATIONWIDE HF EMERGENCY RADIO**

**COMMUNICATIONS**  
.....

VA maintains multiple HF emergency radio sites throughout the country including eight corporate HF radio sites. These stations provide essential radio communications during an emergency and/or when other communication resources fail. Additional emergency radios will be placed in VA's four medical regions.

**SHARES**  
.....

VA is also an active member of the SHARES HF Radio Program, providing emergency radio communications whenever required and technically feasible.



.....  
**CENTRAL INTELLIGENCE AGENCY (CIA)**  
.....

This report is included as part of the  
CLASSIFIED supplement to the FY92  
NCS Annual Report.



.....  
**THE JOINT STAFF (JS)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he Director for Command, Control, Communications, and Computer (C<sup>4</sup>) Systems (J-6) provides assistance to the Chairman, Joint Chiefs of Staff, in the following areas:

- Develops policies, plans, and programs for C<sup>4</sup> systems
- Ensures adequate C<sup>4</sup> support to the CINC's and the National Command Authority for joint and combined military operations
- Conceptualizes future C<sup>4</sup> systems design and provides direction to improve command and control systems.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The C<sup>4</sup> Systems Directorate (J-6) consists of the director and two deputy directors. Each military department has approximately equal representation by rank and number throughout the Directorate. The Director for C<sup>4</sup> Systems, Deputy Director of Unified and Specified Command Support, and Deputy Director of Defensewide Support are general or flag officers from the military departments. Exhibit 4-3 depicts the organization of the J-6 Directorate.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

(Refer to DoD section.)

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

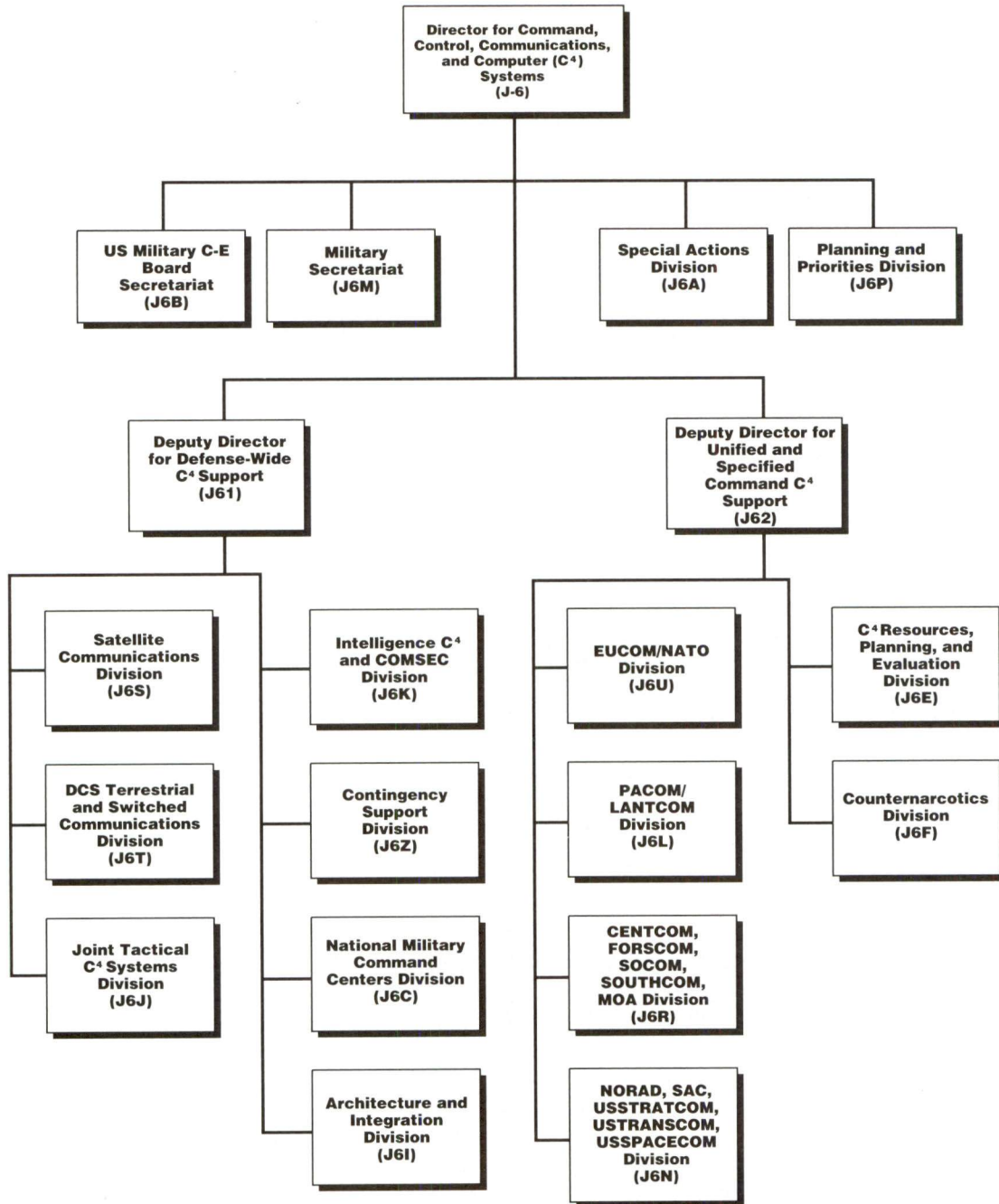
(Refer to DoD section.)

.....  
**PENDING ISSUES**  
.....

(Refer to DoD section.)

**EXHIBIT 4-3**

**COMMAND, CONTROL, COMMUNICATIONS, AND  
COMPUTER (C<sup>4</sup>) DIRECTORATE (J-6)**





.....  
**GENERAL SERVICES**

**ADMINISTRATION (GSA)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**G**SA provides information processing and telecommunication services to the Federal Government under routine and critical conditions. GSA also establishes governmentwide policies and regulations to ensure that agencies support NS/EP and other Federal telecommunication requirements and programs. As part of this responsibility, GSA manages the FTS2000 program, the Aggregated Switch Procurement (ASP), and the Washington Interagency Telecommunications System (WITS). GSA also acts as the worldwide manager of the Federal Secure Telephone Service (FSTS), maintains FIRMR's, promulgates Federal Telecommunication Standards, and serves as the Financial Manager of the Information Technology Fund.

GSA also provides:

- Four Zonal Emergency Communications Planners (each zone consists of two or more regions) and six Regional Emergency Communications Planners to support the NCS
- NCS Regional Managers for the 10 standard Federal regions in support of Federal Emergency Plan D and in support of FEMA under P. L. 93-288
- Federal Emergency Communications Coordinators (FECC) under the National Plan for Telecommunications Support in Non-Wartime Emergencies.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

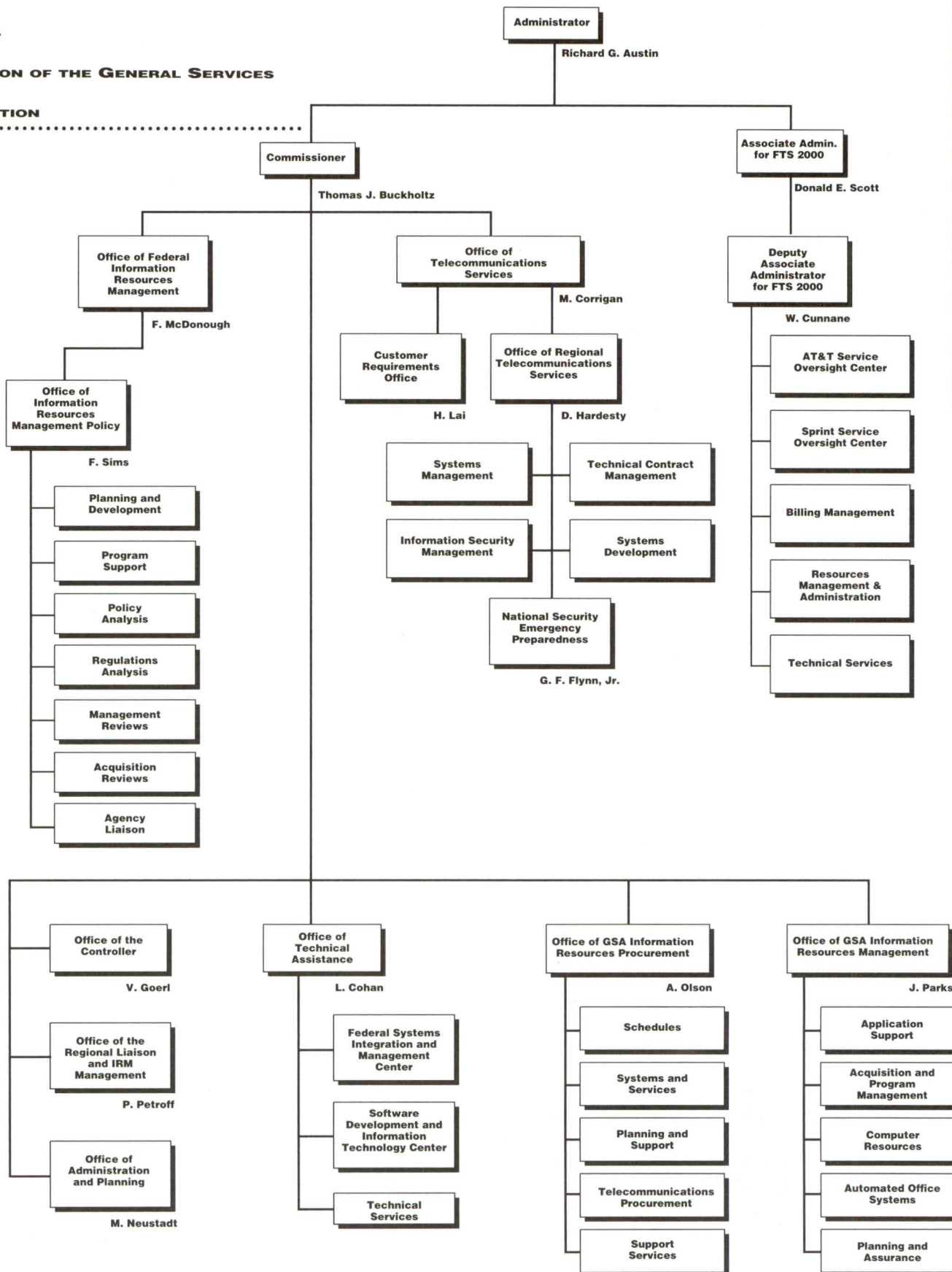
The regional Information Resources Management Service (IRMS) within GSA is organized into a four-zone configuration with field offices in the 10 Uniform Federal Regional Council Cities and the National Capital Region. Exhibit 4-4 depicts the organization of the GSA Central Office. The IRMS National Security Emergency Preparedness Division, which serves as the interface with the NCS within the GSA Central Office, is composed of the Emergency Preparedness Branch and the Policy, Plans, and Programs Branch. These branches coordinate GSA NS/EP telecommunications service provisioning and policy formulation activities with GSA regional and zonal offices, other GSA organizations such as the Office of FTS2000 and GSA's regulatory offices; the NCS Offices of Emergency Preparedness, Plans and Programs, Technology and Standards; the NCC and its client agencies; and the COP/COR.

The GSA IRMS NS/EP Division reports directly to the Assistant Commissioner for Telecommunications Services during exercises and on emergency/disaster telecommunications operational matters.

**EXHIBIT 4-4**

**ORGANIZATION OF THE GENERAL SERVICES**

**ADMINISTRATION**



.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

GSA has improved its reliability, operating capability, and interoperability over the last year through its NS/EP program activities. During FY92, GSA accomplished the following NS/EP telecommunication goals.

- GSA converted the FTS2000 to an all 10-digit numbering plan, and it made all FTS numbers compatible with the commercial numbers at each client agency location. This greatly improved the operational capability and ease of operation of the service.
- GSA now has more than 200 military locations on the FTS2000 voice and data services. This greatly enhances the communications completion capability between civil and military organizations.
- GSA participated in the update of the National Plan for Telecommunications Support in Non-Wartime Emergencies, dated January 1992. This plan serves as the basis for planning for the use of national telecommunication assets and resources in support of nonwartime emergencies, in accordance with P. L. 93-288, as defined by E.O. 12472. The rewrite of this document clarified the lines of authority and organizational responsibilities of all emergency support organizations.
- To update the skills of its technical staff, a GSA Telecommunications Development Institute (GTDI) was established. The school, located in Kansas City, Missouri, was opened in 1992. The curriculum will include courses in current and future telecommunications technology. This is to ensure that GSA can continue to effectively support NS/EP activities during this period of technological and industry infrastructure dynamics.
- The GSA national NS/EP office was instrumental in the development of regional NS/EP plans. The plans provide procedures for overall IRMS policy and procedural guidance within the regions for implementation of an emergency preparedness plan. It provides for telecommunications and automated data processing (ADP) support to GSA regional elements and also to Federal agencies and local governmental entities within the regional area in a domestic or national security emergency. The regional plans supplement the IRMS NS/EP Plan (IRM P 2400.1) and provide for necessary coordination with NCS and FEMA during specific emergency situations. This is anticipated to improve GSA's efficiency to support NS/EP activities.
- A paper entitled "GSA's Capabilities to Support NSEP Telecommunications," was presented at the MILCOM '92 conference as part of the technical program. This made other agencies more aware of GSA's roles, responsibilities, and telecommunication capabilities.
- A GSA senior staff member supports the NCS on the GETS Source Selection Advisory Council, and has been serving in this capacity since its inception in 1990.
- A GSA senior staff member served on the NCS, Major Focus Area (MFA) III team. GSA's contribution served to ensure that the NCS has a set of NS/EP products and services that meet organization and national requirements that are responsive to changing geopolitical and economic conditions, as well as technological developments.
- GSA served as a key party in the review and development of the Federal Response Plan (FRP) and the Emergency Support Function (ESF) 2

Communications Annex. All GSA authorities, responsibilities, and the role of GSA elements to ensure the management of NS/EP telecommunication services under all stress conditions, were reviewed and updated.

- GSA continues to chair the COR TPPS. This subcommittee assisted the NCS in developing the NCS Candidate Initiatives document and is cooperating with the OMNCS on the next step in the planning process, the development of the National Level Plan. This is a significant accomplishment in that this is the first time in 7 years that cooperative planning has progressed this far in the planning process.
- GSA participated with a significant amount of resources in the planning, conduct, and evaluation of numerous national and regional NS/EP exercises in cooperation with other Federal, State, and local government organizations involved in mobilization and wartime operations.
- GSA national and regional offices participated very actively and with substantial commitment of resources in extensive preparatory earthquake planning activities and readiness exercises to support a potential catastrophic New Madrid area earthquake. At the regional level, GSA Emergency Planners act as the functional group leaders in accordance with the Federal Response Plan, ESF 2 Communications Annex. Readiness to act in this ESF activity has been greatly enhanced.
- GSA has implemented the first Switched Digital Integration Service (SDIS) data circuit between Denver, Colorado, and Albuquerque, New Mexico. A cost proposal to provide consolidated SDIS to gain access to voice and data was submitted to the U.S. Department of Agriculture,

National Agriculture Statistics Service, and accepted for implementation. This presents an opportunity to study and evaluate the application of SDIS for future NS/EP applications.

- GSA is cooperating with the Department of Energy in testing BLACKER for application on broadband secure communications. This experience will serve the NS/EP community well in protecting future service arrangements.
- The WITS, ASP, and Purchase of Telecommunications Systems contracts are on schedule. These contracts, which incorporate state-of-the-art technology, provide digital voice and data; local telecommunication services or equipment; and operation, maintenance, and management services; all of which connect to the GSA Consolidated Local Services and the FTS2000 networks. GSA's critical user customers are thereby provided with a variety of inherent NS/EP end-to-end services and features, including better control of restoration and provisioning capabilities, thus enhancing the Government's overall NS/EP posture.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

During FY92, GSA will continue to participate in the following NS/EP telecommunication programs:

- GSA representatives participated in numerous interagency meetings and coordinated the GSA regional emergency response efforts for the provisioning of telecommunications support requirements to Federal agencies in their recovery efforts from approximately 36 presidentially

declared disasters, including hurricanes, floods, and tornadoes. GSA Zonal/Regional Telecommunications Planners become the FECC responsible for all telecommunication requirements relating to presidentially declared disasters.

- GSA continues to cooperate with the NCS in interfacing the GETS with the FTS2000. While the initial meetings addressed interfacing of the networks in the most simplified method, future meetings are expected to address taking advantage of the full capacity of FTS2000 to improve the overall survivability, restorability, and call completion of GETS.
- GSA is working with the two FTS2000 vendors to develop the means to make their voice and data networks (including packet services) totally interoperable. This will greatly improve the reliability and traffic completion capability of the services.
- GSA is working with the FTS2000 vendors to develop the means of making their compressed video services interoperable. This will provide a more flexible video service that could be applied during disaster and emergency support.
- GSA is planning to provide a Network Service Assurance Plan (NSAP) to achieve enhanced performance parameters on the FTS2000 network. This will include features such as enhanced reliability, flagging and tagging, enhanced maintenance response, special coverage, and extended network service. It will also provide for inclusion of TSP charges under FTS2000 billing.

The current proposal addresses only Dedicated Transmission Service (DTS) for Network A. However, AT&T is investigating how NSAP can apply to other FTS2000 services. GSA is discussing with Sprint how

NSAP can be applied to Network B. NSAP will significantly increase the reliability of FTS2000 service for agencies with assured service requirements.

- GSA has approximately 10 percent of its networks equipped with Automatic Number Identification, and will be working with all associated vendors to increase this capability. This capability will enable us to apply priority services more effectively for NS/EP critical users.
- GSA continues to develop its ISDN capabilities, and is working with a number of agencies to develop the applications of this powerful capability. This will provide versatility in the delivery of a mix of telecommunication services from a single service or facility.
- The NS/EP division and the GSA Regional Emergency Communications Managers are developing a comprehensive listing of vendors of NS/EP products and services that could be relied on during emergency and disaster events.
- GSA national and regional offices continue to be active participants in the National Telecommunications Management Structure (NTMS), which coordinates the provisioning and restoration of emergency telecommunication services. GSA provides a regional employee to serve as a Zonal Emergency Communications Planner (ZECP). The ZECP's ensure that regional NTMS groups are staffed and trained and that the proper NTMS guidelines are implemented during exercises or major emergencies. These activities contribute to the effective operation of the NTMS.
- GSA will continue to provide NS/EP training to its senior management officials.

- GSA continues to brief the COP/COR, the NCS, and other interested client departments and agencies on the NS/EP capabilities inherent to the GSA consolidated services.
- GSA has run a testbed on e-mail for use by the GSA Regional Emergency Communications Coordinators for improving interagency coordination. Preliminary results indicate that other electronic mail services may be more beneficial. These are under investigation and further tests are planned.



.....  
**UNITED STATES INFORMATION**

**AGENCY (USIA)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**U**SIA Voice of America (VOA) Broadcast System is validated as an NCS asset and available to the NCS primarily during international emergencies. The Radio Broadcast System, which provides worldwide coverage, is equipped with high-powered broadcast transmitters and a staff to coordinate program schedules, facilities, and circuits. The entire staff is available to operate the network with programming material provided by the NCS or its designated representative.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The Agency's telecommunications element assigns members to the NCS COP/COR. The director of the USIA assigned the authority to implement NS/EP procedures to the COP.

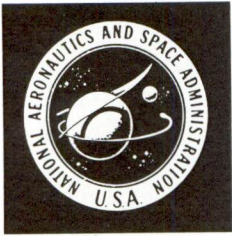
.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

N/A

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

The VOA continues to update its facilities and procedures to ensure operations during an international emergency. These updates are comprehensive and cover localized emergencies, such as fires, bombs, and demonstrations in Washington, D.C.; and international emergencies, such as terrorist incidents, and conventional and/or nuclear war. All actions required under NS/EP and TSP procedures are being accomplished in close coordination with day-to-day operating facilities that must be operative in emergency conditions. Interoperability considerations are addressed at the time of validation by the NCS.



.....  
**NATIONAL AERONAUTICS AND SPACE  
ADMINISTRATION (NASA)**  
**NS/EP TELECOMMUNICATIONS**  
**MISSION**  
.....

**T**he “Administrator of the National Aeronautics and Space Administration (NASA) shall (pursuant to E.O. 12656) coordinate with the Secretary of Defense to prepare for use, maintenance, and development of technologically advanced aerospace and aeronautical-related systems, equipment, and methodologies applicable to national security emergencies.”

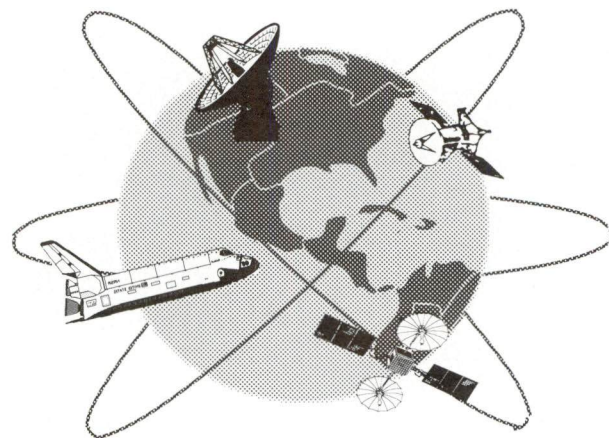
NASA’s Associate Administrator for the Office of Space Communications (AA/OSC) has programmatic responsibility for representing the organization, on behalf of the Administrator, in the NCS process. The OSC plans, develops, acquires, and operates worldwide facilities and provides essential services to the flight projects of NASA and other Government agencies. These projects encompass planetary spacecraft, earth-orbiting satellites, space shuttle missions, sounding rockets, balloons, and aeronautics test vehicles.

The following NASA NS/EP telecommunication assets support NASA’s mission critical (operational, administrative, and programmatic EEF’s), under the Space Act of 1958, as amended: E.O.’s 12472 and 12656, and National Security Decision Directives 47, 97, and National Security Directive 56:

- NASA Operational Communications System (NASCOM)
- NASA Tracking and Data Relay Satellite System (TDRSS)
- NASA Program Support Communications Network (PSCN).

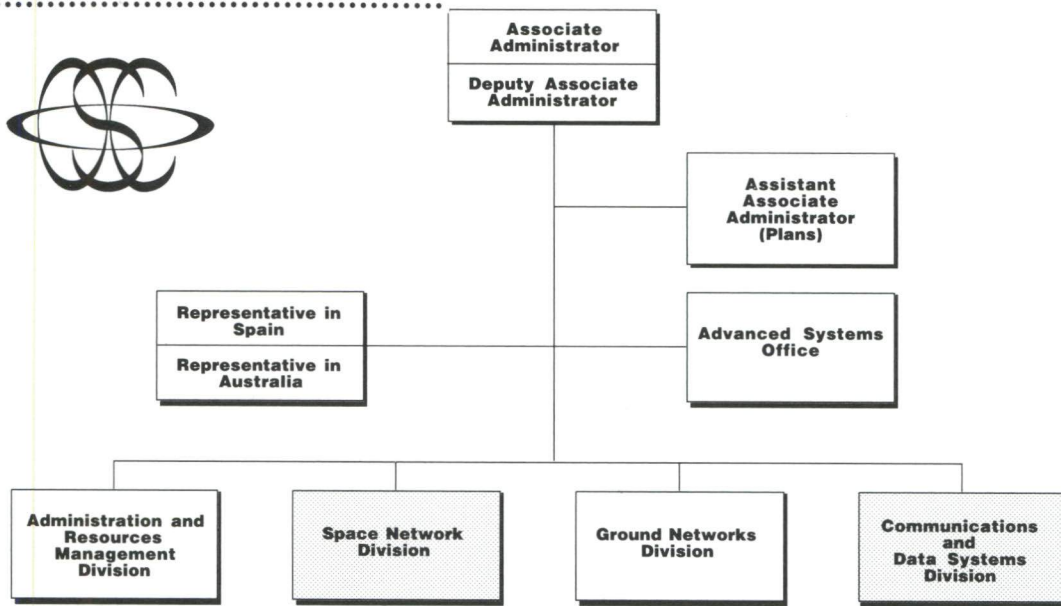
.....  
**TELECOMMUNICATIONS STAFF**  
**ORGANIZATION**  
.....

Exhibit 4-5 shows the NASA staff elements that have programmatic responsibility for NASCOM, TDRSS, and PSCN. The Space Network Division is responsible for TDRSS and the Communications and Data Systems Division manages NASCOM and PSCN.



**EXHIBIT 4-5**

**OFFICE OF SPACE COMMUNICATIONS**



**SIGNIFICANT ACCOMPLISHMENTS**

During FY92, NASA continued supporting the NCS in achieving its mission goals and objectives as required by E.O.'s 12472, 12656, and NSDD's 47 and 97.

**NASCOM**

NASA's mission operational telecommunications network provides communication services used in the operational conduct of flight missions, programs, and projects. It is largely spaceflight oriented, but also include the lines and facilities supporting aeronautical and aerodynamic flight research projects and flight test programs. NASCOM interconnects NASA's foreign and domestic tracking and telemetry acquisition sites, launch areas, mission and facilities, and control centers. Loss or degradation of these telecommunication lines and facilities could directly affect mission success or safety of life or property.

**TDRSS**

NASA now has three operating satellites and one spare in the space network. This constellation of geostationary tracking satellites, in operation since the eighth Space Shuttle flight, provides almost uninterrupted communications with earth-orbiting space shuttles and satellites.

**PSCN**

NASA's PSCN provides communication services used in the day-to-day intercenter administrative and program support activities. The network interconnects all NASA field installation and major contractors.

**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**

NASA continues to be an active participant in the NCS COP/COR and the NSTAC processes. The NS/EP telecommunication activities during FY92 included:

- OMNCS Manpower Support. NASA provided personnel resources to the Manager, NCS. NASA maintained a 100 percent personnel support commitment according to its longstanding memorandum of understanding (MOU) with the Manager, NCS, and NASA's interest in the NCS FTSC program.
- SHARES Participation. During FY92, NASA continued its strategic telecommunications interest in the NCS SHARES program by participating in the SHARES FY92 exercise.



.....  
**FEDERAL EMERGENCY MANAGEMENT**

**AGENCY (FEMA)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**F**EMA has comprehensive responsibilities in managing the civil aspects of emergencies affecting the United States. FEMA assists the national emergency management authorities and other key Federal decision makers by providing the information base and communications media to support decision making and implementation at the highest levels of government. FEMA information systems support the performance of the full range of information requirements in every phase and type of mission activity associated with emergency management. They are referred to in total as the FEMA National Emergency Management System (NEMS) (see Exhibit 4-6). Due to FEMA's significant emergency management mission across the broad continuum of emergencies, its information systems are developed in accordance with the guidelines of NSDD 97 and E.O.'s 12472 and 12656.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

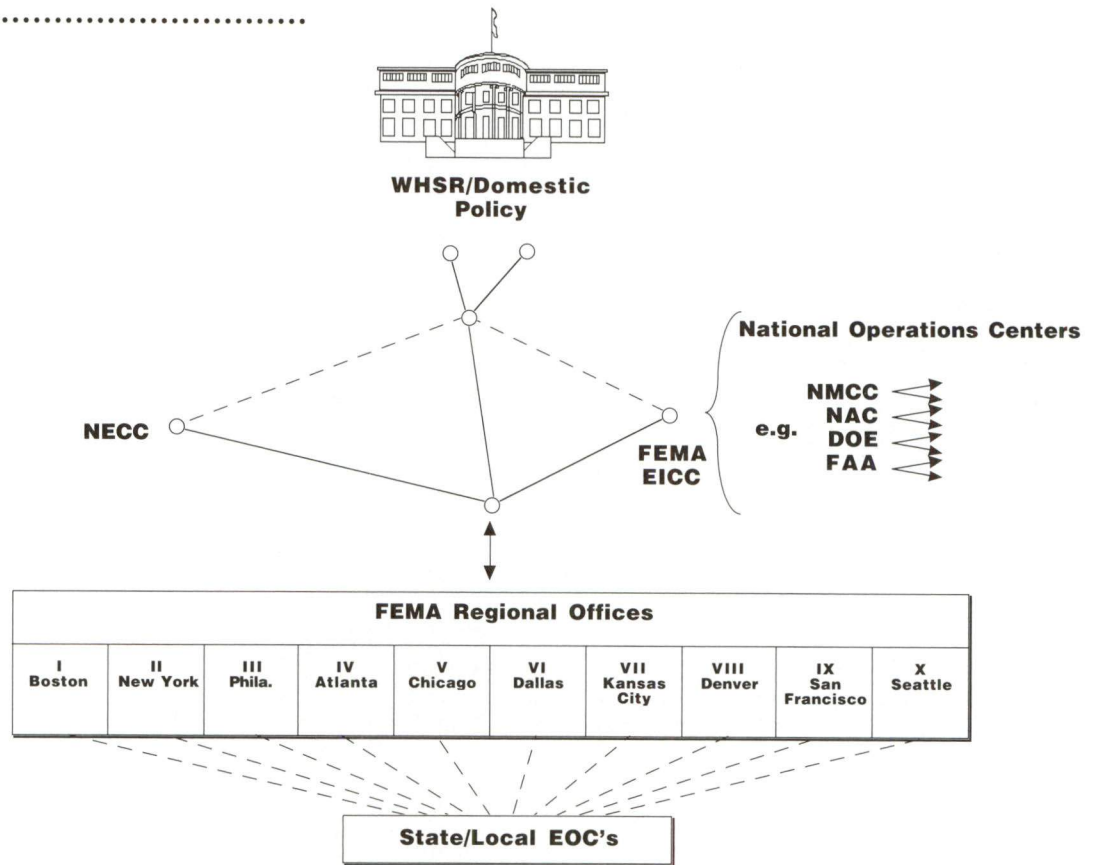
Most of FEMA's telecommunication functions are performed by the National Preparedness Directorate (NPD), which is depicted in Exhibit 4-7. The Office of

Information Resources Management supports the Agency IRM function and operates and maintains NPD programs and national systems, as well as Agency administrative information systems. The Office of Systems Engineering designs, develops, acquires, and tests new information systems concepts and capabilities for FEMA. The Office of Operations carries out the warning and operations functions.

The Office of Emergency Management in the State and Local Programs and Support Directorate provides financial and technical assistance to State and local offices of emergency management for the enhancement of their emergency preparedness capabilities. Survivable and reliable emergency telecommunications are critical to this effort. The Federal Response Division develops and manages policies and program plans for civil defense and State and local emergency management program development. The State and Local Support Division develops and manages programs that provide technical and financial assistance to State and local governments for the design, development, acquisition, operation, and maintenance of emergency management facilities to ensure reliable, interoperable, and survivable emergency telecommunication capabilities at State and local levels of government.

**EXHIBIT 4-6**

**FEMA NATIONAL EMERGENCY MANAGEMENT SYSTEM**



**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**

The FEMA NEMS includes the following major elements:

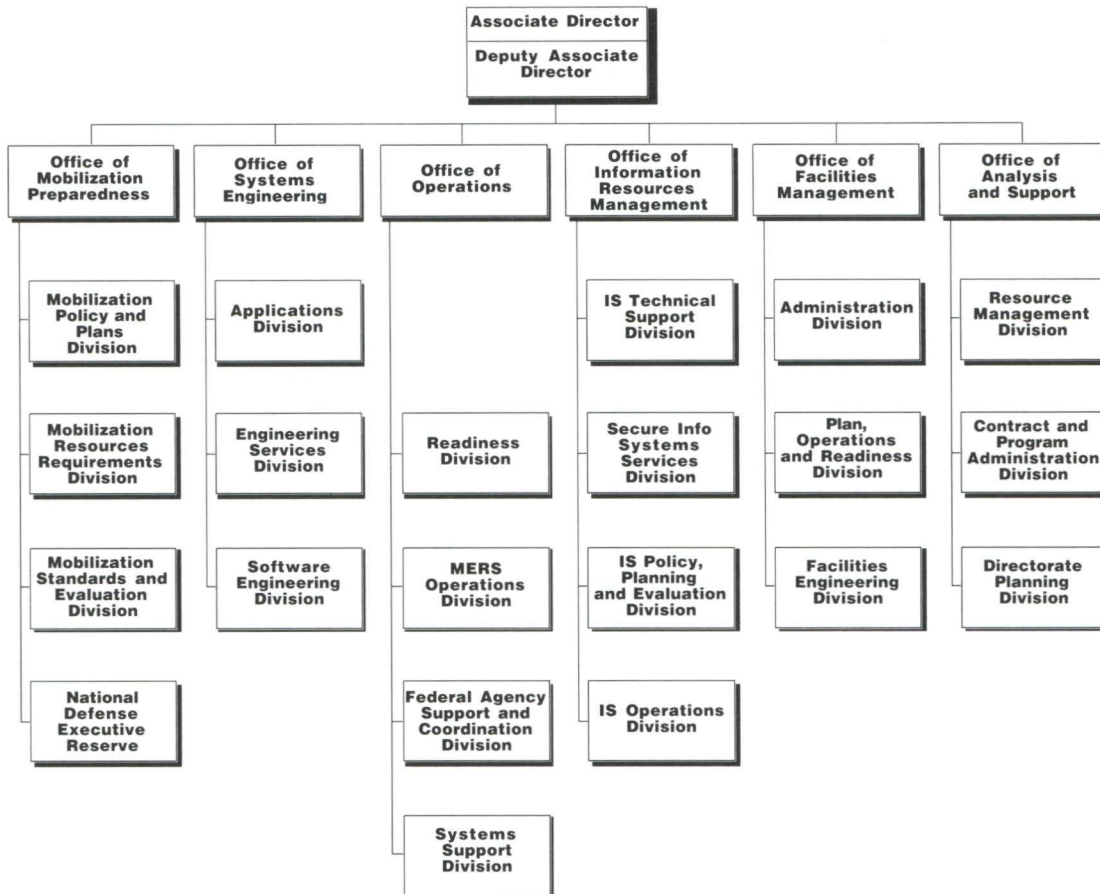
**FEDERAL EMERGENCY RESPONSE CAPABILITY (FERC)**

The FERC is the mobile operations and communications capability that keeps emergency management information flowing when a Federal response is required in any disaster, emergency, or special event.

The FERC supports Federal, State, and local response efforts providing communications and information on the scene of a disaster, and is a link to the FEMA NEMS. The FERC consists of the Mobile Emergency Response Support (MERS) Detachments, the Mobile Air Transportable Telecommunications System (MATTS), the Information Display System (IDS), and portable Private Automatic Branch Exchange (PABX) systems from the National Network Operations Center (NNOC). FERC resources may be deployed as a complete package, or as stand-alone systems.

**EXHIBIT 4-7**

**NATIONAL PREPAREDNESS DIRECTORATE**



**MOBILE EMERGENCY RESPONSE SUPPORT**

The MERS capability is provided by five MERS detachments located in Bothell, Washington; Denton, Texas; Denver, Colorado; Maynard, Massachusetts; and Thomasville, Georgia. Each MERS detachment has a state-of-the-art, transportable disaster communications system composed of modular elements that can provide a disaster field office (DFO) with voice, facsimile, message, and data communications over a variety of media in both secure and nonsecure modes. The MERS communications systems include digital PABX's; message switches to

interface with both secure and nonsecure message networks; HF, VHF and UHF radios; microwave line-of-sight transmission systems; Ku-band satellite communications systems and self-contained power generation and distribution systems. An effort is under way to modernize the MERS PABX's, which will provide smaller, lighter and more portable systems. The new equipment will provide dynamic bandwidth allocation, local area network (LAN)/wide area network (WAN) router interfaces and trunk encryption using the Remote STU-III (STU-III/R). The Multi-Radio Van (MRV) contains a small cross-section of all systems in a single, self-contained vehicle. The

MRV can provide a communications interface to the FEMA Switched Network (FSN) from a remote disaster site via the Ku-band satellite system using industry standard T-1 transmission facilities. Elements of MERS detachments have been deployed in FY92 to provide both long distance and local communications in support of U.S. Forest Service fire-fighting operations in the Columbia River Gorge area of Oregon; as backup and contingency communications for Sail '92 in Boston, Massachusetts; to provide communications support for numerous Federal disaster exercises; and to provide technical expertise and assistance for various DFO operations.

**MOBILE AIR TRANSPORTABLE  
TELECOMMUNICATIONS SYSTEM**  
.....

The MATTS is a highly mobile, state-of-the-art system designed to provide communications for any emergency requirement. MATTS communication capabilities include voice and data via land line, HF/VHF/UHF radio, and a variety of satellite systems operating in the secure and nonsecure modes. An integral part of the MATTS is the telephone switchboard, which is capable of providing 48 trunks and a T-1 link to 88 subscribers. The MATTS can also provide nonsecure voice, data, and video communications when used in conjunction with its T-1 via a Ku satellite link. The MATTS is self-contained and provides its own power source. The entire system is air transportable on either C-130 or C-141 aircraft. The MATTS was deployed to Richmond, Virginia, in March 1992, to provide communications for the Federal response during Exercise I.E. Zelda. It was also deployed twice in FY92 to conduct a working demonstration capability; once in March to the Goddard Space Center in Greenbelt, Maryland, for a national conference of the National Institute for Urban Search and Rescue and again in July to the National Emergency Training Center (NETC), Emmitsburg, Maryland, for State and local government employees attending the Telecommunications and Warning course.

**INFORMATION DISPLAY SYSTEM**  
.....

The IDS accesses and displays information that is critical to officials with emergency management responsibilities. Information is provided in three forms: graphics, digital mapping, and still image video. The system consists of PC workstations interconnected via a LAN, video projectors, and a sound system. The PC workstations can use off-the-shelf or custom-designed software applications to produce briefings, reports, or action-tracking products, or can receive data from outside resources through the use of modems. The system can be deployed as a stand-alone unit or in conjunction with the MATTS. The IDS provided visual information, graphic presentations and data support to the Sail '92 event in July, for the tall ships parade. Beginning in September 1992, it will be used by the Armed Forces Inaugural Committee to coordinate the inaugural activities supporting the upcoming United States Presidential election and related events.

**FEMA SWITCHED NETWORK**  
.....

The FSN is an integrated voice and data network linking FEMA Headquarters, the NETC, and the National Emergency Coordination Center (NECC) with the FEMA regional offices, Federal Regional Centers (FRC), State and territorial EOC's and CD offices, the Flood Insurance Administration in Lanham, Maryland, and the National Teleregistration Center located in Denton, Texas. The system, which is the backbone of the NEMS, is a modern electronic tandem network that fully integrates the voice and data communications required for emergency and day-to-day use. Through the FSN, FEMA manages and controls emergency management information on a real-time basis and directs emergency management and assistance functions. The FSN provides an interface between the MERS and other Federal communication systems. Centralized command and control of the FSN is conducted from FEMA's NNOC, located at

the FEMA Special Facility. The system uses Trouble Tracker Centralized System Management (CSM) equipment and multiplex Network Management System (NMS). There are 14 System 85 PABX's, two Meridian switches, and four Number 5 Electronic Switching System (ESS) central offices in the FSN interconnected with T-1 links to form an Electronic Tandem Network (ETN). Also available for deployment to disaster sites are 15 portable PABX's and five MERS mobile System 85 PABX's. The network offers ISDN, end-to-end digital dial service with automatic route selection (ARS), and automatic alternate routing (AAR). The network offers non-FSN subscribers access to the FSN via 9.6 kbps modem pools at each of the 14 major System 85 locations. Point-to-point video transmission facilities are available between selected FEMA locations. Twelve Sidereal Message Switches (SMS) are installed at FEMA facilities with interconnection provided by the FSN switches and T-1 network; these provide unclassified and secure message and electronic mail services.

**THE FEMA NATIONAL AUTOMATED MESSAGE SYSTEM (FNAMS)**  
 .....

The FNAMS is the record store and forward message system capability of the NEMS. Twelve fixed Sidereal switches collocated with fixed FSN System 85 PABX digital switches provide service to FEMA Headquarters, the Regions, and State EOC's. Five transportable Sidereal switches are part of the MERS emergency response capability. These five switches provide full FNAMS message service from DFO locations. The system provides FEMA with an infrastructure message service that includes the capability to transmit a single message to multiple subscribers simultaneously.

**FEMA FACSIMILE AND RECORD SYSTEM (FFARS)**  
 .....

The FFARS is a high-speed, secure PC-based and facsimile transmitter/receiver telecommunications workstation. The system transmits and receives classified record message traffic among FEMA and other Federal departments and agencies using dial-up telephone lines secured with KG84 COMSEC equipment. It processes photographic images, drawings, special document formats, and narrative text.

**DEC VAX COMPUTER SYSTEMS**  
 .....

These systems provide and operate data bases, information processing capabilities, and information processing displays for FEMA's Emergency Information Coordination Center (EICC), NECC, NNOC, and the Regional Computer System (RCS) located at each of the FRC's. These minicomputer systems also support simultaneous users over secure communication links from various FEMA locations. Some of these systems support graphic displays for such uses as electronic data base mapping requirements at disaster sites.

**LOCAL AND WIDE AREA NETWORK DEVELOPMENT PROJECT**  
 .....

The FEMA NEMS LAN/WAN provides the FEMA community of users with nationwide, integrated PC-based network capabilities of unclassified and secure data communication and processing, and office automation and financial accounting using the System 85 and T1 carrier capabilities of the FSN. PC-based standard terminals are being integrated into LAN and interconnected into a FEMA WAN, which provides gateways to FEMA national computers and inter/intra-regional connectivity, as well as stand-alone capabilities. During FY92, the network was expanded and eight FEMA locations were developed for the system. A maximum of 11 additional LAN's will be developed and installed with final network integration of the LAN's into a WAN during 1993.

#### **FEMA SECURE VOICE PROGRAM**

.....

The FEMA Secure Voice Program provides secure telephone service among FEMA locations and State and territorial EOC's. FEMA has fielded 1,925 STU-III's, which are installed in locations at FEMA Headquarters; the Special Facility; the Federal Support Center at Olney, Maryland; all FEMA regions; the National Warning Center; State EOC's; FEMA's Caribbean office in Puerto Rico; and FEMA contractors.

#### **FEMA NATIONAL RADIO SYSTEM (FNARS)**

.....

The FNARS provides emergency backup to the FSN. It generally connects the same locations served by the FSN. The FNARS also connects other Federal departments and agencies in accordance with formal MOU's, and informally via the NCS SHARES program, as well as a variety of other users and amateur "Ham" operators equipped with HF radio systems. FEMA's HF radio modernization program continued in FY92 with plans to install 12 1 kw HF radio systems at State and territorial EOC's in Alaska (2), California, Delaware, Florida, Indiana, Minnesota, Nebraska, New Hampshire, Puerto Rico (2), and Wisconsin. This effort will bring the number of installed systems to 58, in this 79-node network. In addition, an antenna was installed at the Colorado EOC and the NEMS upgrade was completed at the Region VI FRC in Denton, Texas. FED-STD-1045 and HF modem upgrades, and the procurement of remote control prototypes and associated computer equipment were initiated. The project, initiated in FY91 to assess the feasibility of rehabilitating the survivable, "pop-up" monopole antennas, will be completed in early 1993.

#### **NATIONAL WARNING SYSTEM (NAWAS)**

.....

The NAWAS is a leased, dedicated, nonsecure voice network connected to approximately 2,200 terminals throughout the United States to disseminate attack warning messages. It is also used extensively

during natural disasters, and seawave and severe weather warnings to furnish information to Federal, State, county, and city officials. These officials, in turn, disseminate the warning to the population by local warning systems, the Emergency Broadcast System (EBS), sirens, and public service radio. The terminal equipment is being upgraded with modular solid state instruments to improve network reliability.

#### **EMERGENCY BROADCAST SYSTEM**

.....

The EBS provides the President of the United States with an expeditious method of communicating with the American public in the event of war, threat of war, or a grave national crisis. The EBS may also be used by Governors during day-to-day emergencies at State and local levels for prompt, reliable receipt and release of life- and property-saving warning and emergency information. The EBS is composed of more than 11,000 participating radio and television stations and networks linked into a single nationwide network for simultaneous broadcasts. Upgrade of the Emergency Action Notification Network is expected to be completed in FY92. A prototype Primary Entry Point (PEP) Activation and Communications System, which will replace the Last Resort configuration, is expected to be installed and tested at three stations commencing in late FY92.

#### **EMERGENCY EDUCATION NETWORK (EENET)**

.....

The EENET is a one-way video, two-way audio, satellite-distributed, point-to-multipoint national videoconferencing network operated from FEMA's NETC in Emmitsburg, Maryland. The network provides regularly scheduled training and education to Federal, State, and local emergency managers, and to thousands of local public and private facilities. Examples of courses of instruction available for viewing during FY92 included U.S. Fire Administration Fire Prevention/Education Showcase; Clandestine Drug Labs and the First Responder; Infection Control — Today's Requirements for Fire and

Emergency Management System (EMS) Departments; Integrated Emergency Management Systems (IEMS); and Urban/Disaster Search and Rescue — Initial Response Strategies.

**FEMA FREQUENCY MANAGEMENT SYSTEM (FFMS)** .....

The FFMS is an automated system that improves management of the FEMA radio frequency assignments and operations. Its features include an emphasis on user friendliness and sophisticated frequency engineering modeling programs. The enhanced FFMS will include powerful interference analysis programs integrated with video and digital mapping capabilities, making it possible to conduct large-scale mobile emergency operations and exercises without disrupting normal radio frequency systems. The FFMS will be fully integrated with the general automated frequency management improvements being planned and implemented by the Federal departments and agencies participating in the Interdepartment Radio Advisory Committee (IRAC), Frequency Assignment Subcommittee Working Group 22.

**TELECOMMUNICATIONS SERVICE PRIORITY SYSTEM** .....

FEMA is the Federal sponsor for State and local government agencies desiring to participate in the TSP system. FY92 activities included the development of a TSP videotape and PC software program for use by State and local officials; publication of implementing instructions in the form of a Civil Preparedness Circular and a State and local user's manual in the form of a Civil Preparedness Guide; numerous briefings and presentations to State and local government jurisdictions and to national associations representing telecommunications and emergency preparedness agencies.

.....  
**PENDING ISSUES**  
.....

As telecommunication technologies become obsolete, efforts to modernize complex information systems and telecommunication networks must continue in light of the increasing need for such services.



.....  
**FEDERAL COMMUNICATIONS**

**COMMISSION (FCC)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he FCC, consistent with Section 4(c) of E.O. 12472, performs the following NS/EP functions:

- Reviews the policies, plans, and procedures of all entities licensed or regulated by the FCC that provide NS/EP communication services, to ensure their consistency with the public interest, convenience, and necessity
- Develops policy, plans, and procedures to execute the responsibilities assigned in E.O. 12472 under all conditions of crisis or emergency
- Consults, as appropriate, with the Executive Agent, NCS, and the NCS COP to ensure continued coordination of NS/EP activities.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

During FY92, the FCC:

- Worked closely with the NCS in carrying out shared responsibilities under the TSP system. The Commission assigned a staff member to work at the NCC parttime each week. This liaison officer contributed to improvements in the TSP data base and the TSP report generation system.

- Established requirements, effective April 1992, for telecommunications common carriers to report network outages. The FCC liaison officer at the NCC provides current copies of outage reports to the NCS. Because the major common carriers also have representatives on site, the NCC has served as a useful point for cooperation and information exchange. The FCC continues to monitor network outages and to take steps to reduce their occurrence.
- Participated in meetings and activities of the Toll Fraud Prevention Committee of the common carrier industry Network Operations Forum (NOF).
- Added seven new stations for the EBS PEP Project in Alaska, Hawaii, and the Trust Territories. Communications equipment is being developed to link the stations with the Government.
- Reviewed six revised State EBS plans and 88 local plans; 46 States/territories now have a final plan. Received more than 1,300 EBS activation reports in CY91 from stations for emergencies. Completed four national EBS closed-circuit tests, originated by the WHCA from different locations.
- Released a Notice of Inquiry (NOI) seeking comment on new technologies for EBS, and an NOI and Notice of Proposed Rulemaking (NPRM) concerning several EBS topics, including shortening the two-tone activation signal.

- Participated in exercises of the NTMS through the Seattle, Washington; Powder Springs, Georgia; and Belfast, Maine, FCC offices.
- Participated in the April 1992 exercise of the SHARES HF radio network through the Belfast, Maine, and San Francisco, California, FCC Offices.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
 .....

As Defense Commissioner of the FCC, Andrew C. Barrett provides overall direction and guidance for the Commission's NS/EP activities. He keeps the chairman and other commissioners abreast of any emergency matters requiring their attention, and represents the FCC in the deliberations of the Joint Telecommunications Resources Board (JTRB).

In accordance with the mandate of E.O. 12472, the FCC continues its NCS role as a liaison member; regulatory and adjudicatory functions do not permit the FCC to act as a regular voting member. FCC representatives participate in meetings of the NCS COP/COR. The FCC now has an active NCC liaison to facilitate the exchange of information during crises and emergencies, and to ensure expedited action by the Commission on requests for emergency authorizations or waivers of the rules. This liaison also provides status information on various FCC activities and explains FCC procedures at industry-Government meetings.

In addition, the FCC is represented at meetings of the NSTAC and the National Security Telecommunications and Information Systems Security Committee (NSTISSC). The FCC also provides liaison to Ad Hoc 134 of the IRAC; continues to participate in the activities of the NTMS; and participates in all meetings of the Subcommittee on Federal Earthquake Response Planning, providing assistance to

various FEMA regions as needed. Work continues on implementation of the EBS PEP Project, upgrading of the Emergency Action Notification Network, and updating all State and local EBS plans.

Within the FCC, efforts continue to sensitize bureaus and offices to the NS/EP telecommunication aspects of their regulatory activities. Each bureau or office must develop an impact statement describing the effect of proposed actions on NS/EP. The NS/EP impact is considered by the Commissioners in their deliberations along with legal, regulatory, economic, technical, and administrative factors.

.....  
**PENDING ISSUES**  
 .....

During the next fiscal year, the FCC will:

- Continue to work with the NCS to improve the effectiveness of the TSP system.
- Continue to monitor the hacker threat to the PSN through participation in the Government Network Security Subgroup (GNSS).
- Continue to participate in the Toll Fraud Prevention Committee of the NOF.
- Continue to monitor network outages and to take steps to reduce their occurrence.
- Continue to advise/assist in development of the PEP Project and the EAN upgrade.



.....  
**NUCLEAR REGULATORY**

**COMMISSION (NRC)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he mission of the NRC is to ensure that civilian use of nuclear materials and facilities is conducted in a manner consistent with public health and safety, protection of environmental quality, assurance of national security, and adherence to antitrust laws. The NRC accomplishes this through licensing of nuclear facilities, licensing of the possession and use of nuclear materials, the issuance of rules and regulations governing licensed activities, and inspection and enforcement actions. The NRC's NS/EP telecommunications mission provides assured and reliable communications between the NRC Operations Center (NRCOC), operating nuclear power plant control rooms, and regional incident response centers. This connectivity ensures immediate notification to the NRCOC of unusual occurrences and provides relevant information during events at nuclear facilities. The Director, IRM, represents the NRC on the NCS COP. The Director, Division of Computer and Telecommunications Services represents the NRC on the NCS COR. The Chief, Telecommunications Branch, acts as the alternate for the COP/COR.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

During FY92, the NRC Commissioners approved the use of FTS2000 services for NRC Emergency Telecommunications.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

FTS2000 service (seven lines to each nuclear power plant and associated emergency operations facilities) has been installed at all nuclear power plants in place of the NRC's Emergency Notification System (ENS), which consisted of service via the public switched network and a single dedicated circuit between each nuclear reactor site and the NRCOC. The FTS2000 service is being tested and as tests are completed, the ENS is being removed. NRC expects all emergency telecommunications services to be provided by FTS2000 in 1993.

Ways to provide alternate emergency communications between nuclear power plants and the NRCOC during a nuclear emergency are being explored with the purchase of INMARSAT terminals as the leading contender.

The NRC has received and issued 41 STU-III's to users and expects to receive and issue a final increment of 10 in 1992.



.....  
**UNITED STATES POSTAL**

**SERVICE (USPS)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**U**SPS has not been assigned specific NS/EP telecommunications responsibility in the event of a national emergency or other declared exigency. Therefore, USPS telecommunication systems and services were designed to support day-to-day organizational mission requirements; telecommunication facilities dedicated specifically to NS/EP support are limited in scope.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

The following FY92 accomplishments will enhance the ability of USPS to support the overall NS/EP mission:

- Issuing a request for proposal to establish a single Primary Interexchange Carrier (PIC) to gain cost-effective long distance telephone services for all postal facilities nationwide. The USPS has developed both pricing and procurement decision models that indicate that a competitive approach to the acquisition of a national long distance service contract would result in substantial cost savings. A limited competition has been approved to include three vendors for contract award in October 1992.
- Awarded a contract to Wiltel Communications Systems and Government Telecommunications Inc. for the acquisition of Northern Telecom Meridian 1 current technology

electronic automated private branch exchanges (EAPBX) and AT&T Merlin Legend & Partner key systems. The process for the award was completed in 11 months. The USPS will award several thousand telephone systems over the next 5 years and save approximately \$10 million during that period on better pricing and substantial work hours saved on the process. These two contractors compete against the LEC for each postal facility telephone system.

- Completed work on Universal Wiring (UW) specifications and a business plan to enable each new postal facility to be cabled/wired during the initial construction that will support these buildings for several years of service. The wiring includes telephone systems and total building wiring, which will include terminals, video surveillance, building sensors, heating, ventilation and air conditioning, and lighting and control. The Wiltel contract allows for the contractors and LEC's to also bid on wiring using the UW specifications.
- Converted 181 USPS field locations to FTS2000 service. This project has saved the USPS approximately \$350,000 a month. Most of the conversion was completed on the voice circuits, where the savings were substantial.
- Completed developing an integrated voice and data model for extant networks and defining the USPS 1995 WAN architecture, which will increase LAN interconnection usage.

- During the last 18 months, progress has encompassed the development of a technical architecture. The technical architecture defines the evolving computing and telecommunications infrastructure required in 1995 and beyond to deliver a common set of telecommunications and value-added services to a widely dispersed variety of postal facilities. A utility company model is being employed for these services because the focus is on the infrastructure required to deliver services to users located in facilities.
- Completed first interconnection with outside Government agencies and private industry via the internet network. Future connections are expected to grow.



.....  
**FEDERAL RESERVE BOARD (FRB)**

**NS/EP TELECOMMUNICATIONS**

**MISSION**  
.....

**T**he following are essential functions of FRB that require NS/EP telecommunications service:

- Oversight of essential telecommunication services in support of the financial payment mechanisms
- Oversight of essential communication in support of monetary policy, financial markets stabilization, and bank supervision and regulation
- Issue and distribute currency, coin, and other monetary instruments
- Maintain essential communication with other central banks and with other financial policy entities in the U.S. Government relating to the stabilization of financial markets.

.....  
**TELECOMMUNICATIONS STAFF**

**ORGANIZATION**  
.....

The Assistant Director for Automation, Communications, and Building Programs in the Board's Division of Reserve Bank Operations and Payment Systems has responsibility for oversight of the Reserve Banks' telecommunication services and serves as a liaison member on the NCS COP. The Manager of the Communications Section of the Division of the Reserve Bank

Operations and Payment Systems serves as a liaison member on the NCS COR and the alternate member on the NCS COP.

The Director, Division of Information Resources Management, has responsibility for planning the Board's telecommunication services. The Director, Division of Support Services, has responsibility for the ongoing operations of the Board's telecommunication services.

.....  
**SIGNIFICANT ACCOMPLISHMENTS**  
.....

In support of NCS functions, the following activities were accomplished:

- Provided the OMNCS with Reserve Bank contacts to participate in the Carrier Interconnect services as part of the Commercial Network Survivability (CNS) Program
- Continued to implement TSP on Federal Reserve Communication System (FRCS)-80 backbone circuits
- Developed policy and guidelines for evaluating TSP sponsorship for nongovernment payment system participants that support FRB NS/EP functions
- Provided periodic status reports on the implementation of NCS programs by the FRS to the NSC
- Provided comments to the NCS Office of Technology and Standards concerning proposed telecommunication standards and guidelines.

.....  
**CURRENT/ONGOING NS/EP**

**TELECOMMUNICATION ACTIVITIES**  
.....

The following current ongoing activities are in support of NS/EP programs:

- Reviewing tariffs submitted by local exchange carriers (LEC) to assess the cost impact of implementing TSP for remainder of FRB telecommunications network, and large volume funds and securities transfer depository institutions
- Reviewing ongoing FRB requirements to update information on the GETS data base and the CNS Program
- Developing procedures to audit FRB, NCS, and telecommunications carrier records concerning TSP assignments to ensure accuracy
- Reporting ongoing activities in compliance with NCS directives to the NSC.



.....  
**NATIONAL SECURITY AGENCY (NSA)**  
.....

NSA's FY92 activities have been  
incorporated in the DoD report.



.....  
**NATIONAL TELECOMMUNICATIONS**  
**AND INFORMATION ADMINISTRATION**  
**(NTIA)**  
.....

NTIA's FY92 activities have been incorporated in the DOC report.

V.

**NS/EP TELECOMMUNICATION**

**ISSUES**

**NS/EP TELECOMMUNICATION**

**ISSUES**

**RADIO FREQUENCY SPECTRUM**

**ALLOCATION**

**ISSUE**

**T**he proliferation of new telecommunication technologies such as personal communications systems (PCS) and Low Earth Orbit Satellites (LEOS) has increased the number of prospective users of the already crowded radio frequency spectrum. The measures, both within the United States and internationally, that have been introduced to accommodate this private sector demand will affect those portions of the spectrum currently reserved for the exclusive use of government agencies. The NTIA and FCC have aggressively taken the lead to resolve this issue.

**BACKGROUND**

Over the past year, several national and international measures have been introduced which will affect the allocation of radio frequency spectrum. The World Administrative Radio Conference, the U.S. Congress, and the Federal Communications Commission have all introduced measures that will require greater allocations of radio frequency spectrum to commercial users for undertakings that include PCS's and LEOS's.

**STATUS**

Concurrent with these developments, efforts are underway in the U.S. to reallocate both government and nongovernment-owned spectrum to the private sector. The outcome will have far-reaching impacts on Government spectrum users. NTIA is developing a Strategic

Spectrum Plan for the U.S. that will identify radio frequency spectrum requirements and technology trends that will impact on the use of the radio spectrum. This will ensure that both near-term and long-term spectrum needs of the Government are met. The Plan is required if the Government is to effectively combat both national and international encroachments on spectrum critical to the national security.

The plan will encompass the use of emerging technologies to promote efficiency in spectrum utilization and the implementation of spectrum management early on in the acquisition process. It should also lead to the definition of appropriate policies and procedures to enforce spectrum conservation. It is of paramount importance that the management of the frequency spectrum be carefully considered before decisions are made. This planning is important to all users in the Federal Government.

**JOINT INDUSTRY-GOVERNMENT**

**PLANNING AND COORDINATION OF**

**EMERGENCY TELECOMMUNICATIONS**

**ISSUE**

The National Security Telecommunications Advisory Committee (NSTAC) charter expires in December 1993, and to sustain joint industry-Government cooperation through the NSTAC process, the President must approve an extension of his NSTAC's charter.

**BACKGROUND**

The President's NSTAC was established in 1982, by Executive Order 12382, to provide the President with advice and assistance from the perspective of the telecommunications industry. Since then, both Presidents Reagan and Bush have continued to recognize the unique value, knowledge, and perspective this Presidential advisory committee brings to the Government and its planning at all levels, especially in helping the National Communications System (NCS) achieve its national security and emergency preparedness (NS/EP) telecommunications objectives and responsibilities. Consequently, both Presidents have extended the NSTAC's charter, because a sustained industry-Government commitment is vital to ensure telecommunications are available to support national leadership requirements under all natural and man-made disaster or emergency scenarios.

**STATUS**

The NSTAC charter was extended for two years in September 1991.

**PUBLIC SWITCHED NETWORKS**

**SECURITY**

**ISSUE**

NS/EP telecommunication users are concerned about the vulnerability of the public switched network (PSN) to unauthorized software manipulation by computer hackers. This vulnerability could result in unauthorized disclosure of sensitive information from network data bases, or disruption and possible denial of NS/EP services.

**BACKGROUND**

In fiscal year (FY) 1990 the Chairman of the National Security Council's Policy Coordinating Committee for National Security Telecommunications and Information Systems tasked the Manager, NCS, to determine what action is needed from Government and the

telecommunications industry to address the threat presented by hacker intrusions into the PSN. During FY92, the Government Network Security Subgroup (GNSS) and NSTAC Network Security Task Force (NSTF), through the Government and Industry Network Security Information Exchange (NSIE) groups, worked together to define and address network security issues.

At NSTAC XIV, the Chairman of the NSTAC NSTF briefed committee members in a closed session regarding the status of the hacker threat to the PSN. The NSTF also issued an updated risk assessment that indicated a perceived increase in risk. Consequently, the NSTAC charged the Industry Executive Subcommittee (IES) with direct oversight of all NSTAC network security efforts. To address this charge, the IES created the Network Security Steering Committee (NSSC) to continue reviewing network security issues, and the Network Security Standards Oversight Group (NSSOG), under the NSSC, to specifically address standards issues. The NSSC replaced the NSTF, and will be the focal point for network security initiatives, including oversight of the NSTAC NSIE. The NSIEs will continue to work together in addressing the hacker threat to the PSN.

**STATUS**

Network Security continues to be at the forefront of concern for NS/EP telecommunication users. The NSIEs will continue to meet jointly every 2 months to share information regarding hackers' network vulnerabilities and incidents, and other related network security issues. The NSSC and NSSOG will meet during FY93. The NSSC will serve as the coordinating point for and will provide direct support to all NSTAC network security activities.

.....  
**ENHANCED CALL COMPLETION**

**SERVICES**  
.....

**ISSUE**  
.....

Enhanced call completion (ECC) services could potentially ensure NS/EP call completion rates remain high during periods of stress to the PSN. These services could be provided by telephone carriers through contracts under the National Level NS/EP Telecommunications Program (NLP) and associated programs.

**BACKGROUND**  
.....

Based on a request from the Office of the Manager, NCS (OMNCS) to the NSTAC's IES and a subsequent charge to the IES from the NSTAC, the IES established an ECC Task Force in December 1990 to investigate the technical feasibility of enhancing call completion for NS/EP users during periods of stress to the PSN. The ECC Task Force Report to NSTAC XIV identified 23 existing and future capabilities that could potentially provide ECC to NS/EP users. The OMNCS is analyzing these 23 ECC services to determine the most cost-effective service implementation method. This cost/benefit analysis will focus on the following:

- Analysis of service performance criteria. Each ECC service will be analyzed according to how it improves NS/EP communications connectivity, diversity, and accessibility.

- Analysis of service costs. The total cost will include what it costs to develop, implement, use, and deploy the services. From this, the OMNCS can determine the most cost-effective way that these services can be utilized by NCS member organizations.
- Analysis of service risks. Operational, technical, or regulatory risks are some of the areas to be examined for each of the 23 potential services.

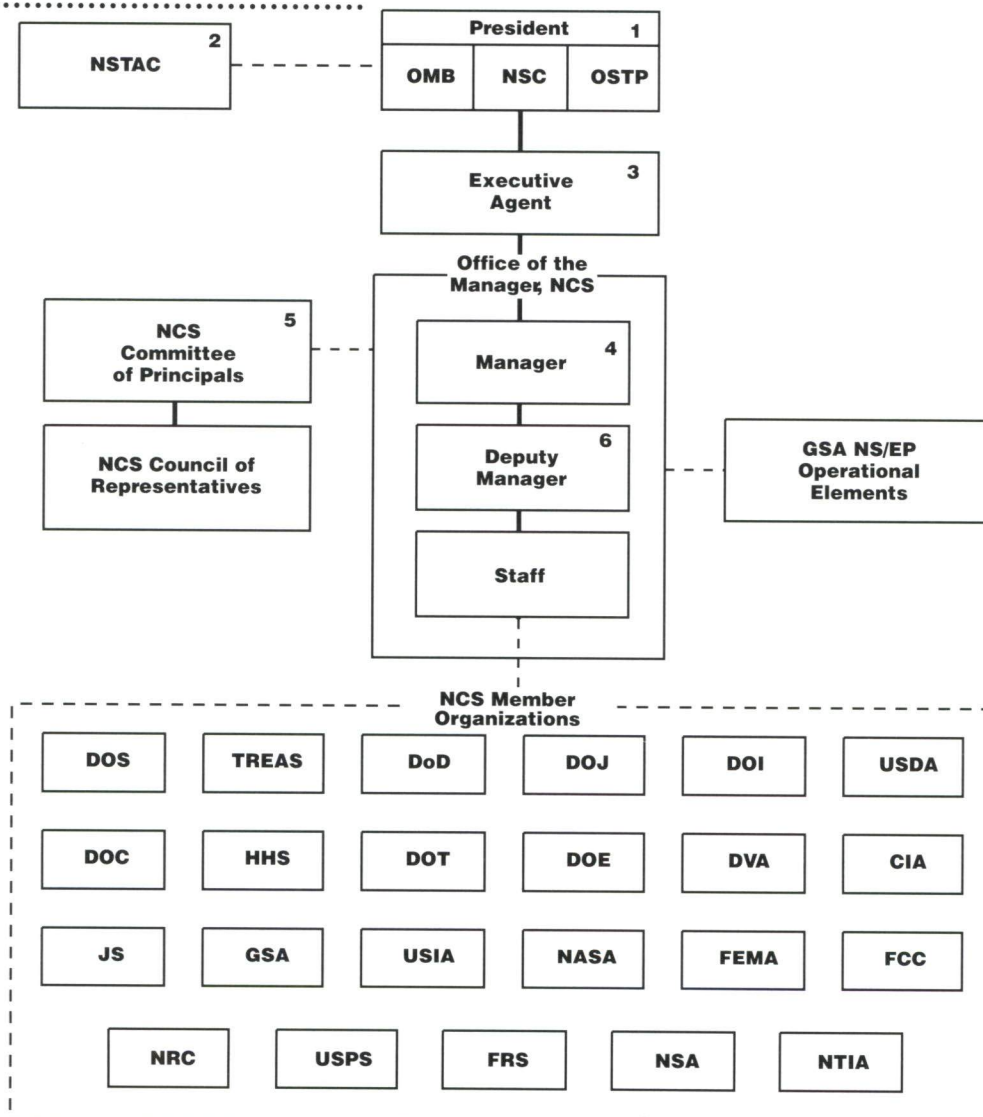
**STATUS**  
.....

The OMNCS will finish analyzing the 23 ECC services by May 1993 and then demonstrate some of those services shown to have potentially significant cost/benefits to NCS member organizations.

NCS AND OMNCS ORGANIZATIONS

EXHIBIT A-1

NCS ORGANIZATIONAL CHART



1. Policy Direction and Direct Execution War Powers Functions
2. National Security Telecommunications Advisory Committee
3. Executive Agent, NCS responsibilities assigned to Secretary of Defense by E.O. 12472, April 3, 1984
4. Director, DISA serves as Manager, NCS
5. The Key Telecommunications Officers of the NCS Member Organizations
6. First line management position which is exclusively NCS

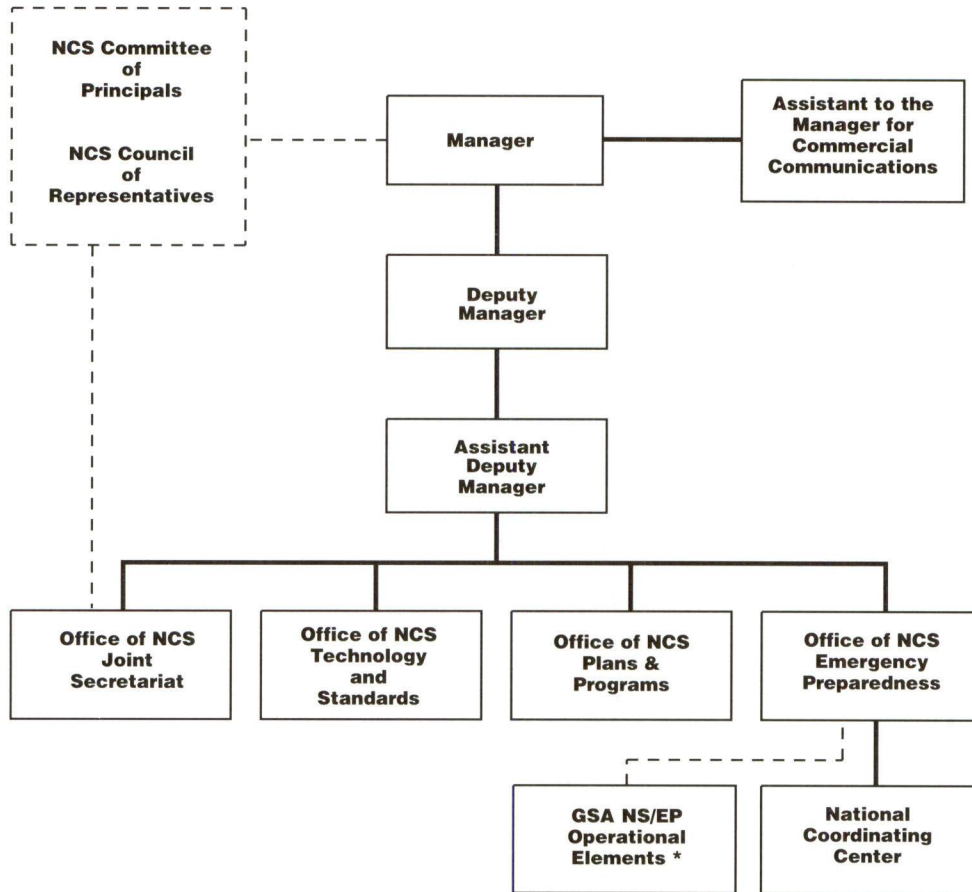
**LEGEND:**

Direction ———

Coordination - - - -

**EXHIBIT A-2**

**OFFICE OF THE MANAGER, NCS**



**NCS Regional Emergency Telecommunication Planners and Regional Emergency Telecommunication Managers**

**LEGEND:**

**Direction** ———  
**Coordination** - - - -

.....  
**NCS-RELATED ACRONYMS**  
 .....

AA/OSC	Associate Administrator for the Office of Space Communications
AAR	Automatic Alternate Routing
ACTS	Advanced Communication Technology
ADNET	Anti-Drug Network
ADP	Automated Data Processing
AFB	Air Force Base
AFMC	Air Force Materiel Command
AFNET	Air Force Network
AIN	Advanced Intelligent Network
AIRSTAS	Air Stations
ALE	Automatic Link Establishment
ANDVT	Advanced Narrowband Digital Voice Terminals
AN/GSC	Army Navy/Ground Satellite System
ANSI	American National Standards Institute
ARS	Automatic Route Selection
ARTCC	Air Route Traffic Control Centers
ASC	AUTODIN Switching Centers
ASMB	Assistant Secretary for Management and Budget
ASP	Aggregated Switch Procurement
ATM	Asynchronous Transfer Mode
AUTODIN	Automatic Digital Network
AUTOVON	Automatic Voice Network
B-ISDN	Broadband Integrated Services Digital Network
BDT	Telecommunications Development Bureau
BFE	Blacker Front End
BXA	Bureau of Export Administration
C <sup>3</sup>	Command, Control and Communications
C <sup>3</sup> I	Command, Control, Communications and Intelligence
C <sup>4</sup>	Command, Control, Communications, and Computer
CAMSLANT	Communications Area Master Station, Atlantic
CAMPAC	Communications Area Master Station, Pacific
CAPS	Contractors Access Points
CCIR	International Radio Consultative Committee
CCITT	International Telegraph and Telephone Consultative Committee
CCPC	Civil Communications Planning Committee
CCPCWG	Civil Communications Planning Committee Working Group
CCS	Common Channel Signaling
CCST	Contingency Communications Support Team
CD	Civil Defense
CDN	Consolidated Data Network
CEAP	Corps of Engineers Automation Program
CELP	Code Excited Linear Production
CEPQ	Civil Emergency Planning Questionnaire
CFG	Communications Functional Group
CGDN	Coast Guard Data Network
CIA	Central Intelligence Agency
CIM	Center for Information Management
CINCCENT	Commander-in-Chief, Central Command
CINCLANT	Commander-in-Chief, Atlantic
CINCNET	Commanders-in-Chief Network
CINCPAC	Commander-in-Chief, Pacific
CIWG	Communications Interoperability Working Group
CMOS	Complementary Metal Oxide Semiconductor
CN	Counter-Narcotic
CNS	Commercial Network Survivability

COMMSTA	Communications Stations
COMSEC	Communications Security
CONUS	Contiguous United States
CONUS	Continental United States
COP	Committee of Principals
COR	Council of Representatives
CSI	Commercial SATCOM Interconnectivity
CSM	Centralized System Management
CY	Calendar Year
DAB	Digital Audio Broadcast
DACS	Digital Access and Crossconnect System
DARPA	Defense Advanced Research Projects Agency
DATN	Disaster Avoidance Telecommunications Network
DCS	Defense Communications System
DCTN	Defense Commercial Telecommunications Network
DDN	Defense Data Network
DEA	Drug Enforcement Administration
DECCO	Defense Commercial Communications Office
DES	Data Encryption Standard
DETIP	Drug Enforcement Telecommunications Implementation Plan
DF	Direction Finding
DFO	Disaster Field Office
DHHS	Department of Health and Human Services
DIA	Defense Intelligence Agency
DIS	Defense Information Systems
DISA	Defense Information Systems Agency
DISN	Defense Information System Network
DISN-NT	Defense Information Systems Network Near Term
DLA DCN	Defense Logistics Agency Communications Network
DMIP	DCS Mediterranean Improvement Plan
DMS	Defense Message System
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DOJ	Department of Justice
DOS	Department of State
DOT	Department of Transportation
DOTTS	Department of the Treasury Telecommunications Systems
DSC	Digital Selective Calling
DSCS	Defense Satellite Communications System
DSCSOC	DSCS Operations Center
DSN	Defense Switched Network
DSNET	Defense Secure Network
DTP	Dedicated Transmission Plan
DTS	Dedicated Transmission Service
DTS	Digital Telecommunications System
DTS	Diplomatic Telecommunications Service
DVA	Department of Veterans Affairs
EA	Economic Affairs
E.O.	Executive Order
E-RTNR	Enhanced Real Time Network Routing

EAPBX	Electronic Automated Private Branch Exchange
EBS	Emergency Broadcast System
ECC	Enhanced Call Completion
ECCRN	Emergency Command Control Radio Network
ECSA	Exchange Carriers Standards Association
EEF	Essential Emergency Functions
EENET	Emergency Education Network
EIA	Electronic Industries Association
EICC	Emergency Information Coordination Center
EMP	Electromagnetic Pulse
EMS	Emergency Management System
ENS	Emergency Notification System
EOC	Emergency Operations Centers
EOF	Emergency Operations Facility
EOP	Executive Office of the President
EPA	Early Post Attack
EPA	Environmental Protection Agency
EPIC	El Paso Intelligence Center
EPIRB	Emergency Position Indicating Radio Beacon
ESA	Economic and Statistics Administration
ESF	Emergency Support Function
ESP	Electric Service Priority
ESS	Electronic Switching System
ETN	Electronic Tandem Network
FAA	Federal Aviation Administration
FAATSAT	FAA Telecommunications Satellite System
FBI	Federal Bureau of Investigation
FCC	Federal Communications Commission
FEB	Federal Executive Board
FECC	Federal Emergency Communications Coordinators
FEMA	Federal Emergency Management Agency
FEMS	FEMA Frequency Management System
FERC	Federal Emergency Response Capability
FFARS	FEMA Facsimile and Record System
FFMS	FEMA Frequency Management System
FHWA	Federal Highway Administration
FIPS	Federal Information Processing Standard
FIRMR	Federal Information Resource Management Regulations
FM	Frequency Modulation
FNAMS	FEMA National Automated Message System
FNARS	FEMA National Radio System
FOC	Full Operational Capability
FORSCOM	Forces Command
FPLMTS	Future Public Land-Mobile Telecommunications System
FRB	Federal Reserve Board
FRC	Federal Regional Center
FRCS	Federal Reserve Communication System
FRERP	Federal Radiological Emergency Response Plan
FRP	Federal Response Plan
FRS	Federal Reserve System
FRWG	Funding and Regulatory Working Group
FSN	FEMA Switched Network

FSTS	Federal Secure Telephone Service
FT	Fiber Optic Transmission
FTS2000	Federal Telecommunications System 2000
FTSC	Federal Telecommunications Standards Committee
FTSP	Federal Telecommunications Standards Program
FY	Fiscal Year
G-T	Office of Command, Control, and Communications
GEOLOCO	Geographical Locations
GETS	Government Emergency Telecommunications Service
GMDSS	Global Maritime Distress and Safety System
GNSS	Government Network Security Subgroup
GSA	General Services Administration
GSM	Global System for Mobile Communications
GTDI	GSA Telecommunications Development Institute
HDTV	High Definition Television
HEMP	High Altitude Electromagnetic Pulse
HF	High Frequency
HFAID	HF AUTODIN Interface Device
HFRWI	High Frequency Radio Wire Interface
HPC	High Performance Computing
HPC	High Probability of Completion
HQ	Headquarter
IDCU	Integrated Data Communications Utility
IDS	Information Display System
IDS-MIS	Information Display System-Management Information System
IDNX	Integrated Digital Network Exchange
IEC	Interexchange Carrier
IEMS	Integrated Emergency Management System
IES	Industry Executive Subcommittee
IFA	Interagency Funding Agreement
IFRB	International Frequency Registration Board
IMA	Individual Mobilization Augmentee
IMBE	Improved Multi-Band Excitation
IMO	International Maritime Organization
IMP	Information Management Plan
IN	Intelligent Network
INEL	Idaho National Engineering Laboratory
INF	Intermediate Nuclear Forces
INMARSAT	International Marine Satellite
INS	Immigration and Naturalization Service
IOC	Initial Operational Capability
IRAC	Interdepartment Radio Advisory Committee
IRM	Information Resources Management
IRMS	Information Resources Management Service
ISC	Information Systems Center
ISDN	Integrated Services Digital Network
IST	Inter-Switch Trunks
ITA	International Trade Association
ITT&C	Interoperable Telemetry, Tracking, and Control
ITTG	Information and Telecommunication Technologies Group
ITU	International Telecommunications Union
ITW/AA	Integrated Tactical Warning/Attack Assessment

IV&V	Independent Validation & Verification
JCS	Joint Chiefs of Staff
JPL	Jet Propulsion Laboratory
JRSC	Jam Resistant Secure Communications
JS	Joint Staff
JTF	Joint Task Force
JTRB	Joint Telecommunications Resources Board
KTU	Korean Telephone Upgrade
LAN	Local Area Network
LANTCOM	Atlantic Command
LATA	Local Access and Transport Area
LCT	Low Cost Terminal
LEA	Law Enforcement Agencies
LEC	Local Exchange Carrier
LEOSAT	Low Earth Orbit Satellite
LINCS	Leased Inner-Facility NAS Communications System
LLNL	Lawrence Livermore National Laboratory
LMR	Land Mobile Radio
LNHR	LEC Non-Hierarchical Routing
LTA	Late Trans-Attack
MARAD	Maritime Administration
MATTS	Mobile Air Transportable Telecommunications System
MBC	Meteor Burst Communications
MCDN	Marine Corps Data Network
MCS	Message Conversion System
MDT	Message Distribution Terminal
MDZ	Maritime Defense Zone
MERS	Mobile Emergency Response Support
METS	Message-based Emergency Telecommunications Service
MF	Multifrequency
MFA	Major Focus Area
MFJ	Modified Final Judgment
MILNET	Military Network
MILSATCOM	Military Satellite Communication
MOA	Memoranda of Agreement
MOC	Media Operations Center
MOU	Memorandum of Understanding
MROC	Multi-Command Required Operational Capability
MRV	Multi-Radio Van
MSAT	Mobile Satellite Experiment
MSO	Marine Safety Office
MSP	Message Security Protocol
MTT	Mobile/Transportable Telecommunications
NARACS	National Radio Communications System
NAS	National Air Space System
NASA	National Aeronautics and Space Administration
NASCOM	NASA Operational Communications System
NATO	North Atlantic Treaty Organization
NAVNET	Navy Network
NAWAS	National Warning System
NCA	National Command Authority
NCAM	Network Connectivity Analysis Model

NCC	National Coordinating Center
NCS	National Communications System
NCS	Naval Control of Shipping
NCSD	NCS Document
NCSH	NCS Handbook
NECC	National Emergency Coordination Center
NEP	Network Enhancement Plan
NETC	National Emergency Training Center
NDA	Non-Disclosure Agreement
NDER	National Defense Executive Reserve
NEMS	National Emergency Management System
NEMT	National Emergency Management Team
NES	National Energy Strategy
NESDIS	National Environmental Satellite Data and Information Service
NETS	Nationwide Emergency Telecommunications Service
NIRMP	National Information Resource Management Plan
NIST	National Institute of Standards and Technology
NLP	National Level NS/EP Telecommunications Program
NNOC	National Network Operations Center
NMC	Network Management Center
NMFS	National Marine Fisheries Service
NMS	Network Management System
NMTP	Network Management and Technology Planning
NOAA	National Oceanic and Atmospheric Administration
NOC	Network Operation Center
NOF	Network Operations Forum
NOI	Notice of Inquiry
NOS	National Oceanic Service
NPA	Numbering Plan Area
NPD	National Preparedness Directorate
NPRM	Notice of Proposed Rulemaking
NRC	Nuclear Regulatory Commission
NRCOC	Nuclear Regulatory Commission Operations Center
NREN	National Research and Education Network
NS/EP	National Security and Emergency Preparedness
NSA	National Security Agency
NSAP	Network Service Assurance Plan
NSC	National Security Council
NSCM	NCS Manual
NSD	National Security Directive
NSDD	National Security Decision Directive
NSIE	Network Security Information Exchange
NSSOG	Network Security Standards Oversight Group
NSTAC	National Security Telecommunications Advisory Committee
NSTF	Network Security Task Force
NSTISSC	National Security Telecommunications and Information Systems Security Committee
NT	NCS Office of Technology and Standards
NTCN	National Telecommunications Coordinating Network
NTIA	National Telecommunications and Information Administration
NTMS	National Telecommunications Management Structure
NTSB	National Transportation Safety Board
NTTC	National Transportable Telecommunications Capability

NWS	National Weather Service
OAR	Office of Oceans and Atmospheric Research
OC	Operating Center
OCONUS	Outside Continental United States
OET	Office of Emergency Transportation
OIRM	Office of Information Resources Management
OMB	Office of Management and Budget
OMNCS	Office of the Manager, National Communications System
ONA	Open Network Architecture
ONDCP	Office of National Drug Control Policy
OSD	Office of the Secretary of Defense
OSI	Open Systems Interconnection
OSTP	Office of Science and Technology Policy
OTAM	Over the Air Management
OTAR	Over the Air Rekeying
OTM	Office of Telecommunications Management
OWG	Operations Working Group
PABX	Private Automatic Branch Exchange
PAC	Pacific
PBX	Private Branch Exchange
PCC-NSTIS	Policy Coordinating Committee for National Security Telecommunications and Information Systems
PCM	Pulse Code Modulation
PCN	Personal Communications Network
PCS	Personal Communication Service/System
PCTN	Pacific Consolidated Telecommunications Network
PEP	Primary Entry Point
PIC	Primary Interexchange Carrier
PIN	Personal Identification Number
PO	Program Office
POE	Panel of Experts
PSCN	Program Support Communications Network
PSN	Packet Switched Network
PSN	Public Switched Network
PTO	Patents and Trademarks Office
PTT	Post, Telephone and Telegraph
PWG	Plans Working Group
QDU	Quantization Distortion Unit
QTCM	Queuing Traffic Congestion Model
RARC	Regional Administrative Radio Conference
RBOC	Regional Bell Operating Company
RCS	Regional Computer System
RDSS	Radio Direction Satellite Service
REMT	Regional Emergency Management Team
REP	Radiologic Emergency Preparedness
RETCO	Regional Emergency Transportation Coordinators
RFP	Request for Proposal
RNHR	Robust Non-Hierarchical Routing
RP	Republic of the Philippines
RP	Restoration Priority
RRF	Ready Reserve Force
RSPA	Research and Special Programs Administration

RWI	Radio Wire Interface
SACNET	Secure Automatic Communications Network
SACS	STU-III Access Control System
SATCOM	Satellite Communications
SATS	Southwest Asia Telecommunications System
SCIS	Survivable Communications Integration System
SDIS	Switched Digital Integration Service
SDN	Secure Data Network
SEED	Self Electro-Optic Effect
SHA	State Highway Agencies
SHARES	Shared Resources
SISOCS	Streamlining of Information Services Operations Consolidation Study
SITOR	Simplex Teletype Over Radio
SMCT	Smart Multichannel Terminal
SMS	Sidereal Message Switches
SNA	System Network Architecture
SONET	Synchronous Optical Network
SS4	Selective Signaling Voice Conferencing System
SS7	Signaling System 7
SSB	Single Sideband
SSCN	Secure Survivable Communications Network
SSN	Survivable Signaling Network
STU	Secure Telephone Unit
STU III/R	Remote Secure Telephone Unit-III
TA	Technology Administration
TAC	Terminal Access Controller
TAG	Technical Advisory Group
TCO	Telecommunications Certification Office
TCS	Treasury Communications System
TDRSS	Tracking and Data Relay Satellite System
TEDSS	Telecommunications Emergency Decision Support System
TIA	Telecommunications Industry Association
TIM	Telecommunications Industry Mobilization
TIS	Telemanagement Information System
TMN	Telecommunications Management Network
TM&O	Telecommunication Management and Operations
TMSO	Telecommunications Management and Services Office
TOR	Terms of Reference
TPPS	Telecommunications Planning Process Subcommittee
TPTT	Turkish Post, Telephone, and Telegraph
TQM	Total Quality Management
TREAS	Department of the Treasury
TRG	Threshold Reporting Group
TSC	Technical Subcommittee
TSO	Telecommunications Service Orders
TSP	Telecommunications Service Priority
TSP PO	TSP Program Office
TSR	Telecommunications Service Requests
TSS	Telecommunication Services Staff
TW/AA	Tactical Warning/Attack Assessment
UHF	Ultra High Frequency
UPT	Universal Personal Telecommunications

USACE	U.S. Army Corps of Engineers
USAF	United States Air Force
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USIA	United States Information Agency
USMCEB	United States Military Communications Electronics Board
USMS	United States Marshals Service Communications System
USN	United States Navy
USPS	United States Postal Service
USTA	United States Telephone Association
USTSA	United States Telecommunications Suppliers Association
UW	Universal Wiring
VA	Department of Veteran Affairs
VANTS	Veterans Administration Nationwide Teleconferencing System
VHF	Very High Frequency
VOA	Voice of America
VSAT	Very Small Aperture Terminal
VTC	Video Teleconferencing
WAN	Wide Area Network
WAPA	Western Area Power Administration
WARC	World Administrative Radio Conference
WHCA	White House Communications Agency
WHCIWG	White House Communications Interoperability Working Group
WITS	Washington Interagency Telecommunications System
WRSS	Wireless and Radio Support Service
WWOLS	Worldwide On-Line System
ZECP	Zonal Emergency Communications Planner

