DCI/IC 85-041

JUN 19 1985

MEMORANDUM FOR: Deputy Director of Central Intelligence

FROM: [redacted] STAT
Director, Intelligence Community Staff

SUBJECT: Comments to United States SIGINT Plan

REFERENCE: [redacted] United States SIGINT Plan STAT

The SIGINT Committee Staff has completed its review of the 1985 edition of the United States SIGINT Plan. The Staff endorses the Plan but believes that you should know that it contains only a single reference to the Future SIGINT Capabilities Study (FSCS). This undoubtedly resulted from the concurrent data call and publication schedules for the two documents. The SIGINT Plan was prepared before FSCS conclusions were available. There is no cause for concern however, since the SIGINT Plan is still largely consistent with the results contained in the FSCS. I expect that the next edition of the Plan will incorporate those items agreed upon in the FSCS that are not reflected in the current (1985) edition.

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UNITED STATES SIGINT PLAN (U)

1985

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UNITED STATES SIGINT PLAN (U)

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NATIONAL SECURITY AGENCY
CENTRAL SECURITY SERVICE
FORT GEORGE G. MEADE, MARYLAND

NSA/CSS USSP

LETTER OF PROMULGATION

The United States SIGINT Plan provides executives with an understanding of the U.S. SIGINT System (USSS) and an appreciation of the direction the U.S. SIGINT System will take in coming years. The courses of action are formulated on the basis of our projections of the environment in which the USSS will operate, an estimate of the nature of SIGINT requirements likely to be levied during the planning period, and the resources and technology which will be available to maintain and improve the SIGINT System.

In describing our concept of the SIGINT System of the future, this edition of the U.S. SIGINT Plan reflects some of the key initiatives identified in plans prepared in accordance with the NSA/CSS Planning System.

Since this document reflects the latest in Agency planning, we have called it the 1985 edition of the U.S. SIGINT Plan. There will not be a 1984 edition.

We welcome your comments on the U.S. SIGINT Plan and on related future SIGINT needs. Please send them to the National Security Agency/Central Security Service, ATTN: Director of Plans (O1).

ROBERT E. RICH
Deputy Director

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UNITED STATES SIGINT PLAN (U)

I. INTRODUCTION (U)

A. The United States SIGINT Plan (USSP) (U)

1. (U) The USSP constitutes a corporate estimate of what must be done to attain the most effective posture for the U.S. SIGINT System in the future. It is published annually to provide a reasonably current analysis of SIGINT targets and requirements for signals intelligence, and to describe plans and strategies for achieving an affordable level of capability for major technical specialities or functional components of the U.S. SIGINT System. The 1985 edition identifies specific courses of action proposed for the mid-range (FY86-90) as well as more general perspectives produced by the new NSA long-range planning system.

2. (U) The USSP is intended to provide to those who direct governmental policy or military operations:

° An appreciation, in nontechnical language, of the SIGINT System targets and the process used to derive SIGINT information;

° An understanding of the inadequacies of the U.S. SIGINT System in meeting anticipated SIGINT requirements;

° An explanation of the NSA/CSS strategy for investment and resource allocation to overcome these shortfalls; and

° A perspective on the specific plans and actions which will promote a more effective U.S. SIGINT System.

B. Signals Intelligence (SIGINT) Defined (U)

(FOUO) Signals intelligence is a generic term for the effort to exploit foreign communications and non-communications signals as a means to satisfy U.S. intelligence requirements. SIGINT consists of three elements: Communications Intelligence (COMINT), Electronic Intelligence (ELINT), and Foreign Instrumentation Signals Intelligence (FISINT), however transmitted.

° COMINT is the technical and intelligence information derived from foreign communications by other than the intended recipient. COMINT results from the collection and processing of foreign communications passed by radio, wire, or other electomagnetic means and the processing of foreign plaintext and encrypted communications, however transmitted.

° ELINT is the technical and intelligence information derived from foreign noncommunications, and electromagnetic radiations emanating from other than atomic detonation or radio-active sources.

° FISINT is the technical and intelligence information derived from the intercept, processing, and analysis of instrumentation emissions associated with the testing and operational deployment of foreign aerospace, surface, and subsurface systems which may have either military or civilian application.

C. The United States SIGINT System (USSS) (U)

1. (S-CCO) The worldwide USSS comprises the National Security Agency/Central Security Service, the Service Cryptologic Elements (SCEs) of the Military Departments, and integral cryptologic elements of military tactical or combat commands. The SCEs are the Army Intelligence and Security Command, the Naval Security Group, and the Air Force Electronic Security Command. The USSS encompasses units of the SCEs at both fixed headquarters and field sites and also those organic to tactical commands. Also included in the USSS are certain collaborating U.S. agencies with defined SIGINT responsibilities. In addition, a number of cooperating foreign governments contribute to the SIGINT System.

2. (C-CCO) The key objective of the USSS is responsiveness to validated needs of all SIGINT users, from tactical to national levels. Statements of requirements primarily are handled by the SIGINT Requirements and Evaluations Subcommittee (SIRVES) of the DCI's Signals Intelligence Committee. Once validated, the requirements are documented in the National SIGINT Requirements List (NSRL) for NSA/CSS tasking of the USSS.

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4. (S-CCO) NSA senior management has also identified Third Party relationships as significant issues for long-range planning. Strategies for these relationships are under development.

E. National Plans (U)

(C) In addition to the plans produced under the NSA/CSS Planning System, the Agency plays a vital role in the development of the following national plans:

° The National ELINT Plan (NEP) - The NEP is a document used to coordinate ELINT activities throughout the U.S. Government and to enhance the use of ELINT. A revised NEP is being written for publication in early 1985. This effort is a continuation of the ELINT planning that the Secretary of Defense directed NSA to lead in 1981. The revised plan is being prepared and will be monitored by the National ELINT Group, which is comprised of representatives of the Military Services and the major intelligence agencies.

° The FIS Processing Master Plan - Foreign Instrumentation Signal processing activities currently exist at a wide number of Government laboratories, military agencies, and contractor facilities. The FIS Processing Master Plan provides the necessary mechanisms for the coordination of these activities. It was developed under the leadership of the National Security Agency and the Military Service Scientific and Technical Intelligence Agencies (the Defense Intelligence Agency, the Missile Intelligence Agency of the U.S. Army, the Naval Intelligence Support Center of the U.S. Navy, the Foreign Technology Division of the Air Force), and the Central Intelligence Agency.

Trends

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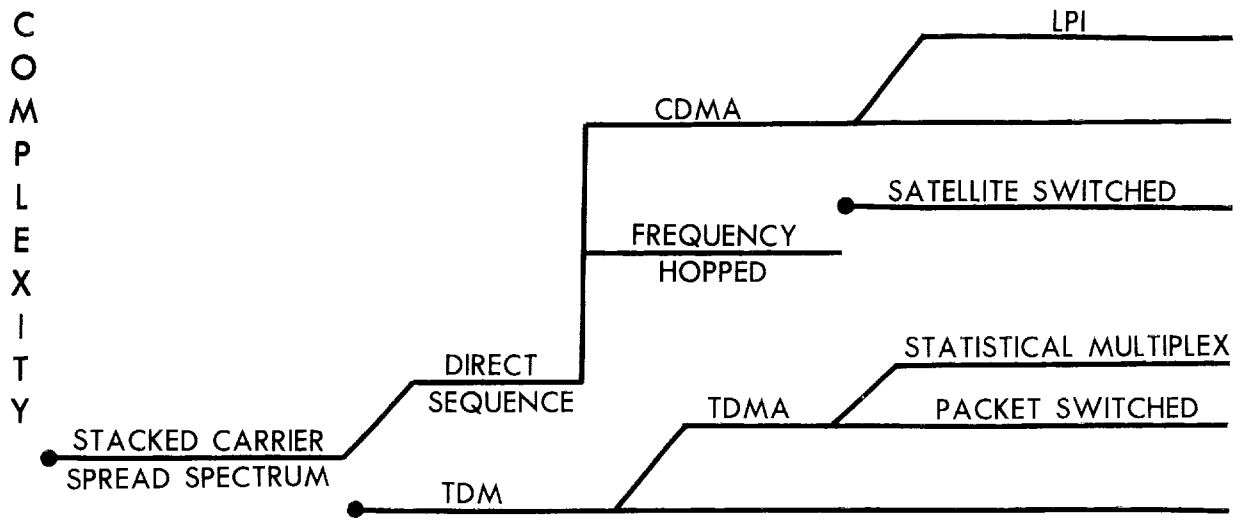
DIGITAL COMMUNICATION SIGNALS



CDMA = Code Division Multiple Access
LPI = Low-Probability-of-Intercept
TDM = Time Division Multiplex
TDMA = Time Division Multiple Access

Figure 1

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SATELLITE TRANSPONDER GROWTH

(36MHz BANDWIDTH)

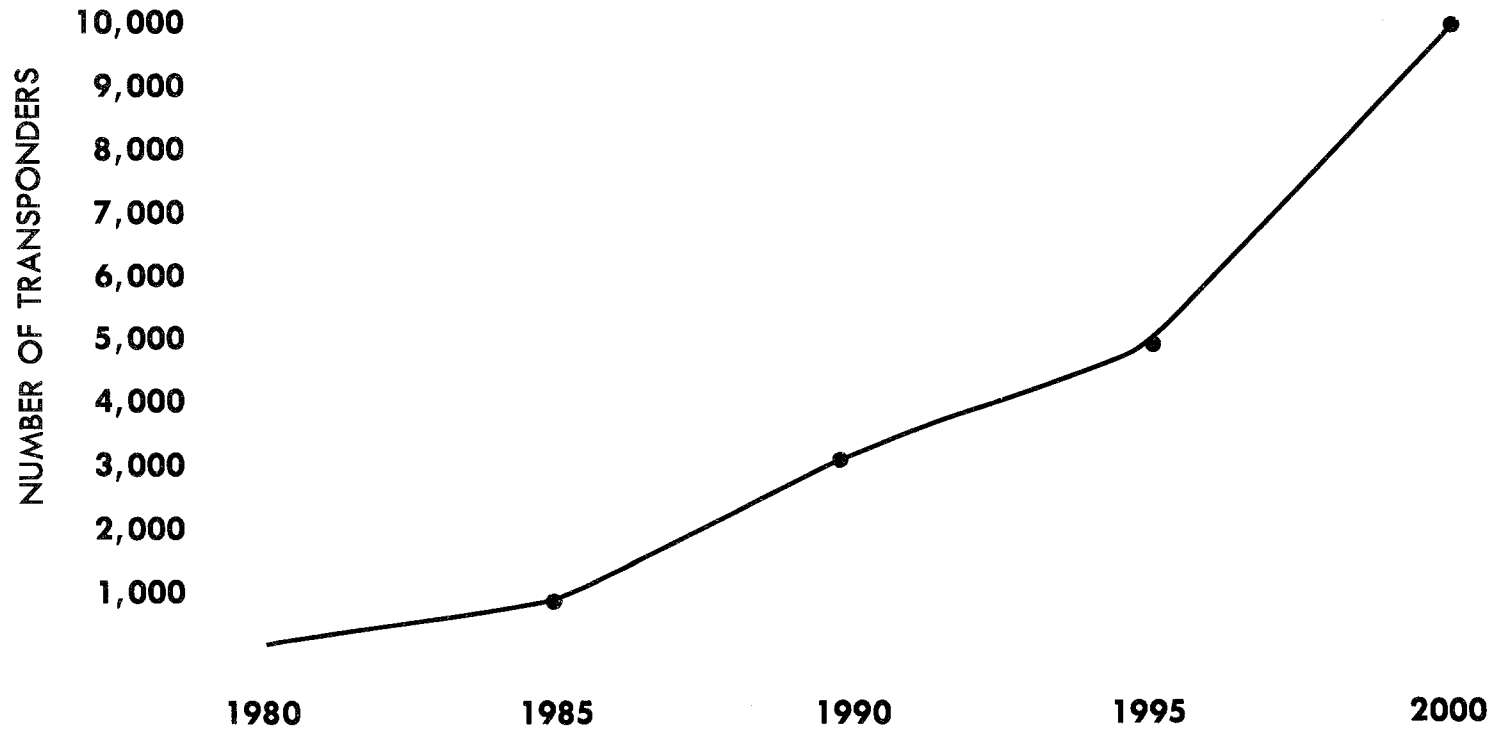

Figure 3

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Shortfalls

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General Strategy

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Functional Improvements

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there are other vital objectives on which communications plans or studies will be conducted. These objectives include:

° Hardening of SIGINT facilities against the effects of radiation or physical disruption;

° Reviewing the initiatives required to provide survivable and enduring communications to the USSS; and

° Providing the capability to manage the bandwidth available to the USSS more efficiently.

b. Networking (U)

(1) (S) Current ADP networking capabilities are based on packet-switching technology. Approximately 100 Agency and Second Party computing systems are interfaced with the network. Common protocols are employed to control transferring data in small packets over optimal routes for high reliability. Uniform interfaces are provided for computer-to-computer communications, data manipulation, and interactive and bulk data transfer services. In addition, standard computer software and hardware are used for ease of implementation and efficient life-cycle support. The current ADP network, although generally centralized at NSA, has a growing number of spurs for remote sites and is maintained as a general-purpose utility to support a variety of users and applications.

(2) (U) Networking will have to be extended to a larger number of customers, both in-house and in the field. The quality and functionality of the networking services provided must be improved, and the cost of connecting to the present Agency network must be reduced.

(3) (U) Growing attention to support of tactical forces will probably result in a major thrust for networking development and deployment. The customers' requirements in this area should result in the need for a very flexible and dynamically configured network. The loading that results from the above and from other, more conventionally evolving requirements may temporarily and adversely influence the level of networking services provided.

(4) (U) Four factors will generally influence Agency networking in the mid-range:

° Because of their speed and relative low cost, there will be a greatly increased demand for electronic information transfer services;

° The sharp drop in costs in computing power will ease the cost and problems currently associated with networking;

° Continuing development of protocol standards will result in easier development of new applications and a greater variety of networking equipments; and

° The use of satellites for communications will continue to be cost effective.

(5) (FOUO) These factors should be included in the broad use of packet-switched networks and a growing number of local area networks. The communications costs for local access circuits will still be relatively high, and the NSA tendency will be to deploy network interfaces closer to the user. The proliferation of networks of various kinds will keep inter networking a problem and cause some awkwardness in customer usage.

(6) (S) In terms of the recent FY86-90 Capabilities Programming and Budgeting (CPB) process, the general thrust of funded ADP-networking initiatives will be to specifically capitalize on unique satellite communication technologies for packet-switching networks, to develop local area networking technology for analyst connectivity and field site architectures, to provide a standard modular interconnection mechanism tailored to specific requirements, and to develop a capability for real-time protocol execution over the network for command and control, speech, and instrumentation applications.

(7) (S) The need to facilitate the timely distribution of various types of data to support the USSS will continue to grow in importance over time. The current approach of wiring users' networks and equipments together is unacceptably rigid for tomorrow's changing application needs. Computer technology advances are allowing major thrusts in the distribution of functions on a global scale. This is resulting in the need to support,

as a standard operating procedure, a level of interoperability only rarely experienced today. The key to this interoperability is an extensive ADP-networking capability. It will require a major investment over a long period of time.

c. Time-Sensitive Processing System (U)

(1) (U) This system comprises the communications and computer resources that support processing, analysis, and reporting of events that are characterized as "time-sensitive" and require rapid responses.

(2) (U) To cope with growth trends and responsiveness requirements, the time-sensitive system planned for the future must be a practical extension of the present system, implemented in a controlled, gradual, low-risk approach. The future system will maintain many of the centralized functions on highly reliable modular target computers. The gradual move toward target-oriented modular computers, instead of the use of a large central processor, will provide high reliability, operational flexibility, and ease of expansion. The building blocks of the improved system are terminal access, an application processing component, a communications interface component, and a local network for exchange within the time-sensitive complex.

(3) (C) [redacted] This plan will facilitate replacement of outdated systems and will dramatically improve reporting capabilities at several of the large surveillance and warning centers. 25X1

d. COMINT Signals (U)

(1) (C-CCO) COMINT signals processing converts intercept that is on magnetic tapes to individual data streams for follow-on processing that leads to the production of signals intelligence. The processing needs created by the changing signals environment and by planned improvements in collection and forwarding will require replacement of older, ineffective systems, development of new systems, and the capability for on-line/sequential processing of a large number of high-interest signals.

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h. General ADP and User Support (U)

(1) (C) General ADP and user support systems provide the NSA Operations Organization with a large-scale automatic data processing complex and analytic support capability that improves the efficiency, quality, and timeliness of the entire SIGINT production process. The volume and complexity of collected data continue to demand large-scale computers, high-volume data base facilities, and accessibility through general and tailored terminal access systems. The present complex supports the full range of SIGINT production, is accessible from more than 1,000 terminals, and extends access to overseas locations.

(2) (S-CCO) Annual processing capacity growth has ranged from 20 to 50 percent. This growth may be sustainable without increases in future funding if technology trends for ADP systems are sustained. NSA's ability to collect the more complex and advanced signals will require a commensurate capability to process that portion of the total collected data considered of highest interest.

(3) (U) During this decade, significant advances will be made in providing flexible and easy access to very large computers with the capability for significant local (at the analyst's desk) processing and fusion of data from many sources. Technological advances will allow users to have "smart" terminals with processing power to do a much higher percentage of work in local centers connected by networks.

(4) (C) The user environment will be supported by a move to the User Interface System (UIS). This will provide more commonality across the Operations

Organization and will reduce the number of tailored user terminal access systems. During this decade, more than 5,000 terminals will be placed on-line with large processors.

(5) (U) To continue to provide the required support, NSA will need to recruit, develop, and maintain a stable, highly competent work force for hardware and software maintenance as well as for development and acquisition of new systems. There are many dangers in an overdependence on contractor support for functions vital to the continued production of SIGINT. The need is for a proper balance in order to retain the skills to keep systems working, particularly in times of crisis. NSA will continue the effort to attract, hire, and retain engineering and computer science professionals as well as the technicians to maintain the proper balance between in-house and contractor support.

(6) (U) In order to increase the capabilities and productivity of support personnel, a greater effort will be made to utilize computer and electronic techniques in the support area. Office automation, word processing, text editing, programmer and maintenance terminals, personal computers, and data base management will all be expanded and extended in the ADP and user support area.

(7) (U) Software engineering tools and methodologies will be vigorously exploited to improve the productivity of NSA software developers and maintainers. Ada, the DoD standard language, for embedded computer applications, will increase in importance for NSA software use. Artificial intelligence tools will also be introduced to assist software developers.

i. Information Resources Management (U)

(1) (U) Information resources management is concerned with the effective management and optimal use of the information resources within the USSS and in support of the national cryptologic mission. This includes operational direction and exploitation of information resources and systems, maintenance of library and archival facilities, and administrative direction of a records management program.

(2) (U) Information handling technology is evolving at a rapid pace, affording the opportunity to process and distribute digital data quickly, to store and retrieve large quantities of information in full text, and to interact with customers on-line. These developments are creating a new environment for information support and a requirement to install new data base management systems.

(3) (U) The increase in the amount of information available, the increasing sophistication of the information requests to be answered, and the need for life-cycle management of information require the implementation of the following initiatives in the 1980s:

° Acquisition of a mass storage, high-speed text search and rapid retrieval system for the large amount of hard copy documentary and graphic material now being handled in its original form;

° Acquisition of an integrated library automation system, which will provide bibliographic control of the materials and rapid access to holdings in the multiple collections of the NSA/CSS Libraries;

° Establishment of an information center that will provide ready walk-in or phone access to open source and classified source information, and which will feature a facility to demonstrate the Agency standard personal computers, a software library, access to Agency history, specialized country or geographically-oriented information stores, and specialized collections for technical users;

° Acquisition and exploitation of new commercial data bases, and the development of specialized files to enhance the research capability of information resources management;

° Development of a fully automated storage, retrieval, and distribution system accessible through analyst/transcriber/professional/executive work stations, taking full advantage of user support systems that are in place or are planned;

° Development of an integrated life-cycle records management system that includes SIGINT

management information; collateral, scientific, and technical documents; life-cycle support cost information; and that captures the bibliographical description of archival records early in the processing cycle;

° Participation in the development of a Community Information and Retrieval System (CIRS), identification and sharing of data bases of common interest and utility with other Intelligence Community members, and use of the Community On-Line Intelligence System (COINS) network;

° Development and promulgation of policies and standards for the efficient, effective, and economical management of NSA information resources; and

° Development of a Vital Records Program responsive to SIGINT System survivability and Continuity of Government (COG) planning.

j. Administrative ADP (U)

(1) (U) The administrative ADP facility provides a central computer capability to support the essential corporate management processes and execution of responsibilities through man-machine interaction. This system supports every NSA/CSS organizational element and employee.

(2) (U) The use of state-of-the-art hardware and software to modernize man-intensive NSA administrative procedures and to meet regulatory and legal requirements is planned. The intention is to provide a large number of users with the capability to retrieve and update time-critical data on security clearance status, travel orders, job applicant data, general personnel data, and finance, payroll, logistics, training, and planning and programming information via an interactive terminal network and on-line storage facility. The system consists of a large-scale central processor with the requisite peripherals and as many as 210 interactive terminals and remote-job-entry stations. Planned system upgrades will keep pace with projected increases in user requirements for processing support, most of which will be interactive. The principal NSA organizational users are the Directorates of Administration, Programs and Resources, Plans and Policy, and Logistics.

(3) (U) The one administrative ADP system now in use will be augmented by two modern hardware and software systems that will support the finance and logistics functions of major NSA/CSS support organizations. These systems will have their peripherals connected through a network and will support over 120 interactive terminals. A phased implementation is planned. Full operating capacity is expected in 1987.

k. Community On-Line Intelligence System (COINS) (U)

(1) (C) During the next decade, NSA will continue to expand use of the COINS network as the primary means for distributing SIGINT product on-line and for providing users with full-time, direct on-line access to SIGINT product. Access will be consistent with the security and need-to-know requirement of each user. The objective is to reduce the amount of routine SIGINT product distributed electronically or in hard-copy form.

(2) (C) The COINS network is currently providing on-line service to more than 50 organizations worldwide. All of them have access to the formatted SIGINT product files in the NSA batch retrieval system. A majority also have access to the NSA SIGINT On-Line Information System (SOLIS).

(3) (C) NSA operates two host processors in the COINS network:

° RYE/TIPS: This is a batch-retrieval system which has been in operation at NSA since the late 1960s. It provides analysts within NSA and some external users with on-line access to 17 formatted SIGINT product files. Its remote terminals are the principal means by which NSA analysts can access other agencies' data bases in the network.

° SOLIS: This system contains full text of the latest 14 months of SIGINT product. The data base is updated every 30 minutes with electrical reports issued or received by NSA during the preceding half hour from field sites and collaborating centers.

(4) (S-CCO) Three major initiatives are being undertaken to improve COINS for NSA:

° Replace RYE/TIPS with a new system capable of handling both batch and interactive interrogations of formatted SIGINT product files;

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° Install a gateway between COINS and the NSA PLATFORM network so that an NSA user in PLATFORM can access non-NSA files and user services available in COINS in either a batch or interactive fashion, depending on the capability of the host being accessed.

(5) (C) The intention over the next few years is to expand and improve customer access to SIGINT product via COINS, and to promote NSA use of other agencies' data bases accessible to NSA through the network. Actions required include:

° Raising the security level of the information;

° Providing for the automatic distribution of routine SIGINT product to specific customers by subject category via the COINS network;

° Ensuring that all major customers have on-line access to both formatted and unformatted SIGINT product;

° Improving the reliability and performance of NSA systems and files in the COINS network;

° Making available additional types of SIGINT product to the Intelligence Community via COINS by dual-connecting additional NSA host processors to the COINS network;

° Demanding improvements in the reliability and performance of both the COINS network and other hosts operating in COINS that are being used extensively by NSA analysts; and

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Cryptologic Support To Military Operations

VII. STRATEGY FOR CRYPTOLOGIC SUPPORT TO MILITARY OPERATIONS (U)

A. Introduction (U)

1. (C) Cryptologic Support to Military Operations (CSMO) is the set of actions taken to provide SIGINT information to U.S. commanders and other recipients in order to plan, exercise, and execute strategic or tactical military operations. CSMO also includes those Communications Security (COMSEC) measures designed to protect the integrity of U.S. communications in support of military operations. All segments of the USSS perform CSMO to facilitate commanders' decisions and initiatives, with emphasis on the production and rapid, secure dissemination of accurate information to support planning, force allocation and maneuvering, command and control, weapons targeting, and other combat functions.

2. (C) In 1982, NSA published "The USSS Concept of Support to Military Operations," which addressed the development of a single interdependent USSS that is fully responsive to U.S. commanders' intelligence needs. To that end, a guide is being written which will implement specific planning procedures for ensuring the coordinated development of CSMO matters at NSA. In addition, "Cryptologic Area Architectures" are being developed to enhance tailored support to operational commanders. One such architecture, being developed to support Allied Command Europe (ACE), will serve as the model for CSMO in other regions; it will also be appended to ACE's Theater Intelligence Architecture Program as a SIGINT annex.

3. (C) NSA/CSS also publishes SIGINT Support Plans (SSPs) in support of certain JCS and Unified and Specified Command contingency and war plans. SSPs establish the concept of cryptologic operations, identify the resources to be employed, and specify the elements of the USSS to be used to provide SIGINT in satisfaction of military commanders' intelligence-related requirements. These requirements include Essential Elements of Information (EEIs), COMINT and ELINT requirements, nuclear strike assessments, OPSEC support, and SIGINT-related communications support.

B. Information Requirements (U)

(U) CSMO responds to the cryptologic requirements of commanders at various decisionmaking echelons. These commanders have different informational needs based on their responsibilities and assigned missions, and the nature of the CSMO provided to each level of command varies accordingly.

1. (C) When engaged in combat, operational or tactical commanders require the most time-critical CSMO that can be provided. CSMO for these commanders includes the support necessary for battlefield targeting and surveillance relevant to the commanders' Area of Operations (AO).

2. (C) The CSMO requirements of Unified and Specified and Component commanders are generally broader and less time-critical than those of operational commanders. The CSMO provided must enhance mission planning, mission assessment, and, to a lesser degree, mission execution. This level of CSMO permits a comprehensive view of the AO in support of both joint operations planning and joint Service coordination of tactical forces.

3. (C) CSMO provided to the National Command Authorities assists these officials to direct the conduct of military operations in pursuit of national goals and objectives through the provision of SIGINT-derived political, economic, and strategic military information.

4. (S) SIGINT must support the operational missions required to prosecute the commander's warfighting concepts. This requires an understanding of the timing and geographic relationships between friendly and enemy operations and determination of "critical time" vulnerability to guide selection of high-value SIGINT targets and to tailor reporting of results to action recipients. The goal is a precise SIGINT attack synchronized to the dynamics of specific military operations rather than pursuing a more costly all-signal collection and correlation approach.

C. Collection Capabilities (U)

(S-CCO) Organizationally, the USSS has been functionally divided into direct service and direct support activities:

° Direct service activities provide SIGINT to all levels of command, and include fixed field sites,

overhead collection systems, and the NSA/CSS. They may focus on any area of the world; employ a wide range of collection systems and sophisticated or unique analytic capabilities; exploit technically complex communications-electronics target systems; and may detect, locate, identify, and track hostile mobile units, but normally not with sufficient accuracy to support the targeting needs of tactical commanders.

° Direct support activities are normally organic to the supported force, directly responsive to the supported tactical commander, and exist primarily to satisfy the tactical information needs of the operational commander. Direct support systems focus on the battlefield situation confronting the tactical commander; employ mobile and fixed systems which can rapidly adjust collection efforts based on tactical needs; primarily exploit communications-electronics of tactical units; and provide locating data sufficiently accurate for limited tactical targeting purposes.

° To further enhance this mutual support in a period of transition to war, selected fixed field stations will be chosen to participate in Project FOUNDRY, which allows for the augmentation of direct support units from direct service assets, while maintaining the capability of the fixed stations to respond to national tasking.

1. Direct Service System (U)

a. (C-CCO) Direct service systems will continue to emphasize improving the use of direct service collection systems to support tactical requirements. While the initial design of these systems may not have considered tactical applications, their capabilities should be fully exploited to achieve an equitable balance of strategic and tactical intelligence production.

b. (S-CCO) Direct service systems, particularly fixed ground sites, will continue to be modernized, capitalizing on the latest technological advances and providing for greater selectivity in exploiting high-capacity target communications and data streams.

c. (C) The initial efforts at NSA to develop a system-wide nodal point for direct service operations in NSOC will continue. The development of Special Support Activities includes improvements in connectivity with the

remote operations facilities, access to tactical communications channels, information handling and delivery systems, and collection management systems that will permit direct service assets to be managed coherently with direct support systems, and with the components complementing and supporting each other.

d. (S) Direct service systems will be required to provide a broader scope of information (both within and outside the range of organic sensors) and fill unique collection requirements relating to exploitation techniques in the HF, SHF, and higher frequencies. The increased emphasis placed on C^3I during crisis situations will be accomplished by these systems.

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f. (S) In advanced systems development programs, the capability to support military commanders is considered an integral function in design, management, and operation. Advanced systems can be used to cue tactical systems for target surveillance and target acquisition purposes and may, when combined with tactical systems data, provide the necessary accuracy for targeting. The possibility that future advanced systems could provide targeting by themselves will be explored.

g. (S-CCO) Second and Third Party support is integrated into SIGINT direct service product to provide information on activities, events, and the communications environment in areas where the U.S. has no collection

capability or the capability is not adequate or, for cost-effectiveness considerations, is less productive.

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2. Direct Support Systems (U)

a. (U) Direct support systems must be capable of placing information in the hands of the supported commander before it loses its operational value. This requires that initial reporting be done as close as possible to the point of collection. The output must be commensurate with the user's information handling capability and be directly transmitted in a usable form whenever possible. In joint and combined operations, SIGINT tactical systems must be interoperable with other operational sensors across Service lines, regardless of echelon.

b. (C) Direct support collection systems are designed to be responsive to the wartime needs of the supported commander and flexible enough to accommodate changes in the commander's requirements at any given point during the battle. At a minimum, the peacetime collection mission should provide training against targets tasked in wartime. CONUS-based units do not have peacetime collection missions because of their peacetime locations.

c. (S) To support tactical commanders, direct support collection equipment must be mobile and transportable; durable; as survivable as the forces they support; flexible in frequency coverage; capable of initiating requests for and receiving direction finding information; modular; easily maintainable; interchangeable; and capable of being employed by ground, naval, and airborne elements with minimal reconfiguration. Collection systems must be automated where practical yet be able to operate in semi-automatic or manual modes if degradation occurs. In addition, there is a continuing need to develop collection systems with reduced power, weight, and size. An example of a special capability being developed to meet these common

requirements is the Lightweight Tactical SIGINT Payload (LTSP).

d. (S) Since close-in tactical support constitutes a high degree of risk, it will be necessary to ensure that alternate coverage of tactical targets is provided for and that deployable back-up hardware, software, and personnel are available. Collection degradation must be held to a minimum, with additional assets in logical positions capable of replacing or supplementing resources lost to such events as tactical overrun and systems failure.

e. (C) Future direct support systems must consider integration of more sophisticated antennas to filter out unwanted signals in very crowded portions of the spectrum.

f. (S) SIGINT tactical modeling must be pursued, on a geographic basis, to simulate and evaluate the anticipated wartime signal environment in conjunction with SIGINT systems operating against it.

g. (S) Linguistic shortfalls in direct support units can be fulfilled partially by making the target environment accessible to U.S. and Allied military linguists and to U.S. and Allied civilians located at safe havens by providing reliable and survivable communications to and from tactical commanders. Advances in automated collection and processing techniques also offer potential improvements in this area. Furthermore, the Services will have to develop innovative methods to retain and enhance their language capabilities.

h. (C) Effective tactical SIGINT collection by Service direct support elements is dependent on timely access to technical data, including information resident in NSA data bases. Therefore, an automated SIGINT data support capability must be developed to ensure rapid exchange of technical data among NSA and Service tactical elements.

i. (S) Planning must be effected for the capability, at the outbreak of hostilities, to replace vulnerable sites (e.g., border sites) with high-altitude-aircraft sensor systems. This consists of remotely tuned receiver connections to the United Kingdom and/or

CONUS for European targets, and CONUS for Far East and Southeast Asian targets. A simultaneous receiver control capability must be available from at least two or three locations. Advanced system design enhancements can help to accommodate this need.

D. Processing Capabilities (U)

1. (C) Processing and reporting systems must stress timeliness, accuracy, and interoperability, with priorities based on timeliness factors derived from the command and control system and weapons reaction times of the supported tactical commander. Because combat information needs differ from tactical intelligence needs, SIGINT processing systems and reporting that address these needs are different. There are COMSEC implications that derive from the handling and transmission of different types of data.

2. (S-CCO) Overall, the direction for SIGINT processing is to selectively handle signals more rapidly, with emphasis on identification of target events based on the analysis of signal activity, characteristics, and profiling (templating). Techniques developed for programs such as Specific Emitter Identification, Signals Parametric Analysis, and Hull-to-Emitter Correlation, will continue to be used for association of emitters with specific weapons, platforms, and units.

3. (S) All future SIGINT systems must be able to process more signals more rapidly with more "front-end" discrimination. Field processing systems will be as automated, compact, modular, technologically current, survivable, and as mobile as practicable. Data forwarding systems will be designed to handle inputs that have been digitized, compacted, and selected for transmission using a minimum of communications capacity. Once certain front-end processing functions, such as location, identification, and translation are accomplished, another crucial facet of processing must occur--that of tailoring the reported data to the user. "Filtering" should be done in accordance with user priorities with regard to subject, timeliness, and area, and the user's ability to handle the information.

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Technology Program

Functional Improvements

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