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17 December 1954

MEMORANDUM FOR: DEPUTY DIRECTOR, PRODUCTION
DEPUTY DIRECTOR, RESEARCH AND DEVELOPMENT
DEPUTY DIRECTOR, COMMUNICATIONS SECURITY
CHIEF, OFFICE OF COMMUNICATIONS
CHIEF, PLANS AND POLICY DIVISION
CHIEF, PERSONNEL DIVISION
CHIEF, LOGISTICS DIVISION
CHIEF, SECURITY DIVISION
CHIEF, TRAINING DIVISION
ADJUTANT GENERAL

SUBJECT: Preparation of the NSA Long-Range Estimate (NSALRE)

Reference: NSA Regulation 20-5

I. PURPOSE

The purpose of this memorandum is to establish the responsibilities and action required for the preparation of the NSA Long-Range Estimate (NSALRE).

II. POLICY

1. The reference establishes the NSA war planning system and outlines the relationships which exist between long-, mid-, and short-range planning, and between the end-product documents which each of these processes produces. Long-range planning deals in terms of estimated future requirements of NSA and furnishes guidance for determination of mid-range objectives. It is broad in scope, forms the basis for the long-range development of the Agency, and furnishes guidance for research and development. The product of the long-range planning effort is the NSALRE.

2. The initial NSALRE will be an estimate of the cryptologic situation to exist during the five-year period which begins on 1 July 1960. It will estimate the situation which will exist during the projection period and will have an effect upon the accomplishment of NSA's mission; will translate this estimate into NSA requirements in the COMINT, COMSEC, and supporting fields of operations; and will postulate broad courses of action for meeting these requirements. The NSALRE will be revised annually in order to take cognizance of new developments; will be scheduled for publication and dissemination annually by the Adjutant General by 1 February; and will consider the five year period which begins on 1 July approximately five years subsequent to its dissemination. Target dates shown in the following paragraph will be extended five months in the case of the initial NSALRE.

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III. RESPONSIBILITIES AND REQUIRED ACTION

The responsibilities and required action for preparation of the NSALRE are as follows:

a. Chief, Plans and Policy Division, is responsible for providing over-all supervision and coordination for preparation of the NSALRE and for preparation of Annex "A" of the estimate. This responsibility includes the provision of necessary planning guidance and direction. The Chief, Plans and Policy Division will:

- (1) Provide a statement of basic assumptions to be used as the foundation for the NSALRE. This statement will be provided to other components of NSA by 1 October each year.
- (2) Consult with planning officials in other components of NSA and in the Service cryptologic agencies and the consumer departments and agencies, as appropriate.
- (3) Prepare the NSALRE in final form for publication and dissemination by the Adjutant General by 1 February each year.

b. Deputy Director, Production; Deputy Director, Research and Development; Deputy Director, Communications Security; Chief, Office of Communications; Chief, Personnel Division; Chief, Logistics Division; Chief, Security Division and Chief, Training Division are responsible for preparation of the corresponding annexes of the NSALRE and for providing support for the long-range planning effort as it applies to matters within their purview. The Adjutant General is responsible for publication and dissemination of the NSALRE by 1 February each year. Each of the foregoing officials will:

- (1) Assign responsibility within his respective organizational component for preparation of the required annex to the NSALRE.
- (2) Designate a long-range planning officer to serve as the point of contact with the Plans and Policy Division in matters pertaining to the NSALRE, and notify the Plans and Policy Division concerning the identity of the designee.
- (3) Submit four copies of required annex to Plans and Policy Division in accordance with the following schedule:

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<u>Responsibility</u>	<u>Annex</u>	<u>Due Date</u>
P/P	"A"	1 Oct
DD/PROD	"B"	1 Nov
DD/COMSEC	"C"	1 Nov
COM	"D"	1 Dec
DD/RD	"E"	1 Dec
PERS	"F"	1 Dec
LOG	"G"	1 Dec
SEC	"H"	1 Dec
TNG	"I"	1 Dec

IV. IMPLEMENTATION

1. Implementing action on the initial NSALRE will be undertaken immediately. As an aid to planners concerned, the following information is inclosed herewith:

- a. Inclosure 1 - - - Format for the NSALRE.
- b. Inclosure 2 - - - Format for the Various Annexes to the Initial NSALRE.
- c. Inclosure 3 - - - Basic Guidance Information Pertaining to the Initial NSALRE.

2. The guidance information presented in Inclosure 3 is of two kinds; first, the initial draft of Sections 1 and 2 of the NSALRE proper; and second, a list of assumptions about the situation to exist during the projection period. Sections 3 through 5 of the estimate proper cannot be drafted until the annexes have been prepared, because these sections will be digests of the total information presented by the several annexes.

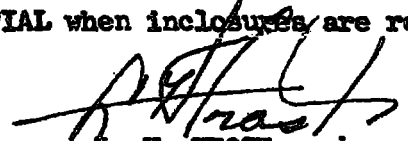
3. The purpose in furnishing the information shown in Inclosure 3 is to orient all planners concerned with the long-range planning effort by providing as clear a picture of the initial NSALRE as can be drawn this early in the planning process, as well as to enable the initiation of work on the annexes by stating assumptions about those aspects of the 1960-1965 situation which will have a general bearing upon NSA's requirements during that period. The

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draft of Sections 1 and 2 of the estimate proper is intended to show the overall focus of the long-range planning effort and thus to furnish basic guidelines to be observed in preparation of the annexes to the estimate. The statement of assumptions is intended to furnish the broad frame of reference within which the estimate and its annexes are to be formulated, and thus not only to establish general parameters but to furnish the basis for any additional assumptions considered necessary by planners preparing the annexes. The assumptions shown in Inclosure 3 have been formulated by Plans and Policy Division in consultation with other components of NSA and with planners and estimators of several outside departments and agencies. The assumptions are essentially projections of current conditions and trends, and it is acknowledged that accuracy can be attributed to them only in a limited sense and only in terms of the broad concepts embodied; however, this limitation is inherent in long-range planning.

4. It is important that work begin on the annexes without delay. In this connection, maximum working-level cooperation between planners in Plans and Policy Division and planners in the other parts of the Agency will be essential to successful accomplishment of the long-range planning mission.

5. Downgraded to CONFIDENTIAL when inclosures are removed.


L. H. FROST
Rear Admiral, U.S. Navy
Chief of Staff

- 3 Incls:
1. Outline Format for the Initial NSALRE.
 2. Topic Outline of Subjects to be Included in Annexes to the Initial NSALRE.
 3. Basic Guidance for Preparation of the Initial NSALRE.

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FORMAT FOR THE INITIAL NSA LONG-RANGE ESTIMATE (NSALRE)

The format for the initial NSALRE will be as follows:

SECTION 1 - INTRODUCTION

1. PURPOSE
2. NATIONAL POLICY AND OBJECTIVES
3. NSA LONG-RANGE CRYPTOLOGIC OBJECTIVES DERIVED FROM NATIONAL POLICY
 - a. COMINT Objectives
 - b. COMSEC Objectives

SECTION 2 - STRATEGIC APPRAISAL OF THE ROLE OF THE NSA CRYPTOLOGIC EFFORT DURING THE PERIOD UNDER CONSIDERATION

1. GENERAL
 - a. Strategic Appraisal
 - b. Major Trend in International Relations
 - c. Major Trend in Military Capabilities
2. THE COMINT EFFORT
3. THE COMSEC EFFORT

SECTION 3 - TRANSLATION OF NSA LONG-RANGE CRYPTOLOGIC OBJECTIVES INTO BASIC SUPPORTING UNDERTAKINGS DURING PERIOD UNDER CONSIDERATION

1. COMINT UNDERTAKINGS
2. COMSEC UNDERTAKINGS

SECTION 4 - BROAD FACILITIES AND OPERATIONS ESSENTIAL FOR ACCOMPLISHMENT OF NSA BASIC UNDERTAKINGS DURING THE PERIOD UNDER CONSIDERATION

1. COMINT FACILITIES AND OPERATIONS
2. COMSEC FACILITIES AND OPERATIONS
3. SUPPORTING FACILITIES AND OPERATIONS
 - a. Communications
 - b. Personnel
 - c. Logistics
 - d. Security
 - e. Training

SECTION 5 - GUIDANCE FOR RESEARCH AND DEVELOPMENT CONDUCTED UNDER THE COGNIZANCE OF THE DIRECTOR, NSA

1. MAJOR TECHNICAL PROBLEMS ANTICIPATED FOR THE PERIOD UNDER CONSIDERATION
 - a. COMINT Problems
 - b. COMSEC Problems

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2. GUIDELINES FOR RESEARCH AND DEVELOPMENT ACTIVITIES DIRECTED TOWARDS SOLUTION OF ANTICIPATED TECHNICAL PROBLEMS.

- a. COMINT Problems
- b. COMSEC Problems

3. LONG-RANGE GUIDANCE FOR RESEARCH AND DEVELOPMENT ACTIVITIES

Inclosure 1

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FORMAT FOR ANNEXES TO INITIAL REALIE, AND DESIGNATION
OF NSA COMPONENTS TO BE RESPONSIBLE FOR PREPARATION OF ANNEXES

<u>ANNEX</u>	<u>SUBJECT</u>	<u>RESPONSIBLE COMPONENT</u>
"A"	<p>ESTIMATED FOREIGN CRYPTOLOGIC CAPABILITIES DURING PROJECTION PERIOD</p> <ol style="list-style-type: none"> 1. COMINT CAPABILITIES 2. COMSEC CAPABILITIES 3. COMMUNICATIONS CAPABILITIES 4. RESEARCH AND DEVELOPMENT CAPABILITIES 	<p>P/P (In coordination with PROD, R/D COMSEC, and COM)</p> <p><i>Requires mandatory subheads of Tech. Intel in comm. - elect field</i></p>
"B"	<p>ESTIMATED U.S. COMINT OPERATIONS</p> <ol style="list-style-type: none"> 1. CONDUCTED BY NSA <ol style="list-style-type: none"> a. Collection b. Processing c. Reporting d. Dissemination 2. CONDUCTED BY OUTSIDE DEPARTMENTS AND AGENCIES <ol style="list-style-type: none"> a. Collection b. Processing c. Reporting d. Dissemination 3. CONDUCTED BY NSA IN COLLABORATION WITH FOREIGN GOVERNMENTS <ol style="list-style-type: none"> a. Collection b. Processing c. Reporting d. Dissemination 	<p>DD/PROD</p>
"C"	<p>ESTIMATED U.S. COMSEC OPERATIONS</p> <ol style="list-style-type: none"> 1. CONDUCTED BY NSA <ol style="list-style-type: none"> a. Establishment of COMSEC Doctrine b. Evaluation of COMSEC principles and equipment c. Review of Communications Cover and Deception programs d. Evaluation of compromises e. Security Surveillance of NSA Communications f. Procurement of Materials g. Production of Equipments, Manuals and Aids h. Distribution, Accounting, and Storage of Equipments, Manuals, and Aids 	<p>DD/COMSEC</p>

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ANNEX

SUBJECT

RESPONSIBLE COMPONENT

- 2. CONDUCTED BY OUTSIDE DEPARTMENTS AND AGENCIES
 - a. Implementation of NSA established COMSEC doctrine and procedures
 - b. Distribution, Accounting, and Storage of Equipments, Manuals, and Aids
 - c. Procurement of Materials (ancillary)
 - d. Production of Equipments, Manuals, and Aids (tasks as delegated by NSA)
- 3. CONDUCTED BY NSA IN COLLABORATION WITH FOREIGN GOVERNMENTS
 - a. Establishment of COMSEC Doctrine
 - b. Evaluation of COMSEC principles and equipment
 - c. Evaluation of compromises
 - d. Procurement of Materials
 - e. Production of Equipments, Manuals and Aids
 - f. Distribution, Accounting, and Storage of Equipments, Manuals, and Aids

"D"

COMMUNICATIONS

COM

- 1. REQUIREMENTS
 - a. Radio Channels
 - b. Landlines
 - c. Equipments
 - d. Personnel
 - e. Link Structure
- 2. DIVISION OF LABOR AS BETWEEN NSA AND OUTSIDE ORGANIZATIONS
 - a. Communications Tasks to be Performed by NSA
 - (1) Headquarters
 - (2) Field Activities
 - b. Communications Tasks to be Performed by Outside Organizations
 - (1) Army
 - (2) Navy
 - (3) Air Force
 - (4) Other

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ANNEX

SUBJECT

RESPONSIBLE COMPONENT

"E"

ESTIMATED CRYPTOLOGIC RESEARCH AND DEVELOPMENT ACTIVITIES

DD/ED

- 1. CONDUCTED BY NSA
 - a. Pertaining to COMINT
 - b. Pertaining to COMSEC
- 2. CONDUCTED BY OUTSIDE DEPARTMENTS AND AGENCIES
 - a. Pertaining to COMINT
 - b. Pertaining to COMSEC
- 3. CONDUCTED BY PRIVATE INDUSTRY
 - a. Pertaining to or applicable to COMINT
 - b. Pertaining to or applicable to COMSEC

"F"

ESTIMATED NSA PERSONNEL REQUIREMENTS

PERS

- 1. HEADQUARTERS
 - a. Military Personnel
 - b. Civilian Personnel
- 2. FIELD ACTIVITIES
 - a. Military Personnel
 - b. Civilian Personnel

"G"

ESTIMATED NSA LOGISTIC SUPPORT FACILITIES

LOG

- 1. HEADQUARTERS
- 2. FIELD ACTIVITIES ✓

"H"

SECURITY CONTROL FACILITIES

SEC

- 1. PHYSICAL SECURITY
 - a. At Headquarters
 - b. At Field Activities
- 2. PERSONNEL SECURITY
 - a. At Headquarters
 - b. At Field Activities

"I"

TRAINING

TRG

- 1. FACILITIES
- 2. METHODS
- 3. SUBJECT MATTER

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BASIC GUIDANCE FOR PREPARATION OF THE INITIAL NSALRE

PART A

(Draft of Sections 1 and 2 of Initial NSALRE)

SECTION 1 - INTRODUCTION

1. PURPOSE. The purpose of the NSA Long-Range Estimate (NSALRE) is to translate national policy into long-range cryptologic objectives for NSA, in order to provide guidance for the orderly development of NSA resources and strategic direction for cryptologic research and development activities conducted by, or under the cognizance of, the Director, NSA, in accordance with the Agency's assigned mission.

2. NATIONAL POLICY AND OBJECTIVES. National policy is the expression of national interests, those values which the people of the United States consider necessary for their security and well being. These interests are expressed as objectives to meet particular situations and are in turn translated into national policy in the foreign and domestic fields. National policy constitutes the frame of reference within which the national cryptologic effort is conducted, and maximum practicable success in the national cryptologic effort is one of the objectives which is engendered by the need for national security.

3. NSA LONG-RANGE CRYPTOLOGIC OBJECTIVES DERIVED FROM NATIONAL POLICY. While many aspects of national policy bear in some manner upon the derivation of NSA long-range cryptologic objectives, the two which bear most directly upon these objectives are: first, U.S. rejection of the concept of "preventive war"; and second, the traditional U.S. requirement for a formal declaration of war before launching an all-out military effort against another nation. These concepts constitute a self-imposed handicap in terms of surrender of the initiative at the beginning of any hostilities. The net effect is to magnify the importance of the time element in the formula for national security. Obtaining early warning of the hostile intentions of foreign nations is an imperative requirement for survival, and is seconded by the critical importance of being able to deny foreign nations a further advantage over the U.S. by insuring the security of Federal telecommunications concerned with the maintenance of national security. The NSA long-range cryptologic objectives, both general and particular, inhere in these

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two major requirements. Therefore it can be said that the peak of our national cryptologic effort may well have passed when general hostilities commence.

a. COMINT Objectives

- (1) As appears from the foregoing statements, the over-all long-range objective of the NSA COMINT effort is to insure that any indication of a potential or actual threat to the national security conveyed by communications monitored by U.S. communications intelligence activities is promptly discovered and reported to appropriate departments and agencies of the government. This over-all objective gives rise to ancillary long-range objectives pertaining to the major constituent operations of the COMINT effort: collection of raw material; production of COMINT information; and dissemination of the end-products. Thus, the long-range objective of the collection effort is to insure that the location, number, and type of intercept facilities and the capabilities of the assigned personnel and equipment will enable effective interception and, where appropriate, forwarding, of desired target communications, and that the associated operating procedures will minimize the elements of error and delay. The long-range objective of the production effort is to insure that the size, composition, location, facilities and procedures of U.S. Government COMINT activities engaged in analysis of the external and internal characteristics of intercepted communications will provide for optimum, timely production of required COMINT information. The long-range objective of the dissemination effort is to insure that the U.S. departments and agencies concerned with the maintenance of national security promptly receive available COMINT information in fulfillment of their stated requirements.
- (2) As in the case with the over-all long-range objective of the COMINT effort per se, each of these ancillary objectives in turn engenders subsidiary objectives which will enable attainment of the larger objective. The identity of these objectives

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and the broad NSA requirements which they generate are presented in the attached annexes.

b. COMSEC Objectives

- (1) The over-all long-range NSA COMSEC objective is to achieve the maximum practicable security of Federal telecommunications. In this context the term "Federal telecommunications" connotes all telecommunications in which the Federal Government has an interest as an originator, addressee, or intermediary, and includes telecommunications involving cooperation between the U.S. and foreign governments and international organizations. As in the case with COMINT, the COMSEC over-all objective gives rise to ancillary long-range objectives which reflect the chief constituent operations within the NSA COMSEC effort: establishment of doctrine; evaluation of principles and equipment; review of communications cover and deception programs; evaluation of compromises; security surveillance of NSA communications; procurement of materials; production of equipment, manuals, and aids; and distribution, accounting, and storage of equipments, manuals, and aids. For example: the long-range objective of the first operation is to insure that a coherent, realistic, easily understandable body of doctrine which applies the basic concepts of COMSEC to prevailing conditions will be promulgated by NSA in time to meet the needs of departments and agencies of the Federal Government; the long-range objective of the second operation is to insure that the evaluation of COMSEC principles and equipment will provide maximum practicable protection against loss of security during the handling and transmission of Federal telecommunications; and the long-range objective of the third operation is to insure that the evaluation of COMSEC compromises will be accurate, timely, and will be followed by action to protect against recurrence.
- (2) As with COMINT, each of the COMSEC constituent long-range objectives in turn generates subsidiary objectives supporting the larger objective. The identity of these objectives and

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the broad NSA requirements which they engender are presented in the attached annexes.

SECTION 2 - STRATEGIC APPRAISAL OF THE ROLE OF THE NSA
CRYPTOLOGIC EFFORT DURING THE PERIOD UNDER CONSIDERATION

1. GENERAL

a. Strategic Appraisal. Any effort to appraise the strategic role of the NSA cryptologic effort during the period 1960-1965 must begin with a projection of current major trends in international relations and in military capabilities of the U.S. and foreign nations.

b. Major Trend in International Relations. The current major trend in international relations is to talk about peace and prepare for war; to employ military force for the attainment of limited objectives but to eschew actions judged to lead to total war, despite the fact that excuses for larger employment of military force continue to accumulate. Projection of this trend raises the prospect of a future situation in which the excuse for full scale employment of military force will always be at hand, and small scale employment of such force will erupt on the international scene with little or no advanced warning. Under these circumstances, a major and continuing problem facing the various governments of the world will be to maintain, or create, the capability for prior, accurate assessment of the occasion and magnitude of any military adventure by a foreign nation.

c. Major Trend in Military Capabilities. The major current trend in military capabilities is the increasing destructive power which can be brought to bear upon an opponent during the first hours of conflict. Projection of this trend leads to the future situation in which the major nations of the world will have the military capability for almost complete destruction of an opponent by a surprise attack, and will themselves be constantly in danger of destruction by a surprise attack mounted by any one of several foreign nations. Under these circumstances the concept of defense in space will have given way to the concept of defense in time, and the problem facing the military leaders will be to maintain, or create, the capability for prior accurate determination of the most effective utilization of destructive power against each potential enemy, and for corresponding determination of the most effective counter-measures against an attack launched by one or more of the foreign nations.

2. THE COMINT EFFORT. In the future situation just visualized, the strategic role of the NSA COMINT effort emerges with great clarity: it will play a leading

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role in the U.S. effort to obtain early warning of threats to the national security and to obtain information which will enable employment of the most effective counter-measures, both diplomatic and military, against such threats, The degree of success or failure of the effort will be known only upon the commencement of hostilities.

3. THE COMSEC EFFORT. Under any conditions, the strategic role of the NSA COMSEC effort will rival the importance of the role of COMINT, in terms of preserving national security. It will be a principal means of denying access by foreign nations to classified information concerning the plans and capabilities -- diplomatic, military, economic -- of the U.S. and, indirectly, of its allies including international organizations in which the U.S. will play a leading role. As in the case of the NSA COMINT effort, the COMSEC effort will be a vital factor in all strategic planning for national security.

PART B

ASSUMPTIONS ABOUT THE SITUATION TO EXIST DURING THE PERIOD UNDER CONSIDERATION

1. The mission of NSA will continue to be to provide cryptologic support for activities of the U.S. Government concerned with the formulation and implementation of national policy. The mission will include:

- a. Provision of COMINT information to authorized consumer departments and agencies of the U.S. Government.
- b. Provision of COMINT technical support to the Service cryptologic agencies.
- c. Provision of COMSEC devices and supporting material to departments and agencies of the U.S. Government, and to other nations and international organizations as authorized by higher authority.
- d. Conduct of research and development activities pertaining to current or anticipated cryptologic requirements.
- e. Conduct of ancillary activities in support of cryptologic operations.

This will include activities in the fields of communications, personnel, logistics, training and security. The operational pattern will be predicated upon maximum practicable decentralization of Category I, and to a more limited extent Category II, COMINT tasks to the Service cryptologic agencies. The average cost per unit output of NSA cryptologic end-products will rise gradually throughout the projection period.

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2. The basic international political alignments in effect as of January 1956 will remain substantially unchanged during the period, but "neutral bloc" patterns of association by secondary and tertiary states will be some significant factors in international relations.

3. The "cold war", the condition of antagonism wherein the instruments of foreign policy and international relations are political, economic, and psychological measures plus the threat of overwhelming military power, will not give way to total war, but conditions required for abrupt transition to total war will be present throughout the period. Sporadic, local "police actions" involving the UN organization will, however, erupt with little advanced warning.

4. COMINT collaboration with member nations of the British Commonwealth will continue.

5. Limited COMINT collaboration with "Third Party" nations will supplement the U.S. - U.K. COMINT effort.

6. The unstable situation in the Middle East will spur the development of cryptologic efforts by nations in the area, and there will be a large requirement for COMINT information about these countries.

7. Growing Soviet influence and dwindling U.S. - British influence in Africa and western Asia will result in substantially larger requirements for COMINT information about these areas.

8. Growing Soviet influence in many Latin American countries (influence based upon the provision of stable markets for raw materials and a regular flow of finished goods in return) will result in sharply increased importance of Latin American COMINT targets. This will be especially true of countries which are located in the southern parts of South America and are thus further removed from the influence of the U.S., but will also apply to the Central American countries and the South American countries bordering upon the Caribbean Sea.

9. The partnership of the USSR and Communist China will be strong and aggressive and the requirements for COMINT information about the Far East, including Southeast Asia, as well as for COMSEC technical support for friendly-to-U.S. countries in the area, will rival corresponding requirements pertaining to the European-Mediterranean area. The COMINT requirements pertaining to China will be rapidly approaching the magnitude of those pertaining to the USSR area.

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10. The strategic concept of defense in space will be largely eliminated by developments in new weapons and will be supplanted by the concept of defense in time, thus giving added importance to the value of COMINT information as a potential means for obtaining advanced warning of the hostile intentions of foreign nations, and to COMSEC equipments and procedures as a means for denying foreign nations advanced warning about U.S. intentions.

11. The involvement of all aspects of national life in any preparation for initiation of total war will produce a corresponding growth in requirements for COMINT information about non-military activities and postures of foreign nations. It could be a serious mistake to postpone any phase or expansion of the COMINT effort because of reliance on a sudden expansion resulting from the outbreak of hostilities. The optimum condition will be for the COMINT community to be very close to wartime posture, capacity, and capability before the outbreak of hostilities.

12. The U.S. will provide COMSEC technical support and training to friendly nations on an increasing scale during the period. One effect of this action will be to increase the difficulty of producing COMINT information about the countries concerned. Another effect will be the requirement for a substantial increase in the size and deployment of pertinent components of the NSA COMSEC organization.

13. The industrial capabilities of the U.S. and Communist Bloc countries will be approximately equal and will increasingly constitute the basis for military power. This will require the U.S. Government (and hence NSA) to provide COMSEC support for the communications of certain key industries.

14. The increased cost of the NSA cryptologic effort will engender acute problems in connection with the allocation of effort.

15. Increased mechanization of COMINT production processes will enlarge the number and scope of profitable fields of effort and will tend to increase NSA personnel requirements accordingly.

16. The great majority of Soviet main-line communications, and a substantial part of the communications of other Communist nations, to major military field headquarters and chief industrial areas will be carried on landlines or microwave transmissions which may frequently utilize scrambler devices for encipherment.

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17. The employment of "masking" techniques in communications handling (i.e., continuous 24-hour operation by transmitters sending dummy traffic during all times other than those when bona fide traffic is being passed) will be increasing steadily.

18. Foreign countries, and especially the Communist Bloc countries, will have well developed capabilities for communications-jamming operations.

19. Noise-communications systems will be in use on a limited scale by all major powers and some minor powers.

20. UHF and VHF communications, including those depending upon tropospheric and ionospheric scatter, will be superceding HF radio transmissions for point-to-point communications in high latitudes.

21. Enciphered telephone (CIPHERONY) will be in use on a substantial scale by all the major powers. This will necessitate changes in NSA's requirements pertaining to intercept and traffic-handling procedures.

22. The use of enciphered facsimile (CIFAX) will be in use on a substantial scale by all the major powers, and the problems connected with the interception and handling of these communications will be similar to those pertaining to CIPHERONY.

23. The characteristics of wave propagation in outer space will be of interest to NSA Research and Development activities because of incipient developments relating to communications to and from man-made satellites.

24. High-speed "true" submarines, supersonic long-range aircraft, and long-range (including inter-continental) guided missiles will dominate the tactical concepts of the time, and NSA requirements will reflect the COMINT and COMSEC aspects of communications to and from such vehicles.

25. Improved COMSEC and communications equipment and techniques in use by foreign nations will result in increased importance of the Special Identification Techniques (Direction Finding, Radio Fingerprinting, and Morse Operator Analysis) as the means for obtaining Category I type COMINT information.

26. Subversive organizations in the U.S. will have well-developed clandestine networks ready to function immediately upon the outbreak of war, and these networks will be designed to handle a type of communications activity (agent-and-partisan communications) characterized by a mode of operation markedly different from military, diplomatic, or commercial communications. COMINT information derived from analysis of these communications will be of vital

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importance to the preservation of U.S. national security, and NSA must be prepared to undertake appropriate COMINT operations on short notice.

27. Weather data for use in planning for total war involving the use of thermonuclear, bacteriological, and chemical weapons as well as guided missiles will be an important aspect of military information. In this situation, there will be a continuing requirement for COMINT information about weather conditions over Communist Bloc nations; a continuing requirement for COMSEC protection of information about weather over Western Bloc nations and Allied nations; and a corresponding and continuing requirement for research and development efforts pertaining to both the COMINT and COMSEC aspects of the weather problem.

28. Requirements for COMSEC equipments and techniques will include:

- a. A demand for compatibility with teletype equipment transmitting at speeds approaching 400 words per minute.
- b/ A need for on-line security components for equipments sending multi-channel transmissions.

29. During the projection period the NSA COMSEC effort will place special emphasis on the COMSEC aspects of the following problems:

- a. Data link transmissions for:
 - (1) High-speed IBM accounting information.
 - (2) Tactical type information.
 - (3) Control information to guided missiles and supersonic aircraft.
 - (4) IFF, aircraft, and naval vessels.
- b. Teletype and facsimile broadcasts including:
 - (1) CIFAX and CIPHONY
 - (2) Television
- c. Carrier techniques on coaxial cables and wire lines.
- d. Forward-scatter techniques for radio wave propagation in the VHF spectrum.
- e. Security components for use with automatic switching equipment.
- f. Long ^{distance} ~~haul~~ Air/Ground communications.
- g. Noise carrier transmissions.
- h. The increased integration of crypto-equipment with communications equipment.
- i. The security requirements of the U.S. Civil Defense Communications networks, with their emphasis on secure voice circuits (CIPHONY).

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30. NSA communications will be employing standard teletype terminal equipment operating at 60/100 words per minute.
31. NSA communications employing teletype terminal equipment will be secured by the use of on-line cryptographic equipment in 95% of the cases, and by the use of off-line cryptographic components in 5% of the cases.
32. NSA communications will include a small percentage of special-purpose communications such as facsimile, television, and IBM Card transmissions.
33. Communications channels will not have increased materially in number over those available during the period FY 1954-1955, but the volume of traffic being handled will have grown substantially. This increased efficiency in the exploitation of available channels will be accomplished by means of improved methods, increased operations per minute, and improved cryptographic devices.
34. Submarine cables will be in use on a substantially greater scale than during the period FY 1954-1955, and contemporary communications planning will provide for increased utilization of submarine cables in the event of war.
35. Combined COMINT Communication Centers (CCCC) will be operational and will be equipped with automatic message-routing devices that work.
36. The CCCC's and the interconnecting communication channels will serve COMINT collection and processing points, and will also serve all major COMINT consumers in both the Zone of Interior and in the various overseas theaters.
37. Each Fixed Intercept Station participating in the national COMINT effort will have the capability to forward raw traffic, as intercepted, to individual COMINT analysts located at NSA Headquarters at Ft. George G. Meade, Maryland.
38. Microfilming or other processes for condensation of written material will be employed for reducing the size and weight of traffic to be forwarded via courier, and transit-time will be reduced correspondingly.
39. A secure telephone communication system will interconnect NSA Headquarters with its principal consumers within the Zone of Interior.

Inclosure 3

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