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STUDENT HANDOUT

HISTORY OF COMMUNICATIONS SECURITY (COMSEC) (1917-1972)

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PREFACE

This special text provides the "roots" for Signal Security specialists (MOS 05G) and traces communications security (COMSEC) from its conception in 1917 to the 1970s. It is designed to furnish the reader with a basic knowledge of the beginning of COMSEC and hopes to instill some sense of belonging. It discuss some problems faced by past COMSECers and the methods with which they met the challenge.

This is not a doctrinal or "how to" text but instead an informative text to those persons within the signal security arena and those persons who have a historical curiousity about its beginning and development.

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CHAPTER I

The Early Years

World War I saw the emergence of radio as the primary means of communications by the Army. With that was the realization that intercepted radio messages could be used for intelligence purposes, thus was the birth of radio intelligence. In July 1917, the Radio Intelligence Section, General Headquarters, General Staff, Army Expeditionary Forces, was established. Its function was to intercept and exploit German military codes and ciphers. At the time COMSEC was still not though of, but the following recorded incident may have lead to it. American intercept operators while searching for enemy transmissions came across an unknown station transmitting an unfamiliar code. Sample messages were copied and passed to the code section. After sometime, the code section was able to identify them as being training messages sent by an American station in Belgium. At the time, the incident was treated as some what of a joke on the code experts. But it may have planted the ideas of monitoring for security purposes. For in Feburary 1918, a sub-section within the radio intelligence section was formed to perform security monitoring.

The function of the sub-section was to copy all American

"trench codes" messages and to identify any and all discrepancies made while encoding and transmitting. This was accomplished by the following method. Intercept operators copied the messages and passed them to their "control officer". The control officer one who was very familiar with the trench codes, would then decode the message and identify any discrepancies. If there was a violation, a letter was sent to the unit requesting an investigation and report of actions taken. Since traffic analysis, intelligence from message externals, traffic volume, traffic flow, and etc. was yet unknown this was the only function of the sub-section.

By mid-year 1918, the radio intelligence functions were transferred to the Signal Corps. The Signal Corps immediately increased the sub-sections functions to include the examination of faulty call letter assignment and closer supervision of organizational code names. Not until the latter part of the war was it realized that intelligence was being gained from wirelines. But once realized tapping of wirelines near the front was conducted.

Immediately following World War I, the Signal Corps organized the code and cipher section to compile codes and ciphers that would improve the security of our communications and to formulate a program for the maintenance of security.

World War I had taught us that 1) there was a definite need

for secure communications, 2) no matter how skillfully compiled no code or cipher could afford complete security, and although technically sound cryptographic systems were provided, 3) errors made by code clerks might nullify the best efforts of the compilers It was also learned that all cryptographic systems had to be practical. In actual combat, where speed was essential, complicated systems could not be employed. It became evident that cryptographic systems should be just secure enough to delay the solution of the message until such time that the information derived would be of no value.

The solution seemed to be in training. The code and cipher section prepared the rules for the use of codes and ciphers using the best cryptographic techniques. Signal officers were then given the training in the proper use of codes and ciphers, so that a few as possible hints were given to the enemy. This training was given to the officers as part of a two week course of instruction at Camp Vail, New Jersey (now Fort Monmouth).

It was also noted that during the period following the war till sometime in the 1930s no COMSEC monitoring was planned or conducted. Only when the Signal Intelligence Service established was COMSEC to be born again,

Appendix A contains extracts from a final report of the Radio Intelligence Section, General Staff, General Headquarters, Army Expeditionary Forces. The appendix gives more detail information on the problem that the sub section encountered.

CHAPTER II

Signal Intelligence Service (SIS)

The signal intelligence service (SIS) was established in the 1930s in an effort to coordinate all cryptographics activities under the Signal Corps. Previously, the military intelligence division of the War Department was responsible for the intercept of enemy code and cipher messages. Now the function was being assumed by the Signal Corps. Later in 1934, the Adjutant General released it responsibility of printing, storing, and handling of cryptographic material to the Signal Corps.

The SIS was organized into 2 types of units. A base unit, one which was assigned to the War Department, corps areas and departments, general headquarters, and field armies. The second type of units were field units, called Radio Intelligence (RI) companies; which were assigned to activities outside of the War Department.

It must be realized that at this time the primary function of the SIS was communications intelligence (COMINT); and COMSEC was just a small segment of the SIS. In fact, only the base

units at general headquarters and field armies were given COMSEC responsibility. The RI companies were responsible for security monitoring in cooperation with the base units which they were assigned under.

A SIS base unit at general headquarters were made up of 4 sections with only 1 section having the additional duty of security. Violations of communcations security and radio procedures were reported by the RI companies and by the base units assigned to field armies to their base unit at general headquarters to be studied and reported. Then reports and studies were submitted to the general headquarters and elsewhere on request.

SIS units at field armies included a headquarters and 1 or more RI companies operating under its supervision. 1 section of the unit was engaged in monitoring friendly communications for the discovery of violations in cryptosecurity rules and regulations, and the surveillance over important wirelines. Reports were submitted to the SIS base unit at general headquarters as well as to the unit concerned.

The RI company was made up of a headquarters platoon, and 3 operational platoons. The intercept section of the headquarters platoon was made up of 2 teams operating 4 intercept stations each. These stations not only intercepted enemy traffic but did COMSEC

monitoring when required.

The first active RI unit was the 1st Provisional RI detachment, organized at Fort Monmouth, New Jersey in 1933. In 1937, the detachment was expanded and reorganized to the 1st Provisional RI Company. The unit in both cases was an experimental company used for the training and research into radio intelligence.

The declaration of the war in Europe in 1939, brought about the activation of 3 new RI companies. These companies were assigned to the National Guard. The units along with the 1st Provisional was to be known as the Signal Radio Intelligence (SRI) companies. And within the headquarters platoon was now a "security monitoring section". The companies were assigned to field armies and in 1941 participated in the Carolina, Louisiana, Arkansas, Mississippi, and Texas maneuvers.

During the manuevers, the security monitoring sections monitored traffic, analysis violations and reported these to the signal officers of the units concerned. In addition, such complete and accurate reports of order of battle, personnel, troop and supply movement, and map coordinates were compiled. When these reports were shown to manuever commanders the unit was accused of stealing manuevers plans. Majority of the officers were not yet convinced of the importance of COMSEC in the national defense effort and

the state of COMSEC was pitifully bad. In fact, COMSEC once more began to receed into the background.

Appendix B and C depicts the efforts in starting COMSEC. Appendix B is the concept paper of the RI detachment and appendix C is an extract of a report of the Mississippi manuevers.

CHAPTER III

World War II

World War II saw great advancements in signal intelligence techniques. Traffic analysis and procedural analysis was developed to a point where each bit of information could be sciencifically evaluated. And the backbone for security monitoring throughout the period would remain to be the SIS.

When SRI companies started to arrived in England it became evident that again COMSEC monitoring was to take a back seat to intelligence. All efforts were made to increase the SRI intelligence potentials and security missions were performed indifferently. Monitor operators were selected from those who could not make the grade as an intercept operator. And the general attitude among the personnel concerned was that their function was relatively unimportant. In fact, the concept of monitoring was based on the assumption that signal personnel were aware of radio security as a counter intelligence means. Headquarters were expected to monitor their own nets and final reports were to be sent to the Cheif, Signal Officer in Washington. Policies and procedures in the theater would be based on those reports and on trips to units made by SIS personnel. But in actuality it was quite different; radio

procedures were in a chaotic state. There was a lack of centralized instruction. Signal officers were either to busy to give adequate attention to their own nets or lacked the facilities to do so. Wherever monitoring was attempted it was recieved with suspicion and resentment by commanders.

Finally, in September 1943, to restore some sort of order the SIS Radio Security Section in North Africa and the 123rd SRI Company merged to form the Africa headquarters Monitoring Service. This alliance was short lived for the 123rd SRI was sent to Italy a month later; but it did accomplish in spreading the doctrine of counter intercept to several of the larger headquarters.

The AFHQ maintained a telephone monitoring service, established at the headquarters switchboard. Line assignments came from the G2 and all lines were monitored. When anything suspicious was heard, a recorder was turned on, and the rest of the conversation recorded. A report then was typed, including the recorded conversation and the collateral information picked up by the operator prior to turning on the recorder. The report then was turned over to the G2 for action. G2 actions on these matters were rather slow and only reasonably effective for short periods of time.

During the same timeperiod, a new concept of monitoring was

being established. This concept was formulated around the activation fo the Fifth Army's Signal Information and Monitoring (SIAM) Company. With the SIAM company in operations, the African headquarters was able to devote all of its efforts to fixed theater channels and higher commands.

The concept of SIAM operations was the first time for security monitoring to be separated from intercept operations. Now COMSEC was married up with information monitoring, whose purpose was to keep Army Headquarters informed of the tactical situation and troop disposition in anticipation of requests for reinforcements, supplies and tactical deployment. SIAM was developed from the British "J" and : PHAMTOM" Service. These services started in September 1942 during the battle of El Alamein, when a British staff officer, tuned in a captured civilian radio and overheard radiotelephone transmission from tanks in the battle. The radio transmissions enable the officer to follow the battle which he reported back to his headquarters. And thus was born the idea of monitoring detachment for both security and information.

When the forces came into action in North Africa, the commanders became familiar with the value of the "J" and "PHANTOM" services and decided that a similiar system would be desirable. This lead to the formation of the Fifth Army's Provisional SIAM company.

The information mission of the SIAM was to reeeive tactical data from the G3 and encoded and transmitted messages of tactical importance to higher headquarters. For the security missions, SIAM detachments monitored, analyzed, and reported security violations to commanders as a function separate from information reporting. SIAM services was developed from personnel in the signal units under Fifth Army. Personnel and equipment from the SRI platoons of the four divisions were placed under direct control of the army's signal officer through the army's SIS officer. These units formed the SIAM platoons at the division level. Additional personnel ~~was~~ were borrowed from the signal companies to form the 2 corps platoons and the 1 army platoon.

During the invasion of Italy, in September 1943, the Fifth Army's SIAM service began to monitor for security and information. The value of the company as a provider of tactical information began to be recognized in the drives from the Garigliano River to link up with the Anzio beachhead, and in the drive to Rome and to the north. The situation were so fluid that it was impossible for the installation and maintenance of wireline communications, so the bulk of the communications was through the radio. The SIAM provided the divisions with early information about flank locations

and progress of the front. SIAM information was so accurate, and was received so much faster than through regular channels that they were accepted as official.

In May 1944, the Fifth Army suggested table of organization was approved by the War Department. The SIAM company was to consist of a headquarters platoon, 4 corps platoons, 8 divisional platoons, and 4 armored platoons. 4 SIAM companies were to be formed one in the Third Army, one in the Seventh Army, and two in the Fifth Army. One of the major problems that faced the concept was that of personnel. There simply ~~was~~ were not enough trained personnel available. Units had to train their own people and since tactical information required continuous 24 hour monitoring, security analysis was often overlooked. Although, SIAM was not entirely successful, it represented an important milestone in the development of security monitoring. Through the combining of the security and information missions, commanders were made to realize that monitoring was a weapon to serve their needs.

Shortly after the organization of the SIAM companies in 1944, the Signal Service Companies (SSC), with SIS function were organized. The SSC operated under a two echelon concept. A company headquarters and 2 platoon headquarters. The platoons were organized around

the RI intercept teams. The intelligence mission was to great and occupied to much time to do security monitoring. For only until late in the war was security monitoring pick up by the SSC and by that time the war was at a close.

Appendix D provides some insight as to the further development of intelligence in World War II.

CHAPTER IV

Army Security Agency (ASA)

The close of the war in Europe found 14 SSC and 10 SRI companies operating in the European theater. The 4 SIAM were dissolved as a large percentage of their personnel rotated back to the US. And the SIS sections remained with the theater headquarters. While in the Far East 4 SRI companies continued to operate in the war against Japan.

World War II would teach us that the cryptologic problems of all commands were closely related; and that the full potential of COMINT and COMSEC activities could only be realized by placing them under one commander. The commander would control and coordinate these activities on a world wide basis. Accordingly, all cryptologic functions, facilities, and personnel of the Army, except for those which were intergral to the Signal communications systems, were combined. On September 15, 1945 the Army Security Agency (ASA) was established. COMINT and COMSEC organizations were now attached instead of assigned to the commands they supported. ASA organizations performed security monitoring and analysis missions as requested by supported commands, while operational control and technical direction of the monitoring and analysis operations were the respon-

sibility of the ASA.

Security monitoring, like many other functions, suffered from immediate post-war demobilization. With no real threat to our communications along with the return to peacetime operations, COMSEC monitoring was again drasticially reduced. Full scale monitoring and analysis was not to be resumed till 1946.

In 1948, when the Army and the Air Force separated, the task of monitoring Air Force communications was also separated. The Air Force COMSEC monitoring was assumed by the US Air Force Security Service.

In January 1950, a new concept was drafted. This concept was called " ASA in Support of a Field Army". This concept gave birth to the establishment of the Communications Reconnaissance Organization in 1951. The COMSEC mission, of the agency, in support of a field army was to furnish the necessary facilities and supervision to insure compliance with COMSEC regulations, to distribute and account for crypto material within the command, and to keep the commander advised on the security of his signal communications, and of ways to improve their security. This new group organization included COMSEC personnel and facilities to provide direct support at army, corps, and divisional levels.

The Communications Reconnaissance (CR) group headquarters and headquarters company performed crypto material supply and maintenance functions for the field army, supervised and coordinated the security support activities of subordinate ASA units, and provided direct monitoring and analysis services to the field army headquarters and army troops.

Each corps of the field army was served by a CR battalion, which included one security company. The security company's sole function was to provide direct security monitoring and analysis support to the corps and its subordinate divisions. Detachments from the security company supported the individual divisions. Teams from these detachments operated in regimental and battalion areas when necessary, to insure adequate monitoring coverage.

Facilities were provided to monitor radiotelephone, radiotelgraph, radioteletypewriter, and telphone communications. The various nets and circuits were monitored on a rotating basis. Spot reports of serious violations found in monitored transmissions were made to the supported commands, to assist them in taking immediate action. Periodic communications procedural analysis reports were made to assist commanders in improving the operating and transmission security discipline of their signal communications

systems. Security traffic analysis reports were submitted periodically to keep the commanders informed of the amount and kind of military information which could be presumed to have been exposed to interception by the enemy. And to assist them in making realistic appraisals of the transmission security of their commands. And to aid them in taking direct, effective action to eliminate correctable weaknesses.

Encrypted traffic was obtained from the supported commands, to be decrypted and examined for deviations from cryptographic operating instructions. Violations discovered were reported to assist the supported commands in maintaining high standards of crypto security.

CR detachments were established to provide monitoring and analysis services to communications and theater zone organizations. These organizations varied considerably from one command to another, Overseas ASA organizations supervised and coordinated all security monitoring and analysis activities of the CR organizations in their area. They also provided direct monitoring and analysis services to the senior headquarters in that command.

A redefining of ASA functions in 23 June 1955, by AR 10-122,

resulted in the transfer to the Signal Corps the function of crypto-material supply and maintenance, and added additional security responsibility to the ASA. Transmission and cryptographic security analysis functions performed by the headquarters of the security company, from the corps, were now being performed by the headquarters of the CR battalion.

Thus was the set-up of the ASA with only minor changes being made during the time period till Vietnam.

CHAPTER 5

A

COMSEC in Vietnam

(FOUO) As early as 1959, questions arose concerning the communications security status of the US Military Assistance Advisory Group's (MAAG) communications nets in South Vietnam. During an annual inspection in Saigon during 1960, the Army Security Agency officer discussed COMSEC with the Signal Officer, MAAG Vietnam who in turn persuaded the Chief, MAAG to request COMSEC monitoring assistance from ASA Pacific. As a result, late in 1960, a six-man team arrived TDY from the 104th USASA Security Detachment in Okinawa. The team's monitoring efforts revealed significant COMSEC weaknesses among the US/Republic of Vietnam radio nets supporting MAAG, and ASA Pacific attempted to take supporting steps to strengthen security.

(FOUO) Following a national policy decision in early 1961, the first contingent of 92 USASA personnel (3d Radio Research Unit) arrived in South Vietnam on 13 May 1961 to provide support to the US Military Assistance Advisory Group and to provide training to the South Vietnamese Army. Because the first contingent of ASA personnel did not arrive equipped to perform a COMSEC mission, Hq USASA Pacific tasked the 104th Detachment to establish a temporary team in Saigon to perform COMSEC monitoring. From October 1961 to January 1962, a six-man team from the 104th performed a COMSEC mission in Saigon. Upon their redeployment to Okinawa, the team left most of its equipment with the 3d RRU.

(FOUO) In December 1961, the 3d RRU was authorized to provide COMSEC support and on 1 January 1962, created a COMSEC Section consisting of one officer and four enlisted men. This increased to one officer and 17 enlisted personnel within six months. In November, the COMSEC Section performed its first mobile operation within country when it sent a two-man team to Da Nang.

(FOUO) In early 1963, the COMSEC support entered into a second phase when a 30-man security detachment was organized on 1 March 1963. The 101st Radio Research Company took the place of the COMSEC Section, 3d RRU and was organized initially into three sections: headquarters, security monitoring, and control and analysis. Headquarters of the 101st Company was at the site of the Joint General Staff Compound in Saigon. Subordinate to the 3d RRU, the 101st Company received an expanded mission reaching throughout Southeast Asia as well as Vietnam including advisory and training support to the RVN Army.

(FOUO) By the end of 1963, the Company was deploying as many as ten mobile teams. Although mobile monitoring team operations represented a major portion of the 101st Company's COMSEC operations, various problems in fielding the teams caused a loss of much effective monitoring time. Road transportation was difficult even when armed convoys were not necessary, and air travel was hard to schedule. Increased demand brought increased resources so that by early summer 1966, there were 63 men and 14 positions.

(FOUO) In view of the growing commitment of the US Armed Forces to Vietnam, ASA undertook a major upgrading of its organization in Vietnam in mid-1966. In place of the 3d RRU, it organized the 509th RR Group, a larger unit needed to support a field army. The SIGSEC mission of the 509th RR Group was to recommend COMSEC support policy through its two COMSEC representatives from the 101st Security Detachment on the staff of the J2, MACV and to maintain technical and operational staff cognizance over subordinate COMSEC elements. The 101st RR Company remained the primary COMSEC force within the 509th Group and along with the Company's elements at Pleiku, Long Binh, and Can Tho.

(FOUO) Due to the entry of major US tactical forces into Vietnam beginning in mid-1965, the role of the 101st RR Company was modified. ASA direct

support unit were assigned to each of the tactical commands to provide cryptologic support. These DSU's were attached at the Field Force, division, and brigade levels and provided the tactical commanders with their own COMSEC support. Normally, the DSU's presented their support plan to the commander for acceptance, who in turn tasked them to fulfill it. The 509th RR Group through the 101st exercised technical control to insure that the best COMSEC know-how and support was being provided. The two major DSU's were the 303d Battalion and the 313th Battalion which supported at the Field Force level. In the area of COMSEC, the battalions each had an authorized two officers and 26 enlisted spaces, operating from three to four positions and performing a wide scope of COMSEC analysis and advisory functions. Below the battalions were the DSU companies and detachments, the companies each with 1 officer and 18 men performing COMSEC responsibilities (two to five positions) and detachments with one officer and eight men (two positions). The 101st Detachment and its platoons were deployed throughout the four Corps areas supporting all MACV advisory teams, the 5th Special Forces Group, 1st Logistical Command, and all non-tactical commands not covered by direct support units.

(FOUO) The Vietnam SIGSEC organization remained basically the same until late 1969. Due to the personnel turbulence and the large number of major units to be supported in Vietnam, the 509th RR Group withdrew all SIGSEC operational resources from the DSU's and consolidated the resources within the 101st Company, which relocated from Saigon to Hq, II Field Force, Vietnam at Long Binh, on 30 March 1970. The Company was collocated with the 303d Battalion. The command elements of the 101st Company consisted of the headquarters, operations, training, maintenance, and supply sections. The Operations Command Platoon had a monitoring and analysis capability which was used

to support units in the Saigon area and the Delta Military Assistance Command (DMAC). The platoon also provided back-up support to any of the other three platoons, each of which was responsible for providing support to specific Army command and geographical area.

(FOUO) The 1st Platoon, with two teams located at Phu Bai with the 8th Field Station, provided SIGSEC support to all XXIV Corps units and other Army commands located in I Corps Tactical Zone (CTZ). The 2d Platoon with its two teams at Nha Trang was tasked to support I FFV and subordinate units as well as all other Army units in the II CTZ. The 3d Platoon, the largest of the three platoons with four assigned teams, supported II FFV and all other Army units in III and IV CTZ. This platoon was located with Hqs 101st Company at Long Binh. The platoons of the 101st Company, through liaison with their respective major supported Army commands, developed support priorities. Based on these priorities, the various platoons organized support teams which rotated periodically to the various units in their area of responsibility. In support of a combat division, a typical team provided cryptofacility inspections, Red/Black surveys, publication review, advice and assistance, and monitoring and analysis support. To provide full support to this Division, up to nine monitor positions could be used with the entire support mission lasting 30 days. A team consisted of three officers, one Red/Black trained noncommissioned officer, four additional NCO's, and 28 lower ranking enlisted personnel.

(FOUO) The reorganization of SIGSEC support in Vietnam, however, took one final phase. In accordance with the 509th RR Group OPORD 02-71, the SIGSEC resources of the Group were reduced and reorganized during the 3d Qtr, FY 1971. The 101st Company was authorized a strength of 111 spaces effective 30 September 1971

as opposed to its previous strength of 228. The 509th RR Group General Order No. 6, dated 6 February 1971, attached the 1st Platoon which consisted of three teams to the 8th Field Station; 2d Platoon with one team to Field Station Pleiku; and the 3d Platoon with its three teams to Field Station Bien Hoa. Under the new organization concept, the field station commanders had complete command and operational control of the SIGSEC platoons, including administrative and logistical support responsibilities. The SIGSEC Division at Hqs 509th RR Group maintained staff supervision and technical control over the platoons.

(FOUO) Early in FY 1972, it became evident that the SIGSEC capabilities of the 101st Company would not be needed in the near future with the drawdown of US Forces. Consequently, the 101st began to phase out after mid-August 1971 which limited the capability of the 101st to provide SIGSEC. During the nine months prior to the 101st Company's discontinuance on 1 April 1972, the COMSEC assets of the 101st Company were used sparingly. Upon discontinuance of the 101st Company, Hq USASA Pacific was assigned to provide COMSEC support upon request, but in reality, none was furnished due to the rapid drawdown of US Forces.

Confidential

[redacted]

WAR DEPARTMENT

OFFICE OF THE CHIEF SIGNAL OFFICER
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FINAL REPORT

OF THE

RADIO INTELLIGENCE SECTION, GENERAL STAFF
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AMERICAN EXPEDITIONARY FORCES

SIGSEE

Roy R. Plumley

TECHNICAL PAPER

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Fig 13

2. Goniometric service.—This service has for its object the location of enemy radio stations and their grouping so as to show organization limits.

Stations are established at suitable intervals along the front and charged with obtaining bearings of all stations active during the day.

These bearings are transmitted several times daily to Army Headquarters where stations are plotted on a map.

Lines are then drawn from each station to all others with which it communicated during the day.

So long as each station exchanges messages with those at the next higher or next lower headquarters a very good idea of the enemy battle order can be obtained by a study of the map so prepared.

The several schemes adopted by the enemy to lessen the value of this service are discussed in paragraph A-2 of Part II.

3. Aeroplane service.—This service reaches its highest value in a fairly quiet sector in trench warfare. In a very active sector it is still useful. In a war of movement it appears quite useless.

The general plan of work should be to provide one or more stations to listen constantly for aeroplanes and when one is heard to notify the field goniometric stations of its call. The goniometric stations will then take simultaneous bearings at regular intervals reporting them by direct wire or radio to one of the goniometric stations designated as "control stations." The control station will determine the location and direction of flight of the aeroplane and will notify the Army Radio Intelligence Officer who in turn sends a warning to the designated pursuit squadron of the Air Service.

In the meantime the station designated to listen for aeroplanes will copy all signals transmitted and inform the Army Radio Intelligence Officer, whenever possible, of the enemy batteries about to fire and the area about to be shelled. This information is passed on to the counter battery officer or the troops about to be shelled as the case may be.

Owing to the doubtful value of this service, the small amount of work required at General Headquarters, and its close relationship to the goniometric service, the goniometric officer is charged with its supervision in addition to his other duties.

4. Press service.—For copying official bulletins and press dispatches of various governments a "press station" should be provided at the headquarters of each army and at General Headquarters. The messages are turned over directly to an officer designated by the Chief of G-2, A. This section acts only as liaison between the Signal Corps and G-2, A, for this service.

5. Translation and classification of enemy documents.—This service translates and extracts from enemy documents information in regard to signal communications in general and radio procedure and the use of code and cipher in particular.

Lists showing conventional radio, light, and other signals, are published from time to time and distributed to those interested.

Information of interest to the Signal Corps is furnished directly from this office.

6. Receipt and distribution of documents—Procurement and care of office equipment. This service receives and distributes all documents, incoming and outgoing, of the section, and arranges for the procurement of supplies and office equipment.

7. Security service—Listening stations.—This service, through radio-control stations established by the Signal Corps, receives copies of all radio messages transmitted by American stations. Assuming them to have been copied by the enemy, they are examined to see what information might have been obtained. Faults in transmission and misuse of code are brought to the attention of those concerned and an effort made to prevent a repetition.

The Signal Corps assignment of call letters to radio stations is examined and any faults in the system liable to give information to the enemy pointed out.

Instructions for the assignment of code names to organizations and places are issued to troops and the use of such code names supervised with a view of preventing the giving of information to the enemy.

Listening-station reports are examined with a view of determining whether or not information has reached the enemy through indiscreet use of telephone or earth-telegraphy at the front. Misuse of these means of communication is reported to commanders for appropriate action.

Extracts giving enemy messages copied by listening stations are furnished the code and cipher section.

Arrangements are made for "listening in" on trunk lines from Corps, Army, and General Headquarters for the purpose of detecting and reporting use of telephone for transmission of indiscreet, trivial, or personal messages.

The security officer has representatives especially trained for the work at Army, Corps, and Division Headquarters.

At brigade, regimental, battalion, and company headquarters, officers are detailed by organization commanders to supervise the security service under instructions from security officers at higher headquarters. These officers are expected to perform their regular duties in addition to supervising the security service.

8. Policy regarding preparation and use of trench codes.—The work of preparation of codes and ciphers is handled by the Signal Corps after consultation with this section.

Distribution lists are furnished the Adjutant General who has the books distributed as requested.

9. Training of listening-station operators.—The technical instruction is given by the Signal Corps. This section gives only general instructions as to the purpose of this service and examines operators as to their ability to speak the enemy's language.

10. Policy as regards carrier pigeons.—The carrier-pigeon service has no connection with the work of this section. The determination of policy should be left to G–4, and this section relieved of any duty in that connection.

11. Reports.—The following reports are considered necessary:

(*a*) Copies of all tactical messages in code or cipher. Prepared by code section at G.H.Q. Distributed as required to code officers including those of Allies and at our War Department.

(*b*) Keys for solution of tactical codes and ciphers. Prepared by code section at G.H.Q. Copies to code officers and to radio intelligence officers of Armies.

(*c*) Naval, diplomatic, and miscellaneous codes and ciphers, and keys for their solution. Prepared by code section at G.H.Q. Copies to code officers.

(*d*) Daily code section reports. Shows all messages decoded during the day. Copies to Chief G–2, A, to Battle Order, and to Allies.

(*e*) Weekly code section report. Gives new methods of attack of enemy messages, new devices adopted by the enemy, and any notes of interest in regard to activity or use of particular codes or ciphers. Also gives a brief summary of the work accomplished by the code section during the week. Prepared by the officer in charge of codes and ciphers. Copies to Chief G–2, A, and to War Department.

(*f*) Daily radio intelligence report. Gives any information of special interest in regard to the day's work. Prepared by the Radio Intelligence Officer at G.H.Q. Copy to Chief G–2, A.

(*g*) Special radio intelligence report. Gives identification of enemy units and other useful information obtained from decoded messages. Prepared by Radio Intelligence Officer at G.H.Q. Copies to Chief G–2, A, and those interested.

70312—35——2

In the fall of 1917, the advice of officers of Allied armies was asked in the matter of our own organization. We were strongly advised to provide our own personnel and equipment complete without reference to the Signal Corps.

As this action would cause much unnecessary duplication and as the Signal Corps had officers and men with technical knowledge and experience, which we could hardly hope to duplicate, it was decided to ask them to furnish equipment and the men required for its technical control.

This decision has been amply justified by the result and no change is recommended.

It should be pointed out, however, that the closest relations between the Signal Corps and this section are essential. At General Headquarters and at the headquarters of each army there should be a Signal Corps officer with authority to act for the Chief Signal Officer to whom this section can go directly with requests for service of any kind. It is also important that the Radio Intelligence Officers at General and Army Headquarters be so familiar with Signal Corps work that, while making no unreasonable demands, they will take full advantage of the latest advances of science and allow no useful powers to deteriorate through lack of use.

13. Peace-time organization.—One of the greatest difficulties of this section was the finding of men suitable for the work.

Codes were almost unknown in our own army. The importance of care in their use so as to maintain their secrecy and avoid giving information to the enemy was entirely unappreciated. Previous to and during the St. Mihiel and Argonne-Meuse Battles, a great amount of valuable information was furnished the enemy through carelessness of our own officers and men in the use of code.

The following indorsement will illustrate the effort made from this office to insure care in the use of code. The fact that such efforts were largely unsuccessful was due to the almost total ignorance of officers in the matter of code and the difficulty of exercising control through commanders, who had neither the time nor the special knowledge required for the purpose.

3D IND.

Adjutant General, American E. F. Sept. 17, 1918.—To Commanding General, 1st Army.

1. Returned.

2. Steps will be taken to learn who was responsible for the misuse of code, brought to your attention in attached letter of September 7th.

3. Since the organization of the 1st Army, the 1st Army radio stations and telephone operators have furnished information of vital importance to the enemy, in regard to your battle order, the organization of your divisions, the location and form of training of divisions in reserve, the location of heavy artillery and tanks while preparing for the attack, and the date the attack was to take place, as nearly as it could be ascertained by the telephone operators. Your attention has been called, by letter, to many cases of criminal carelessness in the use of our code and the transmission of messages in clear, or in a mixture of code and clear. Even messages entirely in code have, in general, been so carelessly prepared that the enemy will have no difficulty in solving the code.

4. You are directed to conduct a rigid investigation in all cases of reported misuse of code, to take necessary steps to correct such misuse, and to bring to trial officers who willfully violate existing orders and instructions printed in the code book.

By Command of General Pershing:

Adjutant General.

The remedy is thought to be the systematic instruction of our officers in time of peace and the placing of representatives of this section at all company and higher headquarters in time of war.

Small tactical code books should be prepared and frequently revised and republished. They should actually be used by student officers at the Staff and Line Schools.

In the matter of radio instruments, the present tendency toward continuous wave field sets of low power with sharp tuning and highly directive antenna will greatly increase the difficulties of unauthorized interception.

While one is forced to admit the apparent success of the directive antenna, I am convinced that electrical disturbances in any direction must produce reaction in all other directions. Just what form this reaction will take and how it can be detected is for the Signal Corps to find out. Experiments along this line should be conducted at the school in connection with the instruction in radio intelligence work.

The whole radio intelligence service should be organized and used as a training school for as many officers and men as can be supplied and should be charged with the duty of keeping posted on the advances made by foreign governments and adapting our own organization to conform to the latest inventions for transmitting or intercepting messages of all kinds.

If this is done we can hope to enter the next war with our organization fairly well perfected at its beginning instead of at its end.

14. Army organization.—This question appears sufficiently covered in paragraph A–14 of Part I.

B. PERSONNEL

1. General Headquarters.—It is assumed that in case of operations even of a single army, either in our own or a foreign country, there will be organized an advance or General Headquarters, the location of which will be more permanent than Army Headquarters. Should this not be the case the personnel recommended for General Headquarters should be located in Washington and work under the supervision and control of the appropriate subsections of the General Staff.

In no case should the personnel be assigned to Army Headquarters. Their records and equipment are too bulky and the personnel too numerous to be readily moved while the necessary interruptions of work due to frequent moves will injuriously affect the work of the section.

(*a*) The officer in charge should have some knowledge of codes and ciphers and be thoroughly familiar with the powers and limitations of the Signal Corps. He should spend a large part of his time with the armies and maintain personal contact with the representatives of the Signal Corps and other services, who assist in or profit by the work of the section.

(*b*) The assistant to the officer in charge should be familiar with all phases of the work and be ready to take full charge of the office at any time.

(*c*) The officer in charge of code and ciphers should be familiar with all the usual methods of encoding and enciphering and should be capable of devising solutions applicable to any new or special methods adopted by the enemy. On this man more than any other will depend the successful reading of enemy messages. The most careful consideration should be given the matter of his selection.

(*d*) Code men, officers, and clerks should know the enemy's language. Before being sent to the front they should be carefully examined in the code section at Washington as to their suitability for code work. In case of doubt the applicant should be rejected. The officers in particular should possess to a high degree ability of independent thought and original research.

(*e*) While a knowledge of the enemy's language is not so essential for cipher as for code men, it is very desirable and no efforts should be spared to obtain suitable men familiar with the

in one of the messages would have made the others useless. The American operators are the only ones who copied all three messages with sufficient accuracy to be useful.

On the afternoon of April 24, a message intercepted from the St. Mihiel Sector announced that an attack had been postponed on account of bad weather. At 1:25 p.m. and again at 1:52 p.m., April 25, messages were received ordering batteries to be at absolute attention and announcing that the barrage signal would be "BLUE." Troops were notified and took the necessary steps to meet the raid which took place that night.

At 9:05 p.m., April 28, a message ordering an attack for 1:00 a.m. was intercepted, telegraphed to this office, decoded, and the troops warned. Warning reached them thirty minutes before actual delivery of the attack. Without a well-organized system for copying and transmitting these messages this information would have been too late to be useful. It should be noted that in this case as in others the Signal Corps operator had no knowledge of the important nature of the message.

On June 14, 1918, a German message was intercepted stating that the enemy (French) was preparing an attack and giving instructions for meeting it. The French were notified. We were later informed by the French that they had planned an attack at the designated point and that on our information that the Germans were prepared to meet it, they had taken necessary action.

The goniometric, like the intercept service, has done excellent work. In spite of daily changes in call letters of enemy stations your goniometric stations have made daily location of nearly all enemy stations. The care and accuracy shown by operators has enabled us to follow the movements of enemy stations with precision and certainty. From such movements it has been possible to get much valuable information, obtainable from no other source, in regard to enemy intentions.

One case in particular deserves notice. Just before the American attack on the St. Mihiel Salient there were many indications that the enemy had withdrawn and the advisability of advancing the infantry without artillery preparation was seriously considered. The final decision to make the attack as originally planned was based on the evidence of the goniometric service that enemy radio stations were still active in their old locations.

The aeroplane stations have done their part. By reporting the location of aeroplanes registering for the enemy artillery they have enabled the air service to interfere with many hostile "shoots."

The telephone listening stations have furnished much valuable information in regard to the enemy. Perhaps the greatest value of these stations, however, has been their reports of American telephone conversation. By their conscientious work in reporting indiscreet American conversation they have done much to limit the information given the enemy by means of our own telephone.

Numerous memoranda and reports inviting attention to the work of individuals have been furnished you. It is not thought necessary to repeat these, but it is desired to express special appreciation of the work of two officers who have worked in close liaison with G–2.

Lt. Col. L. R. Krumm, Signal Corps, has, by his careful study of the needs of this section and his untiring efforts to meet these needs, been of the greatest service.

Maj. Robert Loghry, Signal Corps, who has had charge first of the Radio Section, First Army, and later of the group of armies, has, by his energy and enthusiasm, kept up the interest of his men and made the Radio Section of the Signal Corps a live progressive organization. When the section was short of men and equipment he arranged with the French Armies to help. He has maintained continuous and friendly relations with the French radio men ever since the organization of the Radio Section. The fact that during the past year there has been no case

of friction between the French and American services and no instance in which either has failed to help the other when needed is due very largely to the tact and good judgment of Major Loghry. In his relations with this section and the members of a foreign army Major Loghry's actions have been a credit to himself and the service he represents.

D. E. NOLAN,
Brig. Gen., Gen. Staff, A.C. of S., G–2.

The members of the Radio Intelligence Section, many of whom were selected from divisions because of their special abilities, have seen their less-gifted companions promoted ahead of them. They have accepted the situation because they were informed it was for the interest of the service. The natural desire of young men for more active service has been restrained for the same reason. There have been many applications for transfer to duty with troops, but in every instance where it was deemed desirable to retain applicant in this office, application was voluntarily withdrawn after the situation had been explained.

That there has been no case of lack of discipline requiring action of higher authority is due entirely to the high sense of duty of the members of this section and their sincere effort to meet all requirements.

The men of the Radio Intelligence Section have worked cheerfully and faithfully without regard to hours and have given their Government the very best they had of brains, energy, and good faith. Their Government is indebted to them for faithful service and I am proud to have served as one of them.

FRANK MOORMAN,
Lieutenant Colonel, General Staff.

ENCLOSURE G

(Report of Security Subsection)

United States Army Trench Code.—The Trench Code now in use by our Army is a production based scientifically upon the actual solution of enemy Trench Codes; thus giving a practical code, that can be used as the best means of wireless communication with absolute security, but it is not "fool proof."

Actual use of our code has shown that, after all the care of producing a scientific, practical, and secure code, it is used very carelessly and thoughtlessly in the field. This abuse of the Trench Code has in nearly all cases been due to the offenders' lack of knowledge of the use of code as a means of communication. It is, therefore, absolutely essential that before a man uses code, he must be thoroughly familiar with all fundamental principles of code and with the means of communication he is going to use.

While General Orders and instructions given in the code book thoroughly cover the questions regarding the proper use of our Trench Code, it has been found that a strict surveillance of the actual use of the code is necessary to maintain discipline and to keep our code reasonably safe from enemy solution.

This surveillance of the actual messages sent by wireless is carried out in the following manner: A number of radio intercept stations are installed along the entire front occupied by our Armies. The duty of these stations is to intercept our Trench Code only. These are known as "Control Stations" and their sole purpose is to intercept all American messages which have been sent. The messages thus intercepted are sent in to the Control Officer. This officer must be thoroughly familiar with Trench Codes. He must be able to detect all infractions of instructions and General Orders covering the use of Code and Cipher. He must be able to suggest the best methods for using Trench Code and be so qualified that he can criticize intelligently and thoroughly the manner in which our Trench Code is being used in the field. His further duties are to see any weaknesses that make the present form of Trench Code vulnerable to enemy code men, and make recommendations in this way for improvements and corrections. In order to properly criticize and to detect any faults and weaknesses, the Control Officer must place himself in the position of the enemy code man and study our messages from the enemy viewpoint.

When messages are received by the Control Officer they are decoded and if any violations of General Orders or instructions are found in the manner in which a message has been encoded, a letter is sent through military channels to the officer commanding the unit in which the message originated, over the signature of the Commanding General. The officer commanding the unit concerned is requested to make an investigation and report the action taken in each case to General Headquarters.

A complete record is made of the original messages. The individual groups are recorded alphabetically or numerically as the case may be. This recording shows the frequency of recurring groups in the code and valuable information is thus obtained as to the deficiencies of the code in general and how these deficiencies may be corrected. From the statistics gathered in this way it will show whether or not the proper use of the alternate code values for a single word, letter, number, or phrase are being used and if null groups are being used in proper propor-

tion. One of the chief violations of instructions has been the insufficient use of null groups and second to this is the neglect of using the code variants.

Prompt and strict measures are taken when a message in the clear is intercepted. Documentary evidence proves that the enemy gained valuable information concerning our order of battle, etc., due to the carelessness in sending of clear English radio messages by operators and officers. Whether the message is of tactical value or merely irresponsible conversation does not matter, the enemy can make valuable deductions in all cases.

Recommendations for the improvement of the control service.—Due to the cessation of hostilities before all plans of the security service were put into operation, the following recommendations are made on a basis of probable practicability, but have not been put into actual operation:

1. Not only should the security service be an integral part of the section which is working on the solution of enemy codes, but the work of compiling trench codes should also be a subdivision of that section. In the past, suggestions for the improvement of our code were handled by means of memoranda in a more or less formal manner. Closer personal liaison and discussions would be more advantageous, as would also authority vested under one head.

2. During the war, messages were encoded by officers who were attached to the various headquarters, but whose duties were numerous besides that of encoding messages. The result was that very few officers were sufficiently acquainted with the importance of encoding properly, due to the fact that these officers were being continually changed, and evidently could not devote enough time to a thorough study of code work.

These difficulties could be overcome if the duty of encoding messages and having charge of the code book were assigned to the operator of the radio station. This system was used by the German army, and judging by our difficulties, was evidently quite successful. Stricter discipline, due to more direct action, could thus be maintained. Since the code book would then be continually at hand near the station, instead of in some officer's pocket not at hand, the sending of messages and decoding of messages received, would be greatly facilitated.

3. The security officer should control radio activity by means of issuing orders as to the number of messages to be sent by each station. Since the enemy makes deductions, based upon our radio activity, it is necessary to regulate the activity in such a manner as to mislead the enemy. Stimulated activity will ordinarily attract the enemy's attention to that sector, as will unusually low activity. It is therefore possible to divert his attention to a certain sector, while active operations are undertaken in another sector.

4. A strict surveillance of lateral liaison is necessary. By the term "lateral liaison" is meant the sending of messages between the forward stations of neighboring divisions. This will prevent the enemy from discovering, through accurate locating of our stations, the locations of divisional and Army boundaries.

Control of telephone lines.—In connection with the duties of the officer in control of the U. S. Army Trench Code should be added that of controlling and censoring long distance telephone conversation, known as the "Security Service".

Telephone control consists of a listening-in set, installed in the office of the control officer, which is connected to the main test board. Thus by calling the test board operator the listening-in set can be connected to any one of the long distance lines coming through the main telephone exchange.

A stenographer is detailed to listen in and report all conversations relating to troop movements, supplies, etc., and any other information given over the telephone which may be of any value to the enemy. The stenographer is also instructed to report any conversations relating to matters which may have been transmitted by telegraph. Matters of trivial nature are also reported. The latter conversations are eliminated so as to free the telephone lines of unnecessary traffic.

A schedule is made comprising all the long-distance telephone lines. The schedule is so arranged that the listening-in set is connected to the different lines during their busiest periods of the day. This schedule can only be arranged properly after about 2 weeks of tests on the different lines in order to learn at what hours their busiest periods occur.

Intercepted telephone conversations which contain any violations of telephone censorship are copied and brought to the attention of the offender through military channels.

The following notice is given on the first page of the telephone directory.

Important notice.—Before using the telephone make yourself thoroughly familiar with G. O. No. 10 (1917), and G. O. No. 146 (1918) these headquarters.

Your conversation is very likely to be overheard by the enemy "Secret Service" and our own "Security Service." Both of these organizations are continuously on duty. The first is looking for any scrap of information as to organization, plans, movements, etc., of Allied troops, and any other information of value to their own government. The second will, in addition, report use of long-distance lines for unimportant or unnecessary conversations. Remember that long distance lines are seriously overloaded. The building up of telephone circuits for some trivial purpose takes time and delays the transaction of important business.

By command of General Pershing:

JAMES W. MCANDREW,
Chief of staff.

Official:

ROBERT C. DAVIS,
Adjutant General.

After the above means of prevention became thoroughly understood the violations were comparatively few.

E. H. FALK,
1st Lt., F. A.

E. D. WOELLNER,
2d Lt., Inf.

APPENDIX B

Provisional Radio Intelligence Detachment,

Fort Monmouth N. J.

UNCLASSIFIED

October 15, 1934

Subject : The peace time development of the Signal Intelligence Service

To : Lt. Col. G. L. Van Deusen, Recorder Signal Corps Board Fort Monmouth New Jersey.

1. In compliance with your verbal request that I submit my thoughts on Signal Corps Board Case No. 200 on the above subject, the following remarks are hereby tendered:.

a. Personnel

(1) Composition of detachments.

G.H.Q. Detachment.

1. Officer in charge (graduate of Cryptographic School O.C.S.O.)
1. Supply clerk.
1. Detachment clerk.
1. Radio electrician.

Intercept section.

1. Chief operator.
6. Operators, intercept.
2. Operators, com. security.
2. Operators, recopyists (tape, record, manual)

Goniometric section.

1 Chief operator.
1. Plotter and statistician.
1. Telephone electrician.
6. Goniometric operators.
3. Men ofr truck transmitter. (2 operators 1 utility.)

Code and Cipher solution section.

2. Civilian cryptanalists (1 to act as asst. to O.I.C.)
10. Cryptographic Clerks.

Total, 1 officer, 2 Civilians, 36 Enlisted men.

The detachments to be established in the Philipine and Hawaiian Departments should be essentially the same as the G.H.Q. unit due to their isolation.

The Eighth and Ninth Corps Area detachments should be smaller, cutting out almost entirely the code and cipher solution sections. 2 cryptographic clerks would be sufficient, and their time spent on preparing messages in the form required by the Washington or G.H.Q. Code and Cipher Solution Sections.

Technical and tactical control of these detachments should be direct from the office of the Chief Signal Officer in Washington through the Corps Area and Depart-

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ment Signal offices concerned.

There remains the advisability of establishing a small Secret Ink laboratory as part of the G.H.Q. Philipine and Hawaiian detachments. If so, an additional civilian chemist should be added.

The civilians mentioned should all be trained in the office of the Chief Signal Officer and should be reserve officers.

(2) Training to be given this personnel

The officer in charge and the civilians of these detachments should be trained in Washington, as well as at least half of the enlisted men in the code and cipher solution sections.

At least half the radio operators should be first class operators and the remaining operators should be the equibalent of second class commercial operators, all trained for touch typing.

The intercept section should work on a 24 hours basis, charting the entire radio spectrum, and copying all foreign government messages, either manually or on high speed recorders. They should be trained in the keeping of necessary records and recognizing and copying the kind of material required, and in reading tape signals.

This material is then turned over to the Code and Cipher solution section for training in solution. It is very essential that there be represented in this section a specialist in each language most often encountered.

The goniometric section works on specific missions assigned to it by the officer in charge. It is trained in the use of all types of direction finders available, the plotting and the keeping of detailed records on all stations within the frequency ranges of the sets, the location and calibration of direction finders positions, the variations in daytime, nighttime and seasonal bearings on the same stations.

The communication security unit is made a part of the intercept station and its two operators concentrate on domestic stations and the stations of our own government.

b. Equipment;

(1) The main items of equipment that should be provided these detachments are as follows:

1. Equipment: Intercept ~~Equipment~~, radio, recording, high speed, U.S.A. Spec. 171-46 (This is the present type of tape recorder) It consists essentially of 2 short wave receivers type BC.158, 2 long wave receivers type BC 159, 2 ink recorders type BC 161, 2 tape pullers type MC-110, and necessary batteries and charging equipment. In order to modernize this equipment and bring it to the most efficient point the following changes are necessary: Eliminate the 2 BC-158 and 1 BC-159 receivers and add 4 National Receivers commercial type AGS-X; substitute 2 ink recorders commercial type 4-G, made by H.O. Bochme Co. Inc. N.Y. in place of the present type.

2. Equipments, message recording and reproducing, USA Spec-171-46 (Dictaphone type already in use.)
2. Tape pullers, type MC*110(in addition to above)
1. Clock 24 hour dial.
4. Typewriters, telegraph, underwood.
1. Typewriter office Underwood.
1. Set Berne Bureau publications.
1. Set charts and maps of the world.
1. Frequency meter set. type SCR- 196.

Direction Finding Equipment

5. Radio receivers and transmitters type SCR-163A, for radio communication between direction finder stations, control point and target.
1. Radio Transmitter of each type available to cover the radio spectrum from 100-15000 Kc., and capable of being transported on a truck and set up at frequent intervals.

4. Direction finders, type SCR-206 (or type SCR 172 with additional loops and tuners to cover the band 50-12000 Kc).

1. Universal Drafting Machine, mid anchor type.

1. Chest, combination, drafting, M-1922.

6. Telephones, special (experimental models only, exist at present)

6. Telephones, type EE-5.

1. Switchboard type BD-11.

6. Transmitters, operators, w.e. #234 -BW

1. Transit, engineers

1. Pole, ranging, 6 ft. 2 sections, metal, with case.

1. Tape steel,100 ft.

11. Arrows, steel, 10".

1. Cart reel type RL-16.

10. Mile s of wire, type W-110.

1. Climbers, Equipment type TE- 21.

Code and Cipher Solution Equipment.

10. Devices, Cryptanalytic.

2 Typewriters, Underwood telegraphic.

1. Typewriters, Underwood, Office.
1. Library consisting of necessary books on Cryptography, Cryptanalysis, Commercial Code Books.
Supply of blank forms.
Supply of Scripto pencils with leads of assorted colors.

General Equipment.

1. Tool set, type TE-11.
1. Test set, type I-56.
1. Typewriter Underwood, office.
Necessary spare tubes, headsets, equipment for storage battery maintenance.
14. Watches, wrist.

(2) Research and development.

(a) The special telephone used with direction finders should be developed further which allows the same headset to be used for hearing radio signal and telephone signals, and allowing the radio signal to be cut in on the line.

(b) A light trailer should be developed which would be capable of allowing a direction finder to be mounted permenantly therein, and large enough to allow room for 2 operators. It should be light enough for the 2 men to move it easily and hence should be made of wood and aluminum. The latter would also prevent undue magnetic deflection.

(c) An automatic device which would start a recording unit for any given combination of dots and dashes.

(d) The purchase and test of new multiplex recorders now in use by the RCA.

(3) Items of Transportation necessary:

4. Trucks cargo 1½ ton. (or 2 trucks and 3 trailers of a type to be developed.)

Mark Rhoads
1st Lieut Signal Corps
Commanding

Mississippi Manoeuver Aug. 1938

Notes on the Activity of the Radio Intelligence Detachment

The work of radio intelligence units should be discussed under three separate headings:

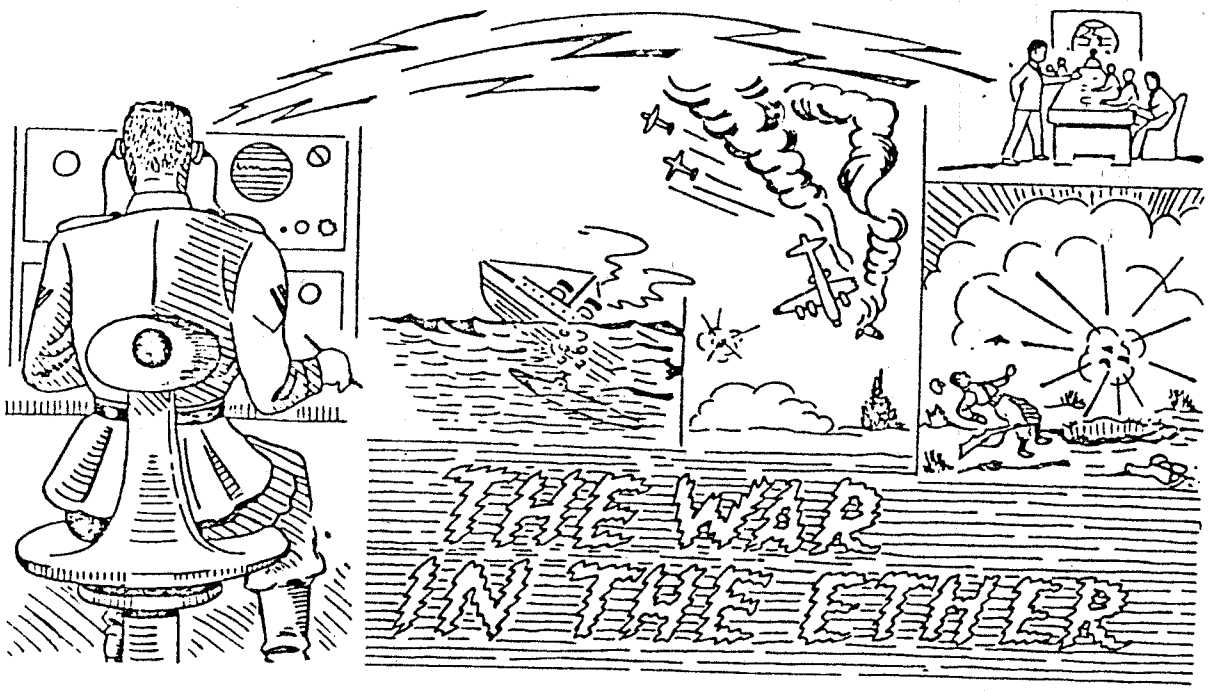
1. Interception of enemy traffic
2. Monitoring of friendly traffic
3. Radiogoniometry

1. Interception of enemy traffic. Because this is the most important phase of radio intelligence, the two sets which were available to the RID were kept continually on such activity except for a period of not quite two days, during which time one of the sets was employed in monitoring our own traffic. The totality of material intercepted was 37 messages of which 23 were in code. Of the remaining 14, several were service messages relating to procedure. There is good reason to believe that this represents a fairly large portion of the total amount of material transmitted. Furthermore, it indicates very plainly that in a major action over a wide front wherein we would set up several intercept stations, there would be obtained a sufficiency of material to permit the cryptanalytic service to break down the code and read the enemy's communications.

2. Monitoring of friendly traffic. During the short period given to monitoring our own services (one set listening in for not quite two days) there were intercepted 17 messages of which only one was in code. The considerable increase in the amount of material obtained is largely due to the fact that the operating frequencies were known beforehand. However, it was obvious that entirely too many messages were being sent in clear. Indeed, some of these clear messages were of tactical importance. When this information was conveyed, through channels, to the higher command, it brought about a considerable improvement in our radio procedure of sufficient importance in itself to justify the existence of the RID.

3. Radiogonometry. The results obtained in this direction were disappointing. However, it has long been known that radio direction finding is of value only as a check on information otherwise obtained Moreover, it is out of place in any highly mobile combat, such as that in which we were engaged. Satisfactory results in radiogoniometry demand a fixed installation over a very long base line, neither of which was available to us.

It might be observed in conclusion that the findings of the RID would indicate a need for more intensive training of radio personnel, especially as regards procedure. The radio operators who served the Div. are not familiar with standard radio procedure and lose considerable time in sending long sentences which can be replaced by a 3 character symbol. Another finding to be stressed is that staff officers do not give sufficient attention to the wording of their messages. The messages are frequently too verbose and can be cut down as much as 1/3 without any loss of meaning. This failure introduces a time loss that may prove significant in periods of considerable radio activity.



For Official Use Only

The Fellers Incident

How slight and unimpressive are often the initial causes which lead to great changes in the course of events! How our picture of great men varies according to what we know about them and the point of view from which we regard them! How easily the fame of great generals grows pale when we know the secret of their successes!

(Author's comment)

Any history of World War II will doubtless mention one name on the German side with particular respect: Rommel! This name has become a symbol of German generalship. In the deserts of North Africa he and his men won astonishing victories and boldly chased the British to the gates of Alexandria. Actually he wanted to chase them further: out of Alexandria, across the Nile and across the Suez Canal. But suddenly his victorious march stopped. At El Alamein, almost within sight of Alexandria, it was suddenly all over.

What had happened? What was the secret of his unexampled victories, and what was the secret of their sudden cessation? There is no question but that in Rommel's case we are dealing with a man of great energy and distinguished military capacity. It would have been hard to find a better general in 1941 when it became a question of stopping Wavell in Africa. In the fall of 1940 the Italians had crossed the Egyptian frontier and advanced to Marsa Matruk but had been forced to halt and had gone over to a war of position. On 9 December 1940 General Wavell started his offensive against the Italians and by mid-March 1941 had thrown them back to the border of Tripolitania.

Translated by Dr. Ray W. Pettengill from original German manuscript by Wilhelm F. Flicke

Meanwhile the Germans decided to help the Italians. The German "Africa Corps" was formed and transported to Tripolitania and General Rommel assumed command over all German and Italian forces in Italian North Africa.

Rommel went to work with great energy. On 24 March 1941 with his Africa Corps and some fresh Italian divisions he attacked the British, who were weakened by three months of combat and an extremely long supply line, and within 18 days drove them out of Cyrenaica. However, approximately on the line Sollum-Djarabub the operation came to a standstill and from early April 1941 on the front was generally calm. Nothing noteworthy occurred. At least, nothing outwardly noteworthy. In reality, something was being prepared quietly which belongs among the most interesting chapters in the history of this war.

A certain Fellers, whose military rank I do not recall and whom I shall therefore call by name only, was stationed in Cairo as United States Military attache. Experience has shown that when many people suddenly display a lively interest in a new field of endeavor they merely cause mischief. Fellers had come to Cairo; the significance of the North African Theater had been stressed by Rommel's actions, and the entire Near East seemed about to become the focal point of the war. For an ambitious young man that seemed to be just the right post. So Fellers decided to act. But how can a military attache act? He writes reports. And how are these reports conveyed nowadays? By radio.

So Fellers set to and sent one radiogram after another to Washington. Reports on the political situation and above all else, reports on everything connected with military preparations and operations. They were enciphered, of course, but the death of any cryptographic system is found in its frequent use. All Fellers' radiograms were intercepted by the Germans. They bore the address "milid wash" or "agwar wash" and hence were easily recognized. By early July the system had been solved in essence and parts of the messages could be read. They proved to be a mine of important information. Fellers reported to the War Department in Washington regarding the reenforcement of British forces in Western Egypt, regarding their equipment with modern arms, regarding each transport of war materiel that arrived and regarding the withdrawal of the Australian Ninth Division from Tobruk, its replacement by British and Polish units, and regarding preparations for an offensive with the aim of encircling and annihilating the Axis troops.

All these reports were passed currently to General Rommel who was able to plan correspondingly. The reports were not complete, to be sure, for the cryptographic system had not been solved in its entirety, but they were adequate to keep Rommel posted. Hence it was no surprise to him when in the grey dawn of 18 November 1941 the British offensive under General Sir Alan Cunningham broke loose along the entire front. Rommel had made good preparations and was able to hold his front for a time. He could not prevent the British from making a break south of Sidi Omar and thus throwing the southern part of the Axis front off balance.

He was able to send an Italian armored division which met the British thrust at Sidi Rezegh and Bir el Gobi.

On 19 November the British took Sidi Rezegh and on the same day Churchill proclaimed the impending destruction of the Axis troops in North Africa. Both sides brought up all the troops they had. Slowly but surely the British drew a ring around the Axis divisions. Nevertheless, despite all tactical successes, it seemed that the first onrush of the British had not achieved decisive results. Wherever the British started an action, Rommel immediately sent forces to oppose

them. He even sent a column behind the British in the direction of Halfaya and broke their connections. He always did the right thing at the right time. Small wonder, for in each phase of the battle he knew the grouping and the intentions of the enemy.

Fellers was sending one telegram after another to Washington. He fairly outdid himself in his reporting. He ranged all over the battle area, saw and heard everything, knew all preparations, every intention, every movement of the British forces and transmitted it all to the United States. The German intercept station promptly copied his message, sent it by teletype to Berlin where it was deciphered and sent by the speediest possible route to Rommel. That took only a few hours. By now the system had been completely solved.

The British were much surprised. Preparations for the offensive had been so thorough that the destruction of the Axis troops in the very first phase had been considered certain. Something did not click. General Auchinleck, Commander-in-Chief in the Near East and Wavell's successor, flew from Cairo to Cunningham's headquarters and on 26 November relieved him of his post. A young general of 44 years, General Ritchie, was appointed commander of the British Eighth Army.

The Battle of Sidi Rezegh continued. Rommel was trying to break the British ring both from within and from without. The garrison of Halfaya Pass maintained its position and forced the British to transport their supplies across the desert. On 6 December Rommel began regrouping his forces. He had recognized a weak point in the British encirclement and on 8 December he pushed toward the west, disengaging his troops without being detected. Before the british recovered from their surprise he had escaped. On 11 December Churchill stated in the Lower House that the Libyian Campaign had not gone as expected.

In the days that followed, the British occupied several towns and captured some 25,000 men. Meanwhile Rommel had established his units near El Agheila and received dependable information regarding his opponent (Fellers had seen to that). On 21 January he advanced 16 km into the British line with three armored columns. The British were taken by surprise and had to retreat. On the 27th Rommel was north and northeast of Maus. On that day Churchill declared "We are facing a very bold and clever foe, and I may well say - a great general!"

On the 29th Benghasi was taken. Rommel was promoted to Colonel General. On 10 February operations came to a standstill 100 km west of Tobruk. Rommel was not strong enough to break through the new defensive front of his opponent. Moreover, Fellers had failed him; he had lost contact and had to get oriented anew. That took a certain amount of time. Till then he could supply no useful information. Rommel waited for reports; they did not come.

A pause in the fighting ensued. Rommel received reenforcement and supplies. For the second time OKW turned its glance toward the Near East. Rommel was to be made so strong that he could drive to the Suez Canal - yes, he was to go beyond Jerusalem and Damascus and upset Northern Arabia and Iraq.

The German offensive from Southern Russia was to roll over the Caucasus, over northern Persia. Near Bagdad or Mosul the two armies were to meet. The days of British predominance in the Near East appeared to be numbered; the great British lifeline through the Mediterranean and Red Sea was to be cut. Once the oilfields of the Caucasus and Iraq were in German hands, the hour of final victory would be at hand.

A gigantic plan. And it appeared capable of execution. OKW already was

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issuing dozens of orientation pamphlets for the troops. On Iran, Iraq, on Syria and the Arabian peninsula, on Trans-Jordan and Palestine, yes, even on Afghanistan and India. Perhaps the day was not far away when the Germans could shake hands with their Japanese allies. The brigade "Free India" was set up and trained. Compared with this operation, the campaign of Alexander the Great would some day appear very modest.

Now there was excellent information once more regarding the situation in North Africa. Fellers had found his speech again; he wrote until his fingers were sore. He radioed everything he could discover. The German operators were listening. Again and again messages to "milid wash" and "agwar wash" were received. Two great stations had both been copying these messages since the beginning of the year in order that none should be missed and their intercepts were transmitted as "urgent" by direct wire to Berlin.

I should like to illustrate the precision with which the Germans were working. The British had carefully planned and prepared an action against Rommel's airfields. They meant to drop parachutists during the night who would destroy everything by means of the explosives they took along. The action had been so carefully planned that it could not have failed its objective. Fellers, radiant with joy, radioed this to Washington. The message was sent about 8 a.m. by the station in Cairo; was received in Lauf immediately and transmitted to Berlin. At 9 a.m. it was on the cryptanalyst's desk; at 10 a.m. it was deciphered; at 10:30 a.m. it was in the Fuhrer's Headquarters; and an hour later Rommel had it. He had a day to warn his airfields. The British project was executed shortly after midnight. The parachutists got a warm reception; the action miscarried. Only one airfield disregarded the warning - here the British met with success.

Now Rommel knew precisely how matters stood on the British side: their supplies and equipment, their strength and their plans. February, March, and April passed quietly. Both sides were bringing in reenforcements. After the middle of May the British began to spot extensive German movements and counted on an offensive in the near future.

On 26 May Rommel's famous offensive broke loose. He advanced in two columns, employing seven divisions. A battle developed at Acroma and advance troops pressed forward to Sidi Rezegh. But it soon appeared that Rommel's frontal attack was a ruse to divert attention from the southern sector of the front. German tanks broke through at Bir Hakin and heavy tank battles raged for days near Acroma. Approximately 1,000 tanks and 2,000 to 2,500 motorized guns were engaged on the two sides. Heat and sand storms made a hell of the battlefield.

On 10 June Bir Hakim, the key to the British defense system, was taken. General Ritchie now adopted a line of resistance consisting of individual hedgehog positions. But the axis troops drove through in three columns. Sidi Rezegh was taken and on the 19th the Egyptian frontier was reached. The next day Tobruk was encircled and on the 21st it was taken, along with 25,000 prisoners. This had been a bold masterstroke.

On 25 June 1942 Rommel had occupied Sollum, the Halfaya Pass and Sidi Omar and was in front of Sidi Barani. Fellers was still radioing his reports and Rommel was receiving precise information every hour, while his opponent had only such information as could be picked up at the immediate front. The British were amazed; Rommel seemed to have "second sight." No matter what the British undertook Rommel always intervened as if the British High Command had been keeping him posted.

On 27 June General Ritchie was relieved as commander of the Eighth Army; Auchinleck assumed command in person.

Quickly the British retreated to Marsa Matruk. Here were the fortifications Wavell had laid out when Graziani was at the Gates of Egypt. Now Rommel was at the Gates of Egypt. In less than four weeks he had chased the British out of all Cyrenaica. Their only hope lay in the Kattara depression between Marsa Matruk and Alexandria which stretches sixty kilometers inland from the coast. This is an area of nothing but sand and great blocks of rock, unparalleled heat and absolute lack of water. The British were resolved to hold the rectangle Alexandria - Port Said - Suez - Cairo. Would they succeed? They were determined to hold Singapore, but had lost it. They had been determined to hold the Balkans, but had to withdraw. They were afraid of German parachutists. On 1 July Rommel was near El Alamein. The threat to Alexandria had become immediate. British domination in the Near East was threatened.

Then the miracle occurred. No, it was no miracle; it was a tragicomedy. It was so comical, so idiotically funny, that it had the effect of a passage from a dime novel. Or it was like a bad joke.

It was Saturday, 27 June 1942. I had turned on the broadcast of the Deutschlandsender and was listening toward 6 p.m. to the announcement of a radio drama. "We are offering a drama with scenes from the British or American information bureau," the announcer said. "Well, this is going to be good," I thought, but left the apparatus tuned in while I occupied myself with some work. Suddenly I pricked up my ears; the drama had as its subject "Events in North Africa" and political and military matters were involved. One of the characters represented the American military attache in Cairo, and now there followed a discussion of his extensive supply of information and the way he sent it on to Washington.

I was speechless. To think that the German broadcast was putting on something that countless people were trying to censor! The drama was genuine. It was only too well played. But how did these people get the information?

On 29 June, 36 hours after this radio drama, the messages from Fellers to Washington suddenly ceased. The German intercept operators tried their best; they listened and searched - in vain. No further "milid" message and no "agwar" message was ever heard. When messages began to flow again, the Americans had changed their system and were using a machine which defied all our efforts at solution.

While the new German offensive swept forward in southern Russia and the world waited the outcome with bated breath, Rommel remained without information. The British regrouped their forces; he knew nothing about it. They introduced new units - this remained hidden from Rommel. New weapons were unloaded in Alexandria and Port Said; Rommel did not find out about it. Henceforth no messages signed "Fellers" gave information regarding the enemy. The great general now had to rely upon himself and his reconnaissance at the front.

On 3 July Rommel tried a strong thrust to the south. It failed. The next day, using all available troops, he tried a major attack near El Alamein. After heavy fighting and initial successes Rommel had to withdraw. Since 26 May the British Eighth Army had lost 75,000 men, plus 1100 tanks and 450 planes. It was in bad shape, but now it held. Auchinleck was now personally conducting operations in the front line. Both sides dug in. Both sides brought up reenforcements. American tank forces arrived in Egypt and were given intensive final training. New contingents arrived from Italy. German troops were brought in

from Crete. Alexandria was attacked by German planes. Decisions of great historical moment seemed to be impending. All eyes were fixed on Rommel. Mussolini betook himself to the Egyptian front in order to be present at the entry into Cairo. Rommel was appointed General Field Marshal. But Rommel no longer had any reliable reports concerning the enemy.

Churchill journeyed to Moscow and had a long conversation with Stalin. German troops stood before Stalingrad and at the foothills of the Caucasus. Everything seemed to portend a climax to military operations in the Near East. On his way back from Moscow, Churchill visited Cairo. Lieutenant General Montgomery was appointed Commander in Chief of the British Eighth Army; General Alexander was named successor to Auchinleck.

For the second time during the war the Near East became the center of intrigue. There was great tension throughout the Moslem world. In the bazaars and in the oases of the desert Mohammedans gathered and discussed the question of their future in connection with the war. The Grand Mufti of Jerusalem issued over the broadcasting station at Bari a flaming appeal to the Moslem world and to the population of India to rise against Great Britain and its allies. The Jewish population was torn between fear of an Arab revolt and the approach of the war. Nationalist elements in Egypt tried to mix water with the gasoline in British tanks and to strew sand in the motors.

But the Allies were not idle. In June 20,000 Americans landed in Basra. New equipment factories in the Near East began large scale production. In August another 50,000 men landed in Iraq. The British Ninth Army was in Syria and Palestine. In Iraq and Iran was the Army Group of General Maitland Wilson, formerly of the Ninth Army. Army Group Wavel was in India. Eight Russian Divisions had been brought to Iran and three Polish divisions were there also. The Near East was preparing for the struggle. Then, about mid-August 1942, the German offensive in Russia began to bog down. In those days Rommel might well have been thinking "a kingdom for one good Fellers message." But this source of information had dried up. Rommel decided to attack without Fellers' aid. In the morning hours of 31 August he advanced against the southern flank of the British position at El Alamein but immediately encountered strong resistance. He threw in his last tanks and had all available trucks drive around in the rear to kick up a dust and give the impression that a strong tank force was advancing. But even this trick did not work.

There was hand-to-hand fighting and after two days Rommel had to retreat. He had 12 divisions and at least 600 tanks, but he missed the Fellers telegrams. Rommel's operations came to a standstill, as did those before Stalingrad and in the Caucasus. The dream of a campaign through Asia Minor had come to an end. Mussolini returned to Italy. The period of Rommel's great victories was over.

On 4 November the British began a smashing offensive against the Axis front. On 8 November the front had been broken, the Africa Corps was beaten, and the Italians were cut off. Rommel's great retreat began; his star had set. On that same day, the Americans and the British landed in Algeria and Morocco. The Second Front had come into being over night.