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Series: Van Cleave, Michelle, Files
Subseries: Telecommunications Files

OA/ID Number: 62116
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Folder Title:
National Security Telecommunications Advisory Committee [2 of 3]

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**NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE
(NSTAC XIII)**

EXECUTIVE SESSION

OCTOBER 3, 1991

MS. VAN CLEAVE



NATIONAL COMMUNICATIONS SYSTEM

OFFICE OF THE MANAGER
WASHINGTON, D.C. 20305-2010

*John - Will you attend
yes - 10/2 + 3*



IN REPLY
REFER TO:

NJ

13 September 1991

Colonel John F. O'Neil, Jr., USMC
Assistant Director for Defense
Systems & Technology Policy
Executive Office of the President
Room 572
Old Executive Office Building
Washington, DC 20506

Dear Colonel O'Neil:

You are cordially invited to attend the thirteenth meeting of the National Security Telecommunications Advisory Committee (NSTAC XIII) to be held in Washington, DC on October 2-3, 1991. A reception and dinner will be held at The Willard Inter-Continental Hotel, 1401 Pennsylvania Avenue, NW, on October 2, 1991. The reception will begin at 7 p.m. The Business Session will be held on October 3, starting at 8:30 a.m., in the Loy Henderson Conference Room at the Department of State, 2201 C Street, NW, Washington, DC. Please use the 23rd Street entrance. Following the Business Session, you will be bused to The Mayflower Hotel for a combined Closed Session and luncheon. Details are provided at enclosures 1 and 2.

The NSTAC, currently consisting of 25 leaders of the Nation's telecommunications industry, provides information and advice to the President to assist in the enhancement of the Government's national security and emergency preparedness telecommunications. I believe you will find NSTAC XIII to be most informative.

Also, I extend an invitation to you to attend the Executive Session. The Executive Session will be held in the Indian Treaty Room of the Old Executive Office Building. Please do not hesitate to contact me for further information. Administrative details may be obtained by calling the National Communications System Joint Secretariat NSTAC Activities Team Leader, Lieutenant Colonel Paul TH Currie, USAF, at (703) 692-9274. Please complete and forward the response sheet provided by September 20, 1991.

Sincerely,

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

- 4 Enclosures:
- 1 Tentative Agendas
- 2 NSTAC XIII Response Sheet
- 3 List of NSTAC Members
- 4 Map

Thirteenth Meeting of the
National Security Telecommunications Advisory Committee (NSTAC)
Department of State
October 2-3, 1991

NSTAC XIII Questionnaire

1. Full Name: JOHN F. O'NEIL
2. Title, Organization, and Telephone Number: Senior Policy Analyst
Office of Science and Technology Policy, Executive Office of the President
Phone: 202/395-3272
3. Do you (personally) plan to attend NSTAC XIII? YES ; NO
If YES, please indicate the functions you plan to attend:
If NO, skip to Item 6.

YES NO

- | | | |
|------------------------|------------------------|---|
| <u> </u>
<u> </u> | <u> </u>
<u> </u> | Reception at The Willard Hotel, 1401 Pennsylvania Avenue, NW, Washington, DC (7:00 p.m., October 2, hosted by General Electric and AT&T). |
| <u> </u> | <u> </u>
<u> </u> | Spouse attending? (Name _____). |
| <u> </u>
<u> </u> | <u> </u>
<u> </u> | Dinner at The Willard Hotel (8:00 p.m., October 2, 1991, hosted by the National Communications System). |
| <u> </u> | <u> </u>
<u> </u> | Spouse attending? (Cost to you is \$60.00. Make check payable to Greta Lomas and include with questionnaire). |
| <u> </u> | <u> </u>
<u> </u> | Do you (or your spouse) request a special diet entree? |
| <u> </u>
<u> </u> | <u> </u>
<u> </u> | Business Session at Department of State (8:30 - 11:45 a.m.). |
| <u> </u>
<u> </u> | <u> </u>
<u> </u> | Closed Session and lunch at The Mayflower Hotel (12:15 p.m.). |
| <u> </u> | <u> </u>
<u> </u> | Do you request a special diet entree? |
| <u> </u>
<u> </u> | <u> </u>
<u> </u> | Executive Session at Old Executive Office Building (2:15 - 3:00 p.m.). |

Information required by White House (for Executive Session):

Date of Birth: N/A * Social Security Number: N/A*

COMMENTS: Colonel O'Neil works in the Old Executive Office Building
and will not need to be cleared in.

4. Please ensure that your Visit Authorization Request (VAR) is up-to-date and on file with the Security Officer, National Communications System, Joint Secretariat, Attn: SMSgt Berry McFarlin, NCS Joint Secretariat (NCS-NJ), Washington, DC 20305-2010, (703) 692-9274.

FOR ASSISTANCE

5. If you should have any questions concerning NSTAC arrangements and schedules, please contact the NSTAC Activities Team Leader, Lt Col Paul Currie or Maj Gordon Powell (703) 692-9274.

SEND RESPONSE TO:

6. National Communications System
NCS Joint Secretariat
ATTN: Lt Col Paul Currie
Washington, D.C. 20305-2010
FAX (703) 746-5240

done 9/20/91

Please mail or fax this response sheet by September 20, 1991.

Thank you for your cooperation. We hope to see you at NSTAC XIII!

John - FYI



NATIONAL COMMUNICATIONS SYSTEM

OFFICE OF THE MANAGER
WASHINGTON, D.C. 20305-2010

IN REPLY REFER TO: NJ

13 September 1991

Honorable D. Allan Bromley
Director, Office of Science
and Technology Policy
Room 5025
New Executive Office Building
Washington, DC 20506

Dear Dr. Bromley:

As you are aware, the thirteenth meeting of the President's National Security Telecommunications Advisory Committee (NSTAC XIII) is scheduled for October 3, 1991. I understand you may have already received an invitation from General Scowcroft to attend the Executive Session on the afternoon of October 3. Additionally, the Committee will hold its reception and dinner at The Willard Inter-Continental Hotel on the evening of October 2 and you are cordially invited to attend either or both of these events.

I would also like to extend an invitation to you to attend the morning Business Session, which will be held in the Loy Henderson Conference Room at the Department of State, and the Closed Session and luncheon at The Mayflower Hotel if your schedule permits. I believe you will find these two sessions to be most informative. The tentative agendas for the Business and Executive Sessions are provided at enclosure 1.

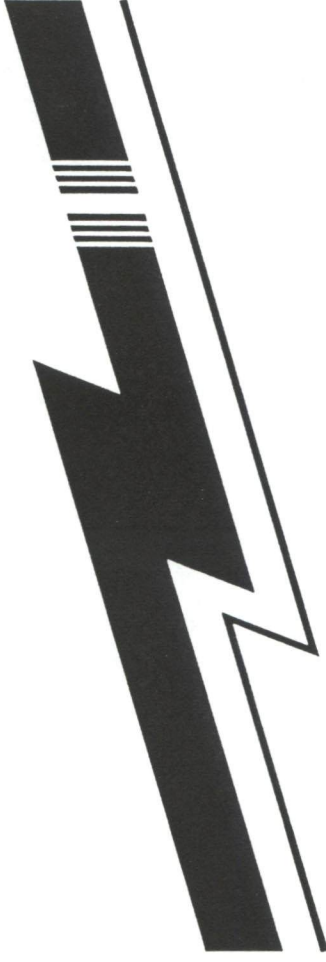
Please do not hesitate to contact me for further information. Administrative details may be obtained by calling the National Communications System Joint Secretariat NSTAC Activities Team Leader, Lieutenant Colonel Paul Currie, USAF, at (703) 692-9274.

Sincerely,

Alonzo E. Short, Jr.
ALONZO E. SHORT, JR.
Lieutenant General, USA
Manager

1 Enclosure:
Tentative Agendas

Copy to:
COL John O'Neil



**NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE**

OCTOBER 3, 1991

National Security Telecommunications Advisory Committee

Executive Session -- Agenda

October 3, 1991

- ▶ 2:15 p.m. Call to Order Mr. Hood, Chairman
- 2:20 p.m. Opening Remarks by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:30 p.m. Secretary of Defense Remarks Mr. Andrews
- 2:40 p.m. NSTAC Chairman's Report Mr. Hood
- 2:50 p.m. Closing Comments by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:55 p.m. Recognition of Departing and
Arriving Chairmen GEN Scowcroft
- 3:00 p.m. Adjourn Mr. Allen, New Chairman

NSTAC XIII EXECUTIVE SESSION

October 3, 1991

CALL TO ORDER

(2:15 - 2:20 p.m.)

MR. HOOD: GOOD AFTERNOON. I AM PLEASED TO CALL TO ORDER THIS EXECUTIVE SESSION OF THE NATIONAL SECURITY TELECOMMUNICATIONS ADVISORY COMMITTEE.

IT'S A PLEASURE TO BE HERE ONCE AGAIN IN THE INDIAN TREATY ROOM. THIS MORNING OUR BUSINESS SESSION AT THE STATE DEPARTMENT WAS VERY PRODUCTIVE. THE WORK OF OUR TASK FORCES PRODUCED TANGIBLE RESULTS IN A NUMBER OF KEY AREAS AFFECTING NATIONAL SECURITY AND EMERGENCY PREPAREDNESS TELECOMMUNICATIONS.

ON BEHALF OF THE COMMITTEE, I WELCOME GENERAL SHORT TO THE NSTAC PROCESS, AND THANK HIM AND HIS STAFF FOR THEIR EXCELLENT PREPARATION FOR THIS MORNING'S BUSINESS SESSION, AND FOR THEIR CONTINUING SUPPORT TO THE COMMITTEE. AS WE WITNESSED THIS MORNING, THE NSTAC PROCESS CONTINUES TO PROVIDE USEFUL AND PRODUCTIVE ADVICE. THE RECOMMENDATIONS WE WILL FORWARD TO THE PRESIDENT AS A RESULT OF OUR WORK IN THE AREAS OF INTELLIGENT NETWORKS AND WIRELESS SERVICES WILL SIGNIFICANTLY ENHANCE OUR NATIONAL SECURITY AND EMERGENCY PREPAREDNESS TELECOMMUNICATIONS POSTURE. WE LOOK FORWARD TO WORKING WITH YOU, GENERAL SHORT, TO HELP YOU MEET THE CHALLENGES OUTLINED IN YOUR COMMENTS THIS MORNING.

I WOULD NOW LIKE TO INTRODUCE THE PRESIDENT'S KEY ADVISORS WHO ARE WITH US THIS AFTERNOON.

- THE ASSISTANT SECRETARY OF DEFENSE FOR COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE, MR. DUANE ANDREWS, REPRESENTING THE SECRETARY OF DEFENSE AND THE EXECUTIVE AGENT FOR THE NATIONAL COMMUNICATIONS SYSTEM
- THE ASSISTANT TO THE PRESIDENT FOR NATIONAL SECURITY AFFAIRS, GENERAL BRENT SCOWCROFT
- THE ASSISTANT DIRECTOR FOR NATIONAL SECURITY AFFAIRS, MS MICHELLE VANCLEAVE, REPRESENTING THE OFFICE OF SCIENCE AND TECHNOLOGY POLICY
- THE ASSOCIATE DIRECTOR FOR NATIONAL SECURITY AND INTERNATIONAL AFFAIRS OF THE OFFICE OF MANAGEMENT AND BUDGET, DR. ROBERT E. HOWARD.

AS YOU KNOW, OVER THE YEARS WE HAVE WORKED VERY CLOSELY WITH, AND RECEIVED EXCELLENT SUPPORT FROM, THE ASSISTANT TO THE PRESIDENT FOR NATIONAL SECURITY AFFAIRS AND THE NATIONAL SECURITY COUNCIL STAFF. GENERAL SCOWCROFT CONTINUES THAT TRADITION, AND WE APPRECIATE THE SUPPORT HE AND HIS STAFF ARE PROVIDING. I WOULD LIKE TO ASK GENERAL SCOWCROFT TO SAY A FEW WORDS AT THIS TIME. GENERAL SCOWCROFT...

National Security Telecommunications Advisory Committee
Executive Session -- Agenda
October 3, 1991

2:15 p.m.	Call to Order	Mr. Hood, Chairman
▶ 2:20 p.m.	Opening Remarks by the Assistant to the President for National Security Affairs	GEN Scowcroft
2:30 p.m.	Secretary of Defense Remarks	Mr. Andrews
2:40 p.m.	NSTAC Chairman's Report	Mr. Hood
2:50 p.m.	Closing Comments by the Assistant to the President for National Security Affairs	GEN Scowcroft
2:55 p.m.	Recognition of Departing and Arriving Chairmen	GEN Scowcroft
3:00 p.m.	Adjourn	Mr. Allen, New Chairman

NSTAC XIII EXECUTIVE SESSION

October 3, 1991

OPENING REMARKS BY THE

ASSISTANT TO THE PRESIDENT FOR NATIONAL SECURITY AFFAIRS

(2:20 - 2:30 p.m.)

GENERAL SCOWCROFT: THANK YOU, ED. ON BEHALF OF THE PRESIDENT, IT IS A PLEASURE, ONCE AGAIN, TO MEET THE MEMBERS OF THE NSTAC. THE PRESIDENT ASKED ME TO EXTEND HIS APOLOGY FOR NOT BEING ABLE TO JOIN YOU TODAY. I WANT TO TAKE THIS OPPORTUNITY TO COMMEND THIS COMMITTEE FOR THE CONTRIBUTIONS IT HAS MADE OVER THE YEARS IN STRENGTHENING OUR NATIONAL SECURITY POSTURE.

THE NSTAC STANDS AS A MODEL OF HOW GOVERNMENT AND INDUSTRY CAN DEVELOP

TIMELY AND COST EFFECTIVE IMPROVEMENTS TO OUR NATIONAL SECURITY AND EMERGENCY PREPAREDNESS CAPABILITIES. THE TELECOMMUNICATION IMPROVEMENTS OBTAINED THROUGH THE NSTAC PROCESS ARE AN IMPORTANT PART OF OUR NATIONAL SECURITY STRENGTH. MUCH OF THE COMMUNICATIONS FOR OUR TROOPS IN THE PERSIAN GULF WERE MADE POSSIBLE BY THE ASSISTANCE OF NSTAC COMPANIES AND BY THE MECHANISMS YOU HELPED CREATE, SUCH AS THE NATIONAL COORDINATING CENTER AND THE TELECOMMUNICATIONS SERVICE PRIORITY (TSP) SYSTEM.

LAST YEAR, IT WAS MY PLEASURE TO RECEIVE YOUR REPORT AND TO FORWARD IT TO THE PRESIDENT. HE HAS REVIEWED THE REPORT, AND THE ACTIONS HE INTENDS TO TAKE WITH RESPECT TO THAT REPORT ARE INCLUDED IN A LETTER TO THE NSTAC CHAIR, WHICH WAS MADE AVAILABLE TO YOU. BRIEFLY, THE PRESIDENT HIGHLIGHTED THE IMPORTANCE OF THE NETWORK SECURITY ISSUE AND STRESSED

THAT "AS IN THE TELECOMMUNICATIONS SERVICE PRIORITY (TSP) DEVELOPMENT, IT IS IMPORTANT FOR GOVERNMENT AND INDUSTRY TO WORK TOGETHER TO ADDRESS THIS ISSUE." THE PRESIDENT ALSO HIGHLIGHTED THE TSP PROGRAM AS A MODEL OF SUCCESS FOR JOINT GOVERNMENT AND INDUSTRY PLANNING -- A PROGRAM THAT PROVED ITSELF IN THE GULF WAR.

THE RAPID CHANGES IN TECHNOLOGY CONTINUE, AS INDICATED BY THE EMERGENCE OF INTELLIGENT NETWORKS AND ADVANCES IN DIGITAL WIRELESS SERVICES. IF GOVERNMENT IS TO BENEFIT FROM THESE CHANGES, IT MUST WORK CLOSELY AND EFFECTIVELY WITH INDUSTRY. THE NSTAC HAS AN EXCEPTIONAL RECORD OF ACCOMPLISHMENT IN THIS REGARD FOR MORE THAN 9 YEARS, YET THE CHALLENGES POSED BY THE ADVANCES IN TECHNOLOGY AND THEIR AFFECT ON NATIONAL SECURITY AND EMERGENCY PREPAREDNESS CONTINUES TO GROW. YOUR ONGOING ADVICE AND ASSISTANCE IN COMBATING THE THREATS TO NETWORK SECURITY, WHICH WE HEARD

ABOUT THIS MORNING, IS A PERFECT EXAMPLE OF WHERE INDUSTRY ADVICE AND ASSISTANCE IS NEEDED TO MEET THE CHALLENGES OF A WORLD UNDERGOING RAPID AND UNCERTAIN CHANGES. I AM GLAD TO HAVE THE OPPORTUNITY TO BE A PART OF THE NSTAC AND ITS ACTIVITIES. THE NATION OWES YOU ITS GRATITUDE FOR THE SERVICE YOU AND YOUR COMPANIES HAVE PROVIDED IN SUPPORTING THIS GREAT EFFORT. I LOOK FORWARD TO YOUR REPORT AND TO YOUR CONTINUING ADVICE AND ASSISTANCE.

OUR NEXT SPEAKER IS THE ASSISTANT SECRETARY OF DEFENSE FOR C3I, DUANE ANDREWS, REPRESENTING SECRETARY CHENEY IN THE SECRETARY'S ROLE AS THE EXECUTIVE AGENT OF THE NATIONAL COMMUNICATIONS SYSTEM. IT IS A PLEASURE TO INTRODUCE THE ASSISTANT SECRETARY OF DEFENSE MR. ANDREWS WHO PLAYS A MAJOR ROLE IN ENSURING THAT OUR CRITICAL COMMAND AND CONTROL SYSTEMS WILL MEET ANY EVENTUALITY THAT OUR NATION MAY FACE. MR. ANDREWS...

National Security Telecommunications Advisory Committee
Executive Session -- Agenda
October 3, 1991

- 2:15 p.m. Call to Order Mr. Hood, Chairman
- 2:20 p.m. Opening Remarks by the Assistant
to the President for National Security Affairs GEN Scowcroft
- ▶ 2:30 p.m. Secretary of Defense Remarks Mr. Andrews
- 2:40 p.m. NSTAC Chairman's Report Mr. Hood
- 2:50 p.m. Closing Comments by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:55 p.m. Recognition of Departing and
Arriving Chairmen GEN Scowcroft
- 3:00 p.m. Adjourn Mr. Allen, New Chairman

NSTAC XIII EXECUTIVE SESSION

October 3, 1991

ASSISTANT SECRETARY OF DEFENSE REMARKS

(2:30 - 2:40 p.m.)

MR ANDREWS: THANK YOU, BRENT. IT IS A PLEASURE FOR ME TO ADDRESS THE MEMBERS OF THE NSTAC THIS AFTERNOON. SINCE 1982, THE NSTAC HAS PROVIDED TECHNICAL EXPERTISE ON TELECOMMUNICATION ISSUES TO THE GOVERNMENT THAT HAS SIGNIFICANTLY ENHANCED THIS NATION'S SECURITY. THIS ADVICE IS CRITICAL BECAUSE THE GOVERNMENT RELIES HEAVILY ON THE COMMERCIAL TELECOMMUNICATIONS INFRASTRUCTURE IN PURSUING OUR NATIONAL GOALS. IN THE YEARS AHEAD, THE UNITED STATES MUST CARRY OUT ITS GLOBAL RESPONSIBILITIES IN A DYNAMIC ENVIRONMENT. ADVANCED COMMUNICATIONS WILL

PLAY AN INTEGRAL ROLE IN OUR NATION'S ABILITY TO REACT TO WORLD DEVELOPMENTS. DURING THE RECENT GULF WAR THIS POINT WAS DRAMATICALLY DEMONSTRATED -- WITHOUT THE ASSISTANCE OF YOUR COMPANIES, WE COULD NOT HAVE ESTABLISHED THE COMMAND AND CONTROL NETWORK REQUIRED TO SUPPORT OPERATION DESERT STORM. OF PARTICULAR NOTE IS THE SUPPORT YOU PROVIDED IN AUGMENTING OUR SATELLITE COMMUNICATIONS. IN SHORT, THE INTEGRATION OF COMMERCIAL COMMUNICATIONS INTO OUR FUTURE PLANNING IS ESSENTIAL. DURING THE PAST YEAR, ESPECIALLY THE LAST FEW MONTHS, WE HAVE ALSO WITNESSED MONUMENTAL CHANGES IN EASTERN EUROPE AND THE SOVIET UNION THAT HAVE REDEFINED EAST-WEST RELATIONS AND INSTIGATED FUNDAMENTAL CHANGES IN THE WORLD'S POLITICAL STRUCTURE. AT THIS JUNCTURE, WE CANNOT PREDICT WITH ANY CONFIDENCE THE FUTURE ECONOMIC, POLITICAL, AND MILITARY STRUCTURE OF WHAT WE HAVE KNOW FOR MANY YEARS AS THE SOVIET UNION. IN THIS HIGHLY UNCERTAIN ENVIRONMENT, THE UNITED STATES CANNOT AFFORD TO RELAX ITS NATIONAL

SECURITY POSTURE. THE ROLE OF THE NSTAC IN SUPPORTING NATIONAL SECURITY AND EMERGENCY PREPAREDNESS WILL CONTINUE TO BE IMPORTANT AS WORLD EVENTS UNFOLD. GOVERNMENT POLICY MAKERS NEED ACCURATE INFORMATION TO ANTICIPATE AND REACT TO RAPIDLY CHANGING EVENTS HERE AND ABROAD. TO DO THIS, WE WILL RELY UPON THE INTEGRITY OF THE SERVICES AND EQUIPMENT SUPPLIED BY YOUR COMPANIES.

THE NSTAC BRINGS TO THIS PROCESS THE SUPPORT OF THE TELECOMMUNICATIONS INDUSTRY, WHICH IS NEEDED BY FEDERAL, STATE AND LOCAL GOVERNMENTS TO COLLECTIVELY IMPROVE OUR NATIONAL TELECOMMUNICATIONS INFRASTRUCTURE. YOUR EFFORTS TO RAISE AWARENESS AND BEGIN ADDRESSING THE NETWORK SECURITY PROBLEM, AND YOUR RECOMMENDATIONS ON HOW TAKE ADVANTAGE OF EMERGING TECHNOLOGIES, SUCH AS ADVANCED INTELLIGENT NETWORKS, ARE JUST TWO EXAMPLES OF YOUR VITAL SUPPORT.

AGAIN MY THANKS TO THE MEMBERS OF THE NSTAC, FOR YOUR EFFORTS OVER THE PAST 9 MONTHS, AND THANK YOU, ED, FOR YOUR FINE LEADERSHIP.

[MR. ANDREWS CONCLUDES REMARKS AND RETURNS MEETING TO MR. HOOD]

National Security Telecommunications Advisory Committee

Executive Session -- Agenda

October 3, 1991

- 2:15 p.m. Call to Order Mr. Hood, Chairman
- 2:20 p.m. Opening Remarks by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:30 p.m. Secretary of Defense Remarks Mr. Andrews
- ▶ 2:40 p.m. NSTAC Chairman's Report Mr. Hood
- 2:50 p.m. Closing Comments by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:55 p.m. Recognition of Departing and
Arriving Chairmen GEN Scowcroft
- 3:00 p.m. Adjourn Mr. Allen, New Chairman

NSTAC XIII EXECUTIVE SESSION

October 3, 1991

NSTAC CHAIRMAN'S REPORT

(2:40 - 2:50 p.m.)

MR. HOOD: THANK YOU, MR ANDREWS AND GENERAL SCOWCROFT. THE NSTAC WAS CHARTERED IN 1982 TO PROVIDE THE PRESIDENT WITH ADVICE AND ASSISTANCE ON NATIONAL SECURITY AND EMERGENCY PREPAREDNESS TELECOMMUNICATION MATTERS. WE ARE PROUD OF THE CONTRIBUTIONS THAT OUR COMMITTEE HAS MADE TOWARD IMPROVING OUR NATIONAL SECURITY TELECOMMUNICATIONS POSTURE OVER THE PAST 9 YEARS. THESE CONTRIBUTIONS INCLUDE INITIATIVES THAT RESULTED IN THE NCS COMMERCIAL SATCOM INTERCONNECTIVITY AND COMMERCIAL NETWORK SURVIVABILITY PROGRAMS, AND IMPLEMENTATION OF THE NATIONAL TELECOMMUNICATIONS MANAGEMENT STRUCTURE AND TELECOMMUNICATIONS

SERVICE PRIORITY SYSTEM, AS WELL AS THE CREATION OF THE NATIONAL COORDINATING CENTER.

TODAY, I AM PLEASED TO SUMMARIZE FOR YOU THE STATUS OF THE ISSUES CURRENTLY ON THE COMMITTEE'S AGENDA. SINCE WE LAST MET, WE MADE SIGNIFICANT PROGRESS ON KEY ISSUES. I WILL PRESENT A BRIEF OVERVIEW OF OUR ACTIVITIES REGARDING NETWORK SECURITY, INTELLIGENT NETWORKS, ENHANCED CALL COMPLETION, WIRELESS COMMUNICATIONS, AND ENERGY.

- WE CONTINUED WORKING CLOSELY WITH THE GOVERNMENT ON THE NETWORK SECURITY ISSUE, THAT IS, THE THREAT OF COMPUTER CRIMINALS WHO COULD PENETRATE AND COMPROMISE THE SWITCHING FABRIC OF THE NATION'S TELECOMMUNICATION NETWORKS. OUR GROUP HELPED THE OFFICE OF THE MANAGER, NCS ESTABLISH A NEW NETWORK SECURITY ALERT, WARNING, AND

RECOVERY FUNCTION WITHIN THE NATIONAL COORDINATING CENTER. WE ALSO ESTABLISHED OUR OWN INDUSTRY NETWORK SECURITY INFORMATION EXCHANGE, OR NSIE. THE NSIE IS COMPRISED OF NETWORK SECURITY EXPERTS FROM NSTAC MEMBER COMPANIES. ITS PURPOSE IS TO EXCHANGE INFORMATION ON NETWORK SECURITY THREATS AND INTRUSIONS, AND DISCUSS AND RESOLVE LONG-TERM NETWORK SECURITY VULNERABILITIES.

THE NETWORK SECURITY TASK FORCE IS ALSO ADDRESSING NETWORK SECURITY RESEARCH AND DEVELOPMENT NEEDS AND STANDARDS REQUIREMENTS. THE NETWORK SECURITY TASK FORCE WILL PRESENT ITS FINAL REPORT WITH RECOMMENDATIONS AT NSTAC 14.

- WE COMPLETED OUR REPORT AND RECOMMENDATIONS ON HOW THE GOVERNMENT SHOULD MONITOR INTELLIGENT NETWORK DEVELOPMENTS.

INTELLIGENT NETWORKS WILL ALLOW USERS TO ESTABLISH AND RECONFIGURE THEIR OWN NETWORK SERVICES. WE RECOMMENDED THAT THE OFFICE OF THE MANAGER, NCS ESTABLISH AN INTELLIGENT NETWORKS PROGRAM OFFICE TO ENSURE THAT THE ADVANTAGES OF EVOLVING INTELLIGENT NETWORKS ARE INCORPORATED INTO THE PLANNING AND PROCURING OF GOVERNMENT NATIONAL SECURITY AND EMERGENCY PREPAREDNESS TELECOMMUNICATION SERVICES.

- AT OUR LAST MEETING, WE ESTABLISHED A NEW GROUP -- THE ENHANCED CALL COMPLETION TASK FORCE. WE CHARGED THE GROUP TO INVESTIGATE ISSUES AND PROBLEMS ASSOCIATED WITH PROVIDING CRITICAL GOVERNMENT USERS CALL-BY-CALL PRIORITY TREATMENT THROUGHOUT THE ENTIRE PUBLIC SWITCHED NETWORK DURING AN EMERGENCY. THE GROUP APPROACHED ITS TASK BY STUDYING WAYS TO IMPROVE CALL ACCESS, TRANSPORT, EGRESS, AND TERMINATION FOR NATIONAL SECURITY AND

EMERGENCY PREPAREDNESS USERS. TO DATE, THE GROUP FOUND THAT MANY NETWORK FEATURES ARE AVAILABLE NOW TO ENHANCE NATIONAL SECURITY AND EMERGENCY PREPAREDNESS CALL COMPLETION, AND THAT STANDARDS MUST BE DEVELOPED TO IDENTIFY NATIONAL SECURITY AND EMERGENCY PREPAREDNESS CALLS FOR PREFERENTIAL TREATMENT THROUGHOUT THE PUBLIC SWITCHED NETWORK, INCLUDING CELLULAR NETWORKS. THE TASK FORCE WILL PROVIDE ITS FINAL REPORT WITH RECOMMENDATIONS AT NSTAC 14.

- AT THE MARCH 15, 1991 INDUSTRY EXECUTIVE SUBCOMMITTEE MEETING, WE ESTABLISHED AN AD HOC GROUP TO EXAMINE THE ISSUES REGARDING THE UNIFORMITY, TRANSPARENCY, AND INTERCONNECTIVITY OF EMERGING DIGITAL MOBILE COMMUNICATION SERVICES FOR NATIONAL SECURITY AND EMERGENCY PREPAREDNESS DATA REQUIREMENTS. THE GROUP HAD THREE MAJOR FINDINGS: FIRST, MOBILE COMMUNICATIONS IS ONE OF THE FASTEST GROWING SEGMENTS

OF THE COMMUNICATIONS INDUSTRY; SECOND, THE USE OF LOW RATE COMPRESSED VOICE ON THE PUBLIC NETWORKS WILL PROHIBIT USE OF CONVENTIONAL MODEMS FOR DATA SERVICES; AND THIRD, NATIONAL SECURITY AND EMERGENCY PREPAREDNESS RELATED DATA SERVICES WILL BE NEGATIVELY AFFECTED. THE GROUP RECOMMENDED THAT THE GOVERNMENT ESTABLISH A FOCAL POINT FOR ADDRESSING DIGITAL WIRELESS INTERFACE ISSUES. IN ADDITION, THEY PROPOSED THAT HIGH LEVEL GOVERNMENT POLICIES BE DEVELOPED THAT ENSURE NATIONAL SECURITY AND EMERGENCY PREPAREDNESS NEEDS ARE TAKEN INTO ACCOUNT IN ALL WIRELESS DIGITAL SERVICES ACQUISITION ACTIVITIES.

- WE ALSO FORMED A NEW ENERGY TASK FORCE TO MONITOR AND ADVISE THE OFFICE OF THE MANAGER, NCS, DEPARTMENT OF ENERGY, AND THE NATIONAL SECURITY COUNCIL'S POLICY COORDINATING COMMITTEE ON PRIORITY ELECTRIC

POWER RESTORATION AND FUEL ALLOCATION INITIATIVES. THE GROUP'S MAIN EFFORT WILL BE TO HELP DEVELOP CRITERIA AND A PROCESS FOR IDENTIFYING CRITICAL NATIONAL SECURITY AND EMERGENCY PREPAREDNESS TELECOMMUNICATION FACILITIES THAT WILL REQUIRE PRIORITY ENERGY RESTORATION AND/OR FUEL ALLOCATION.

THAT CONCLUDES MY REPORT. I WOULD LIKE TO SAY ON BEHALF OF THE COMMITTEE MEMBERS, THAT IT HAS BEEN AN HONOR TO SERVE THE PRESIDENT AND THE NATION. I HAVE NO DOUBT THAT THE NSTAC WILL CONTINUE TO ADVISE THE PRESIDENT ON WAYS TO REINFORCE OUR TELECOMMUNICATIONS INFRASTRUCTURE IN SUPPORT OF NATIONAL SECURITY AND EMERGENCY PREPAREDNESS NEEDS.

National Security Telecommunications Advisory Committee

Executive Session -- Agenda

October 3, 1991

- 2:15 p.m. Call to Order Mr. Hood, Chairman
- 2:20 p.m. Opening Remarks by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:30 p.m. Secretary of Defense Remarks Mr. Andrews
- 2:40 p.m. NSTAC Chairman's Report Mr. Hood
- ▶ 2:50 p.m. Closing Comments by the Assistant
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- 2:55 p.m. Recognition of Departing and
Arriving Chairmen GEN Scowcroft
- 3:00 p.m. Adjourn Mr. Allen, New Chairman

NSTAC XIII EXECUTIVE SESSION

October 3, 1991

CLOSING COMMENTS BY

ASSISTANT TO THE PRESIDENT FOR NATIONAL SECURITY AFFAIRS

(2:50 - 2:55 p.m.)

GENERAL SCOWCROFT: ON BEHALF OF THE PRESIDENT, I THANK YOU FOR YOUR REPORT AND FOR THE EFFORTS OF THE COMMITTEE. AS I PREVIOUSLY MENTIONED, YOUR ADVICE AND ASSISTANCE IS VALUED. THE PRESIDENT APPRECIATES YOUR CURRENT WORK ON THE NETWORK SECURITY, INTELLIGENT NETWORKS, ENHANCED CALL COMPLETION, WIRELESS COMMUNICATIONS, AND ENERGY ISSUES. AGAIN, I THANK YOU ON BEHALF OF THE PRESIDENT FOR MAKING OUR JOINT GOVERNMENT-INDUSTRY PLANNING PROCESS SUCCESSFUL.

(CONTINUED)

ED, WOULD YOU AND BOB ALLEN PLEASE JOIN ME AT THE PODIUM.

[WALK TO PODIUM - NOTE: AN ADDITION SCRIPT IS AVAILABLE AT THE PODIUM]

National Security Telecommunications Advisory Committee
Executive Session -- Agenda
October 3, 1991

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▶ 2:55 p.m.	Recognition of Departing and Arriving Chairmen	GEN Scowcroft
3:00 p.m.	Adjourn	Mr. Allen, New Chairman

NSTAC XIII EXECUTIVE SESSION

October 3, 1991

RECOGNITION OF DEPARTING AND ARRIVING CHAIRMEN

(2:55 - 3:00 p.m.)

GENERAL SCOWCROFT: ED, I SINCERELY THANK YOU FOR YOUR OUTSTANDING LEADERSHIP DURING THE PAST YEAR AND A HALF. THE ACCOMPLISHMENTS OF THE COMMITTEE UNDER YOUR DIRECTION WERE IMPRESSIVE. IN PARTICULAR, YOUR LEADERSHIP RESULTED IN BOTH ENERGIZING BOTH INDUSTRY AND GOVERNMENT TO WORK TOGETHER ON THE CRITICAL ISSUE OF NETWORK SECURITY. ON BEHALF OF THE COUNTRY AND OUR COLLEAGUES, I AM PLEASED TO PRESENT YOU THIS TOKEN OF OUR APPRECIATION FOR YOUR SERVICES, LEADERSHIP, AND A JOB WELL DONE.

MR. HOOD: THANK YOU, GENERAL SCOWCROFT

GENERAL SCOWCROFT: BOB, AS A LONG-STANDING MEMBER OF THIS COMMITTEE, I KNOW YOU ARE AWARE OF ITS IMPORTANCE AND OF THE RESPONSIBILITY ENTAILED IN CHARGING IT. IT PLEASES ME TO PRESENT YOU WITH THE SYMBOL OF YOUR OFFICE AND TO WISH YOU AND ALL THE MEMBERS OF YOUR COMMITTEE GREAT SUCCESS AS THE NSTAC CONTINUES ITS IMPORTANT WORK.

MR. ALLEN: THANK YOU, GENERAL SCOWCROFT.

[RETURN TO SEATS]

National Security Telecommunications Advisory Committee

Executive Session -- Agenda

October 3, 1991

- 2:15 p.m. Call to Order Mr. Hood, Chairman
- 2:20 p.m. Opening Remarks by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:30 p.m. Secretary of Defense Remarks Mr. Andrews
- 2:40 p.m. NSTAC Chairman's Report Mr. Hood
- 2:50 p.m. Closing Comments by the Assistant
to the President for National Security Affairs GEN Scowcroft
- 2:55 p.m. Recognition of Departing and
Arriving Chairmen GEN Scowcroft
- ▶ 3:00 p.m. Adjourn Mr. Allen, New Chairman

NSTAC XIII EXECUTIVE SESSION

October 3, 1991

ADJOURNMENT

(3:00 p.m.)

MR. HOOD: I WOULD LIKE TO EXPRESS MY APPRECIATION TO ALL THE MEMBERS OF THE COMMITTEE FOR YOUR SUPPORT DURING MY TERM AS CHAIRMAN. I NOW RELINQUISH THE CHAIR TO BOB. I AM SURE HE WILL ENJOY YOUR CONTINUED HIGH LEVEL SUPPORT AS HE FACES THE CHALLENGE OF LEADING THIS COMMITTEE DURING THE NEXT 2 YEARS.

MR. ALLEN: THANK YOU, ED. LET ME ADD MY PERSONAL ADMIRATION FOR YOUR INSPIRATIONAL LEADERSHIP AS OUR CHAIRMAN.

AND NOW I WOULD LIKE TO INTRODUCE THE NEW VICE-CHAIRMAN OF THE COMMITTEE, MR. NORMAN AUGUSTINE OF MARTIN MARIETTA.

WE HAD A VERY PRODUCTIVE AND INFORMATIVE SESSION TODAY, AND I WANT TO THANK ALL OF YOU FOR ATTENDING. OUR NEXT MEETING IS SCHEDULED FOR JULY 17, 1992. PLEASE MAKE NOTE OF IT ON YOUR CALENDARS. I LOOK FORWARD TO SEEING YOU THEN. THE 13th MEETING OF THE NSTAC IS NOW OFFICIALLY ADJOURNED.



**NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE**

OCTOBER 3, 1991

**FOR FURTHER INFORMATION
CONTACT:
MANAGER, NATIONAL
COMMUNICATIONS SYSTEM
8TH & COURTHOUSE ROAD
ARLINGTON, VA 22204
ATTN: NCS-NJ**

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National Security Telecommunications Advisory Committee (NSTAC)

Business Session Agenda October 3, 1991

8:30 a.m.	Call to order	Mr. Hood, Chairman
	Welcoming remarks	Hon. Kryss, DOS
8:40 a.m.	Opening remarks	Mr. Hood
8:50 a.m.	Network Security	Dr. Edwards, NTI
9:20 a.m.	Enhanced Call Completion (ECC)	Dr. Munshi, UTI
9:40 a.m.	Wireless Services	Dr. Dayton, COMSAT
10:00 a.m.	Break	
10:20 a.m.	Keynote speech	Mr. Wolfowitz, DoD
10:50 a.m.	Industry Executive Subcommittee (IES) Report	Mr. Welland, GE
11:20 a.m.	Government Activities	LTG Short, NCS
11:40 a.m.	Closing remarks	Mr. Hood
11:45 a.m.	Adjourn	Mr. Hood



**NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE**

OCTOBER 3, 1991

NETWORK SECURITY (NS)

NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE



NETWORK SECURITY (NS) TASK FORCE

OCTOBER 3, 1991

Network Security Task Force

Task Force Members

Mr. Herbert Benington, UNISYS, Chairman

**AT&T
Bellcore
Boeing
COMSAT
GE
GTE
ITT
McCaw
MCI
NTI
UTI**

**Mr. David Bush
Mr. Randall Schulz
Mr. Bob Steele
Dr. Allen Dayton
Mr. D. C. Pidgeon
Mr. Lowell Thomas
Mr. Joseph Gancie
Mr. Richard McElhenie
Mr. Joseph Cassano
Dr. John Edwards
Mr. G. Jay Nelson**

Major Conclusions Presented To NSTAC XII

- Risk to PSN software is very uncertain
- If risk is high, it is likely a group attack on the PSN could cause prolonged nationwide outages
- If risk is low, significant NS/EP service degradation is much less likely
 - To date, hackers have not undertaken a major attack
 - To date, PSN service to NS/EP users has not been significantly degraded
- However, industry and Government should assume that significant NS/EP service degradation is possible and act accordingly
- Individual companies bear major responsibility in reducing risk

Network Security Task Force

NSTAC XII Charges to the IES

Establish a follow-on Network Security Task Force to work closely with and in support of the Government Network Security Subgroup and to:

- **Identify a mechanism for security information exchange, and produce an implementation plan**
- **Recommend how to improve flow of intelligence to industry**
- **Recommend what network research and development is needed**
- **Examine activities on industry-wide standards for network security and make recommendations**
- **Report results by NSTAC XIV**

Network Security Task Force

Meetings Since NSTAC XII

<u>Meeting Sponsor</u>	<u>No. of Meetings</u>
Network Security Task Force (NSTF)	7
Government Network Security Subgroup (GNSS)	4
Network Security Information Exchange (NSIE)	2
R&D and Standards Panel	5
House Committee on Science, Space, Technology Subcommittee on Technology & Competitiveness	1
Joint Telecommunications Resources Board	1

Network Security Task Force

Network Security Information Exchange (NSIE)

- A "trial" NSTAC NSIE has been established:
 - Network security experts from 8 companies
 - To operate until NSTAC XIV acts
- A Government NSIE has been established:
 - Charter closely parallels NSTAC charter
 - Includes intelligence and law enforcement agencies
- Procedures have been developed to act in real-time with NCC
- Two joint NSIE meetings have been held
- A committee of three IES/Task Force members will evaluate NSIE process
 - In conjunction with NSIE and Task Force
 - IES recommendations to NSTAC XIV

Network Security Task Force

NSTAC NSIE Charter

- **Sponsor: Network Security Task Force**
- **Meet on periodic basis to:**
 - **Discuss threats, vulnerabilities, remedies and risks**
 - **Exchange information with Government NSIE**
 - **Provide periodic assessments**
 - **Gain experience for task force/NSTAC recommendations to President**
- **Provide expertise to mitigate effect of network security events**
- **Nondisclosure agreement among member representatives and others**

Network Security Task Force

Members of the NSTAC NSIE

<u>Company</u>	<u>Representative</u>
UTI	G. Jay Nelson, Chair William Donsal Lewis
NTI	James Edward Fulford, Jr., Vice Chair Robert E. Petrie
AT&T	J. R. Dalton Robert C. Rencher, Jr.
Bellcore	Hank M. Kluepfel Carl G. Showalter
GTE	James E. Moake David A. Fiasco
Martin-Marietta	M. Duane Heidel
McCaw	Jack Farley
MCI	Robert E. Wilson Bruce A. Wells

Network Security Task Force

Status of R&D and Standards

- Methodology established:
 - Identify areas needing new standards/technology
 - Assess potential of current Government activities
 - Make recommendations
- Required Standards/R&D identified
- Three significant industry/Government meetings
- Recommendations planned for NSTAC XIV

Network Security Task Force

Proposed R&D and Standards Action Areas

- Identify needs to Government, near-term emphasis to be access area:
 - Control of access to network elements from outside
 - Event control within the "trusted" network segment
 - Prevention of inappropriate access (partitioning, firewalls)
 - Detection of unauthorized access
 - Recovery from software/database damage
 - Planning a full network security architecture

- Explore/support Generally Accepted System Security Principles (GSSP)

Network Security Task Force

Summary

- **Follow NSTAC XII guidance**
 - **Network Security Information Exchange (NSIE)**
 - **R&D and standards**
- **Provide recommendations at NSTAC XIV**

Network Security Task Force

IES Recommendation to the NSTAC

Approve proposed NSTAC XIII charge to the IES

Network Security Task Force

Proposed NSTAC XIII Charges to the IES

- **Continue with Network Security Task Force activities as charged**
- **Report to NSTAC XIV**

ENHANCED CALL COMPLETION (ECC)



NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE

ENHANCED CALL COMPLETION (ECC) TASK FORCE

OCTOBER 3, 1991

NSTAC XII Charge to the IES

Establish an Enhanced Call Completion Task Force to:

- **Define enhanced call completion**
- **Identify the technical approaches or requirements for enhanced call completion**
- **Investigate technical aspects of automatic call rerouting**
- **Identify and evaluate alternatives to enhance existing NCS programs and initiatives, especially TSP**

Enhanced Call Completion (ECC) Task Force

NSTAC XII Charge to the IES (Concluded)

- **Assess the impact of enhanced call completion on the PSN**
- **Recommend an enhanced call completion plan of action for near- and long-term enhancements**
- **Report findings and recommendations by NSTAC XIV.**

Enhanced Call Completion (ECC) Task Force

Task Force Members

Dr. Sushil Munshi, UTI, Chairman

AT&T

Mr. David Bush

Bellcore

Mr. Randall Schulz

GE

Mr. D. C. Pidgeon

GTE

Mr. Jim Bean

McCaw

Mr. Richard McElhenie

MCI

Mr. Joseph Cassano

NTI

Dr. John Edwards

PTI

Mr. Frank Adams

Definition of ECC

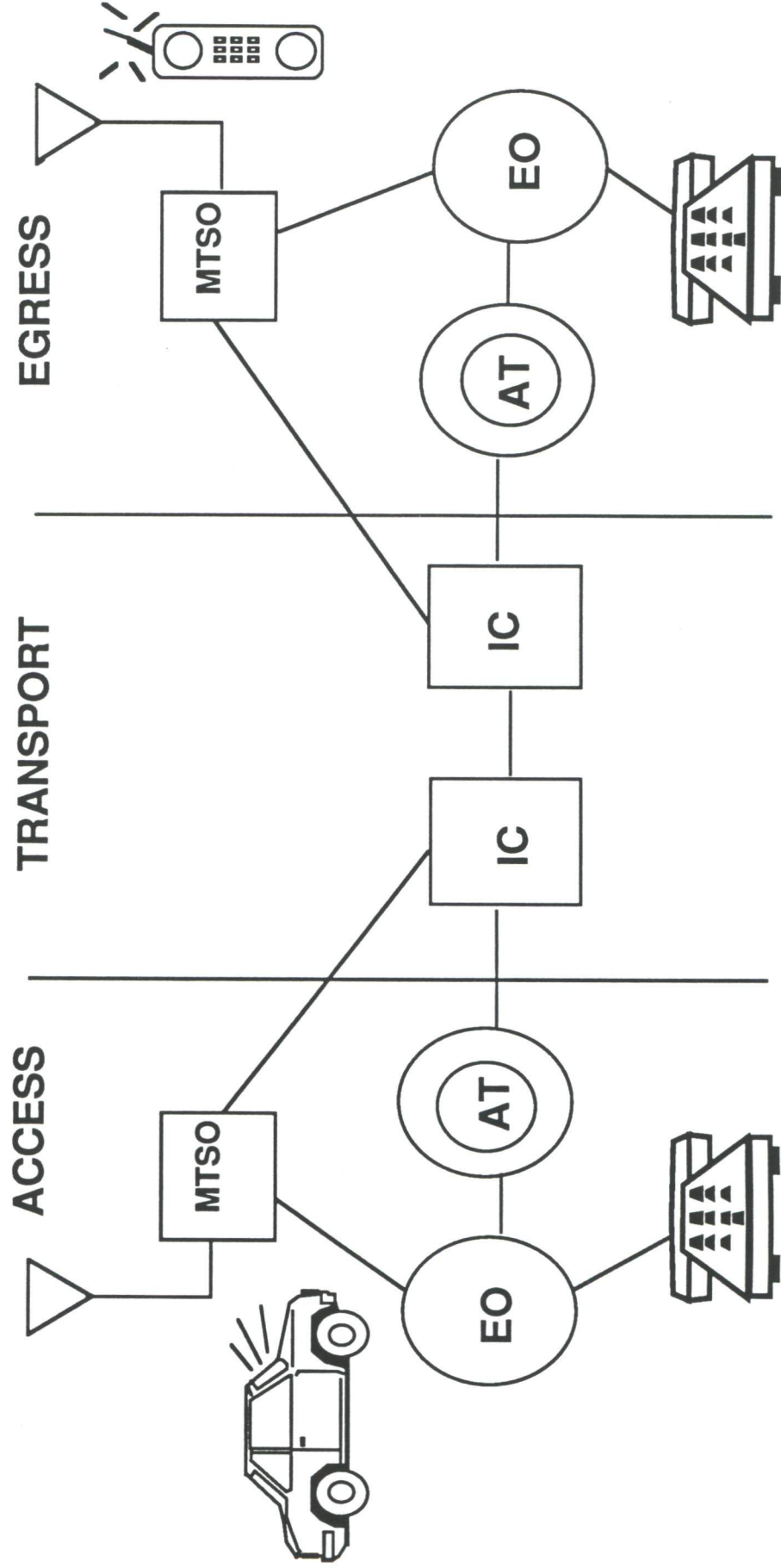
Enhanced call completion is a set of network features/capabilities that permit NS/EP users to complete calls over the public switched network (PSN) (i.e., receive either a ring back or station busy from the terminating station) with minimum delay during network damage and/or congestion.

Definition of ECC (Concluded)

Further, enhanced call completion is defined to ensure that an incoming NS/EP call is terminated in accordance with the needs and operational considerations of the called end user.

Enhanced Call Completion (ECC) Task Force

Wire Line and Mobile Access, Transport, and Egress Segments of the PSN



Enhanced Call Completion (ECC) Task Force

Briefings to the ECC Task Force

2/21	Cellular Communications	Mr. Eicher, Contel
2/21	Dial Tone	Dr. Edwards, NTI
2/21	Current Applications of Dial Tone	Ms. McDermott, Bell Atlantic
2/21	Future Applications of Dial Tone	Mr. Forys, Bellcore
2/21	Transport Issues	Mr. G. J. Nelson, UTI
2/21	Transport of ANI Field	Mr. Cheston, Bellcore
3/21	Signaling System #7	Mr. Young, AT&T
3/21	Cellular Switch Technology	Mr. Bolliger, AT&T

Enhanced Call Completion (ECC) Task Force

Briefings to the ECC Task Force (Concluded)

4/18	High Probability of Completion	Mr. Dobbs, MITRE
4/18	ISDN MLPP Service	Mr. Tittle, CSC
5/16	Network Management Controls	Mr. Schulz, Bellcore
5/16	Network Management Controls	Mr. G. J. Nelson, UTI
7/25	Seamless Cellular Network	Mr. R. Nelson, McCaw
7/25	ECC Features	Mr. Kelly, AT&T

Initial Findings

- **Day-to-day service levels as measured by call completions, outage times, and/or transmission performance continue to be excellent.**
- **Network performance can be seriously degraded during natural or man-made disasters, equipment failures, and other anomalies, but industry structure gives customers alternate network choices.**
- **Services and features are available in the PSN that could improve the probability of call completion for both the general and NS/EP user.**

Initial Findings (Continued)

- **NS/EP users have a number of additional capabilities, e.g., special routing arrangements service (SRAS) and some components of the national level NS/EP telecommunications program (NLP), to further enhance call completion.**
- **The task force identified additional network features, potential capabilities, and service concepts that would enhance NS/EP call completion.**
- **Service concepts would require industry development.**

Enhanced Call Completion (ECC) Task Force

Initial Findings (Concluded)

- The keys to achieving enhanced call completion are:
 - Identification of NS/EP traffic
 - Ability to transport identification between networks
 - An agreed upon national NS/EP service plan
 - An aggressive implementation plan
 - Development of necessary standards, vendor hardware, and software

Enhanced Call Completion (ECC) Task Force

Next Steps

- **Examine new service and/or feature concepts to enhance NS/EP call completion and develop high level service descriptions**
- **Identify the development work and order-of-magnitude costs required by service providers and equipment manufacturers**
- **Discuss new ECC capabilities with standards bodies to determine impacts on the vendor interfaces**
- **Test concepts with the NCS to determine suitability**

Enhanced Call Completion (ECC) Task Force

Next Steps (Concluded)

- **Develop guidelines for the NCS to obtain ECC services or features**
- **Examine call egress and termination**

Enhanced Call Completion (ECC) Task Force

IES Recommendations to the NSTAC

Approve proposed NSTAC XIII charges to the IES

Enhanced Call Completion (ECC) Task Force

Proposed NSTAC XIII Charges to the IES

Continue Enhanced Call Completion
Task Force activities as charged

WIRELESS/LOW-BIT-RATE DIGITAL SERVICES



NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE

WIRELESS/LOW-BIT-RATE DIGITAL SERVICES TASK FORCE

OCTOBER 3, 1991

Wireless/Low-Bit-Rate Digital Services Task Force

IES Instruction to Task Force

Scope the issues regarding wireless services so that industry and Government can best ensure maximum uniformity, transparency, and interconnectivity of emerging digital mobile and personal communications services for NS/EP communications (STU-III, facsimile, data) requirements.

IES Instruction to Task Force (Continued)

Task force should consider the following specific standards and technical issues:

- **Mechanism for accommodating PSN-generated control signals**
- **Uniform control/options at the mobile terminal and the PSN interface**
- **Standard access points**
 - **Mobile data interface**
 - **Modem/data handler**
 - **Analog interface**

IES Instruction to Task Force (Concluded)

Task force should consider the following specific standards and technical issues:

- **ISDN interface**
 - **Rate adaption**
 - **Control**
- **Digital network timing and synchronization**

Present report to NSTAC XIII

Wireless/Low-Bit-Rate Digital Services Task Force

Task Force Members

Mr. David Cade, COMSAT, Chairman
Dr. Allen Dayton, COMSAT, Acting Chairman

AT&T

Mr. David Bush

GE

Mr. Jerry King

GTE

Dr. John Chiang

Hughes

Mr. James Mullen

McCaw

Mr. Richard McElhenie

MCI

Mr. Geoffrey Ward

Motorola

Mr. David Kohler

NTI

Dr. John Edwards

UTI

Mr. G. Jay Nelson

Technical Approach

- **Develop/acquire information from briefings/research**
- **Analyze information and scope issues**
- **Prepare findings and conclusions**
- **Develop recommendations**
- **Present recommendations to OWG, IES, and NSTAC**
- **Propose further NSTAC review/investigation, if appropriate**

Conclusions

- **Government NS/EP requirements for wireless digital communications have not been clearly defined to industry.**
- **The STU III design, which uses unique analog protocols and has no digital output interfaces, is one reason for the Government's compatibility concerns.**
- **Today's PSN wireless analog links support today's STU-III's, facsimile equipment, and modems. Some second generation systems will also support these devices. Third generation systems will be all-digital and may not support these analog devices.**

Conclusions (Concluded)

- There may be compatibility problems between existing analog devices and emerging wireless digital networks. There are managerial approaches and economic inducements that Government could use to mitigate these incompatibility problems.

Task Force Recommendations

- **The Government should establish a focal point, supported by NSA and NIST, to address and monitor wireless digital interface issues.**
- **The Government should formulate policies at a high-level to ensure NS/EP needs are taken into account in all wireless digital service acquisition activities.**

Task Force Recommendations (Concluded)

- **NSTAC member companies should, whenever practical, for National Security and Emergency Preparedness purposes, promote the development of common national and international standards for all types of wireless digital services.**

IES Recommendations to the NSTAC

- Approve and forward Wireless Services Task Force Final Report to the President
- Approve proposed NSTAC recommendation to the President
- Approve proposed NSTAC XIII charges to the IES

Proposed NSTAC Recommendations to the President

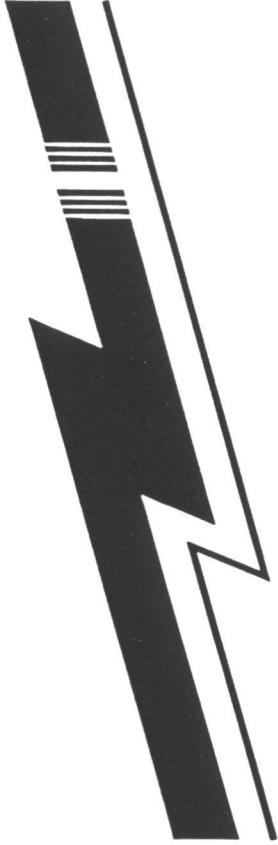
- **The Government should establish a focal point, supported by NSA and NIST, to address and monitor wireless digital interface issues.**
- **The Government should formulate policies at a high-level to ensure NS/EP needs are taken into account in all wireless digital service acquisition activities.**

Wireless/Low-Bit-Rate Digital Services Task Force

Proposed NSTAC XIII Charges to the IES

Establish Wireless/Low-Bit-Rate Digital
Services Task Force once Government
focal point established

INDUSTRY EXECUTIVE SUBCOMMITTEE (IES)



NATIONAL SECURITY
TELECOMMUNICATIONS
ADVISORY COMMITTEE

INDUSTRY EXECUTIVE SUBCOMMITTEE (IES) REPORT

OCTOBER 3, 1991

Industry Executive Subcommittee (IES)

Overview

- **Funding and Regulatory Working Group**
- **Physical Security**
- **Intelligent Networks**
- **Energy**

Funding and Regulatory Working Group

- Reviewed NSIE charter
- Developed and finalized NSIE non-disclosure agreement
- Reviewed NSIE legal considerations
 - NCC legal counsel provided guidance on public law
- Initiated development of funding methodology
 - Working with the ECC Task Force to develop task force methodology

Physical Security

- Issue raised at NSTAC XII
- IES charged to address the issue
- The physical security study encompassed
 - Review of NSTAC reports addressing physical security issues
 - Review of telecommunications industry physical security policies and procedures
 - Review of continuing Government activities related to physical security

Industry Executive Subcommittee (IES)

Physical Security Conclusions

- **Physical security awareness is important**
- **Telecommunications industry has policies and procedures that are continuously reviewed and updated**
- **Government is placing increasing effort on developing a more comprehensive asset protection program plan**
- **Threat information is provided from Government to industry through the NCC. This should continue.**

Intelligent Networks

- NSTAC XII charge to the IES
 - Evaluate, in conjunction with the task force and the Government, the conclusions and recommendations of the Intelligent Networks Task Force
 - Refine the recommendations and develop an approach to implementing appropriate intelligent network features and actions with the goal of enhancing NS/EP telecommunications
 - Report to NSTAC XIII

Industry Executive Subcommittee (IES)

Energy

- **Government (DOE, NSC, OMNCS) has initiated a "fast track" approach to implement NSTAC energy recommendations (NSTAC XI)**
- **The administration's National Energy Strategy (February 1991) warrants further review by the IES**
- **OWG/PWG concluded that NSTAC could provide valuable advice in both areas**

Industry Executive Subcommittee (IES)

IES Recommendations to the NSTAC on Intelligent Networks

- **Approve Executive Report and Intelligent Networks Task Force Final Report**
- **Approve proposed NSTAC recommendations to the President**
- **Approve proposed NSTAC XIII charges to the IES**

Industry Executive Subcommittee (IES)

Proposed NSTAC Recommendation to the President on Intelligent Networks

**Establish intelligent networks program
office to ensure advantages of evolving
intelligent networks are incorporated
into planning for and procurement of
Government NS/EP telecommunications**

Industry Executive Subcommittee (IES)

Proposed NSTAC XIII Charges to the IES on Intelligent Networks

- **Continue work with Government on intelligent networks**
- **Disband Intelligent Networks Task Force**

Industry Executive Subcommittee (IES)

IES Recommendation to the NSTAC on Energy

Approve proposed NSTAC XIII charges to the IES

Industry Executive Subcommittee (IES)

Proposed NSTAC XIII Charges to the IES on Energy

Establish energy task force to support/assist OMNCS efforts with DOE and the NSC to:

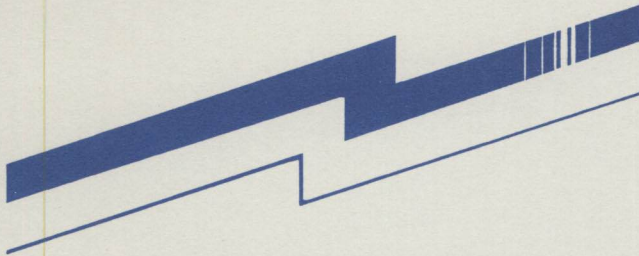
- **Develop criteria for identifying critical industry NS/EP telecommunications facilities that qualify for:**
 - **Priority electric service restoration**
 - **Priority fuel distribution**
- **Develop process for applying criteria to identify critical industry NS/EP telecommunications facilities**

Industry Executive Subcommittee (IES)

Proposed NSTAC XIII Charges to the IES on Energy (Concluded)

- **Provide the NCS with the criteria
and the process within six months**
- **Provide report to NSTAC XIV**

NCS 2450/1



National Security
Telecommunications
Advisory Committee
(NSTAC)

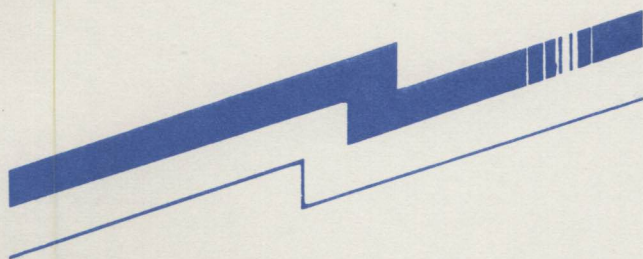
**Reports Submitted
for
NSTAC XIII**

October 3, 1991

Reports Submitted for the
Thirteenth Meeting of
Network Security Telecommunications
Advisory Committee (NSTAC)

October 3, 1991

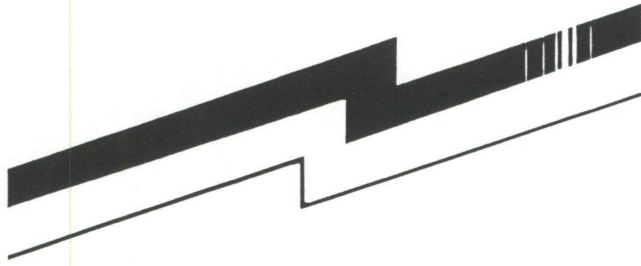
- Final Report of the Wireless Services Task Force
September 5, 1991
- Report of the Network Security Task Force
August 1991



Wireless Services
Task Force
Report

**Towards
National Security and
Emergency Preparedness
(NS/EP)
Wireless/Low-Bit-Rate
Digital Services**

September 5, 1991



Wireless Services
Task Force
Report

**Towards
National Security and
Emergency Preparedness
(NS/EP)
Wireless/Low-Bit-Rate
Digital Services**

September 5, 1991

TOWARDS
NATIONAL SECURITY AND EMERGENCY PREPAREDNESS (NS/EP)
WIRELESS/LOW-BIT-RATE DIGITAL SERVICES:
THE REPORT OF THE WIRELESS SERVICES TASK FORCE (WSTF)
TO NSTAC XIII

September 5, 1991

EXECUTIVE SUMMARY

INTRODUCTION

Early in 1991 the Office of the Manager, National Communications System (OMNCS), became concerned about the possible adverse effects of certain developments in the rapidly growing and evolving wireless digital telecommunications industry regarding its ability to handle facsimile, data communications, and Secure Telephone Units (STUs). This concern is only part of a larger concern about the digital conversion problem that exists when low-bit-rate voice compression is used in the Public Switched Networks (PSNs). Working in conjunction with certain National Communications System (NCS) member organizations, the OMNCS presented the issue to the Industry Executive Subcommittee (IES) of the National Security Telecommunications Advisory Committee (NSTAC). The OMNCS requested that the IES establish a Task Force to (1) scope the issue regarding wireless services and (2) advise the Government how to minimize any adverse impact of emerging digital mobile communications standards and technologies on mobile National Security and Emergency Preparedness (NS/EP) users. In response, the IES established a Task Force to address wireless/low-bit-rate digital services.

THE ISSUE

The next generation wireless systems are introducing digital techniques to enhance capacity and performance. The digital voice compression techniques used in these new digital technologies provide adequate voice service, but they create a problem for NS/EP users in that they will not transparently support modem-based services such as personal computers (PCs), facsimile, and STU IIIs currently proliferating. Supporting those current data services in the emerging wireless digital networks will require special treatment by the carriers. The variety of wireless networks and the current absence of common industry-wide standards imply that future wireless digital services could require a special data device and interface for each such service on each of the different wireless networks. This situation could lead to significant NS/EP problems due to the added expense and number of devices per NS/EP user that could be required.

Based on the Task Force review of emerging wireless/low-bit-rate digital systems, the Task Force drew its conclusions and makes its recommendations to the NSTAC as presented below.

CONCLUSIONS

- NS/EP requirements for wireless digital communications have not been clearly defined to industry. There is no Government focal point for defining such requirements. These Government NS/EP requirements need emphasis to ensure that they will be properly addressed by Government and industry.
- The design of the STU III, which uses unique analog protocols and has no digital output interfaces, is one reason for the Government's compatibility concerns.
- Those portions of today's PSN involving wireless analog links support today's STU IIIs, facsimile equipment, and modems. Some second generation systems will continue to support these devices. Third generation systems will be all-digital and may not support these analog devices.¹
- There may be compatibility problems between the multitude of these analog devices and the emerging wireless digital networks. However, there are managerial approaches and economic inducements that Government could use to mitigate these incompatibility problems; examples might be:
 - (1) Supply-stimulus approaches
 - (2) Demand-restriction approaches
 - (3) Legislative and regulatory-oriented approaches

RECOMMENDATIONS

- The Government should establish a focal point, supported by NSA and NIST, to address and monitor wireless digital interface issues. The functions of this focal point should include:
 - Assisting industry with funding, where appropriate, to develop new or modify existing specifications for interfaces and inter-working functions for mobile data communications connecting to the public switched network.

¹Analog devices are modems that use audio power between 300 to 3000 hertz for signaling.

- Promoting the incorporation of NS/EP requirements into those industry standards under development and requesting the organization of appropriate standards bodies that do not yet exist.
- Developing, where appropriate, data interface devices, protocols, and interworking functions and making these "products" available to industry.
- Establishing a wireless/low-bit-rate digital communications users group, that includes both vendors and users, to exert greater NS/EP influence on the standards setting process.
- In carrying out these functions, the first steps of the Government focal point should be to:
 - Develop in coordination with industry standards bodies, a standard interface for the Government user, encompassing both the physical layer and the control signals
 - Influence the air-to-ground, mobile satellite, and personal communication network (PCN) standards development groups to coordinate with the digital cellular standards community
 - Organize forums with established standards groups, to include customer premise equipment providers, to address these issues
- The Government should consider a two-phased approach to making STU devices compatible with the emerging wireless/low-bit-rate digital environment: (1) design a compatible digital interface applique' for the current STU III; and (2) design a new generation of STUs to operate in the all-digital environment of the future.
- The Government should formulate policies at a high level (such as a National Security Directive) to ensure NS/EP needs are taken into account in all wireless digital service acquisition activities. Options include:
 - Issue directives to the NS/EP user community requiring that they subscribe only to current-data-service-compatible (STU IIIs, facsimile, PCs) wireless/low-bit-rate digital communication systems.
 - Consider issuing a "Notice of Inquiry" or a "Request for Information" concerning industry R&D or production plans for current-data-service-compatible wireless/low-bit-rate digital communication systems.

- Require standardized digital data interfaces in all of its mobile telecommunications acquisition specifications, not limiting those specifications to NS/EP-specific acquisitions only.
- NSTAC member companies should wherever feasible, for purposes of National Security and Emergency Preparedness, promote the adoption of common interfaces and interworking function standards across all types of wireless digital communication services, in their roles as participants in national and international standards setting forums.
- The Government should disseminate this report to appropriate standards forums within 60 days of approval by NSTAC XIII.

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1.0 INTRODUCTION

1.1 The Issue

This report presents the results of a study by a Task Force of the President's National Security Telecommunications Advisory Committee (NSTAC) into the issue of the impact of emerging wireless digital services on National Security and Emergency Preparedness (NS/EP) telecommunications. This issue is driven by two significant components of the rapidly evolving communications environment. These are the trend toward wireless access to the network, and the trend toward increased use of data services as a component of everyday Government and business operations.

Wireless communications has seen dramatic growth in the 1980s. Cellular telephone communications has grown from an experimental configuration at the beginning of the decade to a giant industry today. The customer base of cellular communications is well over 6 million today.² It has been doubling in size every two years and is expected to continue growing to about 18 million units by 1995.³ Mobile satellite systems, air-to-ground phones, and personal communication networks are wireless voice services that will be deployed in the 1990s for a variety of applications. These systems are expected to have similar success and growth trends to that of the cellular phone industry. Market research firms such as Arthur D. Little project a market size of 60 million for handheld Personal Communications devices.⁴ Some forecasters claim that by the year 2000 a significant portion of connections to the public switched networks (PSNs) would be wireless-based.⁵

Data communications has experienced similar success in the 1980s. Personal computers pass electronic mail and documents around the country. Facsimile services have replaced a substantial portion of the mail for daily business communications. The Secure Telephone Unit (STU) III has become a fixture for day-to-day secure voice and data communications. These devices have increased, and will continue to increase, the flexible use of data in the information age. Most of these data devices require use of data modems that operate over the analog PSN. The PSN is effectively transparent to modem signals. These data devices are also used in

²Keller, John J., "Cellular Phones Dial Digital for Growth", Wall Street Journal, May 14, 1990, pg B1.

³Takahashi, Dean, "Cellular Industry Split Over Standards", Washington Post, September 2, 1990.

⁴Bomengen, Heidi (Arthur D. Little), "Personal Communications: A Market Perspective", IEEE Workshop on Personal Communications, Dallas, TX, April 16, 1991.

⁵Cox, Donald C., "Personal Communications: An Overview", IEEE Workshop on Personal Communications, Dallas, TX, April 16, 1991.

today's analog wireless networks that use FM radio channels which support modem operations.

The move toward wireless low-bit-rate digital communications systems is driven by market demand to provide service to more and more customers and by the limited amount of spectrum available to support these customers. This means that these systems must be spectrum efficient; that is, they must provide more service per bandwidth per area than is currently being done with wireless analog mobile systems. The large majority of the market demand is for voice services. In response to this demand, technology is now able to provide quality voice compression in a few kilobits of bandwidth. Voice compression combined with efficient modulation will allow spectrum efficient wireless digital systems to be developed that will provide voice services to a large number of customers.

Today, wireless analog communications systems such as cellular telephones, Standard A mobile satellite terminals, and air-to-ground mobile phones, support NS/EP telecommunications through such means as facsimile machines, personal computer data modems and STU IIIs. These systems pass analog signals (audio tones) over the radio links transparently and provide them to the PSN, which also passes them transparently to the end user. In the future, however, wireless digital systems will incorporate techniques which enhance capacity and performance to better utilize the scarce frequency bandwidths allocated to radio networks. The digital voice compression techniques used in these new digital technologies provide adequate voice service, but they create a problem for NS/EP users in that they will not transparently support modem-based services; that is, they will not pass the audio tone signals used to support data transmissions from personal computer modems, facsimile machines, or STU IIIs. These devices remain analog⁶ while the wireless services are migrating to digital-based equipment. Even though the wireless digital systems will be used commercially, the requirement for the use of these systems for NS/EP purposes indicates that a common, transparent-as-possible solution needs to be developed to support NS/EP communications. Supporting current data services in the emerging wireless digital networks will require special treatment by the carriers in order to provide any service at all.

Since these low-bit-rate systems are digital, it is usually possible to provide a way to transport the user information digitally through the wireless system and convert it to a modem tone representation just before it enters (or leaves) the PSN. See figure 1. Most of the vendors developing new low-bit-rate wireless digital systems are using this approach. Some standards organizations such as the Telecommunications

⁶Analog devices are modems that use audio power between 300 to 3000 hertz for signaling.

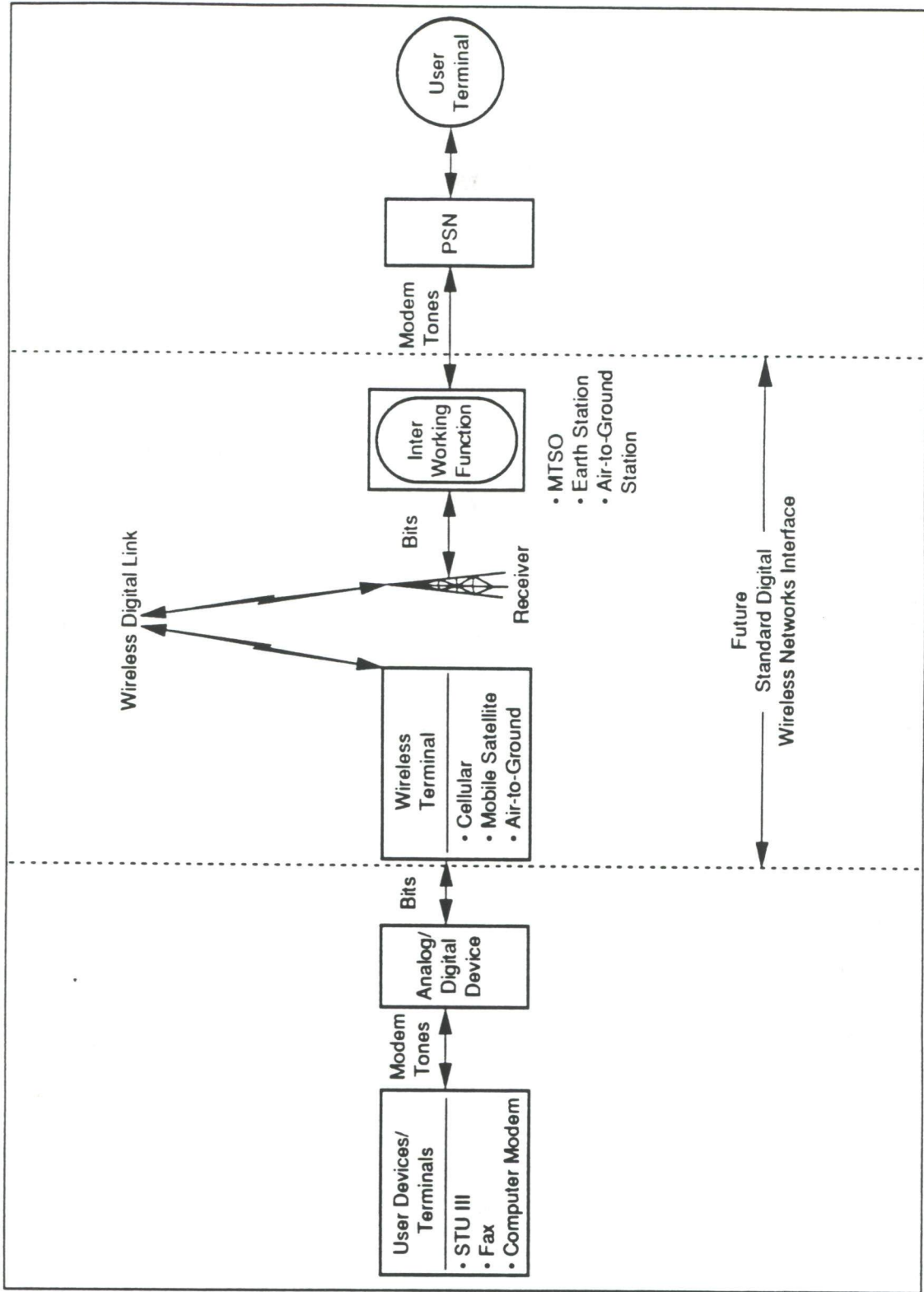


Figure 1. Generic Analog to Digital Wireless Network Interfaces

Industry Association (TIA) TR 45 Committee are developing interface and control standards to support data and facsimile services for the North American Digital Cellular system.

One problem, however, is that there is very little coordination between groups working on different low-bit-rate wireless digital systems; i.e., between digital cellular, air-to-ground phone, and digital mobile satellite systems. Without such coordination and in the absence of commonly accepted industry-wide interface and control standards, it is possible that systems under development will not be interoperable, and that future wireless data services could require a special data device and interface for each such service on each of the different wireless networks. This could lead to significant NS/EP problems due to the added expense and number of devices per NS/EP user that could be required. Another potential NS/EP problem is that some developers are further along than others, and they may be selecting a solution that is unique to their systems, limiting interoperability with other vendor systems.

1.2 Impact on NS/EP Planners and Emergency Responders

Without uniformity and transparency for NS/EP data services, significant problems could be encountered in dealing with future emergency operations. Configuring emergency services will depend on getting mobile services into the field along with on-site communications. Access to computer data bases, facsimile and other data services are anticipated to coordinate emergency response efforts. The wireless digital service carrier could provide Advanced Mobile Phone Service (AMPS), N-AMPS, the TIA's IS-54 Time Division Multiple Access (TDMA) standard, enhanced TDMA, Frequency Division Multiple Access (FDMA), or the Code Division Multiple Access (CDMA) technologies. Without industry-wide interoperability standards, the task of the NS/EP planner and emergency responder will be complicated and costly due to the need to support all possible special devices necessary to accommodate the existing service. If mobile satellite service is required for a remote affected area, a completely different set of equipment will be required to support data services. The net result could be significant delays in providing a full range of communications services, perhaps limiting services to voice only, thereby impairing emergency response efforts.

1.3 Background

Early in 1991 the Office of the Manager, National Communications System (OMNCS), became concerned about the possible adverse effects of certain developments in the rapidly growing and evolving wireless digital telecommunications industry regarding its ability to handle facsimile, data communications, and STUs. This concern is only part of a larger concern about the digital conversion problem that exists when low-bit-rate voice compression is used in the PSNs. Working in conjunction with

certain National Communications System (NCS) member organizations, the OMNCS presented the issue to the Industry Executive Subcommittee (IES) of the NSTAC. The OMNCS requested that the IES establish a Task Force to (1) scope the issue regarding wireless services and (2) advise the Government how to minimize any adverse impact of emerging digital mobile communications standards and technologies on mobile NS/EP users.

At its meeting on March 15, 1991, the IES accepted the Government's request and established a Task Force to address wireless/low-bit-rate digital services and to review relevant issues. The IES instructed the Task Force, in part, as follows:

Scope the issues regarding wireless services so that Industry and Government can best ensure maximum uniformity, transparency, and interconnectivity of emerging digital mobile and personal communications services for NS/EP communications (STU III, facsimile, data) requirements.

Present report to NSTAC XIII.

The Task Force was also instructed to consider specific standards and technical issues, which are presented in Appendix B.

1.4 Scope of Task Force

At its initial meeting on April 10, 1991, the Task Force defined the scope of its review to include all types of systems or "solution-approaches" that (1) involve wireless digital segments and (2) appear likely to be incorporated in, or interface with, the PSN within the time frame 1991-2010. The Task Force decided that the scope of its activities should include a review of the ability of these systems or solution approaches to accommodate existing communications devices such as STU III telephones, Group 3 facsimiles, and related services, as well as developmental devices such as the STU IIID digital telephone. The Task Force also considered the interrelationships among the Government NS/EP community, the telecommunications industry, and the domestic and international standards communities to fall within the scope of its review.

1.5 Objective of Task Force

The objective of the Task Force was to examine the existing and emerging wireless digital systems to determine the status of each such system, to determine whether commonality and transparency exists among these systems or is technically possible, and to recommend management approaches that would encourage maximum commonality, transparency, and interoperability of these new wireless low-bit-rate digital systems to support NS/EP data communications requirements. The Task Force objective was designed to satisfy the OMNCS concerns regarding minimizing any

adverse impact of emerging digital mobile communications standards and technologies on mobile NS/EP users.

1.6 Task Force Approach and Methodology

The Task Force approached its task of scoping the wireless services issue by (1) identifying the Government's concerns regarding wireless digital systems, (2) learning about individual company plans for emerging systems, and (3) inviting individual company comments on how the Government's concerns could be addressed within the context of the emerging wireless digital systems they planned to implement within the 1991-2010 time frame.

Government organizations, companies, and other organizations were invited to brief the Task Force. The topics of their briefings are listed in Appendix C. Most of the industry briefings described particular systems or solution approaches. Summary descriptions of several of these systems are given in section 2.0 to indicate the diversity among the emerging wireless digital systems.

The Task Force was also made aware of significant, relevant standards activity. A list of some of the most significant standards bodies addressing wireless digital issues is given in Appendix D.

The Task Force carried out its work by meeting as a full body seven times over a five month period. Appendix E lists the dates and locations of its meetings. The Task Force developed its results based on the briefings received, staff research, the expertise of its members, and through meeting discussions. The Government provided the secretariat staff function through the Office of the Manager, NCS. Appendix F lists the Task Force members and key secretariat staff personnel.

The Task Force addressed all of the standards and technical issues requested by the IES.

2.0 REVIEW OF WIRELESS DIGITAL SYSTEMS

The following categories of wireless services were reviewed by the Task Force: Cellular Telephone, Mobile Satellite, and Air-to Ground Telephone. The category of personal communications wireless services was not considered at length as this service is still in the conceptual phase of development. The specific digital mobile systems reviewed by the Task Force are listed in Appendix G. The diversity of the technological and commercial initiatives in the wireless communications arena makes the use of wireless data services a challenge for NS/EP planners and users. Not only are there several categories of services in place or envisioned, there are multiple vendors and independent proprietary approaches in each category. Furthermore, there is little communication across the categories of service that might support a common approach or standard. Each category of wireless service is discussed in the following paragraphs.

Based on the information presented to the Task Force, the cellular telephone services segment of the mobile telecommunications industry is further advanced than the mobile satellite and air-to-ground segments, and appears to be reaching a consensus on common standards, namely the TR 45 standards. Also, the industry segments representing mobile satellite systems and air-to-ground telephone systems are not as far along on supporting digital data services; digital voice remains their priority concern.

2.1 Cellular Telephone

The evolution of North American cellular telephone services has been coordinated by the Cellular Telephone Industry Association (CTIA) and the Telecommunications Industry Association (TIA). The current AMPS has been in use since 1982 and is based on analog FDMA technology. The next generation standards, TIA-IS54/IS7X, are a two-stage evolution toward higher capacity digital systems. The first stage is a dual mode system which will support both analog and digital services. This will be introduced into service in 1992 in some locations. The second stage will be a dual mode system whose digital side will use the same TDMA format as the first stage while increasing capacity to six or more times that of today's analog system. This system will likely be introduced in the 1995 time frame. The dual mode system will continue to be supported indefinitely. The TIA standards forum is the only open forum in the mobile realm in North America where standards for data for digital cellular systems are being considered. Standards for data operation with personal computers, Group 3 facsimile, and STU-IIIs are under consideration with participation by the Government.

Other technical approaches to North American cellular have been proposed. One vendor has proposed an enhanced version of an analog cellular system called N-AMPS to serve as an interim enhancement in

capacity. Another vendor has developed an enhanced version of standard IS-54 called Extended Time Division Multiple Access (ETDMA) which is similar to IS-54 in most features except that it uses speech interpolation and half-rate coding to enhance capacity. Yet another vendor has developed a spread spectrum-based approach to cellular using CDMA. The focus of these technologies is on increased capacity of voice services as this serves customer demand and therefore maintains the economic viability of capacity-limited carriers. Most of these approaches are proprietary, and little effort has been directed at planning data services, although most vendors promise this capability in some future generation of equipment.

2.2 Mobile Satellite Systems

Mobile satellite systems using analog frequency modulation (FM) have been in service for 15 years. These systems currently support in a transparent manner STU III, facsimile, and computer applications. Mobile satellite systems are used for NS/EP telecommunications.

Mobile satellite systems with digital voice compression and digital modulation are expected to be deployed soon to support mobile users. In contrast to cellular systems, mobile satellite systems serve a smaller, more select group of customers, depend on very different technology, and are developed by industry segments that have little interaction with the other segments of the mobile industry. In spite of these differences, digital mobile satellite systems will share many common technologies and properties with digital cellular systems. Most significant of these is the use of digital voice compression with digital modulation and the associated complications of providing transparent data services.

There is one mobile satellite system in operation and two other systems under development. One of the systems being developed is owned and operated by a consortium and will provide both voice and data capabilities using FDMA. Although this system intends to serve a significant portion of the Government market, there is little effort to provide Group 3 facsimile and STU III support as part of its early capabilities. Thus, mobile satellite is not as far along as digital cellular in considering support to Group 3 facsimile and STU III.

Additional companies have recently filed proposals with the Federal Communications Commission (FCC) to establish a worldwide telecommunications network based on fleets of low orbiting satellites. The systems being proposed will use different access schemes and include the use of CDMA spread spectrum as well as other access technologies, and operate in the L-band and S-band frequency spectrum.

With regard to the systems being developed for use in the mobile satellite services, the general consensus is that the systems will probably support computer modems and in some instances facsimile and STU IIIs. However, the vendors tended to be non-committal and could not make definite promises that their systems would support Government data service needs.

2.3 Air-to-Ground Telephone Service

Air-to-ground telephone service using analog FM techniques has supported military aircraft for many years. Worldwide voice and data service has recently become available for some private and commercial aircraft companies. One system, implemented in 1990, provides low speed data (300 bps) for flight crew purposes. Beginning in 1991, this system will provide higher speed data services to both the crew and passengers. Capabilities of the system will include analog-based voice, messaging, facsimile, and personal computers.

Two other air-to-ground systems are being developed and are near implementation. These systems will offer public telephone service as well as a variety of data services. One of the systems has begun basic air-to-ground voice service. Expanded voice and data service (2400 bps carried over voice link) is planned for 1993. Basic operation of the system will be to and from an aircraft through a ground station and the PSN. The system will be fully digital with an interoperable single carrier per channel (SCPC) access scheme. Both systems are expected eventually to support facsimile and personal computers. Compatibility with STU IIIs is unknown at this time. Thus, air-to-ground services are not as far along as digital cellular services with respect to their consideration of support to Group 3 facsimile and STU III.

Vendors competing to develop next generation digitally-based systems have stated their systems will use an FDMA scheme. Such systems will have properties similar to digital cellular systems in that they will employ digital voice compression and will require special treatment for data. The systems under development are proprietary to the individual developers.

As with the digital cellular and mobile satellite industries, the activities in the air-to-ground communications arena demonstrate the fragmentation of the mobile market. The air-to-ground industry segment has little interaction with other industry standards bodies. The air-to-ground systems are being developed under separate efforts and each vendor will have a unique non-standard access scheme for supporting personal computers, G3 facsimile, and possibly STU IIIs.

2.4 Personal Communications Networks (PCNs)

Personal Communications Networks (also called Universal Personal Communications) represent the largest potential form of mobile or portable communications. It is also the least mature of the mobile systems on the horizon. Personal communications will combine communications from hand-held terminals with Intelligent Network technology to provide customized and reconfigurable access to the public network. The market potential claimed by some to be 60 million by the year 2000, has many organizations and companies involved in the technology and in standards setting. For this reason, the Task Force did not review activities in this area. Because personal communication networks are still early in their development cycle, they offer the best opportunity for Government influence.

2.5 Specific Standards and Technical Issues

Sections 2.1 through 2.4 above have presented information that was provided to the Task Force relative to the cellular, mobile satellite, air-to-ground phone, and personal communications networks. In considering these emerging systems, the Task Force found that the set of standards and technical issues the IES charged it to address cut across these systems. Each of these standards and technical issues are addressed below.

Mechanisms for Accommodating PSN Generated Control Signals: This category addresses the need for the mobile network to accommodate initiation of data service from either a mobile control signal or potentially a PSN generated (modem) control tone. Control tones at 2100 Hz, 1800 Hz, and 1100 Hz are commonly used with Group 3 facsimile and STU IIIs to signal a request for initiation of service. In general there was no commonality among the mobile industry approaches to this concern. One vendor, for example, is considering dialed number access to a dedicated mobile/PSN interface; another vendor proposes detection and conversion of these tones at both mobile and PSN interfaces. The TR-45 standards committee has no procedure to date to address this concern.

Uniform Control/Options at the Mobile Terminal and the PSN Interface: This category addresses the need for uniformity of services and selection of such services. The survey done of industry showed that there was little uniformity in this category as well. While most vendors intended to provide Group 3 facsimile service, for example, selection of this service differed from one network to the next. Some services were constructed at the application layer, others, such as the European GSM, were created at the transport layer from primitives.

Standard Access Points: This category addresses a need across the mobile industry to identify standard interfaces for the mobile terminal data devices, for the PSN modem handlers, and for analog interfaces. A survey

of industry representatives that briefed the Task Force showed that there was little commonality in the approaches for standard access points. Furthermore the approaches taken most often had these interfaces buried with their designs without any definition of the various interfaces.

ISDN Interface: This category represents the need for the definition and standardization of the interface to Integrated Services Digital Network (ISDN) for next generation all-digital network applications. This area is recognized by most of the mobile industries represented at Task Force briefings as an important issue, but the issue was viewed as too far into the future for consideration in an industry with so many near term challenges.

Digital Network Timing and Synchronization: This category represents the requirement associated with data service to accommodate means to operate within an environment with multiple independent timing sources. This feature is important for any encrypted data, as timing is necessary for decryption. This is an especially challenging problem with cellular networks where connections are dynamically handed off from one cell to another during transmission. In general, only the simpler asynchronous data connections are currently in design by the vendors. Only a limited effort is being expended to address these problems for synchronous data services.

The Government presented a paper to the Task Force that included a number of recommendations in each of the above categories. The Government has also presented these recommendations to a number of industry forums. The Task Force believes that much work remains to be done by both Government and industry in these areas.

3.0 FINDINGS

Based on its review of the various emerging wireless digital/low-bit-rate systems, the Task Force made the following findings:

- Mobile communications is the fastest growing segment of the communications industry with many new and different services.
- Use of low-bit-rate compressed voice on these networks will prohibit use of conventional modems for data services.
- Data services (PCs, facsimile, STU-III, etc.) used in NS/EP telecommunications will be affected by these changes.
- Because the demand for Government NS/EP STU III and mobile data services represents only a small fraction of the total market for mobile services, NS/EP requirements--even when known--are generally not considered when new wireless digital technologies are being developed. If the Government NS/EP community is to influence technology development, it must act within a narrow time window to avoid incompatibilities.
- There are currently about 2,000 analog mobile STU III users, and trends indicate that in the near-future there will be 6,000 to 8,000 users. However, the potential customer base for total mobile wireless data users is much larger.
- Presently, the different segments within the wireless communications industry have varying levels of standards development to support mobile data services. In addition, these segments have little or no standards development activity to support mobile data services across the total wireless industry.
- The wireless segment of the industry is evolving rapidly. The conversion to digital will be a phased process. Some networks will first evolve from analog to a hybrid, and then to an all-digital network. Others will be developed as all-digital networks from the start.
- All existing domestic cellular networks voluntarily adhere to TR 45 standards. However, cellular networks proposed for implementation during this decade may not adhere to TR45 standards.
- The design of the current STU III is based on unique analog protocols and has no digital output interfaces. These protocols are not readily accommodated by some of the emerging wireless digital networks.

- The Government is working closely with the standards community to promote the development of standards for wireless digital systems that support the use of STU III and other secure voice and data devices/services.
- The NS/EP user community may not be fully aware that wireless communications are not secure and are subject to interception. The issue of vulnerability of mobile communications to interception needs to be given higher visibility within the Government and the broader NS/EP community.

4.0 CONCLUSIONS

Given the findings above, the Task Force drew the following conclusions based on the expertise and judgement of its members:

- NS/EP requirements for wireless digital communications have not been clearly defined to the standards community or to industry. There is no Government focal point for defining, assembling, and communicating such requirements. A strategic issue is to emphasize these Government NS/EP needs to ensure that they will be dealt with in Government and industry.
- The design of the STU III, which uses unique analog protocols and has no digital output interfaces, is one reason for the Government's compatibility concerns.
- Those portions of today's PSN involving wireless analog links--cellular telephones, air-to-ground service, and mobile satellite services--support today's STU IIIs, facsimile equipment, and modems. Some second generation systems will continue to support these devices through the use of dual mode technology or a mix of analog and digital services. Third generation systems will be all-digital from the start. As the wireless portions of the network are converted from analog to digital technology, the emerging wireless digital network may not support analog devices.
- Due to the lack of managerial or economic impetus, there may be compatibility problems between the multitude of these existing analog devices and the emerging wireless digital networks. However, there are managerial approaches and economic inducements that Government could use to mitigate these incompatibility problems; examples may be:
 - (1) **Supply-stimulus approaches**, such as directed R&D funding, grants, tax incentives, subsidies, or guaranteed minimum purchases intended to stimulate the supply of systems that meet NS/EP requirements.
 - (2) **Demand-restriction approaches**, such as requiring all Federal Government users of wireless services or equipment to acquire only those services or equipment that incorporate compatible digital data and voice technological solutions, thereby increasing the market for these types of services/equipment.
 - (3) **Legislative and regulatory-oriented approaches**, such as having the FCC impose an interoperability requirement on the industry.

5.0 RECOMMENDATIONS

Based on the conclusions above, the Task Force makes the following recommendations:

- For NS/EP purposes, the Government should establish a focal point within the Government to address and monitor wireless digital interface issues. The focal point should be supported by the National Security Agency (NSA) and the National Institute of Standards and Technology (NIST) for encryption expertise. The functions of this focal point should include:
 - Assisting industry with funding, where appropriate, to develop new or modify existing specifications to provide for common interfaces and interworking functions for mobile data communication services (e.g., facsimile, data modems, and STU III) connecting to the Public Switched Network.
 - Continuing to actively participate in the standards development bodies to promote the incorporation of NS/EP requirements into industry standards in the national/international arenas. Approaching industry segments to request the organization of appropriate standards bodies that do not yet exist.
 - Developing, where appropriate, data interface devices, protocols, and interworking functions (as well as new products such as a STU IIID) in accordance with evolving standards and making these "products" available to industry.
 - Initiating the establishment of a wireless/low-bit-rate digital communications users group that includes vendors (e.g., manufacturers, operators) and users (both Government and private-sector) to enhance information exchange among participants and to exert greater NS/EP influence on the standards setting process.
- In carrying out these functions, the first steps of the Government focal point should be to:
 - Develop in coordination with industry standards bodies, a standard interface for the Government user, encompassing both the physical layer and the control signals
 - Influence the air-to-ground, mobile satellite, and personal communication network (PCN) standards development groups to coordinate with the digital cellular standards community

- Organize forums with established standards groups, to include customer premise equipment providers, to address these issues
- The Government should consider a two-phased approach to making STU devices compatible with the emerging wireless/low-bit-rate digital environment: (1) design a compatible digital interface applique' for the current STU III (e.g., the STU IIID); and (2) design a new generation of STUs to operate in the all-digital environment of the future.
- The Government should formulate policies at a high level (such as a National Security Directive) to ensure NS/EP needs are taken into account in all acquisition activities, including Government-funded R&D, procurement and leasing of wireless digital services. Options include:
 - Issue directives to the NS/EP user community requiring that they subscribe only to those wireless/low-bit-rate digital communications systems that accommodate STU IIIs, facsimile, PCs and other data terminals.
 - Consider issuing a "Notice of Inquiry" or a "Request for Information" concerning industry R&D or production plans for current-data-service-compatible (STU IIIs, PCs, facsimiles, modems, etc.) wireless/low-bit-rate digital communication systems.
 - Require standardized digital data interfaces in all of its mobile telecommunications acquisition specifications to ensure that Government wireless digital communications can be both secure and affordable; Government should not limit those specifications to NS/EP-specific acquisitions only.
- NSTAC member companies should wherever feasible, for purposes of National Security and Emergency Preparedness, promote the adoption of common interfaces and interworking function standards across all types of wireless digital communication services, in their roles as participants in national and international standards setting forums.
- The Government should disseminate this report to appropriate standards forums within 60 days of approval by NSTAC XIII.

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APPENDIX A

OMNCS ISSUE STATEMENT AND PROPOSED APPROACH

ISSUE: How can industry and Government best ensure maximum uniformity and transparency of emerging digital mobile communications services for NS/EP data (STU-III, facsimile, digital) requirements?

BACKGROUND: Using multiple carriers and technology, today's Public Switched Network (PSN) provides the uniformity and transparency essential for several communications methods which support NS/EP users. Mobile services have become a major extension of the PSN.

RF spectrum limitations, combined with growing cellular mobile services requirements have influenced service providers to propose new standards and techniques to increase system capacity and capability. Most of these proposed standards are digital, and involve increased spectrum and bandwidth efficiency involving data and voice compression. These efficiencies could affect NS/EP data communications, e.g., STU-III, facsimile, etc.

Several forums within industry and the communications standards community are currently considering competing digital mobile standards, but to date no single standard has prevailed. It is possible that several different technologies could be fielded.

To continue efficient cost-effective support to mobile NS/EP users, the Government desires to minimize modifications to its systems and equipment which provide mobile NS/EP users with digital/secure communications services. It needs to ensure communications continuity as mobile services convert from analog to digital systems.

PROPOSED APPROACH: The Government requests that the NSTAC establish an IES Task Force or special subcommittee to advise the Government how to minimize the impact of emerging digital mobile communications standards and technologies on mobile NS/EP users. Because of the on-going standards activities, the advice should be offered by NSTAC XIII.

APPENDIX B

IES INSTRUCTION TO THE TASK FORCE

Scope the issues regarding wireless services so that industry and Government can best ensure maximum uniformity, transparency, and inter-connectivity of emerging digital mobile and personal communications services for NS/EP communications (STU III, facsimile, data) requirements. Task Force should consider the following specific standards and technical issues:

- Mechanism for accommodating PSN-generated control signals
- Uniform control/options at the mobile terminal and the PSN interface
- Standard access points
 - Mobile data interface
 - Modem/data handler
 - Analog interface
- ISDN interface
 - Rate adaption
 - Control
- Digital network timing and synchronization

The Task Force believes it has addressed all of the above standards and technical issues in the body of this report.

APPENDIX C

BRIEFINGS/PRESENTATIONS TO THE TASK FORCE

Subject	Presented by
<u>Government Concerns</u>	
STU III Evolution	Mr. John Nagengast Chief of Strategic Systems National Security Agency
STU III Operations on Wireless Networks	Dr. Richard Dean National Security Agency
Mapping STU III onto Wireless Networks	Dr. Richard Dean National Security Agency
NSA Perspective/Future Directions	Dr. Richard Dean National Security Agency
Vulnerability and Threats in Cellular Systems	Mr. Gary Bright Mr. Dale Nunley National Security Agency
<u>Standards</u>	
Standards Concerns for Wireless Digital Communications --Facsimile and Modems --Wireless Digital Channels --Wireline Digital Channels (CCITT/ISDN)	Dr. Dennis Bodson Assistant Manager for Technology and Standards, National Communications Systems
Informal Comments on the Work of TIA Committee TR 45.3	Mr. Gil LaVean IMM
<u>Digital Cellular Systems</u>	
Hughes Network Systems' Advanced Cellular System; Extended TDMA Concept	Mr. James Mullen Hughes Network Systems, Inc.

APPENDIX C (Concluded)

Subject	Presented by
<u>Digital Cellular Systems (Conc'd)</u>	
Ericsson-GE Systems	Mr. Barry Kratz Ericsson-GE Mobile Communications
Async Data Overview	Dr. John Diachina Ericsson-GE Mobile Communications
CDMA Digital Cellular and PCN Technology Development Status	Dr. Mark Epstein Qualcomm, Inc.
GSM: Pan-European Digital Cellular System	Mr. Gene Bruckert Motorola, Inc.
<u>Digital Mobile Satellite Systems</u>	
Transmission of Group 3 Facsimile Over INMARSAT's Digital Mobile Satellite Circuits	Dr. Spiros Dimolitsas COMSAT Laboratories
Iridium	Dr. Peter A. Swan Motorola, Inc.
AMSC Satellite System	Mr. Michael Ward American Mobile Satellite Corp.
<u>Air-to-Ground</u>	
Air-to-Ground Technology (Clairtel's System)	Mr. John Kenyon Clairtel Communications
In-Flight Telephone System (Note: This system involves satellite as well as direct air-ground radio links)	Mr. Chuck Boensch Goeken Group
GTE Airfone Air-to-Ground Telecommunications System	Mr. James B. Costello GTE Airfone, Inc.
GTE Airfone Second Generation System	Mr. Roger Merel GTE Airfone, Inc.

APPENDIX D

RELEVANT INDUSTRY STANDARDS ORGANIZATIONS

Significant Industry standards organizations addressing wireless/low-bit-rate digital standards issues are listed below.

- TIA TR45 "Mobile Cellular Radio" Committee
- ECSA T1P1, "Systems Engineering, Standards Planning, and Program Management" (Universal Personal Telecommunications) Committee
- IEEE Committee Regarding 802.10, "Standard for Interoperable LAN Security"
- The International Telegraph and Telephone Consultative Committee (CCITT)
- International Radio Communications Consultative Committee (CCIR)
- European Telecommunications Standards Institute (ETSI)

APPENDIX E

TASK FORCE MEETINGS

<u>Date</u>	<u>Host</u>	<u>Location</u>
4/10/91	OMNCS	Arlington, VA
5/02/91	MITRE	McLean, VA
5/29/91	GTE	Washington, D.C.
6/18/91	AT&T	Silver Spring, MD
7/24/91	MITRE	McLean, VA
8/05/91	MCI	Washington, D.C.
8/20/91	COMSAT	Washington, D.C.

APPENDIX F

TASK FORCE MEMBERS AND SECRETARIAT PERSONNEL

Task Force

Dr. Allen Dayton, COMSAT, Chairman

<u>Member</u>	<u>Organization</u>
Mr. David Bush	AT&T
Mr. Jerry King	GE
Dr. John Chiang	GTE
Mr. James Mullen	Hughes
Mr. Richard McElhenie	McCaw
Mr. Geoffrey Ward	MCI
Mr. David Kohler	Motorola
Dr. John Edwards	NTI
Mr. Jay Nelson	UTI

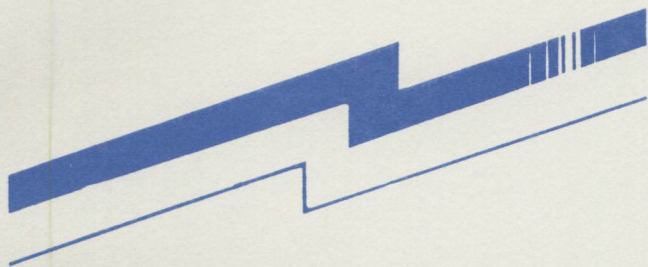
Secretariat

Mr. Leonard Brush, Mr. William Olden, Ms. Judy Vandegriff	Action Officers	OMNCS
Mr. Michael L. Cohen, Mr. Robert S. Kite Mr. J. Bruce Truett	Technical Support	MITRE
Mr. Douglas Cohen	Meeting Summaries and Technical Review	BAH
Mr. Richard Frederick	Technical Review	ARTEL

APPENDIX G

DIGITAL MOBILE SYSTEMS REVIEWED

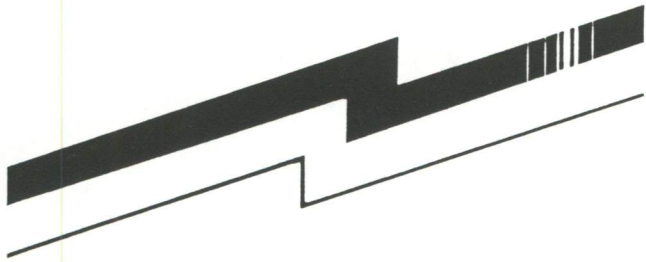
<u>SYSTEM</u>	<u>TYPE SERVICE</u>	<u>ACCESS</u>	<u>IOC</u>	<u>STATUS</u>	<u>STANDARD</u>	<u>FAX</u>	<u>STU-III</u>
A	CELLULAR	TDMA	1992	TRIALS	TR45	YES	PROB'LY
B	CELLULAR	ETDMA	1992	DEVEL	TR45-LIKE	YES	TBD
C	CELLULAR	CDMA	1992	TRIALS	CUSTOM	TBD	TBD
D	GEO SATELLITE	FDMA	1994	DEVEL	TBD	YES	PROB'LY
E	LEO SATELLITE	FDMA	1996	CONCEPT	CUSTOM	TBD	PROB'LY
F	GEO SATELLITE	FDMA	1991- 1992	OPERATION- DEVEL	INMARSAT	YES	TBD
G	AIR/GROUND	FDMA	1991	DEVEL	NONE	YES	TBD
H	PCN	TBD	TBD	CONCEPT	TBD	TBD	TBD



Network Security
Task Force
Report

**Status Report
of the
Network Security
Task Force
for
NSTAC XIII**

August 1991



Network Security
Task Force
Report

**Status Report
of the
Network Security
Task Force
for
NSTAC XIII**

August 1991

EXECUTIVE SUMMARY

The Network Security Task Force reports its accomplishments to date and describes plans to complete its assignment as scheduled for NSTAC XIV. The task force continues to work closely with Government entities responding to direction from the Policy Coordinating Committee on National Security Telecommunications and Information Systems.

Primary efforts have focused on identifying a mechanism for security information exchange concerning risks and remedies and recommending steps to improve flow of Government information to industry about threat to the public switched network (PSN). The task force has established three activities: (1) a Network Security Information Exchange (NSIE) activity consisting of industry network security subject matter experts; (2) an Alert, Warning and Recovery activity providing "real time" notification to industry and Government about significant events regarding network security; and (3) an IES subcommittee to evaluate the above two activities and to contribute to task force conclusions and recommendations to NSTAC XIV. The industry NSIE is being established on a trial basis. The aim of the NSIE is to foster informal, collegial exchange of information -- some of it proprietary and sensitive -- concerning intrusions into software of the PSN that might (1) deny telecommunications service to national security and emergency preparedness (NS/EP) users, or (2) extract NS/EP-significant information. The Government has established a Federal NSIE to work in concert with the industry group. Although separate organizations, both groups will meet together regularly to exchange information on vulnerabilities, risks and trends. In event-driven situations, they will assist the alert/warning/recovery activities to mitigate the effects of network security events on the PSN. Charters and membership lists for the two NSIEs are included in report appendices. The existing joint industry-Government National Coordinating Center (NCC) is supporting the Alert, Warning and Recovery activity, assisted by technical advice from NSIE members. Task force evaluation of the two activities will be undertaken after some experience on which to base recommendations to NSTAC XIV.

In a separate effort, the task force is in the process of addressing charges to recommend to Government R&D needed for commercially applicable tools and to comment on standards activities. Task force subgroup members have preliminarily identified six areas that need R&D and perhaps new standards to improve NS/EP telecommunications network security in the current PSN and in which the Government may have contributions to offer. A dialogue with Government has begun to determine what Federal Agencies/Departments have accomplished in the identified "need" areas and which Government developments might be commercially applied or adapted. In addition the task force is addressing the Generally Accepted System Security Principles (GSSP) concept recently proposed in a National Research Council report.

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SECTION 1 - INTRODUCTION

Since the National Security Telecommunications Advisory Committee (NSTAC) was established, several NSTAC task forces have addressed security of US telecommunications. In early 1990, Government requested that NSTAC address potential disruption of national security and emergency preparedness (NS/EP) telecommunications through manipulation of software in the public switched network (PSN). An NSTAC task force evaluated the vulnerability of the current PSN to intrusions that might (1) deny telecommunications service to NS/EP users, or (2) extract NS/EP-significant information.

The task force concluded recent intrusions into the PSN confirm "hackers" have significant capabilities to penetrate key switching and signalling system elements. Individual companies are aware and are taking action; the task force provided service suppliers with a checklist of steps that, when followed, would substantially enhance the security of their own networks. The task force reported that "until there is confidence that strong, comprehensive security programs are in place, the telecommunications industry should assume that a motivated and resourceful adversary, in one concerted manipulation of network software, could degrade at least portions of the PSN and monitor or disrupt the telecommunications serving NS/EP users."*

The NSTAC in December 1990 approved the task force report and directed a follow-on Network Security task force (see Membership in Appendix A) to complete the following for consideration by NSTAC XIV in mid-1992:

- 1) Identify a mechanism and provide an implementation plan for security information exchange concerning risks and remedies
- 2) Recommend steps to Government agencies that will improve the flow of Government information about threat to industry
- 3) Recommend to the Government research and development (R&D) needed for commercially applicable security tools, and
- 4) Evaluate existing industry-wide standards activities for network security and make recommendations.

The NSTAC charged the task force to work closely with, and in support of, the Government Network Security Subgroup (GNSS). The GNSS was established in 1990 by the Office of the Manager, National Communications System (OMNCS), responsive to direction from the Policy Coordinating Committee on National Security Telecommunications and Information Systems (PCC-NSTIS)**. The GNSS is chaired by the Deputy Manager of the NCS and has representatives from Federal departments, agencies, and other entities that have

* Report of the Network Security Task Force, November 1990, National Communications System, Arlington, VA, Executive Summary, page i.

** Memo, Chairman of the PCC-NSTIS to the Manager, NCS; April 23, 1990

particular responsibilities relevant to network security: the OMNCS; the Central Intelligence Agency (CIA); the Defense Intelligence Agency (DIA); the Federal Bureau of Investigation (FBI); the Federal Communications Commission (FCC); the General Services Administration (GSA); the National Institute of Standards and Technology (NIST); the National Security Agency (NSA); the National Security Council (NSC); the Office of Science and Technology Policy (OSTP); the Office of the Assistant Secretary of Defense, Command, Control, Communications and Intelligence (OSD-C3I); and the United States Secret Service (USSS).

The purpose of this document is to report to NSTAC XIII the activities and accomplishments to date of the task force and describe task force plans to complete its assignment as scheduled for NSTAC XIV.

SECTION 2 - STATUS OF THE EFFORT

2.1 ESTABLISHMENT OF AN OPERATIONAL TRIAL OF SECURITY INFORMATION EXCHANGE

2.1.1 Task Force Approach

In addressing the first two tasks assigned by NSTAC -- that is, defining a mechanism for security information exchange and improving flow of information about threat -- the task force established three activities:

- o A Network Security Information Exchange activity (NSIE) consisting of network security subject matter experts from operations and security divisions of service providers and vendors in industry.
- o An Alert, Warning and Recovery activity providing "real time" notification to industry and Government about significant events regarding network security.
- o An IES subcommittee, chaired by the Task Force Chairman, to evaluate the above two activities and to contribute to task force conclusions and recommendations to NSTAC XIV.

Prior to establishing these activities, the task force deliberated the functions to be performed, information to be exchanged, and constraints that must be dealt with. In February a subgroup was authorized to explore options for implementing an information exchange. Advised by the subgroup and OMNCS legal counsel, the task force, in coordination with the GNSS, chose to create an NSIE rapidly, on a trial basis, by establishing two separate NSIE organizations -- one of representatives from NSTAC member companies, the other of representatives from the GNSS. Although separate organizations, both groups will meet together regularly to exchange information on vulnerabilities, risks, and trends. In event-driven situations, they will assist the alert/warning/recovery activities to mitigate the effects of network security events on the PSN.

The industry NSIE is being established on a trial basis. The charter of the NSTAC, as an advisory body to the President, precludes establishment under the NSTAC of a permanent, standing operational entity. Experience with the trial NSIE should provide insight into an appropriate longterm solution.

The OMNCS and the GNSS, working closely with the task force, established a Federal Government NSIE to work in concert with the NSTAC NSIE. The resulting Government-industry liaison in joint NSIE activities is expected to improve the flow of threat information to industry, and keep Government in touch with efforts ongoing in industry to address network security.

Details of NSIE implementation were developed in concert with GNSS and OMNCS personnel, and unified crafting of complementary charters for Government and NSTAC NSIEs was completed within a few months.

A letter to IES members on 17 May announced the formation of the "initial/temporary" NSTAC NSIE as a means to respond to NSTAC tasking, and asked for responses by interested parties by 10 June. In coordination with the task force, the Funding and Regulatory Working Group developed nondisclosure agreements to protect proprietary information of NSTAC member companies who participate. The NSTAC NSIE was established under the aegis of the task force. In parallel, the Government NSIE was established under the aegis of the GNSS. An initial NSTAC NSIE meeting, held jointly with the Government NSIE, was held on June 25-6, 1991. A second meeting was held on September 11-12.

2.1.2 The Network Security Information Exchange.

In the NSTAC NSIE, eight NSTAC companies are providing one or two subject-matter experts in network operations and computer security. The aim is to foster informal, collegial exchange of information -- some of it proprietary and sensitive -- on threats, incidents, vulnerabilities, remedies and risks concerning software manipulation of the PSN. The NSIE will also periodically assess security of the PSN including trends, successes, and evolving threats. These activities will be carried out in periodic NSIE meetings, usually held jointly with the Government NSIE.

In another mode of operation, if a significant attack should take place on the PSN, or if such an attack appears imminent, the NSIE experts will convene to foster a concerted response by affected companies. Procedures for convening the group in real time are being developed.

For further detail about NSIE purpose and objectives, functions, membership and operating principles, see the Charter of the NSTAC NSIE, reproduced in Appendix B; the list of NSTAC NSIE Members in Appendix C; the Federal Government NSIE Charter, developed in concert with the NSTAC NSIE Charter, in Appendix D; and the Government Members in Appendix E.

2.1.3 Alert, Warning and Recovery.

The task force and GNSS agreed that the existing joint industry-Government National Coordinating Center (NCC) should support the real time function of protecting against significant attacks on network software. The NCC's mission is to assist in the initiation, coordination, restoration and reconstitution of NS/EP telecommunications services or facilities. It operates under the Manager, NCS, to provide for the rapid exchange of information and expedite NS/EP telecommunications responses. The NCC has assumed its role in the joint NSTAC/NCS approach to real time situations. Operating procedures have been defined for linking the NCC and NSIEs on occasions where network security-related notifications are involved.

2.2 PROGRESS ON R&D AND STANDARDS CHARGES

2.2.1 Task Force Approach

The task force sees the 3rd and 4th areas of their charge -- that is, recommending to Government R&D needed for commercially applicable tools and evaluating standards activities -- as so interrelated that they are best addressed together. Accordingly, the task force has determined it will pursue the following methodology:

- o Identify what network security areas need further R&D
- o Determine what is already being addressed by Government, and
- o Make recommendations on government R&D and on public network standards.

2.2.2 Identifying Areas of Need

Task force subgroup members have preliminarily identified areas that need R&D and perhaps new standards to improve NS/EP telecommunications network security in the current public switched network and in which the Government may have contributions to offer. A letter soliciting Government response was mailed on 18 June 1991 and a meeting with interested parties was held on 11 July 1991. A dialogue with Government has begun to determine what Federal Agencies/Departments have accomplished in the identified "need" areas and which Government developments might be commercially applied or adapted. Six areas initially proposed for discussion are:

1. Mechanisms for easy, portable control of access to a network element
2. A development to introduce an appropriate level of "suspicion" among trusted elements of the PSN
3. Solutions for reliable recovery from damage to software and databases: if you have a problem, how do you get well?
4. Means to adequately partition memory, or otherwise isolate network element software from databases that are more broadly accessed
5. Means to analyze all events in a network and highlight questionable situations, e.g. exception reports; and, at a broader level,
6. Tools to plan an architecture toward a long-term more secure network

In addition the task force is addressing a concept put forward in a recent National Research Council report*, that of Generally Accepted System Security Principles (GSSP).

* Computers at Risk, National Research Council, National Academy of Sciences, 1991.

SECTION 3 - PLANS FOR FUTURE TASK FORCE ACTIVITIES

The task force expects to complete its full assignment, including response in all four areas described on page 1, report its findings and make recommendations for consideration of the Principals at NSTAC XIV in the summer of 1992.

3.1. PLANS FOR NSIE AND OVERSIGHT ACTIVITIES

The task force believes that the first 4 meetings of the NSIE, expected to be completed by January or February of 1992, will provide a basis for deriving task force recommendations to the NSTAC's Industry Executive Subcommittee (IES) when they meet in late spring 1992. As the NSIE has met only twice so far, the task force has not yet undertaken to assess NSIE activities.

By the early months of 1992, the three IES members monitoring the NSIE will begin to assist the task force to formulate conclusions and recommendations about (1) whether an ongoing mechanism is needed for exchange of security information; and (2) if needed, what this mechanism should be.

The NSTAC NSIE will continue to operate until NSTAC XIV in the summer of 1992, when recommendations to the NSTAC Principals will be made and, if appropriate, recommendations to the President will be proposed. If requested to do so, the NSTAC NSIE may continue to operate for a limited period beyond that time to provide a transition to a more permanent arrangement.

3.2 PLANS FOR R&D AND STANDARDS ACTIVITIES

Based on the results from identifying areas where R&D is needed, the task force will foster contact with Government organizations having relevant information to offer. If perceived by Government and industry to have value over the next half year, the final task force report will recommend ways to continue productive interaction between Government and providers/suppliers of public telecommunications beyond the lifetime of the task force. At this writing, further actions in the area of standards are under consideration.

APPENDIX B - NSTAC NSIE CHARTER - MAY 1991

Section I. ESTABLISHMENT

The NSTAC Network Security Information Exchange, hereinafter referred to as the NSIE, is established under the auspices of the Network Security Task Force of the President's National Security Telecommunications Advisory Committee (NSTAC). The date of initial activity is June 1991.

Section II. PURPOSE AND OBJECTIVES

The purpose of the NSIE is to provide a working forum to identify issues involving penetration or manipulation of software and databases affecting national security and emergency preparedness (NS/EP) telecommunications. In this NS/EP context, the NSIE will monitor network security in the public switched network (PSN). Two modes of operation will be followed. An immediate and event-driven mode will consist of reaction "in real time". Another mode, longer-term and more reflective, will be implemented by meeting on a periodic basis.

In reacting immediately in an event-driven manner, the NSIE objective is:

- o To mitigate the effects of network security events on the PSN

In its longer-term mode of operation, the NSIE objectives are:

- o To discuss and develop recommendations for reducing vulnerabilities
- o To assess network risks
- o To acquire threat and risk assessments from the Government
- o To inform the Government of relevant risks
- o To provide expertise to the NSTAC on which network security recommendations to the President can be based

Section III. FUNCTIONS

To meet its real time objectives, the NSIE shall:

- o Assess, when alert and warning indications warrant, the potential for significant degradation of PSN services and recommend measures to reduce network impact

APPENDIX B - NSTAC NSIE CHARTER - MAY 1991 (Continued)

To meet its longer-term objectives, the NSIE shall:

- o Identify lessons learned (1) about process/procedures and (2) about technology/systems
- o Exchange information and views on:
 - Threats and incidents affecting the software elements of the PSN
 - Vulnerabilities of the PSN
 - Remedies, and
 - Consequent risks to NS/EP telecommunications
- o Recommend measures to reduce vulnerabilities of the PSN
- o Periodically assess NS/EP risks, including trends, international activities, and key uncertainties, and inform senior NSTAC and Government managers

Section IV. MEMBERSHIP

Members of the NSIE shall be NSTAC Member organizations. NSTAC Member organizations initially participating shall be chosen by the NSTAC's Network Security Task Force.

Each Member may appoint two individuals to participate in the NSIE, one as Regular Representative and the second as Alternate Representative. Representatives will be subject matter experts, e.g.:

- o Telecommunications organization employees who are engaged full time in the prevention, detection, and/or investigation of telecommunications network software penetration
- o Telecommunications organization employees who have security and investigative responsibilities as a secondary or collateral function.

Voting rights are accorded to each participating Member organization.

Section V. ORGANIZATION

The Members of the NSIE will elect a Chair and a Vice Chair. The Manager, National Communications System will serve as secretariat.

The Network Security Task Force, working with the National Coordinating Center (NCC), will develop initial operating procedures. These procedures may be modified on the basis of operational experience.

APPENDIX B - NSTAC NSIE CHARTER - MAY 1991 (Concluded)

Section VI. OPERATING PRINCIPLES

The operating principles of the NSIE are as follows.

In operating in real time, i.e. providing subject matter expertise in event-driven situations, the NSIE will coordinate with the NCC as appropriate:

- o NSIE points of contact for each company will be notified, by the company's NCC representative, of any pertinent information that has been provided to the NCC from other sources.
- o Alternatively, the NSIE, or its representatives, can be the source of pertinent information that initiates NCC-related alert, warning and response procedures.

The operating principles for the longer term, i.e. in assembling on a periodic basis in a more reflective mode, will be as follows:

- o Due to the sensitive nature of the information that may be discussed at NSIE meetings, attendance will be limited.
- o Recording devices of any kind will not be permitted at NSIE meetings unless specifically authorized by the group.
- o A nondisclosure arrangement will be needed among representatives and meeting attendees.
- o Summary meeting notes will be prepared, will be marked proprietary as required by the content, and will be limited in distribution.
- o In performing its functions the NSIE shall:
 - Invite the Government to participate as appropriate in assessing the potential for significant degradation of PSN services due to intrusion events
 - Regularly meet jointly with the Federal Government NSIE to exchange information on threats, vulnerabilities, remedies, and risks
- o For NSIE meetings that are joint with the Government NSIE, the attendees and agendas will be jointly agreed to by the Chairs of the two groups.

The NSIE will operate within the requirements of all applicable state or Federal laws concerning the disclosure of information.

APPENDIX C - NSTAC NSIE MEMBERSHIP

UTI	G. Jay Nelson, Chair William Donsal Lewis
NTI	James Edward Fulford, Jr., Vice Chair Robert E. Petrie
AT&T	J.R. Dalton Robert C. Rencher, Jr.
Bellcore	Hank M. Kluepfel Carl G. Showalter
GTE	James E. Moake David A. Fiasco
Martin-Marietta	M. Duane Heidel
McCaw	Jack Farley
MCI	Robert E. Wilson Bruce A. Wells

APPENDIX D - FEDERAL GOVERNMENT NSIE CHARTER, 6/25/91

Section 1. ESTABLISHMENT

The Federal Government Network Security Information Exchange, hereinafter referred to as the NSIE, is a subordinate activity of the Government Network Security Subgroup. The Government Network Security Subgroup was established under the auspices of the Manager, National Communications System, in response to tasking from the National Security Council's Policy Coordinating Committee for National Security Telecommunications and Information Systems. The date of initial activity of the NSIE is June 1991.

The Government NSIE is meant to complement the NSIE of the President's National Security Telecommunications Advisory Committee (NSTAC). If the NSTAC NSIE is deactivated the need for continued operation of the Government's NSIE will be evaluated at that time.

Section II. PURPOSE AND OBJECTIVES

The purpose of the NSIE is to provide a working forum to identify issues involving penetration or manipulation of software and databases affecting national security and emergency preparedness (NS/EP) telecommunications. In this NS/EP context, the NSIE will assess and make recommendations concerning network security on the Public Switched Network (PSN). Two modes of operation will be followed. An immediate and event-driven mode will consist of reaction "in real time." Another mode, longer-term and more reflective, will be implemented by meeting on a periodic basis.

In reacting immediately in an event-driven manner, the NSIE objective is:

- o To mitigate the effects of network security events on NS/EP needs served by the PSN.

In its longer-term mode of operation, the NSIE objectives are:

- o To assess network risks and develop approaches for reducing vulnerabilities
- o To provide threat, vulnerability and risk assessments based on information from Government sources to the NSTAC NSIE
- o To acquire relevant risk information from the NSTAC NSIE
- o To assist the NSTAC NSIE by providing expertise to the NSTAC on network security, and
- o To provide advice to the Government Network Security Subgroup on network issues.

APPENDIX D - FEDERAL GOVERNMENT NSIE CHARTER, 6/25/91 (continued)

Section III. FUNCTIONS

To meet its real time objectives, the NSIE, separately or in coordination with the NSTAC NSIE, will:

- o Assess, when alert and warning indications warrant, the potential for significant degradation of PSN services to NS/EP needs and recommend approaches to reduce network impact on NS/EP needs.

To meet its longer-term objectives, the NSIE will:

- o Identify lessons learned about (1) processes/procedures and (2) technology/systems
- o Exchange information and views on:
 - Threats and incidents affecting the software elements of the PSN
 - Vulnerabilities of the PSN
 - Remedies, and
- o Consequent risks to NS/EP telecommunications
- o Assess vulnerabilities of the PSN as they relate to NS/EP needs
- o Annually assess NS/EP risks, including trends, international activities, and key uncertainties, and inform the Government Network Security Subgroup, which will, as appropriate, make the assessment available to the NSTAC in support of its chartered responsibilities to advise the President on telecommunications issues.

Section IV. MEMBERSHIP

Members of the NSIE shall be the Central Intelligence Agency (CIA); the Defense Intelligence Agency (DIA); the Federal Bureau of Investigation (FBI); the General Services Administration (GSA); the National Institute of Standards and Technology (NIST); the National Security Agency (NSA); the Office of the Manager, National Communications System (OMNCS); the Office of the Secretary of Defense for Command, Control, Communications and Intelligence (OSD-C3I); and the United States Secret Service (USSS). The Federal Communications Commission (FCC) will designate a nonvoting liaison representative to the NSIE to participate in meetings as appropriate wherein the exchange of information between the FCC and NSIE would be mutually beneficial.

APPENDIX D - FEDERAL GOVERNMENT NSIE CHARTER, 6/25/91 (continued)

Each Member may appoint up to two individuals, preferably with each representing a different functional group within the agency, to participate in the NSIE. Representatives will be subject matter experts, e.g.:

- o Federal organization employees who are engaged in the prevention, detection, and/or investigation of computer penetration, especially telecommunications network software penetration,
- o Federal organization employees who have telecommunications network security and investigative responsibilities as a secondary or collateral function.

Voting rights are accorded to each participating Member organization.

Section V. ORGANIZATION

The Members of the NSIE will elect a Chair and a Vice Chair. The Manager, National Communications System, will serve as secretariat.

The NSIE, working with the National Coordinating Center (NCC), will develop initial operating procedures. These procedures may be modified on the basis of operational experience.

Section VI. OPERATING PRINCIPLES

The operating principles of the NSIE are as follows:

In operating in its real time mode, i.e., providing subject matter expertise in event-driven situations, the NSIE will coordinate with the NCC as appropriate:

- o NSIE points of contact for each Government organization will be notified by the NCC of any information judged pertinent that has been provided to the NCC from any other sources.
- o Alternatively, the NSIE or its representatives will provide to the NCC any pertinent information that could initiate NCC-related alert, warning and recovery procedures.

The operating principles for the longer term, i.e., in meeting on a periodic basis in a more reflective mode, will be as follows:

- o Due to the sensitive nature of the information that may be discussed at NSIE meetings, attendance will be limited.

APPENDIX D - FEDERAL GOVERNMENT NSIE CHARTER, 6/25/91 (concluded)

- o Recording devices of any kind will not be permitted at NSIE meetings unless specifically authorized by the group.
- o In order to share and discuss industry proprietary and sensitive information, some form of nondisclosure arrangement may be needed among representatives and others attending the meetings.
- o Summary meeting notes will be prepared, will be marked proprietary/classified as required by the content, and will be limited in distribution.
- o In performing its functions the NSIE will:
 - Participate as appropriate with the NSTAC NSIE in assessing the potential for significant degradation of PSN services due to intrusion events, and
 - Regularly meet jointly with the NSTAC NSIE to exchange information on threats, vulnerabilities, remedies, and risks.
- o For NSIE meetings that are joint with the NSTAC NSIE, the attendees and agendas will be jointly agreed to by the Chairs of the two groups.

The NSIE will operate within the requirements of all applicable Federal laws concerning the disclosure of information.

APPENDIX E - FEDERAL GOVERNMENT NSIE MEMBERSHIP

OMNCS	Frederick W. Herr, Chair
FBI	James C. Settle, Vice Chair
CIA	W. Allen Day
DIA	Stanley R. Young
GSA	George F. Flynn
OSD(C3I)	J. Robert Anderson
NIST	Dennis D. Steinauer
NSA	Robert A. Cavaluchi
USSS	Thomas R. Moyle Dave Boll