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System.

The Fiscal Year (FY) 92 National Communications System (NCS) Annual Report, which is submitted to the Executive Office of the President (EOP), presents an overview of the Nation's national security and emergency preparedness (NS/EP) telecommunications status. The report summarizes major NCS plans, programs, and activities; highlights the NS/EP telecommunication accomplishments of NCS member organizations; and provides recommendations concerning critical NS/EP telecommunication issues.

Continued interagency cooperation among the 23 NCS member organizations was essential to many of the achievements described in the report. Active member participation in the Committee of Principals, Council of Representatives, and the NCS Vision 21 strategic planning effort is key to ensuring that timely and comprehensive interagency advice and recommendations reach the EOP.

The contributions of the President's National Security Telecommunications Advisory Committee (NSTAC) and its subordinate bodies were equally important for the success of NS/EP telecommunication activities over the past year. The NSTAC ensured that a telecommunications industry perspective was presented to the President and considered by the NCS in NS/EP telecommunications planning.

The past year was one of significant challenge and opportunity as the NCS responded to a changing technological and geopolitical environment. In meeting the challenges and exploiting the opportunities, the National Level NS/EP Telecommunications Program was restructured to capture and use emerging state-of-the-art network technology that is being implemented by the commercial telecommunication carriers. Several other NCS programs also took advantage of new and evolving technologies, such as wireless and advanced intelligent networks, and incorporated them into NS/EP telecommunications planning. All of these efforts seek to capitalize on commercial off-the-shelf technology to provide infrastructure enhancements in support of NS/EP missions.

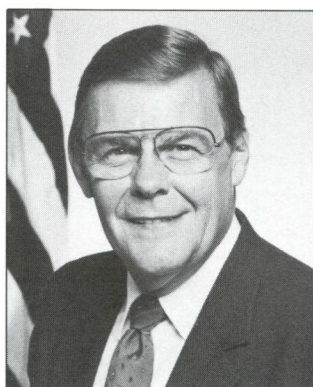
In meeting the challenges of a new geopolitical environment, the NCS assumed many non-traditional roles, while at the same time focusing on its primary mission. Over the past year, the NCS through its National Coordinating Center for Telecommunications demonstrated its ability to marshal the resources of the Federal Government and the telecommunications industry in supporting humanitarian aid missions abroad (PROVIDE COMFORT), while at the same time effectively responding to several natural disasters at home (HURRICANE ANDREW).

Looking to the future, the success of the NCS will continue to be strongly tied to the unique joint industry-Government partnership embodied by the cooperation of the NCS and NSTAC. This partnership helps to ensure that critical NS/EP telecommunication requirements are met while working cooperatively to strengthen the Nation's Information Management infrastructure.

Alonzo E. Short, Jr.

ALONZO E. SHORT, JR.
Lieutenant General, USA
Manager

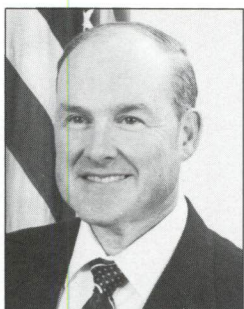




Mr. B. E. Morriss
Deputy Manager



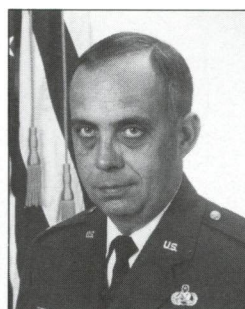
COL Victor W. Bowser, USA
Assistant to the Deputy Manager



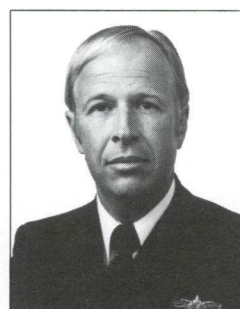
Dr. Dennis Bodson
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Technology and Standards



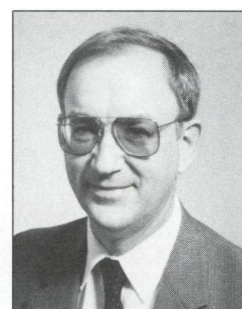
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Assistant Manager
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CAPT Dennis I. Parsons, USN
Assistant Manager
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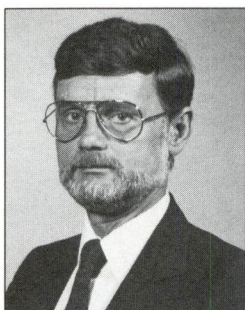
Mr. James G. Bittner
Chief
Financial Management Office

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COMMITTEE OF PRINCIPALS

FY92

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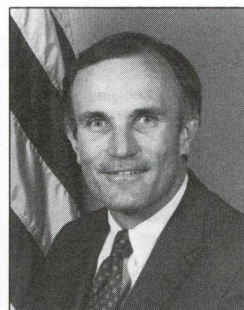
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Mr. Steven W. Broadbent



Department of Defense
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Mr. Roger M. Cooper



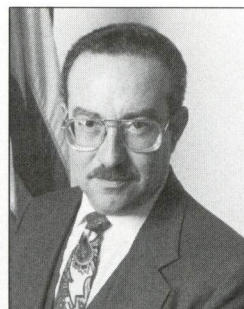
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United States
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Dr. John L. Okay



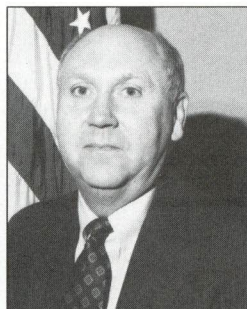
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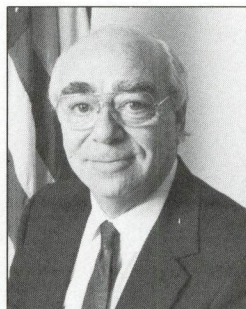
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Ms. Cynthia C. Rand



Department of Energy
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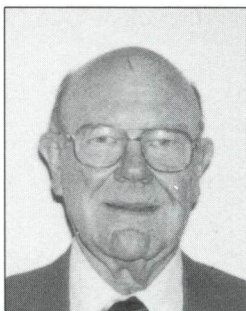
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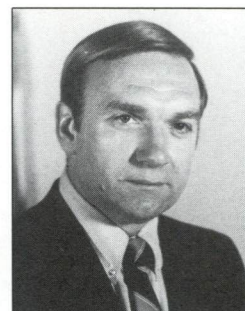
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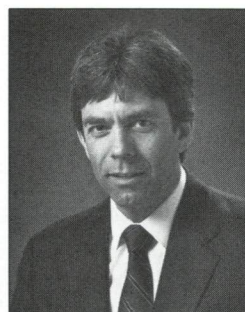
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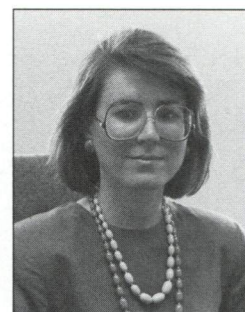
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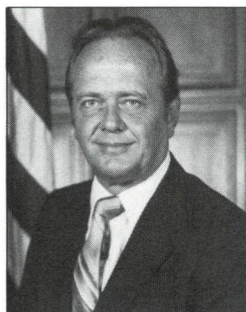
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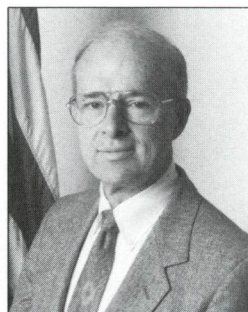
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National Security Agency
Mr. John W. Saadi



National
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Not Pictured:

Mr. Donald L. Miller, Central Intelligence Agency

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NCS COUNCIL OF

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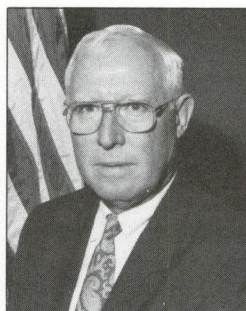
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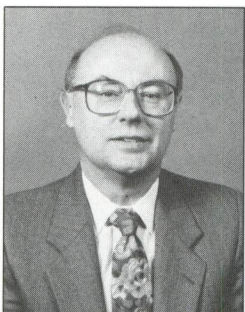
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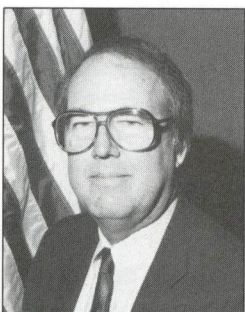
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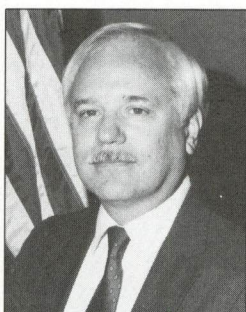
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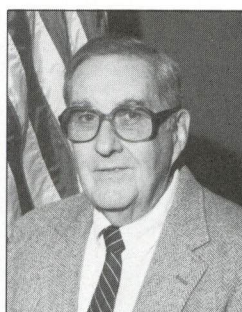
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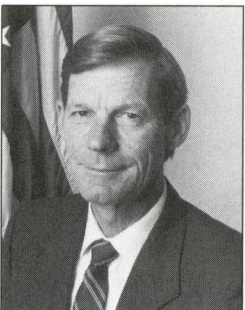
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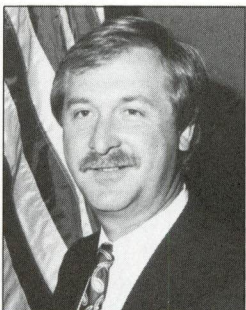
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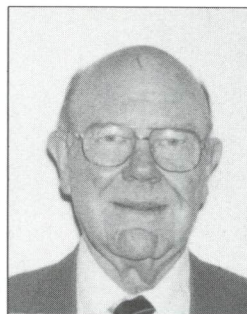
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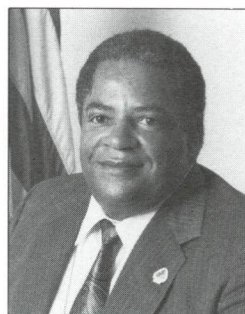
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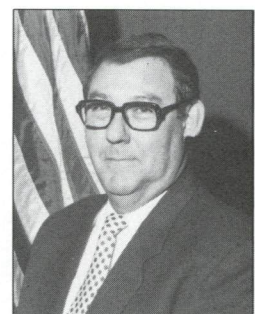
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United States Information
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Mr. Orris F. Gilmore, Jr.



National Aeronautics and
Space Administration
Mr. Arthur L.C. Sigust



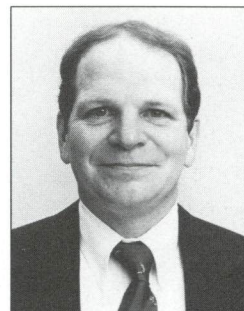
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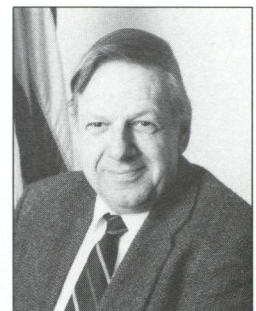
Federal Communications
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Mr. Terry D. Johnson



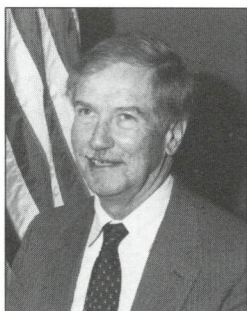
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Ms. Pamela G. Kruzic



Federal Reserve Board
Mr. Kenneth D. Buckley



National Security Agency
Mr. David L. Austin



National
Telecommunications and
Information Administration
Mr. Roger W. Reinke

Not Pictured:

Mr. Jack D. Phillips, Central Intelligence Agency

Mr. Ronald C. Schwitz, United States Postal Service

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IVE SUMMA

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EXECUTIVE SUMMARY

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Pursuant to Executive Order (E.O.) 12472 and National Security Decision Directive (NSDD) 97, this report outlines the activities of the National Communications System (NCS) during fiscal year (FY) 1992 in meeting national security and emergency preparedness (NS/EP) telecommunications policy and objectives of the Federal Government. The NCS ensures NS/EP telecommunications for the entire spectrum of national emergencies. This responsibility includes interagency planning and coordination to meet NS/EP requirements, standards (technical and operating) for an interoperable national telecommunications infrastructure, and assistance to the President in the management and coordination of national telecommunication resources during periods of national crises and emergencies.

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ANNUAL REPORT OVERVIEW

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NCS NS/EP TELECOMMUNICATION PROGRAMS AND ACTIVITIES

.....

NCS Committee of Principals/ Council of Representatives Interagency Coordination and Consultation. The NCS Committee of Principals/Council of Representatives (COP/COR) addressed programs and activities that will enhance NS/EP telecommunications of the Federal Government. In FY92, the COP/COR reviewed and concurred with the FY94 National Level NS/EP Telecommunications Program (NLP) and funding profile, the NCS response to the National Security Telecommunications Advisory Committee (NSTAC) XIII Executive Report to the President, and considered the revised version of NCS Manual 3-1-1, "Telecommunications Service Priority (TSP) for NSEP Service User Manual."

The COP and/or COR also participated in two special meetings. On November 5, 1991, the COP held a special meeting to discuss the recommendations and findings of an independent Panel of Experts' (POE) report on the NLP. On June 3, 1992, the COP/COR participated in a special information meeting on the Government Emergency Telecommunications Service (GETS) program review.

OFFICE OF THE MANAGER, NCS, SIGNIFICANT ACTIVITIES

.....

In performing its administrative functions, the Manager, NCS, coordinated and maintained NCS issuances, records of memoranda of agreement between the NCS and other organizations, and NCS document archives.

JOINT INDUSTRY/GOVERNMENT PLANNING

.....

At NSTAC XIII, held on October 3, 1991, the NSTAC established an Energy Task Force to assist the Office of the Manager, NCS (OMNCS), the Department of Energy (DOE), and the NCS in developing criteria and a process for identifying critical industry NS/EP telecommunication facilities requiring priority electric service restoration and fuel distribution. The NSTAC also approved recommending that the President establish an intelligent networks Government focal point and a Government wireless services focal point to monitor emerging technologies in these areas.

At NSTAC XIV, held on July 17, 1992, the NSTAC received a special briefing on national security issues. The NSTAC also received and approved final reports and recommendations from the Network Security and Enhanced Call Completion Task Forces. The NSTAC approved forwarding recommendations to the

President to publicly support network security activities and establish a Government focal point for coordination of network security standards, and to address technical standards and regulatory actions for enhancing NS/EP call completion.

NS/EP TELECOMMUNICATION PLANS

AND ARCHITECTURE

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. NCS member organizations submit information for the data base, and it 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.

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 the Nation. The Manager, NCS, is developing a standards-based, technology-rich architecture that can continue to meet these changing requirements.

NS/EP Telecommunications Planning

Process. Through a survey, the Manager, NCS, in cooperation with the COR Telecommunications Planning Process Subcommittee, identified candidate initiatives to mitigate deficiencies and to achieve the overall enhancement of NS/EP telecommunication capabilities. The results of this effort are being documented in the NS/EP Telecommunications Candidate Initiatives Report.

NATIONAL LEVEL NS/EP

TELECOMMUNICATIONS PROGRAM

In response to White House guidance to delay the Nationwide Emergency Telecommunications Service initial operating capability until FY96, the OMNCS established an independent POE 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 resulting public switched network (PSN)-based approach, GETS, was recommended to be the foundation of the NLP.

Subsequently, the FY94 NLP was forwarded to the Policy Coordinating Committee for National Security Telecommunications and Information Systems in July 1992. It identifies three integrated NS/EP telecommunication programs and provides for their funding and implementation. The three components of the FY94 NLP are GETS, Commercial Network Survivability (CNS), and Commercial SATCOM Interconnectivity (CSI).

PUBLIC SWITCHED NETWORK SECURITY

During FY92, the Government Network Security Subgroup (GNSS) and the Network Security Task Force (NSTF) worked together 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 Network Security Information Exchange (NSIE) groups. The groups met bimonthly during FY92 to provide a forum for identification and exchange of issues involving penetration and manipulation of network software and data bases affecting NS/EP telecommunications.

**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, including:

National Coordinating Center (NCC). During FY92, there were 54 major disaster declarations and one emergency declaration by the President. The NCC continued to provide international support and assistance as required to a large number of United States programs throughout the world.

National Telecommunications Management Structure (NTMS). In FY92, plans were finalized for the activation of communications functional groups (CFG) in Thomasville, Georgia, and Battle Creek, Michigan (actual activation events, scheduled for September, were postponed due to Hurricane Andrew). In addition, NTMS training was completed for the National Emergency Management Team CFG team and training was conducted for four NTMS regional CFG teams.

Telecommunications Service Priority System (TSP). In FY92, the TSP Oversight Committee met five times and identified 10 issues for the Manager, NCS, to address. The TSP Program Office processed a record number of TSP requests in Florida and Louisiana during Hurricane Andrew.

Shared Resources (SHARES) High Frequency (HF) Radio Program. In FY92, the SHARES HF Interoperability Working Group continued to conduct periodic nationwide exercises to maintain and assess SHARES capability. Two SHARES exercises were conducted, on December 3, 1991, and April 21, 1992. The exercises involved more than 200 operators from 93 HF stations. Ninety-five percent of the messages processed were received by the intended addressee. The destruction caused by Hurricanes Andrew and

Iniki required extensive emergency communications support from SHARES. More than 400 SHARES stations located throughout the United States were on-the-air and available to provide support.

Other telecommunications management activities included:

- The Office of Science and Technology Policy (OSTP) released the revised National Plan for Telecommunications Support in Non-Wartime Emergencies in February 1992.
- The Manager, NCS, Test and Exercise Program maintained active participation.
- OMNCS Augmentee programs continued their development.

**NS/EP TELECOMMUNICATIONS
INTEROPERABILITY AND FEDERAL
TELECOMMUNICATION STANDARDS PROGRAMS**
.....

The Manager, NCS, contributed to the establishment of industry, national, international, and Federal standards through the Federal Telecommunication Standards Program. NS/EP concerns such as interoperability were addressed. Standards activities focused on fiber optics, meteor burst, Land Mobile Radio, High Frequency radio, High Definition Television, facsimile, development and filing of two telecommunication patents, and development of commercial telecommunication publications. Increased emphasis was placed on the emerging technical areas of Broadband Integrated Services Digital Network, the variable bandwidth Asynchronous Transfer Mode, the Synchronous Optical Network, the Signaling System 7, and the Telecommunications Management Network.

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

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.

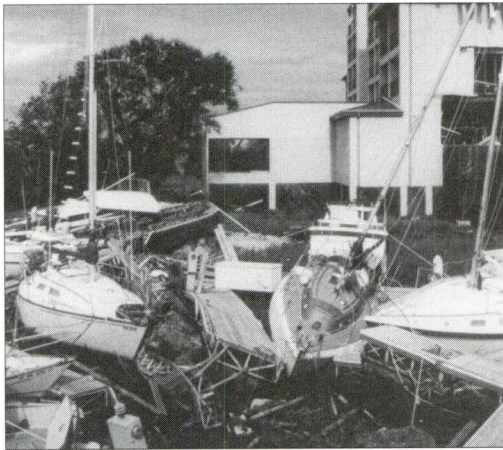
While the nuclear threat has been diminishing, other threats have been increasing in importance because of the high reliance of the Nation on telecommunications, the increasing complexity of the networks, and the movement toward a global economy. Both disruptive threats and destructive threats short 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.

BACKGROUND

The 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 telecommunications 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-



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.

TELECOMMUNICATIONS

GRAMS AND ACTIVITIES

NCS NS/EP TELECOMMUNICATION

PROGRAMS AND ACTIVITIES

This section highlights the activities and accomplishments of the Office of the Manager, National Communications System (OMNCS) and the national security and emergency preparedness (NS/EP) telecommunications community during fiscal year (FY) 1992. This section also highlights the National Level NS/EP Telecommunications Program (NLP), which is designed to ensure the provision of NS/EP telecommunications to the Federal Government during national emergencies or crises.

SUMMARY OF COMMITTEE OF PRINCIPALS

INTERAGENCY ACTIVITIES

In FY92, the COP examined several key programs and activities designed to improve the Nation's NS/EP telecommunications posture, including national level programs that are undertaken by means of the NSEP Telecommunications Planning Process. The NLP is the vehicle for forwarding proposed national level programs and their funding profiles to the PCC-NSTIS for review and approval. The COP conducted the following activities in FY92:

- Examined the revised FY93 NLP and recommended PCC-NSTIS approval.
- Examined and endorsed the Manager's proposed FY94 NLP and funding profile.
- Reviewed and approved the NCS response to the National Security Telecommunications Advisory Committee (NSTAC) XIII Executive Report to the President.
- Considered the revised version of NCS Manual 3-1-1, "Telecommunications Service Priority (TSP) for NSEP Service User Manual."

The COP deliberated on several major NS/EP telecommunication programs and activities in FY92, including the following:

- The National Telecommunications Management Structure (NTMS)
- The NS/EP Telecommunications Requirements Exercise and Data Collection

NCS COMMITTEE OF

PRINCIPALS/COUNCIL OF

REPRESENTATIVES INTERAGENCY

COORDINATION AND CONSULTATION

The National Communications System (NCS) Committee of Principals (COP) is an interagency group that provides advice and recommendations on NS/EP telecommunication programs and activities. These recommendations are submitted to the Policy Coordinating Committee for National Security Telecommunications and Information Systems (PCC-NSTIS), through the Manager and Executive Agent, NCS. The PCC-NSTIS, which is chaired by the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (C³I), is composed of representatives from the National Security Council (NSC), the Office of Science and Technology Policy (OSTP), and the Office of Management and Budget (OMB). The COP established the Council of Representatives (COR) as a permanent, subordinate group to address NS/EP telecommunication issues. Together, these groups address the complex NS/EP telecommunication needs of the 23 NCS member organizations.

- 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 NTIA 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.

- The OMNCS and Naval War College representatives briefed on Global War Game 1992.
- NTIA explained trunked radio systems for Federal agencies in the Washington, D.C., area.
- GSA presented its plan to convert from 7-digit to 10-digit dialing throughout the Federal Telecommunications System (FTS2000) network.
- A representative of the OMNCS discussed mobile satellite services and their applications to NS/EP communications.
- GSA discussed video compression technologies.

..... **OFFICE OF THE MANAGER,**

NCS, SIGNIFICANT ACTIVITIES

In performing its administrative functions, the Office of the Manager, NCS, coordinated and maintained NCS issuances, records of memorandums of agreement (MOA) between the NCS and other organizations, and NCS document archives.

THE NCS ISSUANCE SYSTEM

The NCS Issuance System governs policy and guidance issuances that concern the internal organization, policies, procedures, practices, management, and/or personnel of the NCS. The following NCS issuances were approved and distributed this fiscal year:

- NCSD 3-4, "National Telecommunications Management Structure."
- NCSD 4-2, "Focal Point for Electromagnetic Pulse Information."
- NCSH 3-3-1, "Shared Resources (SHARES) High Frequency (HF) Radio Program Directory" (May 15, 1992 edition).

MEMORANDUMS OF AGREEMENT

The Executive Office of the President (EOP) instructed all NCS member organizations to execute MOA's with the NCS regarding personnel support and funding for the NLP. Specifically, the MOA's require each member organization to provide personnel support to the Manager, NCS. Funding support for the NLP for FY93 and beyond is provided in accordance with National Security Directive 56 (NSD-56). NSD-56 supersedes National Security Decision Directive 201 (NSDD-201). Funding guidance for FY92 was provided by the Director, OMB, on behalf of the EOP.

NCS Membership Support. MOA's regarding personnel support ensure that each NCS member organization provides at least one full-time staff member to serve on the staff of the Manager, NCS, or as a resident representative of the NCC. The policy of providing personnel support was implicitly established by Executive Order (E.O.) 12472 to promote the coordination responsibilities embodied in the NCS structure. Later, the Assistant to the President for National Security Affairs issued a memorandum to member organizations reaffirming this NCS membership responsibility. According to the policy, member organizations cannot be exempt from furnishing personnel unless a waiver is obtained from the Assistant to the President for National Security Affairs. Exhibit 2-1 depicts the personnel support provided to the Manager, NCS, or NCC by each member organization at the close of the reporting period.

Funding. The OMB directed each NCS member organization to work with the Manager, NCS, to develop the necessary MOA's and interagency funding agreements (IFA) to transfer member funds to the NCS for the NLP. Exhibit 2-2 shows the members who executed MOA's and IFA's with the Manager, NCS, as of September 30, 1992. Under the provisions of NSD 56, the Department of Defense and the Federal Emergency Management Agency will fund the NLP after FY92.

NS/EP Telecom News

The *NS/EP Telecom News*, published bimonthly by the NCS Office of the Joint Secretariat, provides an NS/EP impact assessment for the NCS and NS/EP telecommunications community, and helps the NCS keep abreast of legislative, regulatory, judicial, technological, and executive developments. In FY92, *NS/EP Telecom News* provided:

- In-depth discussions of personal communication networks (PCN) and wireless communication services, the 1992 World Administrative Radio Conference (WARC) and radio frequency spectrum allocation, telephone outages and Federal Communications Commission (FCC) service disruption reporting requirements, competition in the local exchange market, network management and open systems, and transmission performance standards.
- Special editions to commemorate the 10-year anniversary of the NSTAC and to remind the NS/EP community of the need to transition from the Restoration Priority (RP) System to TSP by March 1993.

NATIONAL SECURITY

TELECOMMUNICATIONS ADVISORY

COMMITTEE

The National Security Telecommunications Advisory Committee (NSTAC) consists of 24 Chief Executive Officers representing major telecommunications industry carriers, manufacturers, and aerospace firms. Established by E.O. 12382 in September 1982, the NSTAC provides advice and expertise to the President and the Executive Agent, NCS, on issues and problems related to implementing NS/EP telecommunications policy. The NSTAC's Industry Executive Subcommittee (IES) and its working groups, task forces, and other subordinate groups, analyze NS/EP telecommunication issues and report their activities and recommendations through the NSTAC to the President. Because the

OMNCS is the focal point for joint industry-Government planning, all NSTAC activities are supported by and closely coordinated with the OMNCS.

EXHIBIT 2-1

PERSONNEL SUPPORT FROM NCS

MEMBER ORGANIZATIONS

PERSONNEL FURNISHED	MEMBER ORGANIZATION
2 ⁵	DOS
1	TREAS
89 ²	DoD
14	• U.S. Army
2	• U.S. Navy
10	• U.S. Air Force
63	• Civilian
5 ³	• DISA
1	DOJ
0	DOI
0	USDA
0	DOC
1	HHS
2	DOT
1 ⁵	• U.S. Coast Guard
1	• Federal Aviation Administration
0	DOE
1	DVA
1	CIA
N/A	JS
2 ⁴	GSA
0 ⁵	USIA
1	NASA
2 ⁵	FEMA
1 ¹	FCC
1	NRC
0 ¹	USPS
0 ¹	FRS
1	NSA
0	NTIA

NOTES:

1. Liaison membership status; no support requirements
2. DoD authorizations as of 10/01/87
3. DISA comptroller personnel supporting Manager, NCS
4. Other GSA-furnished personnel:
 - 4 reserve on-call to NCC
 - 11 part-time regional communications managers
 - 4 full-time planners
5. One position assigned to NCC

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

NSTAC MEETINGS
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- **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
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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

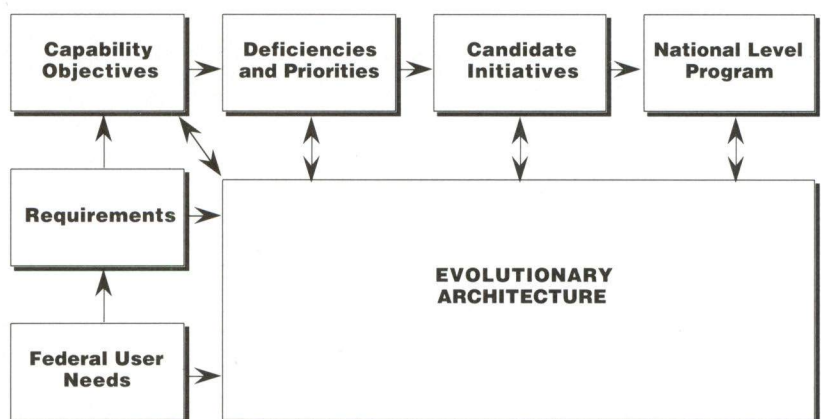
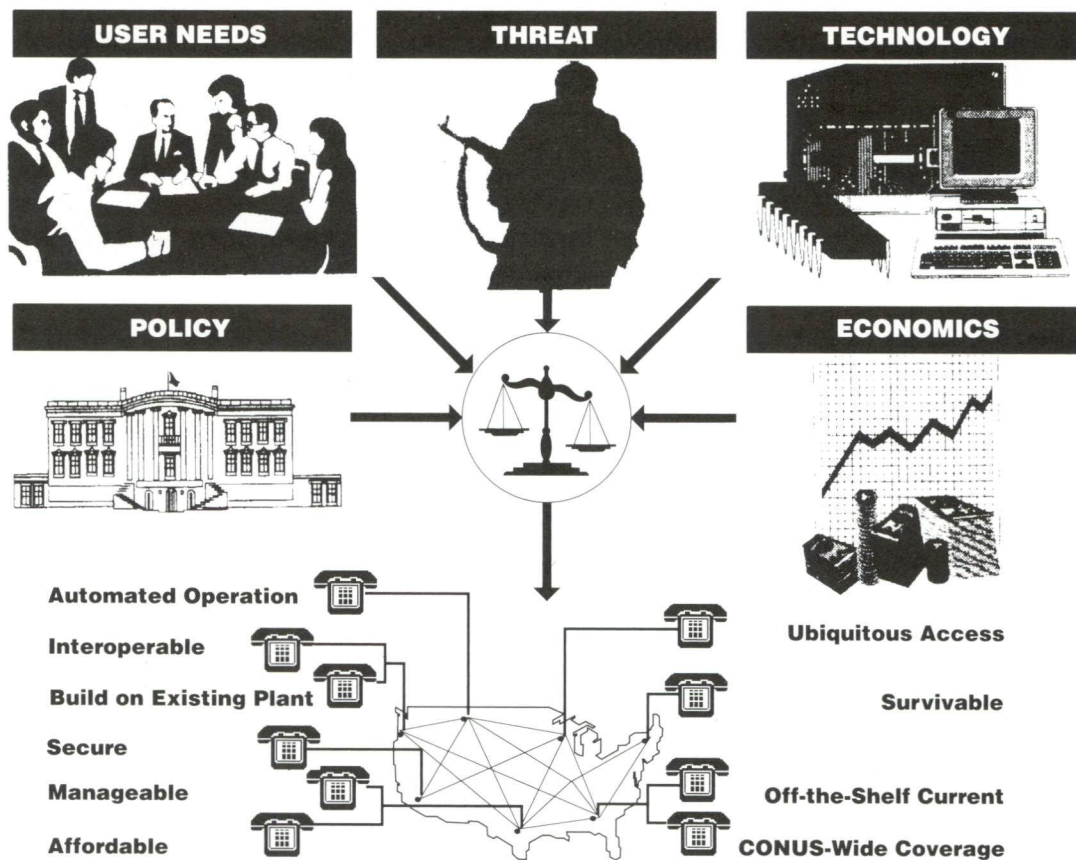


EXHIBIT 2-4

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.

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)*

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.

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:

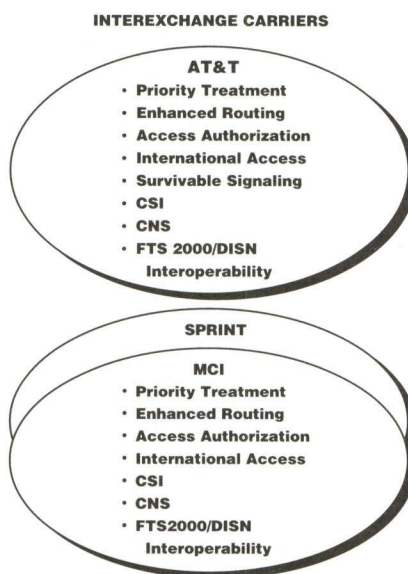
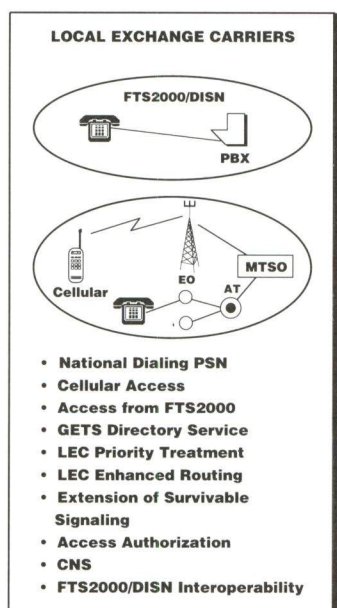
- A GETS Integration Contractor Industry conference was held.
- The Government released three Requests for Proposals (RFP). RFP's were released to AT&T, MCI, and Sprint for procurement of similar GETS services in the interexchange carrier (IEC) networks. A fourth RFP was prepared for release in October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

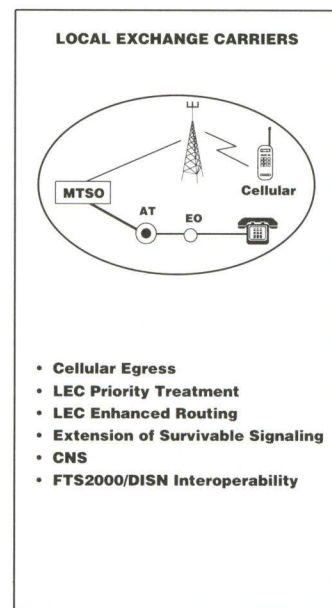
- An annual Robust Non-Hierarchical Routing (RNHR) redesign was completed to reflect changes in the AT&T network and increase the number of CSI links to 28.

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:

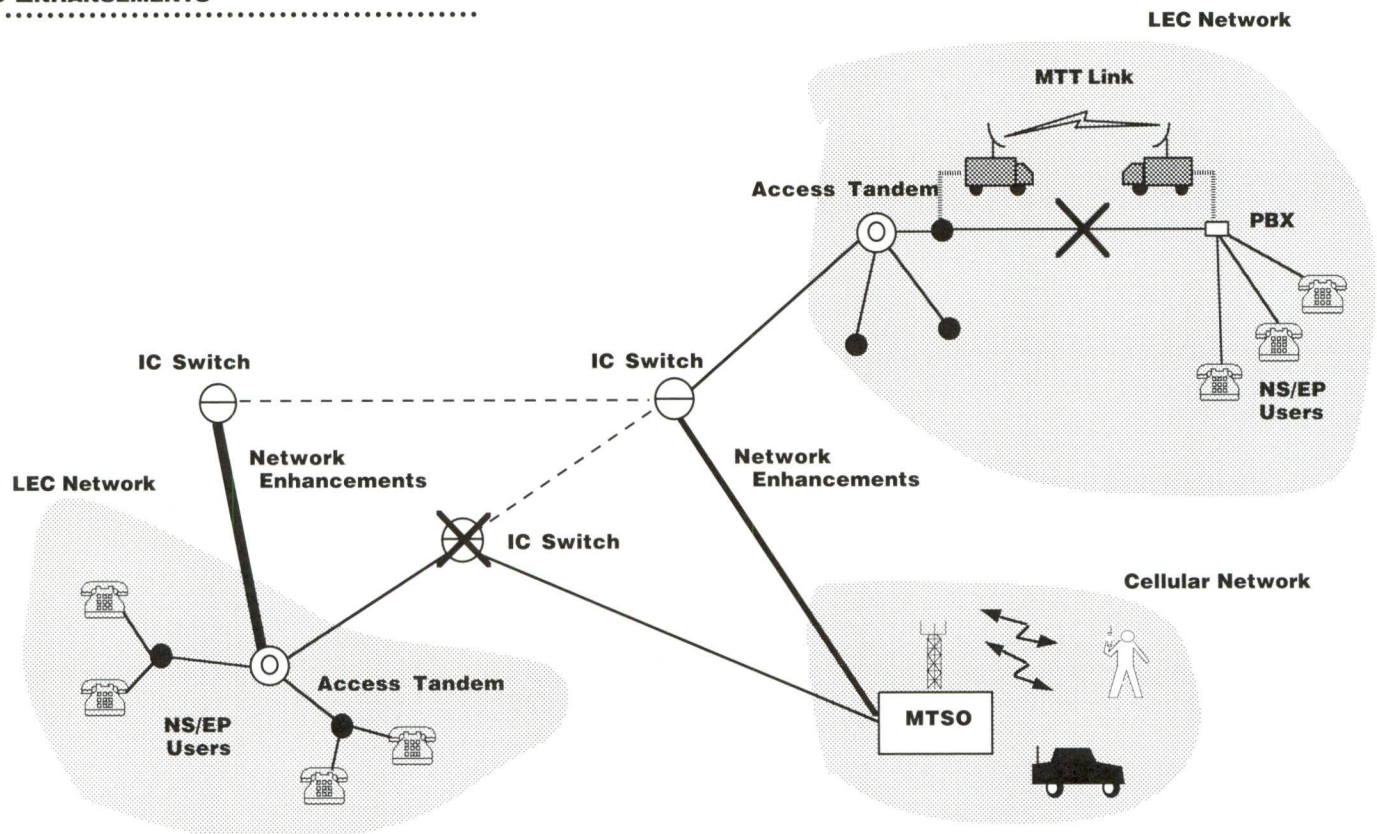
- Analysis of telecommunication systems and assets, and developing survivability enhancement recommendations.
- Evaluation of priority treatment capabilities of cellular systems and system designs for wireless communication networks to determine opportunities for improving NS/EP telecommunications. The 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

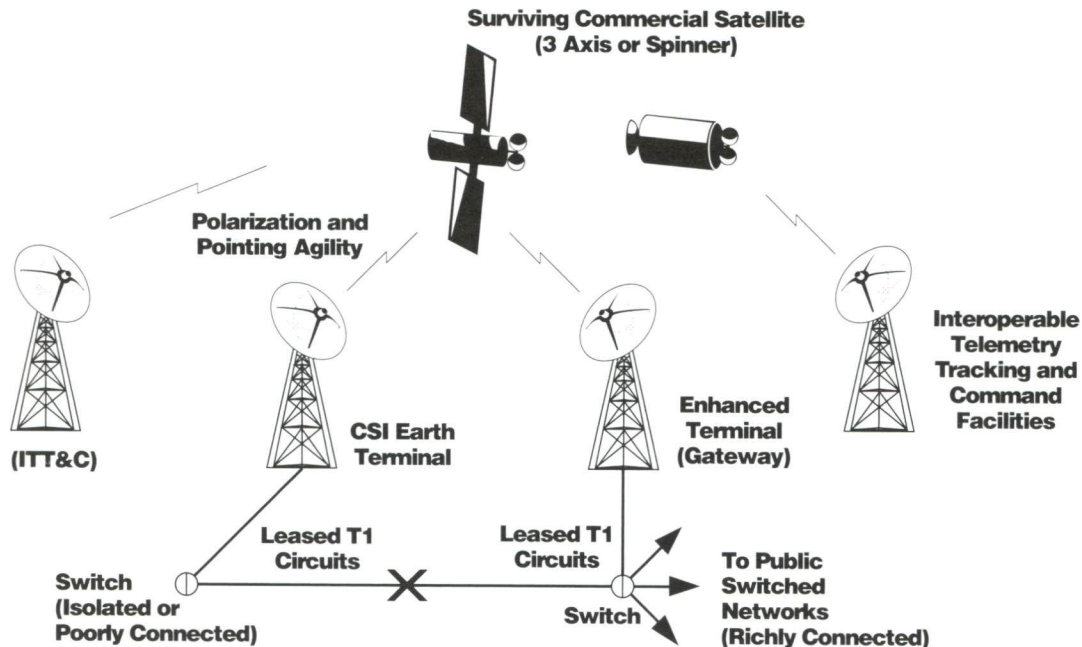
As shown in Exhibit 2-7, the CSI program uses surviving commercial C-band satellites to enhance the long-haul connectivity of the PSN during national emergencies. The CSI network consists of two interoperable telemetry, tracking, and control (ITT&C) facilities that allow interoperability within the two 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

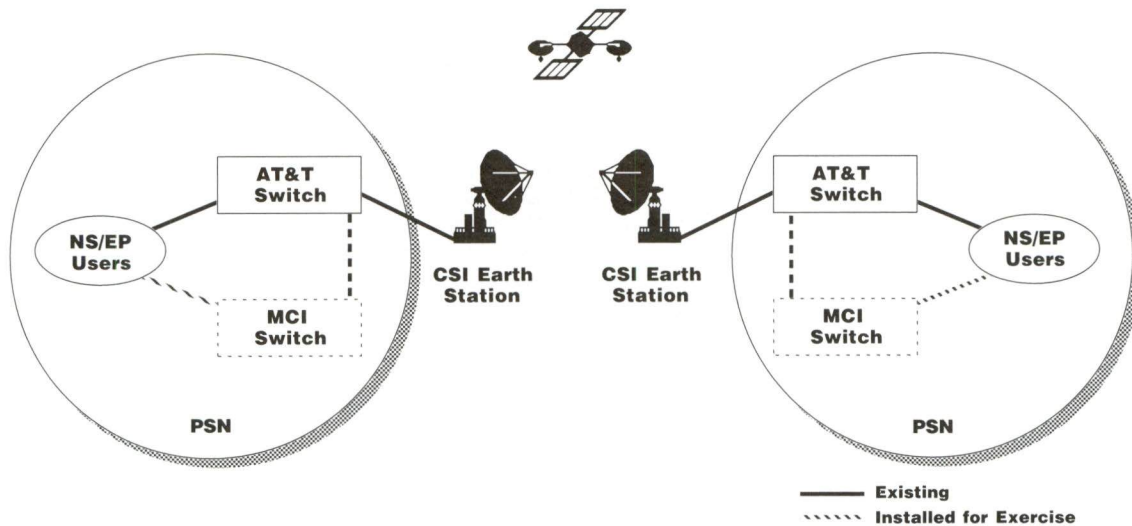
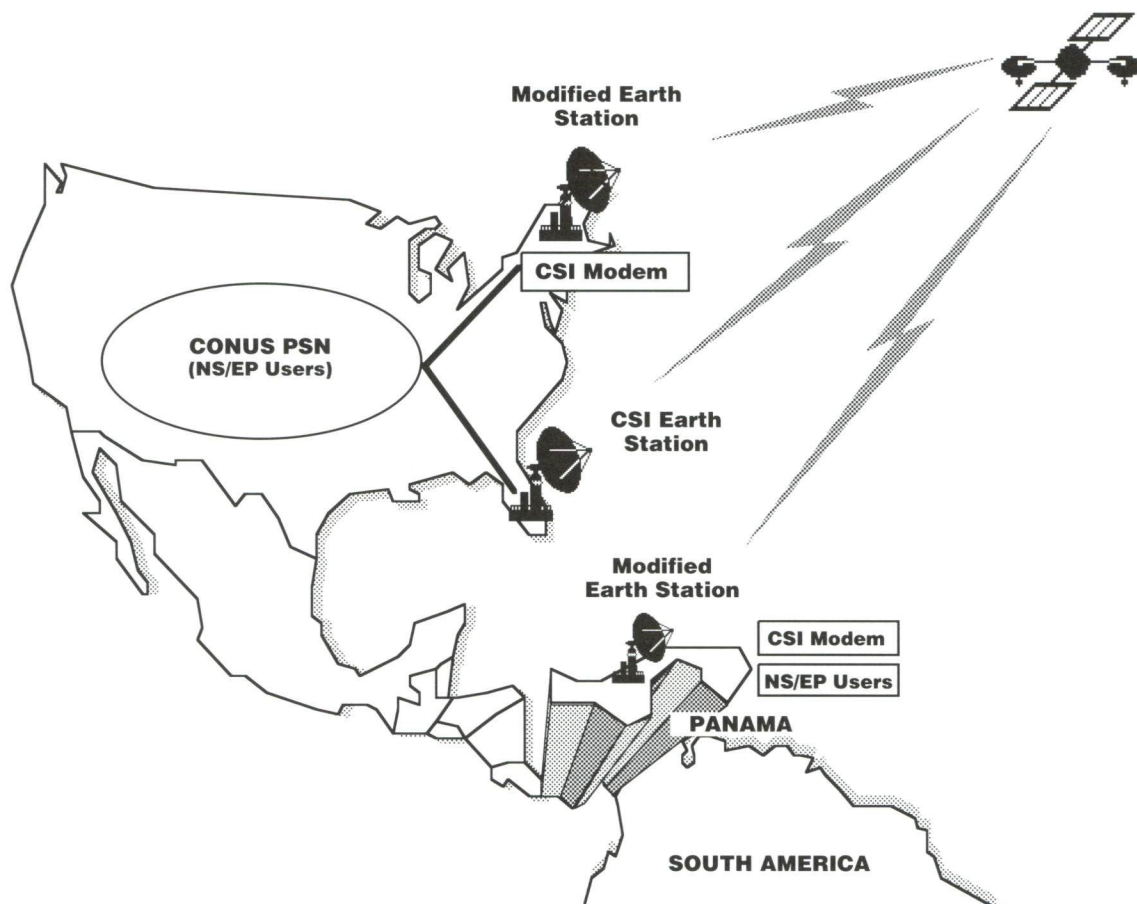


EXHIBIT 2-9

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.)

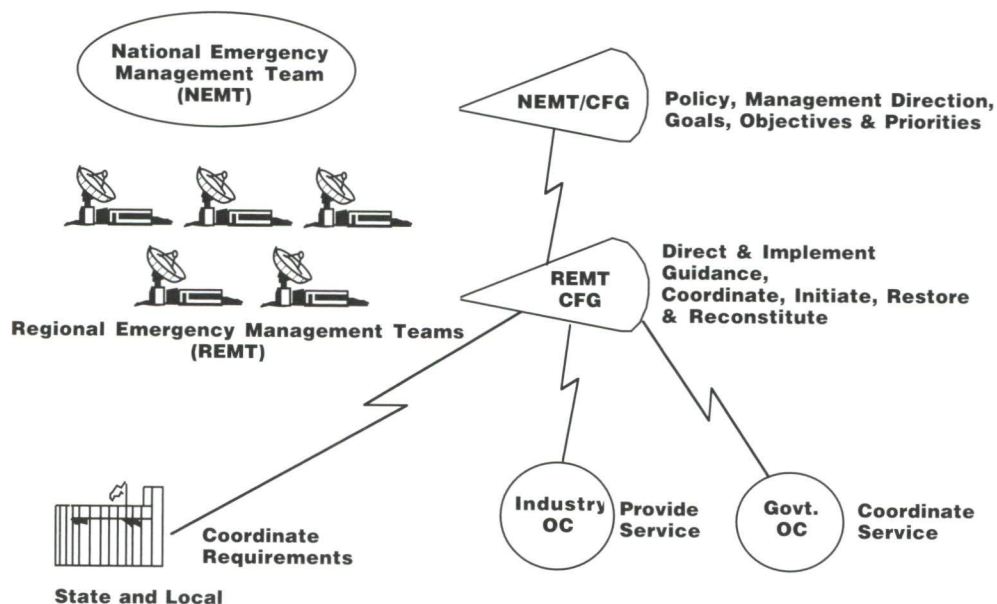
NTMS IOC was achieved in October 1990 at Maynard, Massachusetts, when the first joint Government-industry Regional Emergency Management Team Communications Functional Group (REMT CFG) became operational and supporting Operating Centers (OC) were identified in the northeast region. In FY91, REMT CFGs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

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 2-11

NTMS NOTIONAL REGIONAL CONNECTIVITY

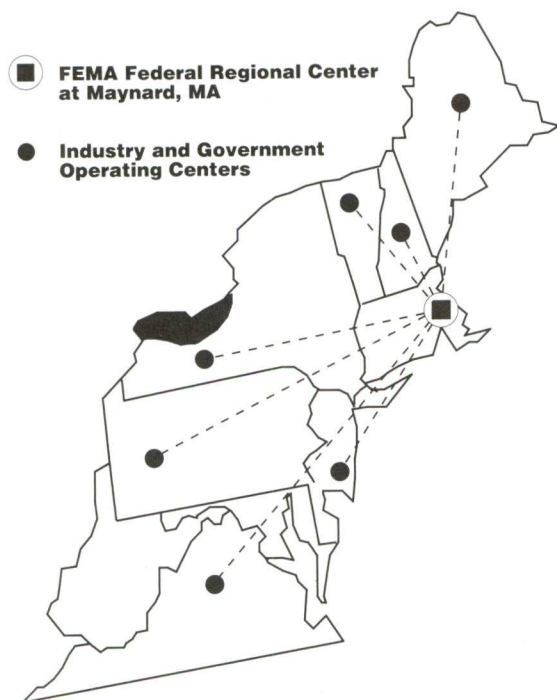
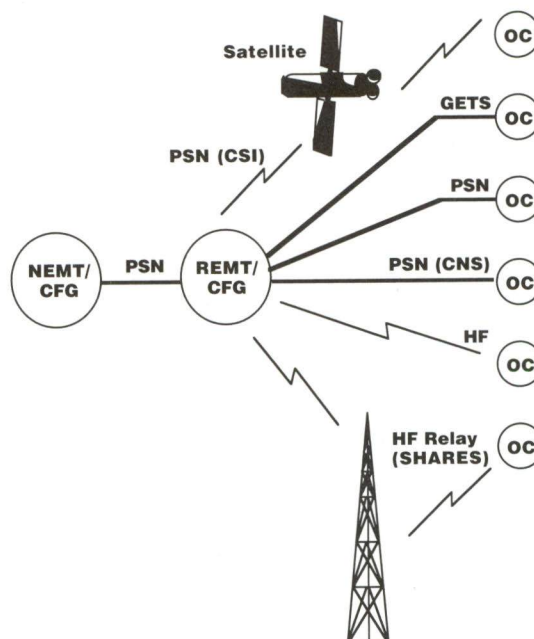


EXHIBIT 2-12

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 telecommunication 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.

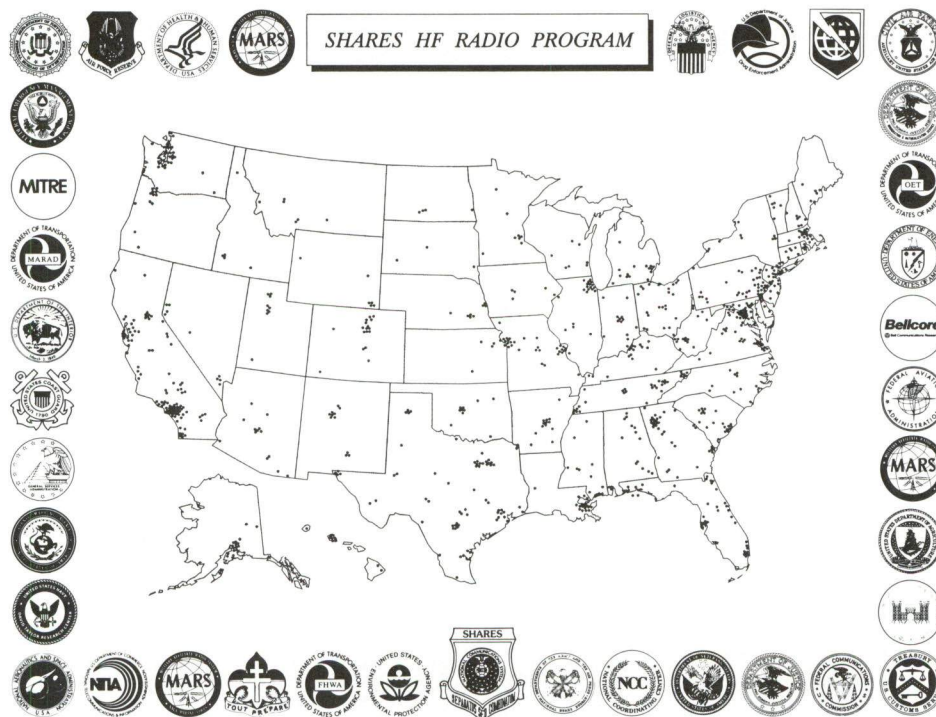
In FY92, the TSP PO was reorganized as an operational element and placed in the NCC for reporting purposes.

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 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.

SHARES HF RADIO STATIONS



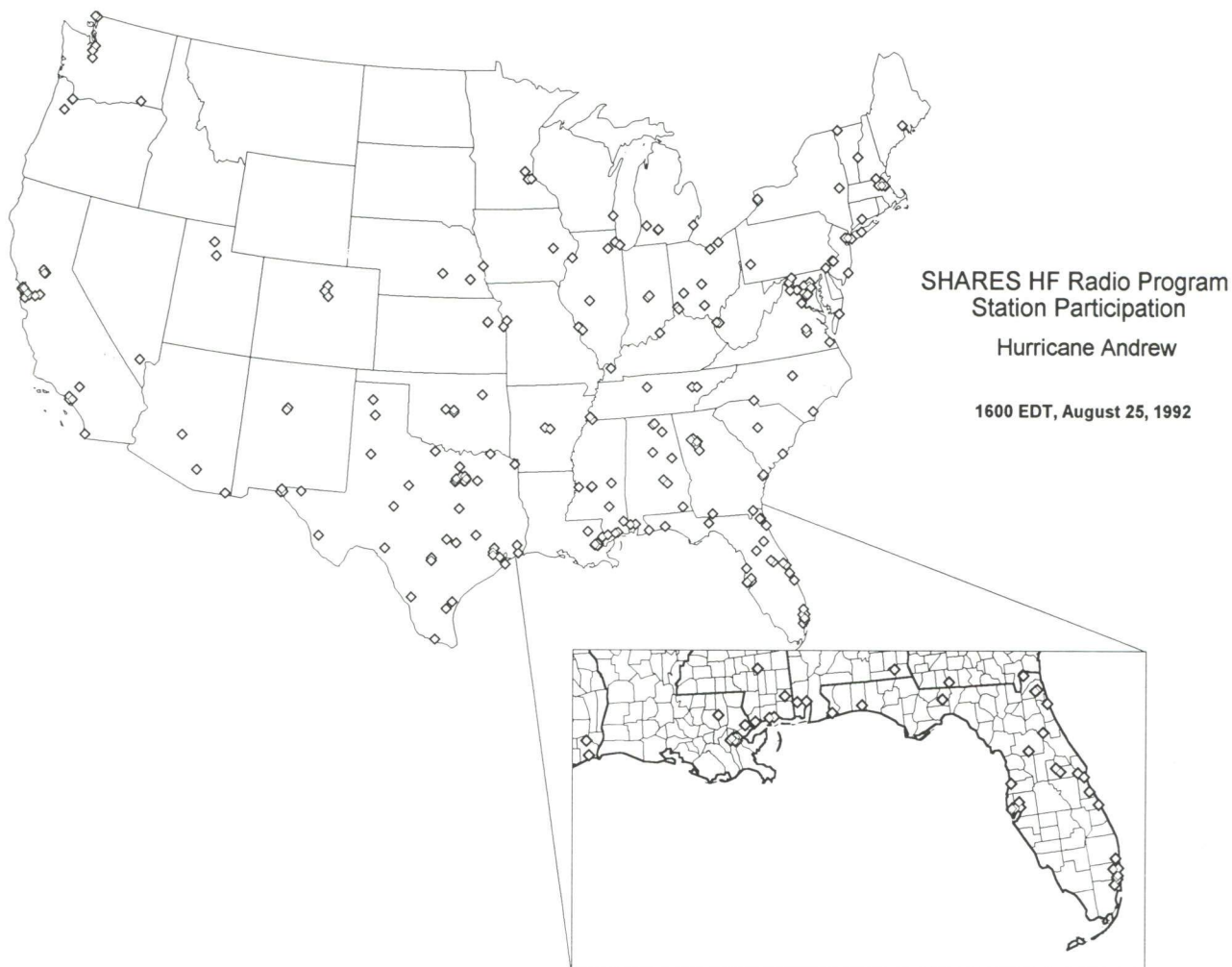
- Of the 53 SHARES stations located in the immediate impact area of Hurricane Andrew, 36 were available to support SHARES.
- Thirty-three of the 36 Federal and federally affiliated departments and agencies participating in the SHARES program reported stations on the air and available.
- The SHARES Emergency 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

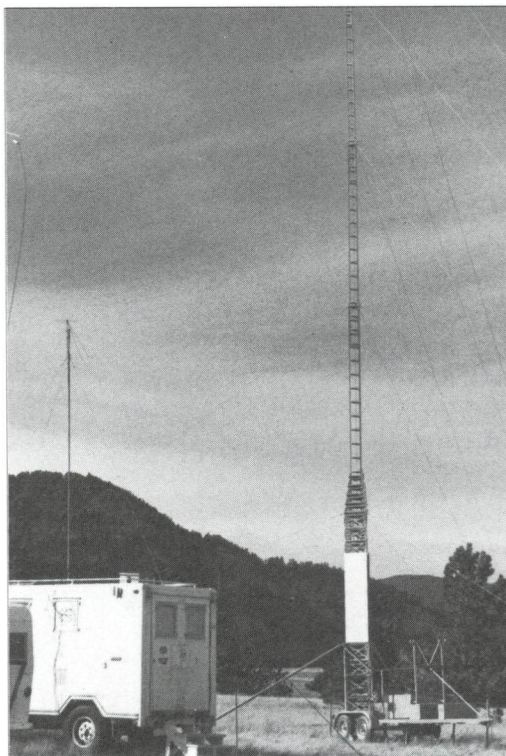
Semiconductors. Complementary Metal Oxide Semiconductors (CMOS) technology is used extensively in electronic equipment. The extremely low power consumption of CMOS is its key quality. However, CMOS is vulnerable to fallout radiation. This vulnerability was addressed through a special work effort that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

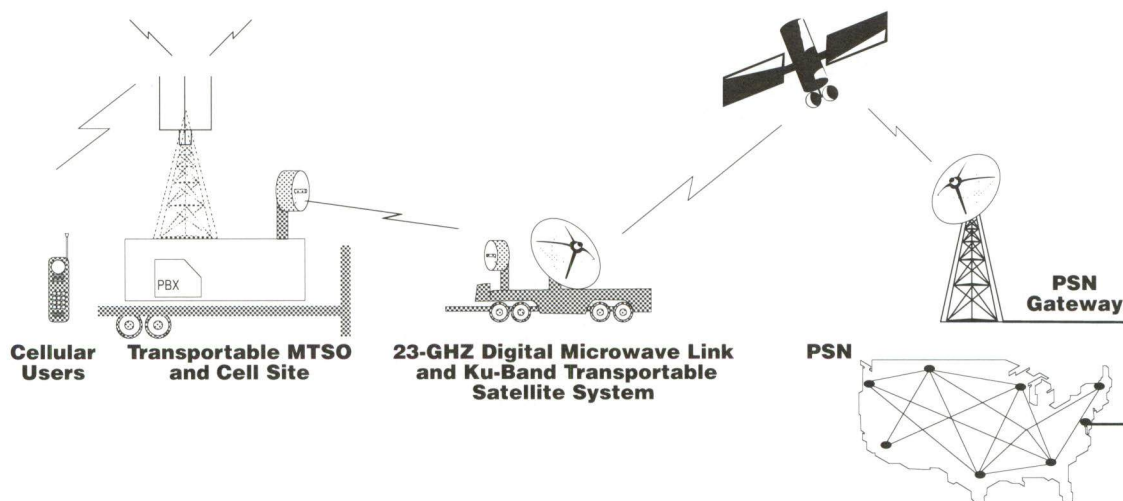
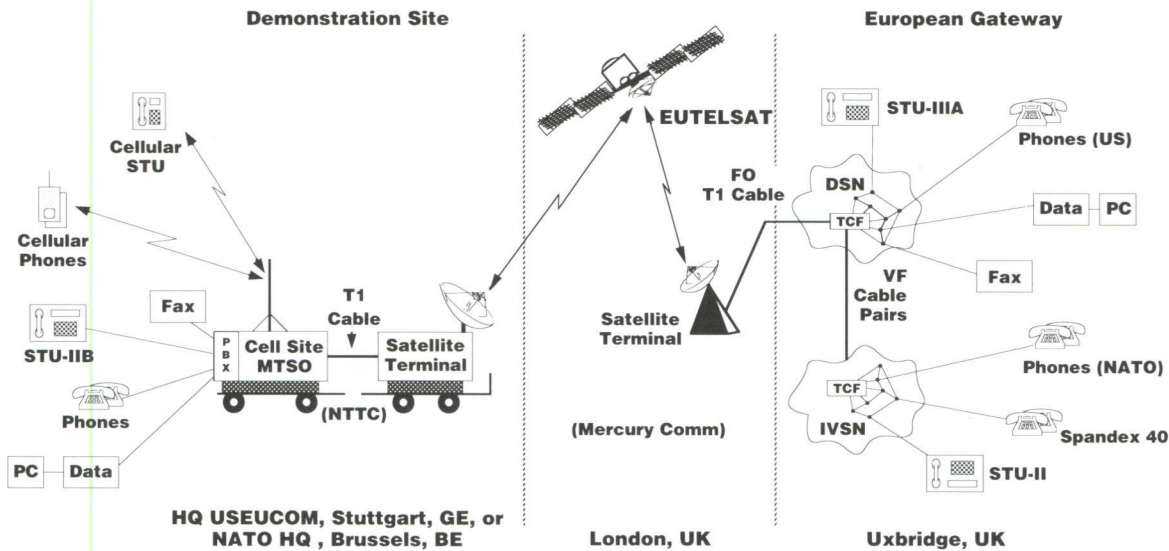


EXHIBIT 2-16

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
- 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.

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

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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

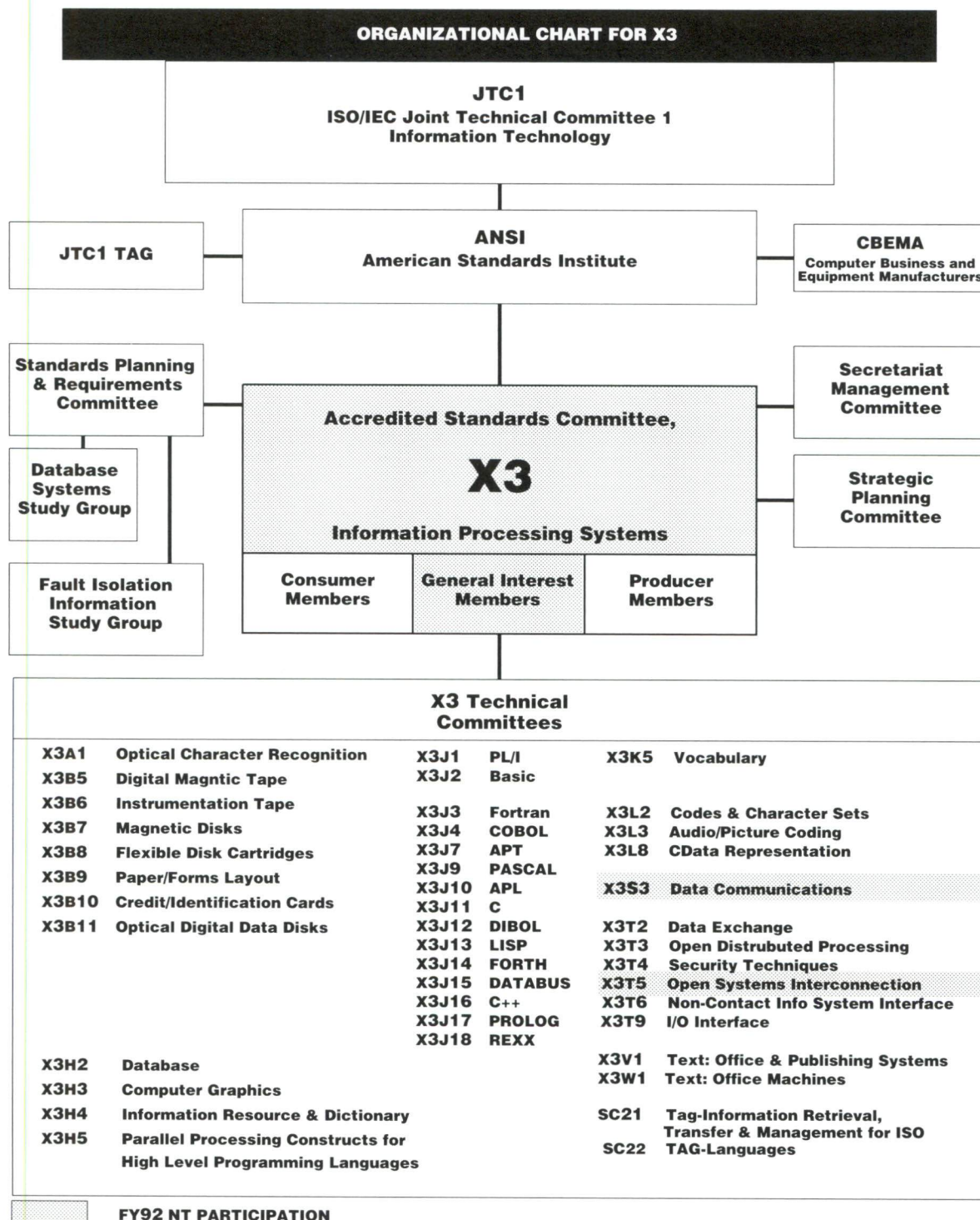
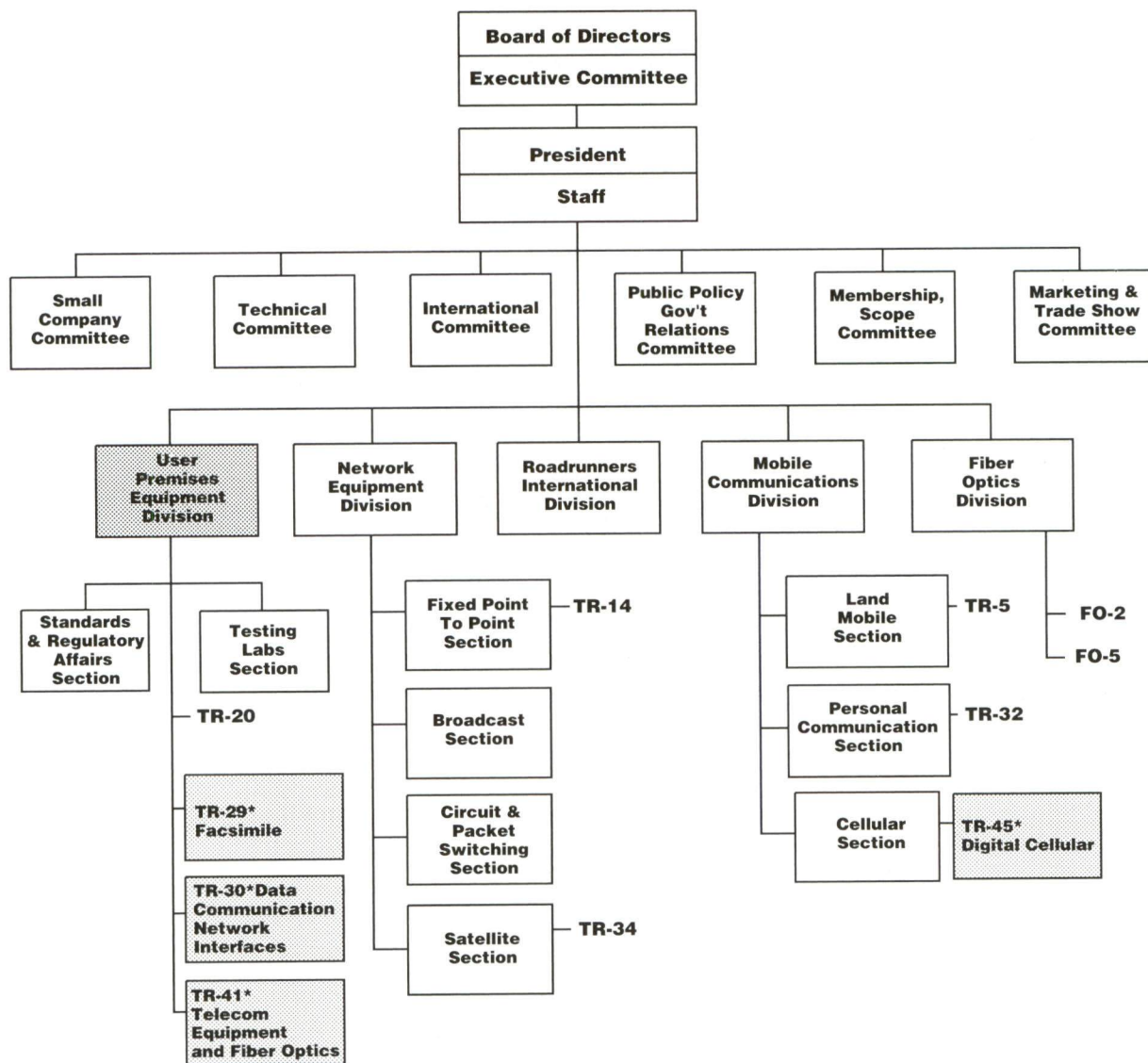
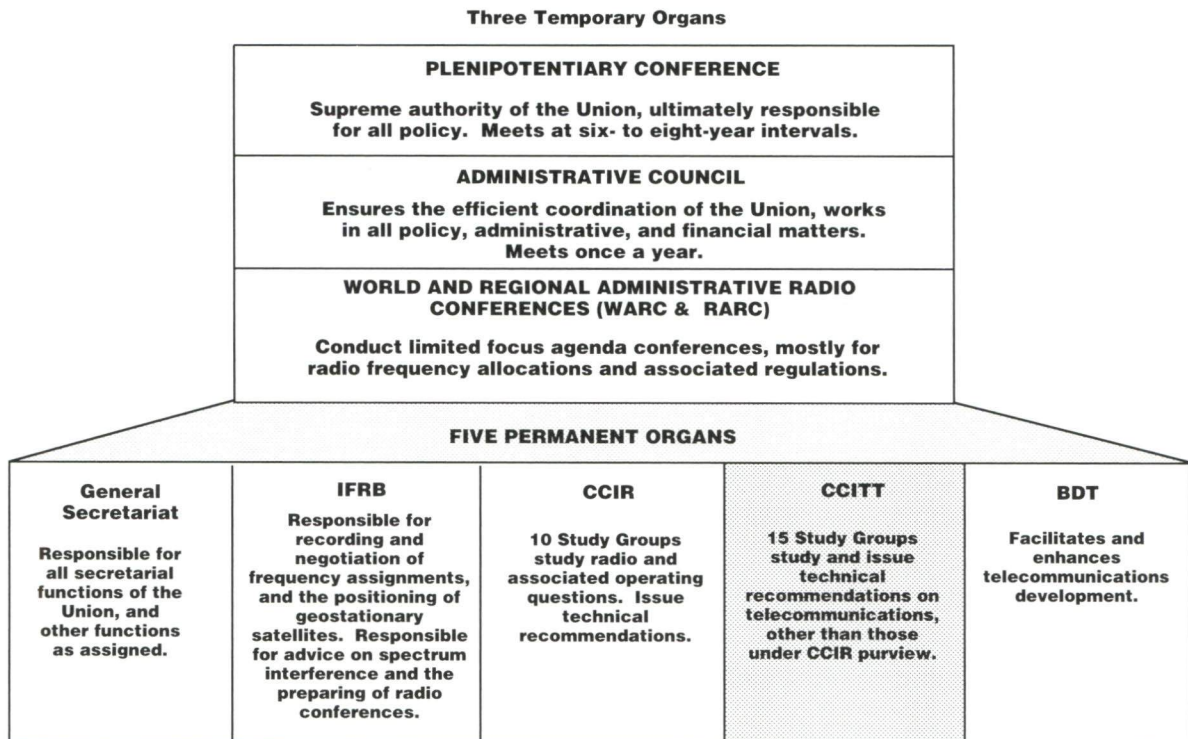


EXHIBIT 2A-2

TIA ORGANIZATIONAL CHART



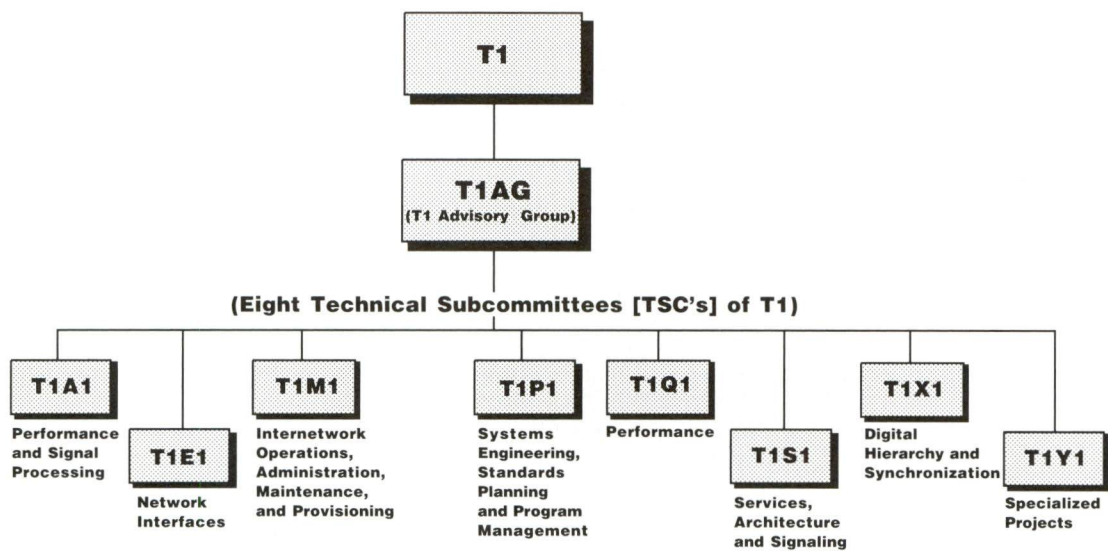
***NT PARTICIPATION**

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)**

TIB #	Title	Date	AD #
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

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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						

ECOMMUNICA

AND REGULAT

DEVELOPME

NS/EP TELECOMMUNICATION POLICY AND REGULATORY DEVELOPMENTS

This 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

VOICE BAND SERVICE	The service must provide voice band service in support of presidential communications.
INTEROPERABILITY	The service must interoperate with and use the resources of selected other government or private facilities, systems, and networks through the application of standards.
SURVIVABILITY/ ENDURABILITY	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.
INTERNATIONAL INTERFACE	The service must provide access to and egress from international service.
NATIONWIDE COVERAGE	The service must provide readily available nationwide coverage to support national security leadership and inter/intraagency emergency operations.
INTRA/INTERAGENCY EMERGENCY OPERATIONS	Common user service must provide NS/EP traffic with priority service.

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

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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)

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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

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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

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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

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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)
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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

The 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.

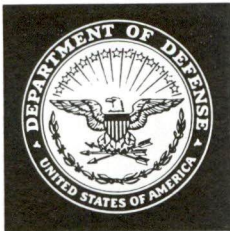
- Instituted a Wireless and Radio Support Service (WRSS) program to develop and incorporate digital radio and wireless communications technological advances into future Treasury systems. This program will examine how Treasury bureaus can utilize the new digital very high frequency/ultra high frequency (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

Under 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 (C³I). C³ 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 contractors 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

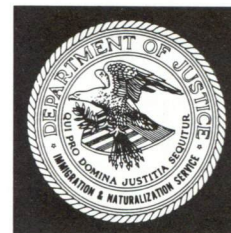
- Provided recording support for the Chairman, JCS. Produced and facilitated 14 programs, recorded in the Visual Recording Facility studio or on location.
- Provided television production support for politico-military war games and disaster scenarios for the Joint Staff, Department of Defense, and other 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)**
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- 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

The 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

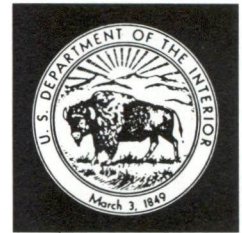
The following current/ongoing activities support NS/EP objectives:

- 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.



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DEPARTMENT OF THE INTERIOR (DOI)

NS/EP TELECOMMUNICATIONS

MISSION
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DOI 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.

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TELECOMMUNICATIONS STAFF

ORGANIZATION
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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.

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SIGNIFICANT ACCOMPLISHMENTS
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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.

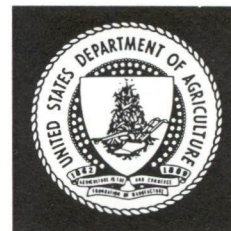
.....
CURRENT/ONGOING NS/EP

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TELECOMMUNICATION ACTIVITIES
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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.

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PENDING ISSUES
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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.



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**UNITED STATES DEPARTMENT OF
AGRICULTURE (USDA)**

NS/EP TELECOMMUNICATIONS

MISSION
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The 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
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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.

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SIGNIFICANT ACCOMPLISHMENTS
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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.

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CURRENT/ONGOING NS/EP

TELECOMMUNICATION ACTIVITIES
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- 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

The 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

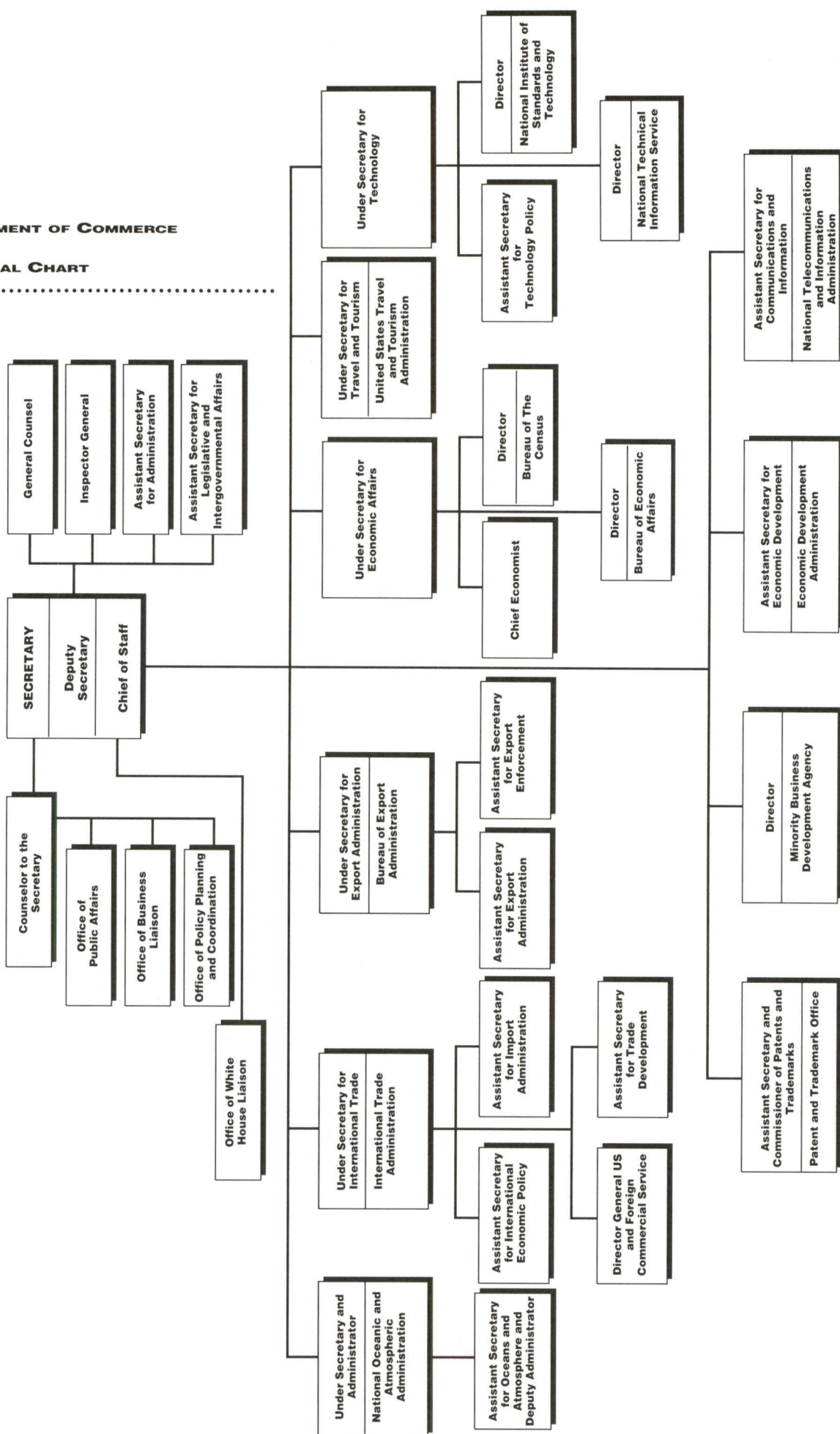
The DOC and its operating units are continuing to make significant accomplishments in supporting the above emergency functions by providing communication resources vital to the flow of information; these accomplishments are listed below:

- 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.

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.



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**DEPARTMENT OF HEALTH AND HUMAN
SERVICES (DHHS)**

NS/EP TELECOMMUNICATIONS

MISSION
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The 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
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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
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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
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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

DOT 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 (C³) support program. (See Exhibit 4-2 for an organizational chart.)

.....
CURRENT/ONGOING NS/EP

TELECOMMUNICATION ACTIVITIES
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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.

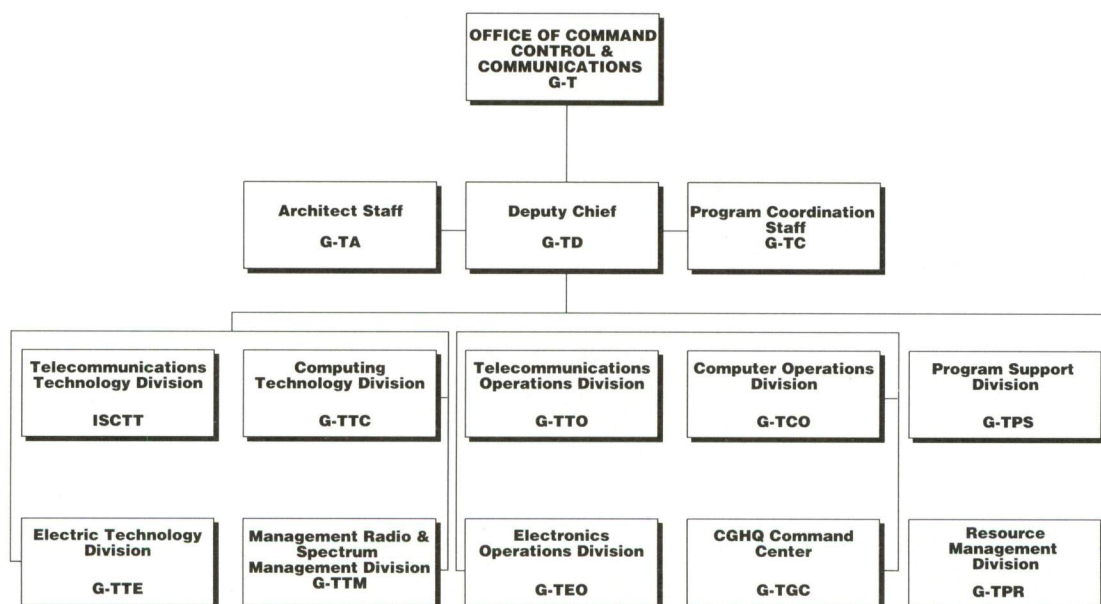
Complete PARKHILL replacement is expected by the end of FY92.

- 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 (C³)



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 C³ 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 (FAATSAT) 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.

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PENDING ISSUES
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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.

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**FEDERAL HIGHWAY
ADMINISTRATION (FHWA)
NS/EP TELECOMMUNICATIONS
MISSION**
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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.

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**TELECOMMUNICATIONS STAFF
ORGANIZATION**
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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.

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**CURRENT/ONGOING NS/EP
TELECOMMUNICATION ACTIVITIES**
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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.

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PENDING ISSUES
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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.

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RESEARCH AND SPECIAL PROGRAMS

ADMINISTRATION (RSPA)

NS/EP TELECOMMUNICATIONS

MISSION
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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.

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TELECOMMUNICATIONS STAFF

ORGANIZATION
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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.

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SIGNIFICANT ACCOMPLISHMENTS
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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.

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CURRENT/ONGOING NS/EP

TELECOMMUNICATION ACTIVITIES
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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.

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MARITIME ADMINISTRATION (MARAD)

NS/EP TELECOMMUNICATIONS

MISSION
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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.

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TELECOMMUNICATIONS STAFF

ORGANIZATION
.....

Responsibilities are handled as a collateral duty by the overall organization.

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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.

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CURRENT/ONGOING NS/EP

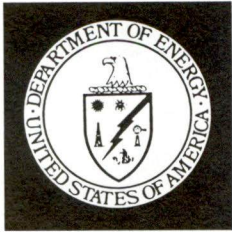
TELECOMMUNICATION ACTIVITIES
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MARAD has had the U.S. Merchant Marine Academy vessel Kings Pointer designated as a SHARES station. The vessel serves as part of the Federal Highway Administration high frequency telecommunications network. Equipment tests will continue throughout FY93.

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PENDING ISSUES
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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.



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DEPARTMENT OF ENERGY (DOE)

NS/EP TELECOMMUNICATIONS

MISSION
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The 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.

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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.

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CURRENT/ONGOING NS/EP

TELECOMMUNICATION ACTIVITIES
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INTERAGENCY ACTIVITIES
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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
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- 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
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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
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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 telecommunications 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

The 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 telecommunications 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

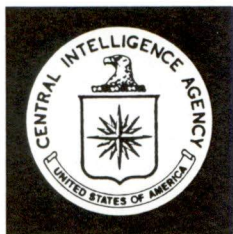
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VA maintains multiple HF emergency radio sites throughout the country including eight corporate HF radio sites. These stations provide essential radio communications during an emergency and/or when other communication resources fail. Additional emergency radios will be placed in VA's four medical regions.

SHARES

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VA is also an active member of the SHARES HF Radio Program, providing emergency radio communications whenever required and technically feasible.



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CENTRAL INTELLIGENCE AGENCY (CIA)
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This report is included as part of the
CLASSIFIED supplement to the FY92
NCS Annual Report.



.....
THE JOINT STAFF (JS)

NS/EP TELECOMMUNICATIONS

MISSION
.....

The Director for Command, Control, Communications, and Computer (C⁴) Systems (J-6) provides assistance to the Chairman, Joint Chiefs of Staff, in the following areas:

- Develops policies, plans, and programs for C⁴ systems
- Ensures adequate C⁴ support to the CINC's and the National Command Authority for joint and combined military operations
- Conceptualizes future C⁴ systems design and provides direction to improve command and control systems.

.....
TELECOMMUNICATIONS STAFF

ORGANIZATION
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The C⁴ 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 C⁴ 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.

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SIGNIFICANT ACCOMPLISHMENTS
.....

(Refer to DoD section.)

.....
CURRENT/ONGOING NS/EP

TELECOMMUNICATION ACTIVITIES
.....

(Refer to DoD section.)

.....
PENDING ISSUES
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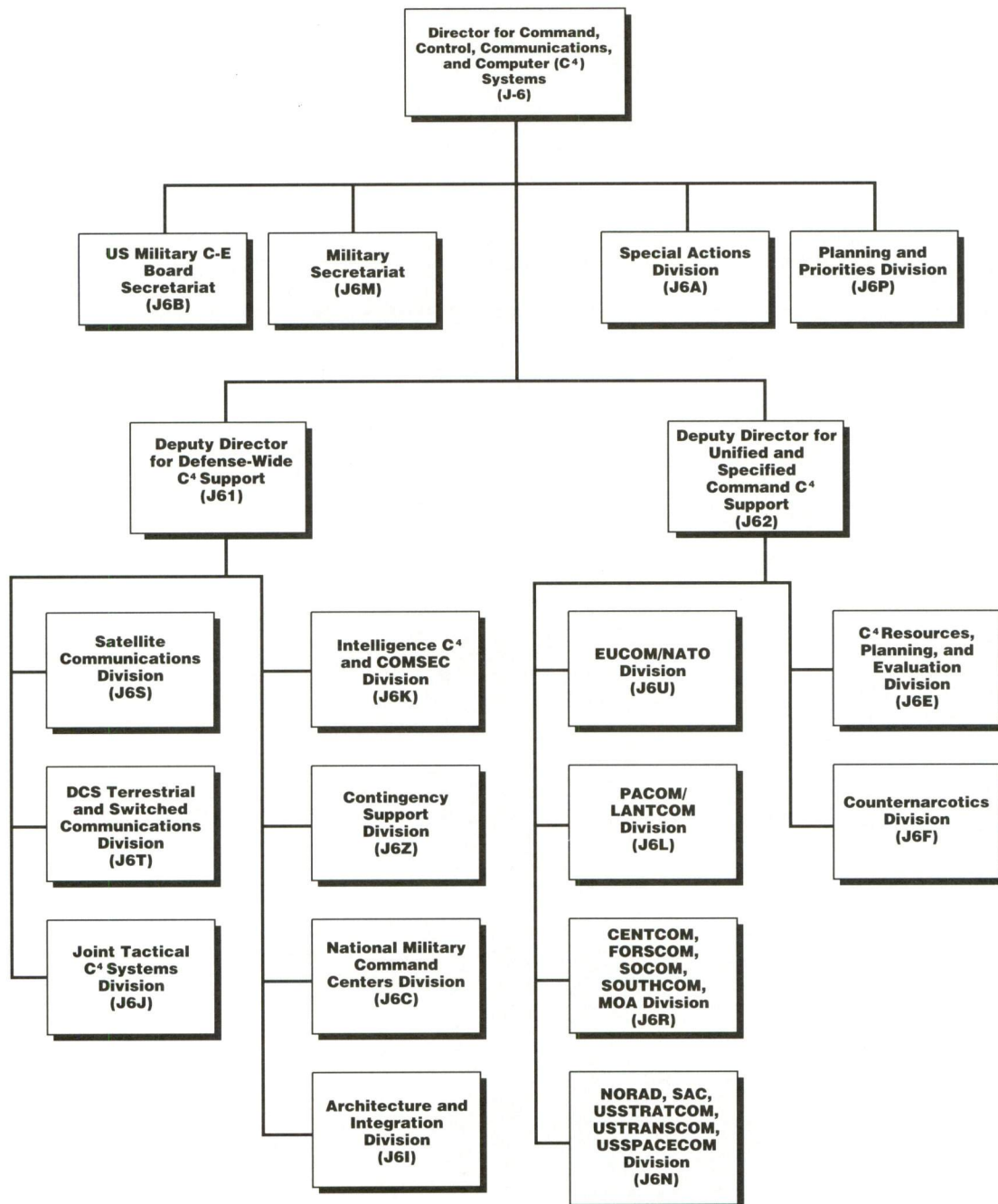
(Refer to DoD section.)

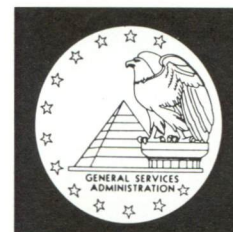
EXHIBIT 4-3

COMMAND, CONTROL, COMMUNICATIONS, AND

COMPUTER (C⁴) DIRECTORATE (J-6)

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..... **GENERAL SERVICES**

ADMINISTRATION (GSA)

NS/EP TELECOMMUNICATIONS

MISSION

GSA 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

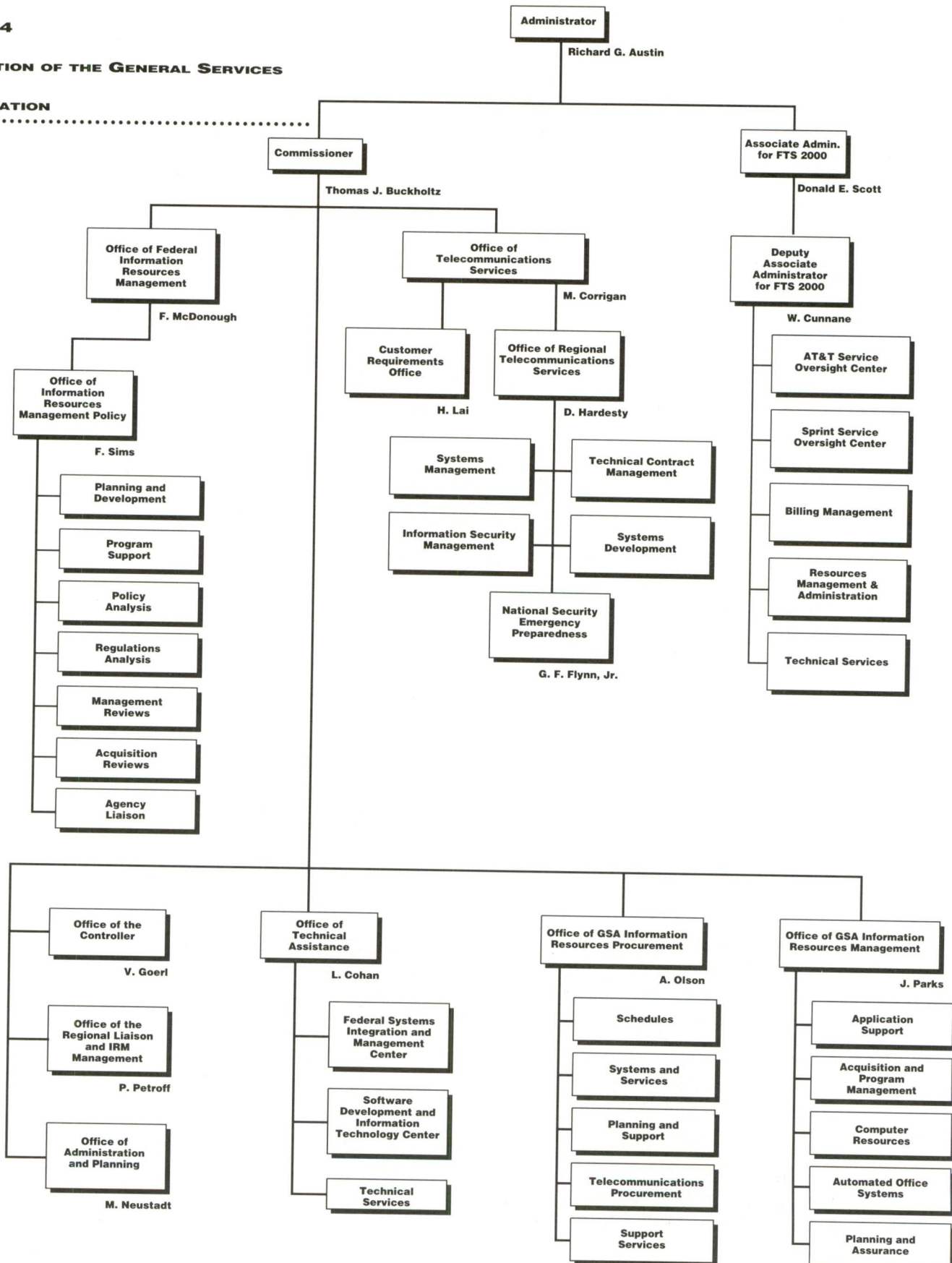
The regional Information Resources Management Service (IRMS) within GSA is organized into a four-zone configuration with field offices in the 10 Uniform Federal Regional Council Cities and the National Capital Region. Exhibit 4-4 depicts the organization of the GSA Central Office. The IRMS National Security 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 telecommunications 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.



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UNITED STATES INFORMATION

AGENCY (USIA)

NS/EP TELECOMMUNICATIONS

MISSION
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USIA 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.

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TELECOMMUNICATIONS STAFF

ORGANIZATION
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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.

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SIGNIFICANT ACCOMPLISHMENTS
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N/A

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CURRENT/ONGOING NS/EP

TELECOMMUNICATION ACTIVITIES
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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

The "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.

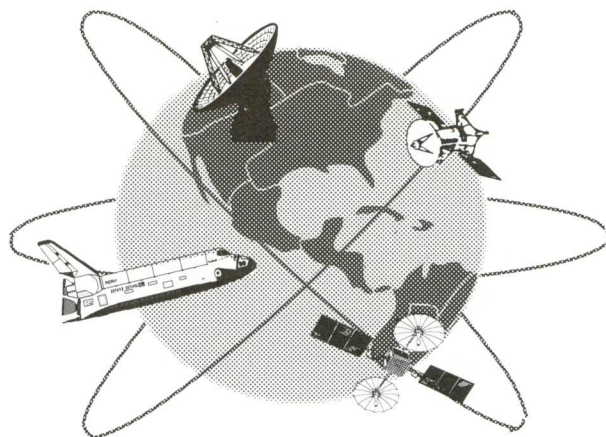
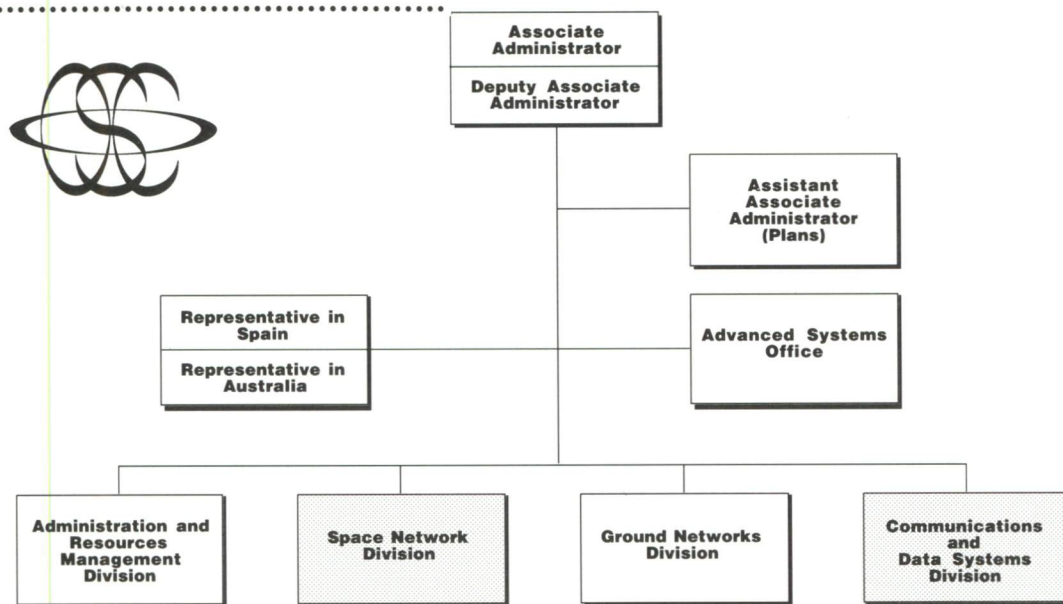


EXHIBIT 4-5

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

FEMA 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

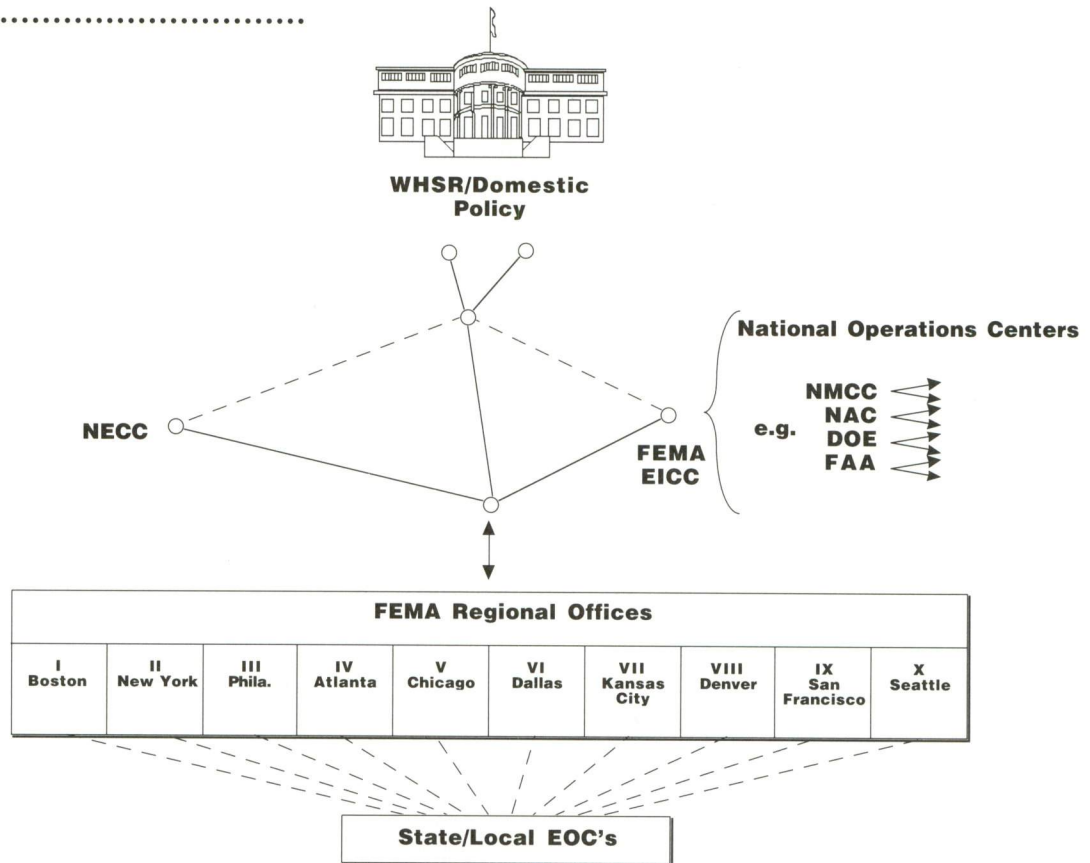
Most of FEMA's telecommunication functions are performed by the National Preparedness Directorate (NPD), which is depicted in Exhibit 4-7. The Office of

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:

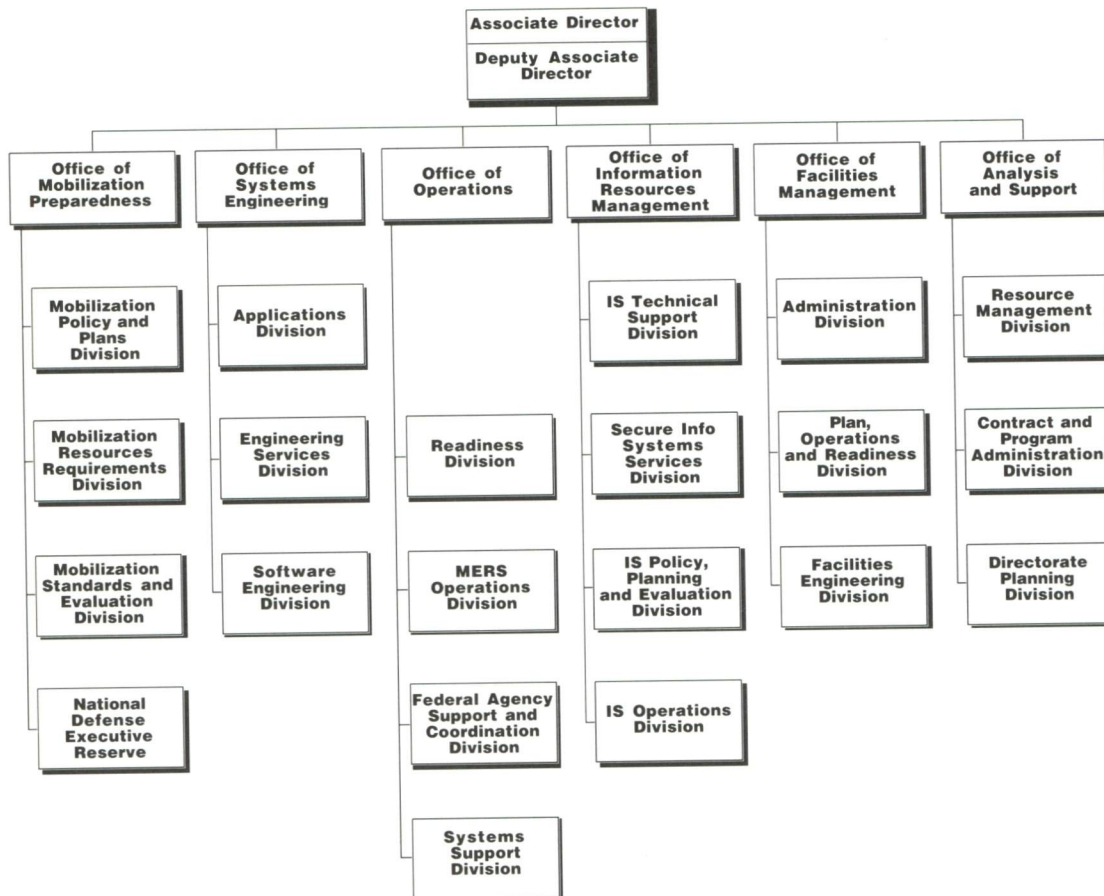
**FEDERAL EMERGENCY RESPONSE CAPABILITY
(FERC)**

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

The 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

The 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, IIR, 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

USPS 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

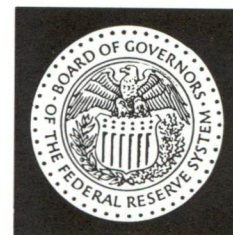
The following FY92 accomplishments will enhance the ability of USPS to support the overall NS/EP mission:

- 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.



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FEDERAL RESERVE BOARD (FRB)

NS/EP TELECOMMUNICATIONS

MISSION
.....

The 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.



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NATIONAL SECURITY AGENCY (NSA)
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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.

NS/EP TELECOMMUNICATION

ISSUES

RADIO FREQUENCY SPECTRUM

ALLOCATION

ISSUE

The 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.

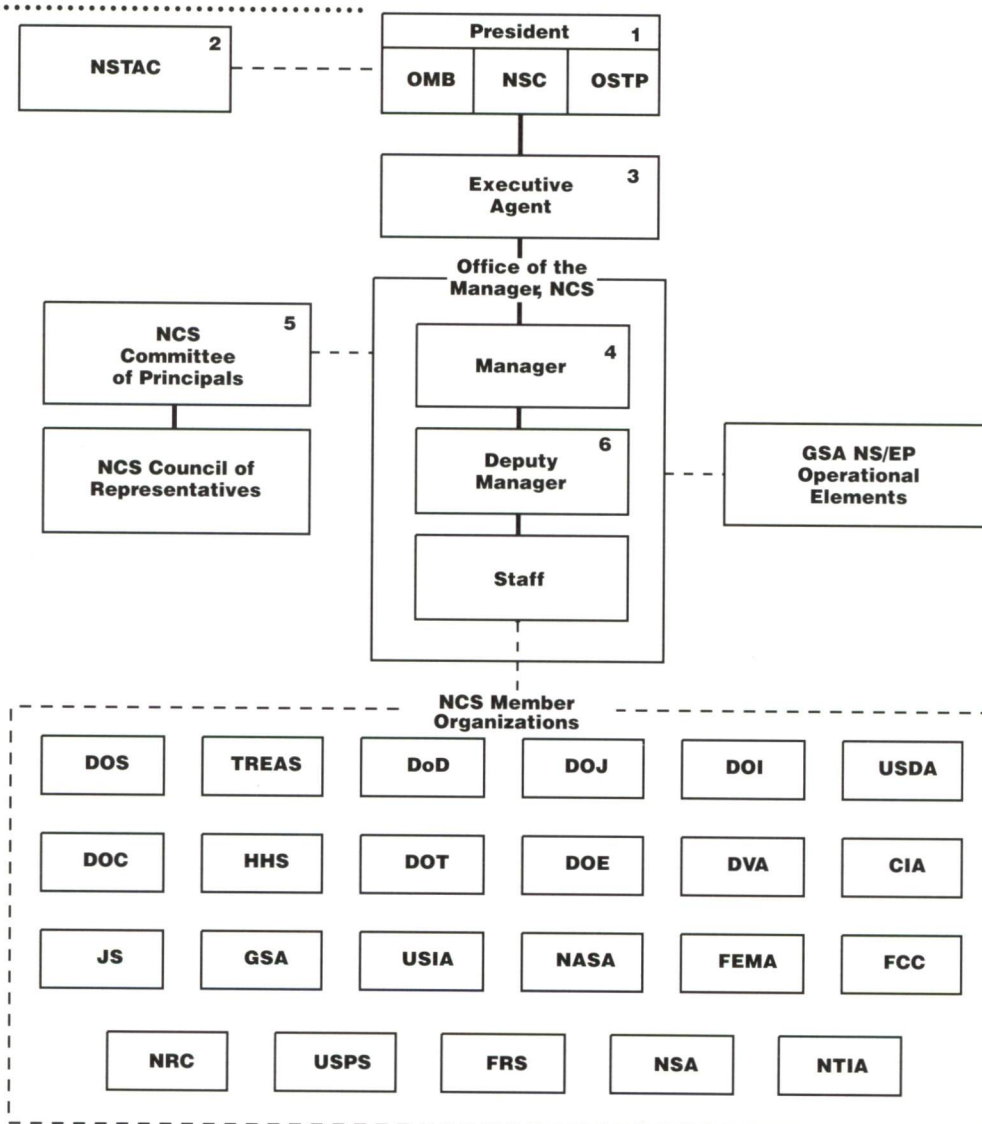
APPENDIX A

NCS & OMNCS ORGANIZATIONS

NCS AND OMNCS ORGANIZATIONS

EXHIBIT A-1

NCS ORGANIZATIONAL CHART



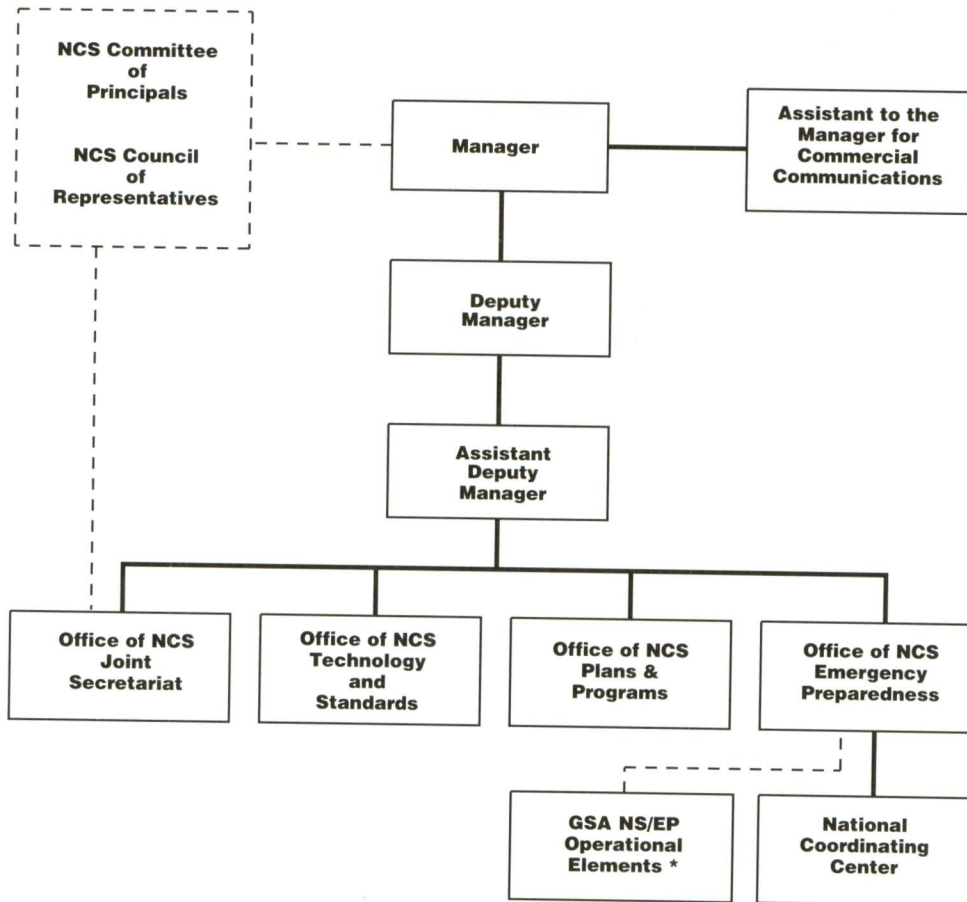
1. Policy Direction and Direct Execution War Powers Functions
2. National Security Telecommunications Advisory Committee
3. Executive Agent, NCS responsibilities assigned to Secretary of Defense by E.O. 12472, April 3, 1984
4. Director, DISA serves as Manager, NCS
5. The Key Telecommunications Officers 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
.....

.....
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 ³	Command, Control and Communications
C ³ I	Command, Control, Communications and Intelligence
C ⁴	Command, Control, Communications, and Computer
CAMSLANT	Communications Area Master Station, Atlantic
CAMSPAC	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

