

MEMO ROUTING SLIP		NEVER USE FOR APPROVALS, CONCURRENCES, OR SIMILAR ACTIONS	
1 NAME OR TITLE	INITIALS	<input type="checkbox"/>	CIRCULATE
ORGANIZATION AND LOCATION	DATE	<input type="checkbox"/>	COORDINATION
2		<input type="checkbox"/>	FILE
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3		<input type="checkbox"/>	NECESSARY ACTION
		<input type="checkbox"/>	NOTE AND RETURN
4		<input type="checkbox"/>	SEE ME
		<input type="checkbox"/>	SIGNATURE
REMARKS			
<p>Go over Robertson report action & single out the <u>major</u> items which should be pointed up to Gen C so he can keep aware of progress. If these 6 say are handled properly, the chance good that many others are too.</p>			
FROM NAME OR TITLE		DATE	
ORGANIZATION AND LOCATION		TELEPHONE	

DD FORM 1 FEB 50 95

Replaces DA AGO Form 895, 1 Apr 48, and AFHQ Form 12, 10 Nov 47, which may be used.

16-48487-4 GPO

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<p>For comments and recommended deletions in regard to the release of The Report to Canada, see USCIB 3.5/series.</p>			
FROM NAME OR TITLE		DATE	
ORGANIZATION AND LOCATION		TELEPHONE	

~~TOP SECRET FROTH~~ *S/sect*~~SPECIAL HANDLING REQUIRED~~
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Progress on certain of the recommendations contained in NSA Study "The Potentialities of COMINT for Strategic Warning." (Robertson Report)

Recommendation 1 - Determine, by logical analysis and postulating, the probable preparatory steps, which of those Soviet communications links currently interceptable by us would show significant variations in traffic volume if preparations were underway to attack the U.S. or areas in which the U.S. has vital interests.

✓ PROD is keenly aware of its general responsibilities in the matter of spotting preparations for a Soviet attack on the U.S. or areas of vital interest to the U.S. The Soviet capability of carrying on all main-line communications to its major Army, Navy, and Air Force field headquarters by landline makes it quite unlikely that any significant changes in traffic volume would be noted on radio links between these headquarters and Moscow prior to attack. It is believed that variation in traffic volume taken by itself is not a completely reliable guide as an indication to the imminence of hostilities, because such volume variations may be affected by fluctuations in intercept-facilities, ionospherics, weather, and maintenance conditions. Even though these varying factors were evaluated, the resulting totals could be subject to different, widely varying interpretations. Furthermore, the Soviets are aware of the techniques of radio deception, and might be expected to practice traffic volume deception prior to an attack.

✓ It is felt that the chances are excellent, however, that the imminence of hostilities may be detected by the observation of other communications abnormalities, relating to logistics, deployment of troops and aircraft, security measures, alerting status, border sensitivity, police activity, et cetera. Most of these do not bear direct relation to traffic volume, but are more indicative of the true situation. A detailed list of communications abnormalities and developments that might be regarded as indicative of possible preparation for hostilities on the part of the Soviets has been prepared and disseminated to field and Washington components of the U.S. COMINT organization. Copies of this memorandum, NSA Field Circular 53-2 (23 March 1954) will be made available on request.

✓ There are no "keystone" Soviet radio links which would in and of themselves give a reliable indication of Soviet intentions. Rather, we must be dependent for our warning upon as intensive as possible coverage and reporting on a large number of "operational" links which the Soviets are likely to be forced to use even in the face of a developing emergency, and the possible overflow of live material on those main-line links which are at present in a stand-by status. In general,

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air defense alertness, concentrations of aircraft as shown by navigational and tactical air nets; and any increase or decrease in operational traffic volume in any area, might be regarded as significant. In formulating intercept plans from month to month, those Soviet radio links and nets which are regarded as being the most likely to yield intelligence are consistently accorded the highest priority; the situation changes from month to month.

Recommendation 2 - Establish, for various seasons, and for other conditions the existence of which is verifiable, normal traffic volumes for these links.

Traffic volume records, and records of other types of activity are maintained in NSA-90 on all links considered significant.

Recommendation 3 - Devise and inaugurate a system for obtaining rapid reports, from stations covering these links, of any significant variation from normal traffic volume on each.

NSA Field Circular 53-2, mentioned above, set up a system of special reporting of significant communications developments under conditions of alert, and gave a detailed list of developments which would warrant declaring an alert. The circular covers not only traffic volume, but the many other items which PROD considers to be equally important and significant.

Recommendation 4 - Develop and install a centralized display and control board, where these variations could be plotted against time; whereby, mechanically or electronically, the probable purport of the sum of reported variations could be predicted; from where checks on other potential indicators could be initiated; and from where rapid dissemination of evaluated indications could be made to intelligence authorities.

In view of the discussion of Recommendation #1 above, it is considered that a central control board showing only traffic volume fluctuations would give a misleading picture. Only a consideration of a number of different factors - volume being one of them - would give an accurate picture.

Recommendation 5 - Develop machine (computer, analogue) methods for summing and translating quantitative traffic measures into indications; weighting these indications according to probability; checking against collateral information; and calculating most probable causes of the effects observed.

No comment at this time.

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Recommendation 6 - Expand intercept activities to the extent necessary to monitor traffic volumes on all Soviet links determined (Step 1 above) to be significant.

See comments under Recommendation 1. Intercept facilities are gradually being expanded as rapidly as it is possible for the U.S. service cryptologic agencies to implement long-range recommendations. Also significant in this connection is the Decentralization Program, in which field units who have the capability are assigned both the intercept control and COMINT reporting function for certain problems. The flexibility enjoyed by a field unit in controlling its own intercept in certain problems will enable more rapid adjustment to a changing situation. Outstanding NSA technicians have been sent and will continue to be sent to field installations in Europe and the Far East to assist in problems accompanying decentralization.

Recommendation 7 - Develop methods and equipment which will improve reception on frequencies now theoretically interceptable by us:

- a. Improve receivers.
- b. Improve audio and other recording equipment.
- c. Improve radio printer equipments, including means for demultiplexing, unscrambling, and precision recording.
- d. Install and develop methods for using propagation measuring equipment to improve intercept control.
- e. Augment NSA scientific and engineering staff in order to assist Services in design and placement of antenna fields and intercept positions so as to take utmost advantage of propagation phenomena.

The investigation and evaluation of radio receivers, recording equipment, and demultiplex equipment, etc., is a continuing project. Action through TTB has also been initiated to improve the design and installation of antenna facilities to improve the quality of the intercept take.

Recommendation 8 - Develop methods and equipment which will make interceptable links not now within our capabilities to monitor:

- a. VHF
- b. SHF
- c. Noise communications
- d.
- e. Frequency dispersal systems

EO 3.3(h)(2)
PL 86-36/50 USC 3605

The Special Intercept Problems Board has been established to study and recommend action on those types of radio transmissions listed.

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Recommendation 9 - Improve facilities for enabling the intercept operator to determine the identity of transmitters which he hears;

- a. Develop means, whereby operator can by himself determine direction of arrival of a signal.
- b. Increase collocation of D/F [] MOA, and intercept facilities.
- c. Improve communications between intercept operators and D/F, [] MOA positions.

This could be a highly desirable operational facility. However, it is so far beyond the present concept of direction finding which in itself is inadequate or without an exact status of reliability that the combined function of intercept and D/F can only be considered as being far in the future when the state of the art has been greatly developed.

NSA-614 has recently completed a case study which indicates future requirements of D/F [] and MOA. The results of this study has clearly pin-pointed the exact sites at which there exists a need for collocated D/F, [] and MOA equipments. On the basis of these requirements, an [] equipment [] was installed at USM-3 to be used as a third ingredient in the proposed SIT effort. Proposals for the transfer of a DEN-31 (MOA) equipment to USM-3 are also being reviewed.

Requirements for improved communications between intercept operators and D/F, [] and MOA positions, when determined are brought to the attention of NSA-62. NSA-62 has queried the services regarding the inter-comm facilities at installations. When this information is received, NSA-62 will initiate action to get adequate inter-comm facilities at those stations requiring them.

Recommendation 10 - Improve methods of transmitter identification:

- a. Improve [] equipment and analytical methods.
- b. Develop MOA and other operator identification techniques, recording and analytical equipments and methods.
- c. Develop better methods of radio position fixing, such as Inverse Loran.
- d. Improve field coordination of all (SIT) methods with each other and with intercept.

Continuous efforts are being made to improve the [] equipment and the techniques used in analysis. Research Priorities List, dated 10 September 1954, lists the following Research and Development priority items:

#11-Sub Task - 331 - 5002 (Development of Interim [] Techniques)
Expected completion date, March 1955.

#20-Sub Task - 331 - 5005 (Mobile [] Equipment - AFSAV D-37)
Expected completion date, October 1954.

#29-Sub Task - 331 - 5006 []
Expected completion date, October 1954.

Sub Task - 331 - 5000 (Local [] Research) Objective - To conduct local research and study in the field of [] identification. The research and study is directed towards:
(1) Supplementing the work undertaken by commercial contractors on the [] problem by local study. (2) Conducting evaluation and improvement of currently employed [] techniques.

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Recommendation 11 - Develop improved methods of intercepting, recording, and utilizing immediate action voice communications, including automatic time registering devices.

The past difficulties in intercepting voice communications satisfactorily have usually been ones with personnel rather than with equipment. Two recent developments have improved the situation:

a. In the recent summer (1954), three technicians from NSA-06; two from NSA-94; one from NSA-61; toured USM installations in ASA Europe for the express purpose of seeking to improve radiophone intercept. The results were felt in the [redacted] transmissions as compared to previous summers.

b. The radio-telephone training effort is being constantly improved. Beginning in February 1954, NSA began organizing a class for training R/T operators in the NSA training school. The school started in late summer with students from the Army and the Navy.

Automatic time registering devices, although possible, would not provide any additional convenience, and are at present too expensive to produce to warrant their being used with radiophone intercept. Special devices, however, have been used to mark time on automatic Morse tapes as they are being intercepted, and are quite satisfactory for that purpose.

Recommendation 13 - Increase T/A potential at points of intercept by:

- b. Providing traffic analysts for each point of intercept.
- c. Decentralizing T/A operations to intercept stations by moving T/A units forward.
- d. Increase exchange of T/A and collateral information between forward units and more centralized T/A units.
- e. Increase authority of forward units to originate messages disseminating urgent intelligence information derived by them.
- f. Provide guidance relative to (e) above, on appropriate addresses; and provide adequately rapid communications channels.

Action completed on items 13 b, d, e, and f. Progress is being made on 13 c, as plans for the next 2 years are nearing completion.

Recommendation 15 - Use more extensively the existing T/A Fusion sources to construct the pattern of Soviet operations by:

- a. Intensifying our intercept and T/A efforts during Soviet maneuvers in order to build up as complete a picture as possible.
- b. Making special, separate, and intensive studies of all T/A Fusion material to construct an accurate pattern of the behavior of the

[redacted] EO 3.3(h)(2)
PL 86-36/50 USC 3605

Intercept and T/A efforts during Soviet maneuvers have always been a matter of top priority. The much more complete 1954 summer [redacted] of [redacted] in Europe (see comment above) will be of great assistance.

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~~TOP SECRET FROTH~~Recommendation #15 (Continued)

EO 3.3(h)(2)

PL 86-36/50 USC 3605

[redacted] Every month, wrap-up studies of each of the [redacted] are produced by analysts of the Air Force Security Service. These studies include the activity of each of these armies, practically down to the individual aircraft. They include information concerning [redacted] to the extent that COMINT is capable of producing the information. These reports have been produced regularly for some years.

[redacted] An exhaustive COMINT study of the [redacted] (as of 31 December 1954) has been produced by NSA analysts as [redacted]. A corresponding technical study appeared in the NSA-90 Interim Report series as #239-53. Similar studies of the Soviet European [redacted] System are underway.

Recommendation 17 - Improve the quality of T/A Fusion by personnel actions to:

- a. Improve recruitment and selection criteria and techniques, including use of psychometric methods.
- b. Pin-point intensify, and improve training given in analytic techniques.
- c. Improve proficiency evaluation of analysts.

Progress is being made within NSA-90 in all of these fields. Regular training classes in operational T/A are being conducted by NSA-94, and many branches are holding informal lectures and meetings having as their purpose the improvement of their personnel. A career ladder for traffic analysts leading through the grade GS-15 has been developed and is in effect; promotions are being made whenever possible and wherever warranted. A program of rotation within NSA-90 is in effect.

Recommendation 18 - Improve the computational support available in NSA by:

- a. Increasing the number of skilled programmers on the NSA staff by educating qualified NSA personnel in industrial and educational institutions and by hiring programmers. "Programmer" includes those educated, trained, and experienced in the highly complex theory and mathematics of programming, as opposed to those skilled in scheduling machine times, applying fundamental computational orders, making various plugging combinations and performing maintenance on existing machines/.
- b. Investigating thoroughly the possibility of utilizing cleared indoctrinated personnel skilled in the art of programming who may be available outside NSA.

The following is the recruitment for NSA-S2 programmers from January, 1954 to the present:

- a. Transfers from other NSA Divisions:

GS-7	4
GS-9	5
Military	2

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~~TOP SECRET FROTH~~Recommendation 18 - Continued

All the above held analyst positions; were transferred from the following divisions:

NSA-71	3
NSA-72	2
NSA-76	4
NSA-064	2

b. Transfers from machine processing units within NSA-82:

11 persons transferred at present

GS-9	5
GS-7	3
GS-5	1
Military	2

8 persons being trained at present for future transfer:

GS-10	1
GS-9	2
GS-8	1
GS-7	4
Military	1

This is a continuing program and new courses for machine processing personnel are to be initiated within the next month.

c. Personnel recruited from college by direct hiring:

GS-5	8 hired	1 lost since (B.S.)
GS-7	4 hired	1 lost since (M.A.)
New Military	1	

d. Personnel with computing experience hired at:

GS-7	1
GS-5	1

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Recommendation 19 - Continue to give the highest possible priorities to the [redacted] systems.

Recommendation 20 - Maintain a firm and consistent policy to control and regulate the transfer of personnel familiar with the [redacted] [redacted] problems to other activities with a view to maintaining the highest possible degree of continuity of the several efforts involved. Due regard should be given to the psychological and career development factors involved.

Recommendation 21 - Augment the existing staff of these high-level problems by several additional top-flight analysts, utilizing psychometric methods of proficiency evaluation and selection.

In line with the committee's recommendations, PROD has, during the month of September, conducted a high-level review of the current [redacted] [redacted] problem. As a consequence of this review, the staff working on the [redacted] problem is being augmented with the addition of about eight experienced and competent cryptanalysts. This has been accomplished with due regard to the career development factors involved in the rotation of personnel both in and out of the problem. It is anticipated that the traffic analysis effort on the [redacted] will be transferred from the Office of Exploitation to the Office of Analysis.

Recommendation 22 - Increase the speed of conveying information to intelligence channels:

- a. Continue detailed time studies of traffic delays with a view to:
 - (1) Reduction of processing times in message centers at all echelons.
 - (2) Routing overseas traffic through the best possible routes.
- b. Reduce transit time of high precedence and other traffic by studying and adopting some of the principles now available (including those reported by the Programs Research Unit of the John Hopkins University).

No comments at this time.

Recommendation 28 - Study carefully the entire concept of military, diplomatic, and commercial communications to:

- a. Reveal those aspects of the communications networks which are most susceptible to communications intelligence activities.
- b. Relate the value of the intelligence gained through exploitation of these aspects to the cost of exploitation and to the cost to the enemy of security measures which would reduce their vulnerability.

This recommendation states in brief form the entire purpose of NSA-90. Effort to accomplish these ends continues and will continue as long as the Soviets are considered a COMINT target.

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Recommendation 35 - Provide direct communications between field ELINT units and the nearest field COMINT unit.

✓ In the case of Navy and Air Force field units, ELINT and COMINT operations are generally collocated, and few problems of providing for direct communications have arisen. Army units are not collocated, but in view of the possibility that the Army may provide a common organizational subordination for COMINT and ELINT operations, it is felt further action on this problem should be deferred until after this policy determination.

Recommendation 36 - Provide adequate coordination and cooperation between ELINT and COMINT units at all echelons.

✓ The AFSS plan for close support of COMAD calls for the deployment of COMINT/ELINT units, collocated with ADC control centers, thus providing for the coordination and cooperation desired on this phase of the Early Warning Problem. Further, it has been possible in many instances to arrange for pre-flight alerting of COMINT resources when SESP and other sensitive flights are scheduled. This has enabled all authorities concerned to obtain maximum coverage of the reflection of such flight activities.

Recommendation 37 - Include data derived from ELINT in all pertinent COMINT processes, studies, and developments.

✓ In general, the final product derived from ELINT activities is made available to the COMINT authorities, primarily for inclusion in COMINT end-product reports. However, there is a requirement for operational use of ELINT data in conducting current COMINT operations and performing detailed studies. Means of satisfying this requirement more fully than at present will be investigated. However, under the present division of COMINT and ELINT responsibilities, it is doubtful whether such COMINT requirements can be achieved fully because of the laborious coordination necessary, the involved command channels, and the varying policies encountered.

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Progress on certain of the recommendations contained in NSA Study "The Potentialities of COMINT for Strategic Warning." (Robertson Report)

D/P Prod

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20. Prod

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volume
Prod
R/D
Am*

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*Problem
for found.
works.
Prod
R/D*

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No comment at this time.

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Prod Recommendation 6 - Expand intercept activities to the extent necessary to monitor traffic volumes on all Soviet links determined (Step 1 above) to be significant.

See comments under Recommendation 1. Intercept facilities are gradually being expanded as rapidly as it is possible for the U.S. service cryptologic agencies to implement long-range recommendations. Also significant in this connection is the Decentralization Program, in which field units who have the capability are assigned both the intercept control and COMINT reporting function for certain problems. The flexibility enjoyed by a field unit in controlling its own intercept in certain problems will enable more rapid adjustment to a changing situation. Outstanding NSA technicians have been sent and will continue to be sent to field installations in Europe and the Far East to assist in problems accompanying decentralization.

Recommendation 7 - Develop methods and equipment which will improve reception of frequencies now theoretically interceptable by us:

- R/D* {
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 - c. Improve [] equipments, including means for demultiplexing, unscrambling, and precision recording.
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? The investigation and evaluation of radio receivers, recording equipment, and demultiplex equipment, etc., is a continuing project. Action through TMS has also been initiated to improve the design and installation of antenna facilities to improve the quality of the intercept take.

Recommendation 8 - Develop methods and equipment which will make interceptable links not now within our capabilities to monitor:

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EO 3.3(h)(2)
PL 86-36/50 USC 3605

The Special Intercept Problems Board has been established to study and recommend action on those types of radio transmissions listed.

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Recommendation 9 - Improve facilities for enabling the intercept operator to determine the identity of transmitters which he hears;

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Prod, P/P
Prod (TMS)

- a. Develop means, whereby operator can by himself determine direction of arrival of a signal.
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This could be a highly desirable operational facility. However, it is so far beyond the present concept of direction finding which in itself is inadequate or without an exact status of reliability that the combined function of intercept and D/F can only be considered as being far in the future when the state of the art has been greatly developed.

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Recommendation 10 - Improve methods of transmitter identification;

- a. Improve [] equipment and analytical methods.
- b. Develop MOA and other operator identification techniques, recording and analytical equipments and methods.
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EO 3.3(h)(2)

PL 86-36/50 USC 3605

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Prod Prod

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Action completed on items 13 b, d, e, and f. Progress is being made on 13 c, as plans for the next 2 years are nearing completion.

Recommendation 15 - Use more extensively the existing T/A Fusion sources to construct the pattern of Soviet operations by:

Prod

- a. Intensifying our intercept and T/A efforts during Soviet maneuvers in order to build up as complete a picture as possible.
- b. Making special, separate, and intensive studies of all T/A Fusion material to construct an accurate pattern of the behavior of the

Prod

- (1) Soviet Long Range Air Force
- (2) Soviet Air Defense Systems

Intercept and T/A efforts during Soviet maneuvers have always been a matter of top priority. The much more complete 1954 summer [redacted] in Europe (see comment above) will be of great assistance.

EO 3.3(h)(2)
PL 86-36/50 USC 3605

Recommendation #15 (Continued)

[redacted] Every month, wrap-up studies of each of the [redacted] are produced by analysts of the Air Force Security Service. These studies include the activity of each of these armies, practically down to the individual aircraft. They include information concerning [redacted] to the extent that COMINT is capable of producing the information. These reports have been produced regularly for some years.

[redacted] Systems. An exhaustive COMINT study of the [redacted] System (as of 31 December 1954) has been produced by NSA analysts as [redacted]. A corresponding technical study appeared in the NSA-90 Interim Report series as #239-53. Similar studies of the Soviet European [redacted] System are underway.

Recommendation 17 - Improve the quality of T/A Fusion by personnel actions to:

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- a. Improve recruitment and selection criteria and techniques, including use of psychometric methods.
- b. Pin-point intensify, and improve training given in analytic techniques.
- c. Improve proficiency evaluation of analysts.

Progress is being made within NSA-90 in all of these fields. Regular training classes in operational T/A are being conducted by NSA-94, and many branches are holding informal lectures and meetings having as their purpose the improvement of their personnel. A career ladder for traffic analysts leading through the grade GS-15 has been developed and is in effect; promotions are being made whenever possible and wherever warranted. A program of rotation within NSA-90 is in effect.

Recommendation 18 - Improve the computational support available in NSA by:

Part
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- a. Increasing the number of skilled programmers on the NSA staff by educating qualified NSA personnel in industrial and educational institutions and by hiring programmers. "Programmer" includes those educated, trained, and experienced in the highly complex theory and mathematics of programming, as opposed to those skilled in scheduling machine times, applying fundamental computational orders, making various plugging combinations and performing maintenance on existing machines.
- b. Investigating thoroughly the possibility of utilizing cleared indoctrinated personnel skilled in the art of programming who may be available outside NSA.

The following is the recruitment for NSA-82 programmers from January, 1954 to the present:

a. Transfers from other NSA Divisions:

GS-7	4
GS-9	5
Military	2

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Recommendation 18 - Continued

All the above held analyst positions, were transferred from the following divisions:

NSA-71	3
NSA-72	2
NSA-76	4
NSA-004	2

b. Transfers from machine processing units within NSA-32:

11 persons transferred at present

GS-9	5
GS-7	3
GS-5	1
Military	2

8 persons being trained at present for future transfer:

GS-10	1
GS-9	2
GS-8	1
GS-7	4
Military	1

This is a continuing program and new courses for machine processing personnel are to be initiated within the next month.

c. Personnel recruited from college by direct hiring:

GS-5	8 hired	1 lost since (B.S.)
GS-7	4 hired	1 lost since (M.A.)
New Military	1	

d. Personnel with computing experience hired at:

GS-7	1
GS-5	1

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Recommendation 19 - Continue to give the highest possible priorities to the solution of the [redacted] systems.

Prod
Recommendation 20 - Maintain a firm and consistent policy to control and regulate the transfer of personnel familiar with the [redacted] [redacted] problems to other activities with a view to maintaining the highest possible degree of continuity of the several efforts involved. Due regard should be given to the psychological and career development factors involved.

*Prod
R/D*
Recommendation 21 - Augment the existing staff of these high-level problems by several additional top-flight analysts, utilizing psychometric methods of proficiency evaluation and selection. EO 3.3(h)(2)
PL 86-36/50 USC 3605

In line with the committee's recommendations, FROTH has, during the month of September, conducted a high-level review of the current [redacted] [redacted] problem. As a consequence of this review, the staff working on the [redacted] problem is being augmented with the addition of about eight experienced and competent cryptanalysts. This has been accomplished with due regard to the career development factors involved in the rotation of personnel both in and out of the problem. It is anticipated that the traffic analysis effort on the [redacted] will be transferred from the Office of Exploitation to the Office of Analysis.

Comm-Prod
Recommendation 22 - Increase the speed of conveying information to intelligence channels:

a. Continue detailed time studies of traffic delays with a view to:

- (1) Reduction of processing times in message centers at all echelons.
- (2) Routing overseas traffic through the best possible routes.

Comm
b. Reduce transit time of high precedence and other traffic by studying and adopting some of the principles now available (including those reported by the Programs Research Unit of the John Hopkins University).

No comments at this time.

Prod
Recommendation 23 - Study carefully the entire concept of military, diplomatic, and commercial communications to:

a. Reveal those aspects of the communications networks which are most susceptible to communications intelligence activities.

*Prod
R/D*
b. Evaluate the value of the intelligence gained through exploitation of these aspects to the cost of exploitation and to the cost to the enemy of security measures which would reduce their vulnerability.

This recommendation states in brief form the entire purpose of NSA-90. Effort to accomplish these ends continues and will continue as long as the Soviets are considered a COMINT target.

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