U.S. ARMY SIGNALS INTELLIGENCE IN WORLD WAR II

A DOCUMENTARY HISTORY

Edited by
James L. Gilbert
and
John P. Finnegan

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Foreword

This book is part of the Army historical community's commemoration of the fiftieth anniversary of World War II. American victory in that conflict was brought about not only by the valor of our fighting men and the immensity of our productive capacity, but also by the availability of superb military intelligence. Much of this intelligence came from the ability of our armed forces to intercept and decipher the most secret communications of their adversaries. For many years security considerations prevented any public mention of these successes in the official histories. Now much of the story can be told. To preserve the memory of the Army's role in this intelligence war, the U.S. Army Center of Military History has joined with the History Office, U. S. Army Intelligence and Security Command (INSCOM), to publish this collection of documents on Army signals intelligence in World War II. INSCOM carries on the heritage of the Army's World War II Signal Security Agency, which by breaking the Japanese diplomatic ciphers and military codes helped speed the way of our forces to victory.

The book is intended both for an Army audience and for the general public—including those World War II veterans who participated in the signals intelligence war and who for so many years were constrained to keep their contributions secret. The security barriers have now been lifted, and the Army is proud to acknowledge those contributions.

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Chief of Military History

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Preface

The Army's contributions to the success of the American communications intelligence—COMINT—effort in World War II are not widely known. This volume represents a modest attempt to close this information gap. The core of the book consists of World War II–era documents generated by various cryptologic organizations of the U.S. Army. Originally, most of these documents were highly classified. As a result of initiatives undertaken in the 1970s, they have now been released to the National Archives and Records Administration in the form of Special Research Histories after declassification by the National Security Agency. The documents included necessarily represent only a small fraction of the material that is now in the public domain. It is hoped that the publication of this book will help to alert the public to the existence of this relatively unexplored mass of historical documentation. Although these materials are being increasingly used by professional historians, only two collections of these documents have yet been published. In 1977, the Department of Defense released a multivolume compilation entitled *The "Magic" Background of Pearl Harbor*; more recently, Dr. Ronald Spector has edited *Listening to the Enemy: Key Documents on the Role of Communications Intelligence in the War with Japan*. We can assure the reader that the present volume does not exhaust the possibilities of further exploiting this largely untapped source.

The documents themselves consist for the most part of official histories and government memoranda. For the sake of variety, we have also included one highly unofficial history and examples of intelligence reports and intercepted messages. Some of the documents have been rather heavily sanitized before release, as is indicated by the [text withheld] notations liberally sprinkled through them. It should be pointed out that the declassification/sanitization process went on for a number of years (and is still continuing), and that guidelines as to the releasability of material have changed during this period. As a result, the careful reader will note certain inconsistencies. The editors of this volume have made no attempt to reverse any of the original declassification decisions. They have, however, not hesitated to abridge documents that were overly long or treated subjects repetitively. The editors have also chosen to eliminate those portions of documents that had been so

heavily sanitized as to render them less than intelligible. Those who are curious about what we may have omitted may check the original documents at the National Archives and Records Administration. It should be noted that most typographic mistakes in the originals have been retained.

No book comes into existence without some type of collaborative process going on, and this one is no exception. We would like to begin by thanking Col. James H. P. Kelsey, Deputy Chief of Staff, Operations, U.S. Army Intelligence and Security Command, for the unfailing support he has provided to the History Office in all of its projects. The manuscript itself was prepared and proofread by Ms. Diane L. Hamm, the History Office writer-editor. John Elsberg of the U.S. Army Center of Military History did much to enhance the final product through astute editing and wise counsel. John Greenwood, Chief of the Center of Military History's Field and International Division, made arrangements for an earlier version of the introductory essay to be presented at the 1990 Army Historians Conference. John Birmingham designed and formatted the final product, working closely with the authors and the editorial staff. Finally, we would be remiss if we did not thank the numerous declassification specialists at the National Security Agency whose dedicated work made the publication of this book ultimately possible.

Fort Belvoir, Virginia

JAMES L. GILBERT
JOHN P. FINNEGAN

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Note: SRH numbers refer to Special Research Histories: declassified/sanitized cryptologic documents released to the National Archives and Records Administration by the National Security Agency.

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U.S. ARMY
SIGNALS INTELLIGENCE
IN WORLD WAR II

CHAPTER I

U.S. Army Signals Intelligence in World War II: An Overview

by John P. Finnegan

The United States Army entered World War II with an effective, functioning organization for the production of communications intelligence—COMINT. This was the Signal Intelligence Service (SIS) of the Army Signal Corps. The SIS had been formed in 1930 to consolidate all Army cryptologic functions under the Signal Corps. It was a unified organization responsible for producing the Army's own codes and cipher devices and for attempting to decrypt the communications of America's potential adversaries. Previously, the cryptanalytic function had been carried out by the War Department's Military Intelligence Division through a clandestine element based in New York, headed by Herbert O. Yardley, and funded with State Department support. However, this had been discontinued in 1929, partially as a result of Secretary of State Henry L. Stimson's conviction that "Gentlemen do not read each other's mail."[1]

The SIS was an organization shaped by its first chief, the legendary William F. Friedman. Friedman, who had previously served as the Signal Corps' code and cipher consultant, quickly recruited a small but extremely talented civilian staff. Even after a military officer was placed in charge of the SIS in 1935, Friedman continued to exercise a wide influence. During the period before World War II, the SIS published a series of influential studies on cryptology and pioneered the development of machine ciphers of unparalleled sophistication and security to safeguard Army communications. It also implemented training courses to educate reserve officers in cryptology, thus setting up a limited mobilization base for wartime expan-

sion. Another accomplishment was the establishment of a network of radio intercept stations, something which the Army had never attempted in peacetime; Yardley's earlier cryptanalytic efforts had depended on the cooperation of friendly cable companies to provide the raw material. [2]

The greatest prewar accomplishment of SIS, however, was its success in deciphering the machine cipher used by the Japanese Foreign Office for its most secret messages. Through purely cryptanalytic methods, the SIS was able to build an analog of this machine and read Japanese dispatches as quickly as the intended recipients. As a result, the Army became privy to the thought processes that guided Japanese diplomacy. The secret breakthrough was shared with SIS's Navy counterpart, OP–20–G, and later with the British. Otherwise, it was closely held. Decrypts of enciphered Japanese messages, code-named MAGIC, were passed on to a tightly restricted group of individuals in the War and Navy Departments and further disseminated to top policymakers (the Secretaries of War, Navy, and State, the President's military adviser, and the President himself). [3]

Unfortunately, MAGIC could not ward off Pearl Harbor. The high-level communications of the Japanese Foreign Office did not carry the details of Japanese military planning. Consular traffic that did contain military intelligence indicators traveled in less secure systems, but it could not be translated in a timely fashion because of other priorities. Moreover, the very secrecy with which MAGIC was handled impaired its utility. A few upper-level officials received tantalizing snippets of information from critical messages, but the material itself was never subject to detailed exploitation and analysis over the long haul. As Friedman would later put it, "each message represented only a single frame, so to speak, in a long motion picture film." [4] But no one had ever been in a position to watch the whole movie.

The shock of the Pearl Harbor attack immediately led to the adoption of a more systematic approach to handling diplomatic intercepts. A first step was taken when the Secretary of War, Henry L. Stimson, directed that a Special Section be formed within the Military Intelligence Division's Far Eastern Section. (The head of the Far Eastern Section had previously functioned as the sole conduit of MAGIC.) Following an outside study conducted at Stimson's direction by a Chicago attorney, Alfred McCormack, the section was expanded to the status of a Special Branch within the Military Intelligence Service that was created as the operating arm of the Military Intelligence Division in March 1942. The Special Branch was headed by Col. (later Brig. Gen.) Carter Clarke; McCormack himself accepted a

colonel's commission and became Clarke's deputy. This organizational innovation for the first time allowed sufficient numbers of analysts access to COMINT in ways that would allow them to use it in its entirety to build up an intelligence picture. [5]

Meanwhile, the Signal Intelligence Service was conducting a rapid expansion. In March 1942 the Military Intelligence Division (MID) recommended to the Chief Signal Officer that SIS move from its existing quarters in the Munitions Building in downtown Washington to new quarters that would provide greater security. MID also suggested that primary monitoring stations be established, one on each coast. At the time, the seven small existing stations manned by the 2d Signal Service Company—the SIS collection unit—were not well positioned for wartime needs; the station nearest to the scene of action, Fort McKinley in the Philippines, had already been overrun by the Japanese Army. [6]

Under wartime conditions, these steps were taken with alacrity. In June 1942 the first Army elements took possession of Arlington Hall, a former women's junior college just outside Washington. That same month, personnel from the 2d Signal Service Battalion (as the intercept arm of the SIS was now designated) began operations at Vint Hill Farms in Warrenton, Virginia, which had been selected as the site for Monitoring Station Number 1. A second major field station was soon set up at Two Rock Ranch near Petaluma, California. In the meantime, SIS itself was redesignated. The term "Signal Intelligence" was thought to be too provocative; SIS first became the Signal Security Division, then the Signal Security Service; and achieved its final wartime designation as the Signal Security Agency (SSA) in the summer of 1943. [7]

The Signal Corps' cryptologic organization recruited a largely civilian work force and began a process of rapid expansion. The original buildings at Arlington Hall were quickly outgrown. In the winter of 1942 and the spring of 1943, two large temporary buildings were hastily constructed at Arlington Hall to handle the overflow. Meanwhile, the agency moved in new directions even as it grew. In the spring of 1942 liaison with the British introduced it to the new and promising art of traffic analysis, through which intelligence could be derived from the externals of a message even if the message itself could not be decrypted. In June 1942 the agency was given exclusive responsibility for exploiting foreign diplomatic communications, a mission previously shared with the Navy. It also dispatched a small detachment to Australia and sent one of Friedman's top cryptologists, Col.

Abraham Sinkov, to command it. This would become the American nucleus of a completely independent COMINT effort conducted in support of General Douglas MacArthur's Southwest Pacific Area by Central Bureau Brisbane, a combined U.S.-Australian operation headed by Brig. Gen. Spencer Akin, MacArthur's signal officer and a former chief of SIS. [8]

However, there were still large deficiencies in the Army's COMINT effort. The effort remained fragmented with intelligence production and collection in separate compartments. The Special Branch of the Military Intelligence Service, responsible for COMINT evaluation, had no association with the cryptanalysts at Arlington Hall. The latter group worked for the Signal Corps, which itself was only one component of the Army Service Forces. As a result, McCormack commented, a situation existed in which the Military Intelligence Service was "simply taking in what the Signal Corps catches and turns in, leaving with the Signal Corps the responsibility for determining how much it will catch and turn in, and from what sources."[9] And the Signal Security Agency itself did not monopolize COMINT collection, since tactical signals intelligence units in the field worked for the supported commanders, not SSA. [10]

Moreover, the Army's COMINT effort was hampered by a severe shortage of personnel throughout the whole system. This created bottlenecks within the Special Branch and the Signal Security Agency. Part of the problem resulted from military regulations. The Secretary of War had decreed that no officer under 28 years old could be in Washington after 31 January 1942. Additionally, the Army was reluctant to offer direct commissions to qualified civilians. The Civil Service Commission was equally obstructive. McCormack noted rather sourly that it seemed "unable to distinguish an intelligence organization from an office that routes and stamps papers, and therefore forces on us an organization chart that calls for quotas of morons and semimorons. . . ." The Signal Security Agency, with much larger personnel requirements, was even more vulnerable to such practices, and it was hampered by the low priority given to it as a component of Army Service Forces. Paradoxically, the importance of its work, which might have been used to justify a higher personnel priority, was too secret to divulge. [11]

Even more frustrating was the slow progress made by SSA in actually breaking any military codes. As previously noted, Japanese cryptosystems worked on principles entirely different from those used in Japanese diplomatic communications. The Japanese Army used bulky reenciphered codes, not a cipher machine. Cryptanalytic continuity was lacking. The Navy had

been able to monitor traffic produced by Japanese naval exercises in the 1930s, but the Army had never encountered Japanese military nets until Bataan. As a result, SSA analysts at Arlington Hall were not able to make an entry into a single Japanese Army system until April 1943, when SSA and MacArthur's Central Bureau Brisbane made an almost simultaneous breakthrough. The first usable intelligence was not derived from exploitation of this Japanese Water Transport code until June 1943. [12]

The Army was equally frustrated in its attempt to work on German military systems. In April 1942, SSA had suggested to the British that it be allowed to work on the Enigma cipher machine used in high-level communications of the German armed forces. It was generally understood that the Government Code and Cypher School (the main British cryptanalytic center at Bletchley Park) had achieved some success in this field. However, the British rebuffed the Army's efforts either to secure Enigma decrypts or to work on the Enigma problem. This studied lack of cooperation—justified by the British on grounds of security and economy of effort—became even more grating when the Army became aware that the British were willing to share high-level COMINT with the U.S. Navy to meet the operational needs of fighting the U-boat war. [13]

Finally, America's first exposure to actual land combat in the Tunisia campaign that followed Operation TORCH revealed major deficiencies in the structure of the Army's tactical signals intelligence organization. When the Army entered World War II, it was envisaged that only two types of tactical COMINT units would be needed: radio intelligence platoons organic to the divisional signal companies and signal radio intelligence companies assigned on a basis of one per field army. Since it was assumed that analysis and translation would be accomplished by small radio intelligence staffs at theater or field army level, as had been the case in World War I, no analytic personnel were included in these units. [14]

The test of combat quickly demonstrated the unsuitability of this structure. The divisional platoons, in exposed positions near the front, were in too great a danger of being overrun to practice effectively their specialty; the signal radio intelligence companies, as organized, were too large and unwieldy to be used to support a corps, which had no dedicated communications intelligence support but which seemed to be the level of command most in need of it. Central processing proved to be impracticable, and the staffs at army level were too limited to handle the volume of exploitable COMINT. At the same time, the communications practices of the European

members of the Axis (but not the Japanese) presented large volumes of material sent in clear or in low-level codes susceptible to timely forward exploitation. The Army was initially forced to turn to the British to bolster its units with analytic personnel. Later, a numbered theater intelligence service, the 849th Signal Intelligence Service, was formed to support American COMINT units in the North African Theater of Operations. [15]

In short, the Army's successes in the COMINT field up to the midpoint of the war were limited. Its continuing triumphs in the field of diplomatic communications had not been matched by corresponding success against the military systems in use by its major adversaries. The Army's COMINT effort had been hampered by its own organizational deficiencies and lack of priorities. The Army had been rebuffed by the British in its attempt to obtain access to German COMINT; it had been largely baffled by the Japanese military systems. Commenting on the situation in early January 1944, McCormack concluded morosely that "except for whatever the Navy has been able to do, we have achieved no corresponding victory over the Japanese. To date, in the field of radio intelligence, we have met largely with failure." [16]

McCormack's dissatisfaction at the beginning of 1944 was understandable. A resistive personnel system had created bottlenecks within both Arlington Hall and the Special Branch. Arlington Hall's initial breakthrough against Japanese codes in the summer of 1943 had created "a critical need for at least 2,000 [additional] persons. . .", but it had taken six months to begin "the lengthy and difficult job of recruiting such personnel. . . ." In the meantime, 200,000 unread Japanese messages had piled up. [17]

But McCormack drew too dark a picture. Already the situation was becoming brighter. Mid-1943 had been a watershed in the Army's final successful exploitation of communications intelligence. Two major developments took place at this time. The first was Arlington Hall's success in breaking and exploiting the Japanese Water Transport codes. This proved to be a springboard for the exploitation of other Japanese military systems. The Signal Security Agency, now steadily expanding, was able to throw masses of personnel and batteries of IBM machines against the Japanese military cryptosystems. The capture of codes by troops in the field enhanced the ongoing efforts of cryptanalysts. Soon after McCormack's pessimistic evaluation, Arlington Hall had thus mastered the main Japanese Army code, a breakthrough that produced a wealth of intelligence. [18]

The second development was of equal importance. In mid-1943 the

British finally decided to take the United States Army into their confidence and reveal the full story of their success against the Enigma and other high-grade German systems. This was accomplished by a liaison visit to London by a joint Special Branch–SSA team: McCormack, Friedman, and Lt. Col. Telford Taylor of the Special Branch. All barriers to free exchange suddenly fell. American cryptanalysts were allowed to work at Bletchley Park, a Special Branch liaison officer in London supervised the dispatch of pertinent traffic to MID in Washington, and Arlington Hall was given a share of research on the Enigma problem. In turn, the United States agreed to adopt and implement stringent British security practices on the transmission of COMINT to the field. [19]

The new availability of COMINT from both American and British sources created for the first time the problem of dissemination to the field. The problem was solved by the creation of a system of Special Security Officers (SSOs) along the pattern already established by the British. The SSOs would serve as representatives of Special Branch to the major American commands in the field, functioning as transmitters, guardians, and interpreters of ULTRA, as high-level COMINT was now called. The first three SSOs were sent to the Pacific in December 1943. Shortly thereafter, the British agreed to allow American SSOs to support the American commanders in the European and North African–Mediterranean–Middle East Theaters. (Previously, the British Special Liaison Unit system had handled all such dissemination of COMINT.) A subsequent decision to release ULTRA down to the field army and numbered air force level resulted in an even greater expansion of the Special Security Officer system. By August 1944 the SSO system had been allotted 172 officers and 65 enlisted communications personnel. [20]

The new importance and availability of COMINT led to changes in the organizational structure that produced it. By mid-1944 Special Branch was as large as all other branches in the Military Intelligence Service's Intelligence Group combined. But this created a situation in which a large portion of the War Department's intelligence organization labored blindfolded, producing estimates without access to what was now the Army's single most important intelligence source. This was an obviously less than desirable situation, and it led to a reorganization of MID and its operating arm. Rather awkwardly, this took place just at the time of the Normandy invasion. Special Branch, as such, was broken up; its members dispersed through the rest of the Military Intelligence Service. (A smaller Special

Branch entity continued to supervise dissemination of COMINT to the field.) [21]

A few months later, the artificial barriers that had separated collectors of COMINT from evaluators also fell. The fact that the Signal Security Agency was just a small part of the Signal Corps had disturbed War Department intelligence officers ever since 1942. By 1944 the SSA had become the Military Intelligence Division's most important single source, furnishing it with 70 percent of its diplomatic intelligence and 80 percent of its information on the Japanese military. This made the existing situation even more unsatisfactory. In August 1944 Assistant Secretary of War John J. McCloy wrote pointedly to Lt. Gen. Joseph McNarney, the Army Deputy Chief of Staff, that "I do not believe it is good practice to have the MIS by general directive and the establishment of general policies to attempt to create a workable intelligence organization in the low echelons of Army Service Forces as they are now attempting to do."[22] The Signal Corps clung tenaciously to SSA, but in the end it was forced to back down. On 15 December 1944, the Military Intelligence Division was given operational control over the Signal Security Agency, leaving the Chief Signal Officer responsible only for the agency's administration. [23]

Meanwhile, SSA continued to expand. By the summer of 1944 5,100 civilians and 2,000 military personnel were on duty at Arlington Hall. The intercept facilities of the 2d Signal Service Battalion, SSA's collection arm, were also built up. In the spring of 1944 new fixed stations were established at New Delhi, India; Asmara, Eritrea; Fairbanks and Amchitka, Alaska; and Fort Shafter, Hawaii. In the fall the steady advance of American forces allowed another field station to be established on the island of Guam. The battalion also took over "listening posts" at Bellmore, New York, and Resada, California, that had been previously operated by the Office of Strategic Services (OSS). The OSS had used the facilities to track Axis propaganda broadcasts; SSA converted them to security monitoring stations. [24]

At the tactical level Army signals intelligence was strengthened by the creation of new types of units. As previously noted, the Army's experience in conducting the COMINT war in North Africa and later in the Mediterranean had demonstrated deficiencies in the existing organization of field assets. Divisional signal radio platoons had proven unsatisfactory; the existing signal radio intelligence companies were cumbersome and could function effectively only when supplemented by analytic and linguist personnel from a theater-level signal intelligence service. The War Department's initial reaction had been to move radio intelligence platoons

up to the corps signal battalion. However, this measure only jammed a small number of intelligence personnel into a larger unit performing an unrelated function, resulting in obvious security and operational disadvantages. In the northern European theater, a happier solution was found. Small signal service companies, numbered in a sequence beginning with 3250, were formed from existing resources in theater to provide COMINT support to each corps. These units contained their own analytical personnel. The large signal radio intelligence companies continued to operate at army, army group, and theater level. [25]

In the Far East, because of the nature of the target and the tactical circumstances, the structure of the Army's tactical signals intelligence organization followed a different pattern. The Japanese target array offered little opportunity for local exploitation, and large Army formations were not fielded until the Philippine campaign of late 1944. Consequently, the four signal radio intelligence companies in the Southwest Pacific Area operated as collection arms for MacArthur's Central Bureau Brisbane rather than supporting the army commanders. In the Pacific Ocean Area two signal radio intelligence companies worked in similar fashion on high-level codes for Arlington Hall. [26]

In addition, the Army Air Forces (AAF) created its own specialized intercept units to carry out a mission previously performed by signals intelligence units of the ground Army. In 1944 the AAF organized radio squadrons, mobile, to support each numbered air force. These large, battalion-size units, which included AAF intelligence analysts, were capable of operating in separate detachments and conducting intercept against both continuous-wave (Morse) and voice transmissions. [27]

By 1945, then, the Army had largely perfected its structure for collecting, evaluating, and disseminating communications intelligence. In this field, however, the Army never acted as an autonomous player. MIS and SSA were partners in a vast combined effort in which responsibilities were largely divided along theater and target lines, with the British focusing on the German problem, and the Americans on the Japanese. However, the U.S. Army was deeply involved in all theaters: American SSOs furnished intelligence derived by Bletchley Park to the American commanders they supported in Europe, and Army personnel were at three of the four great Allied production centers. The Army controlled Arlington Hall; Central Bureau Brisbane continued as a combined U.S.-Australian effort; and the Army had a foothold at Bletchley Park. Only the Wireless Experimental

Center at Bombay, India, remained a purely British operation. [28]

Despite these steady improvements, the Army's COMINT arrangements were still less than satisfactory in three areas. SSA was still under the administrative control of the Chief Signal Officer, and this took its toll on any claim for resources. The fact that Col. Preston W. Corderman, who commanded 10,000 men and women in his dual capacity as chief of SSA and commander of the 2d Signal Service Battalion, did not receive a brigadier general's star until June 1945 reveals something of the dimensions of the problem. [29]

Second, the Army's strategic and tactical signals intelligence assets were still not coordinated properly. Tactical COMINT units were trained by Army Ground Forces, not SSA, and they functioned under the direction of theater and numbered air force commanders, not SSA, despite the fact that this division of labor did not reflect the reality that the communications intelligence process was a seamless web. As one contemporary evaluation put it, "radio intelligence operations, their availability for interception, the cryptographic systems used, and the usefulness of the results derived therefrom, all have no relation to the considerations which are determinative in assigning command responsibility for combat operations against enemy forces." [30]

Finally, cooperation between Army and Navy COMINT operations had been slow to arrive, despite the fact that OP–20–G, the Navy equivalent of SSA, was headquartered in another requisitioned junior college just a few miles away from Arlington Hall. An Army-Navy Communications Intelligence Coordinating Committee (ANCICC) had been set up in early 1944, but had not been able to effect coordination all that well. The Navy had different uses for COMINT than the Army, and its security practices were more stringent. Navy hesitancy at sharing naval COMINT had been so great that McCormack at one time had toyed with the idea of terminating all cooperation between the two services. In February 1945, however, the two service chiefs (Army Chief of Staff General George C. Marshall and Navy Commander in Chief and Chief of Naval Operations Admiral Ernest W. King) had agreed to set up a high-level Army-Navy Communications Intelligence Board to finally coordinate a joint effort. [31]

The new head of MID, Maj. Gen. Clayton Bissell, took this Navy initiative as an opportunity to resolve what he perceived as the remaining difficulties of Army signals intelligence organization. He protested that "the Army cannot participate on an inter-service project of this sort as long as its

own signal intelligence activities remain as decentralized as they now are." [32]

This bureaucratic ploy spurred the War Department to thoughts of reorganization. After consulting theater commanders in the Far East, the Army created a single unified signals intelligence organization on 15 September 1945. The Army Security Agency established that day was to control "all signals intelligence and security establishments, units, and personnel" and to function under direct control of the Military Intelligence Division. The U.S. Army thus attained the integrated COMINT organization its intelligence chiefs had so long desired—thirteen days after the world war that had called it into being had finally come to an end. [33]

Notes

Note: SRH citations refer to Special Research Histories: declassified/sanitized cryptologic documents released to the National Archives by the National Security Agency.

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2. SRH 29, "A Brief History of the Signal Intelligence Service," pp. 8–13.

3. SRH 134, p. 19; Kahn, *The Codebreakers*, p. 24; SRH 106, "Specific Instructions for the Handling and Dissemination of Special Intelligence," pp. 1–2.

4. SRH 125, "Certain Aspects of 'Magic' in the Cryptologic Background of the Various Official Investigations into the Pearl Harbor Attack," p. 63.

5. SRH 141, "Papers from the Personal Files of Alfred McCormack, Colonel, AUS, Special Branch, G–2, Military Intelligence Division, War Department General Staff," Part 2, pp. 7–8.

6. *ULTRA and the Army Air Forces in World War II*, edited by Diane Putney (Washington, D.C.: Office of Air Force History, 1987), p. 71; SRH 349, "The Achievements of the Signal Security Agency in World War II," pp. 13–14.

7. *ULTRA and the Army Air Forces in World War II*, p. 71; SRH 135, "History of the 2d Signal Service Battalion," p. 101.

8. SRH 349, pp. 9, 15; Ronald Lewin, *The American MAGIC: Codes, Ciphers, and the Defeat of Japan* (New York: Farrar, Straus, Giraux, 1982), pp. 143, 149.

9. SRH 141, Part 2, pp. 202–203; Part 1, p. 29.

10. SRH 169, "Centralized Control of U.S. Army Signal Intelligence in World War II," pp. 14–15.

11. SRH 141, Part 2, pp. 8–13, 139, 223; SRH 116, "Origins, Functions, and Problems of the Special Branch, MIS," p. 22.

12. SRH 349, p. 26.

13. F.H. Hinsley et al., *British Intelligence in the Second World War* (New York: Cambridge University Press, 1981), Volume II, pp. 56–57.

14. SRH 391, "American Signal Intelligence in North Africa and Western

Europe," pp. 6–7.

15. Ibid., pp. 63, 94; "History of the Signal Intelligence Division, European Theater of Operations, United States Army" (SECRET), Part I, Chapter V, p. 1, Army Cryptologic Records; Hinsley, *British Intelligence*, Volume II, p. 742; SRH 124, "Operational History of the 849th Signal Intelligence Service," pp. 10–12.

16. SRH 361, "History of the Signal Security Agency, Volume II: The General Cryptanalytic Problem," p. 83; SRH 141, Part 2, p. 223.

17. SRH 141, Part 2, pp. 221–222.

18. SRH 349, pp. 18, 26–28.

19. Hinsley, *British Intelligence*, Volume II, pp. 57–58; SRH 141, Part 2, pp. 182–183.

20. SRH 33, "History of the Operations of Special Security Officers Attached to Field Commands," p. 16; SRH 61, "Allocation of Special Security Officers to Special Branch," p. 30.

21. *ULTRA and the Army Air Forces*, pp. 86–87; Ray S. Cline, *The CIA Under Reagan, Bush, and Casey* (Washington, D.C.: Acropolis Press, 1981), p. 111.

22. SRH 141, Part 2, pp. 316–317.

23. SRH 349, p. 10.

24. Ibid., p. 14.

25. G.R. Thompson and Dixie R. Harris, *The Signal Corps: The Outcome*, United States Army in World War II (Washington, D.C.: Office of the Chief of Military History, 1966), p. 347; SRH 391, pp. 94–96, 104. Details on the organization of the corps-level signal service companies can be found in SRH 42, "Third Army Radio Intelligence History in Campaign of Western Europe."

26. SRH 169, pp. 54–55, 60–61; SRH 365, "History of Signal Intelligence Division of the Signal Officer, AFMIDPAC," pp. 15–23.

27. SRH 124, p. 24.

28. SRH 141, Part 2, p. 220.

29. SRH 135, p. 12; SRH 349, p. 6; Thompson and Harris, *The Signal Corps: The Outcome*, pp. 331, 338–339.

30. SRH 169, p. 59.

31. SRH 141, Part 2, pp. 282–295; SRH 169, p. 58.

32. SRH 276, "Centralized Control of U.S. Army Signal Intelligence Activities, 30 January 1939–16 April 1945," p. 139; Memo, AC of S, G–2, subj: Army-Navy Communication Intelligence Board–Establishment of (2 Mar 45), Army Cryptologic Records.

33. SRH 349, pp. 85–88.

CHAPTER II

The Road to Pearl Harbor

These documents trace the evolution of U.S. Army signals intelligence in the period prior to United States involvement in World War II. SRH 29, A Brief History of the Signal Intelligence Service, was written by William F. Friedman, the organization's first head. It sketches the beginnings of Army signals intelligence in World War I, provides an unflattering account of Herbert O. Yardley's Black Chamber organization, the legendary cryptanalytic unit secretly funded by the State and War Departments, and goes on to explain the reasons for transferring the function from Military Intelligence to the Signal Corps in 1929. SRH 134, Expansion of the Signal Intelligence Service, was also written by Friedman. It charts the growing pains of this organization after 1930, and discusses how the efforts of Friedman and his team resulted in the breaking of the Japanese diplomatic machine cipher, codenamed PURPLE.

The actual intercept of communications was performed by specially trained Signal Corps personnel. After 1938, these were brought together in a unique unit, the 2d Signal Service Company. The establishment of this unit is documented in an excerpt from SRH 135, History of the Second Signal Service Battalion, 1939-45.

The success of the SIS in breaking PURPLE was shared with the Navy's corresponding cryptologic unit, OP-20-G, but was otherwise closely held. The intelligence product obtained from decrypted Japanese diplomatic communications was assigned the codename MAGIC and disseminated to only a small group of top officials. One of the most important messages contained in Japanese diplomatic traffic is reproduced from *The Magic Background of Pearl Harbor, Volume IV, Appendix* (Washington, D.C.: Department of Defense, 1977), p. A-89. However, the stringent security measures surrounding MAGIC impaired effective and sustained evalu-

ation of the material. The excerpt from SRH 115, U.S. Army Investigations Into the Handling of Certain Communications Prior to the Attack on Pearl Harbor, 1944-1945, shows the impact of this policy of tight compartmentation on the War Department military intelligence organization.

From SRH 029. *William F. Friedman, the first head of the Signals Intelligence Service, was America's foremost cryptologist. Born in Czarist Russia to Jewish parents, Friedman was brought to the United States by his family as a very young child. He was originally trained as a geneticist, but his energies were soon diverted to the exotic field of cryptology when he was hired by the eccentric philanthropist George Fabyan to work at Fabyan's private "think-tank"—Riverbank Laboratories at Geneva, Illinois. Fabyan had a theory that Shakespeare's plays had actually been written by Sir Francis Bacon, and that this could be proved by deciphering a hidden cipher that Bacon had scattered throughout the plays. Fabyan was wrong—as Friedman convincingly demonstrated many years later, no such cipher existed—but his enthusiasms led Friedman on to a brilliant career. In 1942, Friedman wrote this succinct account of the origins of the Army's World War II signals intelligence organization. As can be seen from the text, his bitterness against his great colleague and rival, Herbert O. Yardley, continued to run deep.*

A BRIEF HISTORY OF THE SIGNAL INTELLIGENCE SERVICE

1. Prior to June 1917 no department of the Government conducted cryptanalytic activities whatsoever. From June 1916 to about May 1918 a considerable amount of work along these lines was conducted purely as a patriotic enterprise at his own expense by Mr. George Fabyan, whose Riverbank Laboratories at Geneva, Illinois, organized a small group of fairly well-trained cryptanalysts to work upon such codes and ciphers as were forwarded by the War, Navy, State, and Justice Departments. The undersigned directed the cryptanalytic operations and training at the Riverbank Laboratories from the time of the inception of this work until its close thereat in 1919, except for a period of a year when he was 1st Lieut., MID, serving at GHQ-AEF in the German code solving section.

2. In June 1917 the cryptanalytic activities of the War Department were initiated by Colonel Van Deman, G-2, with the commissioning of H.O. Yardley as 1st Lieut., MID. Yardley, who had been a telegrapher at the State Department and had

taken some interest in cryptography, was given two civilian employees to assist him. The work grew rapidly and by the autumn of 1917 the increased staff was organized as a section designated as MI-8, which was subdivided into 6 subsections with duties as indicated very briefly below:

(1) Code and cipher solution subsection. - This subsection was what would now be called the cryptanalytic subsection. It was the largest of the subsections of MI-8 and performed the cryptanalytic work not only for the War Department *but also for all other Government departments, including Navy, State, Justice, and the two censorships—Cable and Postal, which were then separate organizations.*

(2) Code and cipher compilation subsection. - Despite the fact that under Army regulations the compilation and revision of codes was a function of the Chief Signal Officer, compilation activities under the Signal Corps were apparently in a moribund state. Information having been received that the Germans possessed copies of the War Department Telegraph Code, MI-8 deemed it advisable to establish a code compilation subsection, and that subsection produced several codes such as Military Intelligence Codes No. 5 and No. 9, small pocket codes for secret agents, and the like.

(3) Training subsection. - In addition to training its own personnel MI-8 trained the majority of the personnel sent overseas for cryptanalytic duties with field forces, both AEF and Siberia.

(4) Secret inks subsection. - A laboratory was established for the preparation of invisible inks for use by our own agents. It also examined letters for secret ink writing and an average of over 2000 letters per week were examined for the military and postal censorship from July 1, 1918 to February 1, 1919.

(5) Shorthand subsection. - This subsection was organized to handle texts in various shorthand systems, especially German, which had to be deciphered.

(6) Communications subsection. - This was established in MI-8 for handling messages to and from military attaches and intelligence officers serving abroad. In a period of 9 months it sent and received about 25,000 such messages, practically all in code.

3. At the height of its development, which was reached in November 1918, MI-8 was, for those days, a rather large unit, consisting of 18 officers, 24 civilian cryptographers and cryptanalysts, and 109 typists and stenographers. The time had come for the establishment of a definite policy for the future. Now, the guiding heads of Military Intelligence at that time fully recognized the high importance and value of the services rendered by the cryptanalytic bureau, because they had been in positions where the products of the daily activity of the bureau came directly to notice and they could not fail to note the influence and bearing which the work had, not only upon the military and naval but also upon the diplomatic, political, and economic phases of the conduct of the war. They therefore had *practical* experience in the matter and could bring the weight of their position of influence and their actual experience to bear upon those in charge of the purse strings, with the

result that they were able to obtain funds sufficient to keep a fairly large organization intact for a year or two. An annual appropriation of $100,000 was recommended in a G-2 study dated May 16, 1919 [text withheld] to be used as follows:

Rent, light, and heat		$3,900
Reference books		100
Personnel:	Chief	6,000
	10 code and cipher experts @ $3,000 each	30,000
	15 code and cipher experts @ $2,000 each	30,000
	25 clerks @ $1,200 each	30,000
	Total	$100,000

The item for "rent, light, and heat" is explainable when it is noted that the bureau was to be moved from Washington with a view to hiding its existence. Of the $100,000 recommended, the State Department was to provide $40,000 and $60,000 was to be provided for expenditure by the A.C. of S, G-2 on "confidential memoranda" against funds pertaining to "Contingency Military Intelligence Division"—that is, by vouchers not subject to review by the Comptroller General. The paper containing the recommendations made by the A.C. of S, G-2 to the Chief of Staff was "OK-ed" and initialled by Acting Secretary of State Polk on May 17, 1919, and on May 19 it was approved by the Secretary of War over the signature of General March, Chief of Staff. The plan was put into effect, the bureau was installed in a private house at 22 East 38th Street, New York City, and all personnel together with existing records were moved thereto.

4. It is important to note that at that time no provision whatsoever was made for radio intercept as a source of raw material for cryptanalysis. A few words on this subject may not be amiss. Radio intercept of fixed station material in the U.S. by the Army during our active participation in the last war was rather fragmentary. The work was, of course, a responsibility of the Signal Corps, but radio communications could hardly compete with cable and wire communications as a source of raw material because not only did the large governments use cable in preference to radio, but also radio as a means of communication between widely separated fixed stations was then in its infancy. The Signal Corps did, however, have what was called "mobile tractor" units stationed on the southern border, [text withheld] and in late 1918 one large intercept station was established at Houlton, Maine, for the purpose of copying trans-Atlantic radio. The large intercept stations maintained by the Signal Corps in the AEF did furnish a large quantity of diplomatic traffic which was forwarded as raw material to G-2 in Washington, but as soon as the war was over all these sources of intercept material were abandoned. [text withheld]

* * *

This was, of course, true to a certain extent but was not by any means the whole truth. At any rate by 1929 the flow of messages furnished G-2 had dwindled to a mere trickle. In about the year 1926 the intercept stations of the Coast Guard submitted to me informally a few radio intercepts of what appeared to be Japanese code messages, but these were only sporadic occasional intercepts of transmissions in the Far East. They were usually fragmentary and afforded very poor material. Such as they were, however, these occasional messages were turned over to G-2. There were, therefore, clear indications that if a serious attempt were made to obtain this material better copy could be obtained. However, no pressure was brought on the Signal Corps to set up a regular intercept service, and aside from a few relatively weak efforts to establish an intercept station in the Philippine Department there was no real intercept service until after 1929, when responsibility for cryptanalysis was transferred from G-2 to the Signal Corps. How this came to pass will soon be detailed.

5. As indicated Par. 3 above, the $100,000 appropriation set up in 1919 took care of the bureau for the FY 1920, that is from July 1, 1919 to June 30, 1920, but when in June 1920 it came time to set up the budget for FY 1921, the purse strings were already beginning to be pulled tighter. Many of the "old-timers" in G-2 had gone to other assignments; those remaining and the newcomers in G-2 apparently had neither the background nor the influence to press the matter. The appropriation was at once cut in half, that is, to $50,000, of which the State Department share still continued to be $40,000. The theory was, evidently, that since the work done by the bureau was primarily, if not solely, for and of interest to the State Department, all or nearly all of the funds should be provided by that department. The War Department overlooked some very important points in the situation—points which will be brought up and emphasized later in this summary. In order not to break the continuity of the history at this point, it will be stated merely that year by year the funds provided for the maintenance and operation of the bureau became more and more constricted until by the autumn of 1929 the following tabulation, based upon a letter dated July 17, 1929 from Major O.S. Albright, G-2 to the Chief Signal Officer (General Gibbs), shows how the bureau had been permitted to deteriorate:

Rent		$3,000
Books, postage, travel, transportation, misc.		2,370
Personnel:	1 Chief (Yardley)	7,500
	1 Code and cipher expert	3,660
	1 translator (Jap)	3,750
	1 secretary	1,800
	1 clerk-typist	1,600
	1 clerk-typist	1,320
	Total	$25,000

In the foregoing total appropriation of $25,000 the State Department furnished $15,000, the War Department $10,000. The activities of the bureau had by this time become so reduced that it was sending in only occasional translations of a few Japanese [text withheld] diplomatic messages. No research whatsoever was conducted in cryptanalysis; there were no training activities, no intercept, no code compilation, no secret ink work. The personnel consisted of six persons all told and 37 1/2% of the total payroll went to one man, who had little interest other than to continue as long as possible to maintain himself in the sinecure into which he had been permitted to establish himself.

6. In the summer of 1929 Major O.S. Albright, Signal Corps, had been assigned to G-2 to serve on the Staff of the A.C. of S., G-2 to supervise and coordinate such of the cryptographic and cryptanalytic activities of the War Department as remained. After a careful study of the situation and an appraisal of how the existing cryptanalytic bureau was and was not serving the functions for which it had been intended, Major Albright came to the conclusion that the entire picture was wrong. He felt that the product ("bulletin") which the bureau was turning out every few days was indeed of primary interest for its own sake to the State Department and while the War Department had only a secondary interest in the "bulletin" for the information it gave, the primary interest of the War Department in cryptanalytic studies in peace time was that it was intended to provide a means for training of personnel for *immediate* war-time effectiveness. Major Albright found that not only was there very little if any training being conducted but also that all the persons in the bureau, except for one clerk receiving the least pay, were "getting along in years"—their potential usefulness for possible war time service practically nil. Moreover, the bureau was now hidden away in a public office building in New York (under cover of the "Code Compilation Company" for alleged purposes of security) and far away from *direct* supervision of anybody connected with the War Department or of G-2, so that nobody knew what was going on, how the office was administered, etc. Yardley devoted most of his time to two or three private enterprises (commercial code compilation, real estate brokerage, consultant in code matters to commercial firms) and he was having a "field day" at Government expense. There were, in addition, several other weighty factors which motivated Major Albright in preparing a G-2 study [text withheld] recommending that the bureau be taken out of G-2 and its functions transferred to the Signal Corps, chief among which was the desirability, if not necessity, of placing *all* cryptographic and cryptanalytic work of the War Deparment under one agency, rather than distributing it among three (The Adjutant General, for printing, storage, issue, and accounting of codes; The Chief Signal Officer, for compiling codes and ciphers; Military Intelligence for solution of codes and ciphers). A memorandum on the same subject was prepared by Lieut. Col. W.K. Wilson of the War Plans and Training Section of G-2, and is also attached hereto [text withheld] The reasons given in Major Albright's study and in Col. Wilson's memorandum were apparent-

ly deemed valid by the Chief of Staff, for Major Albright's recommendations were approved in April 1929 and steps were soon initiated by G-2 and the Chief Signal Officer to put them into effect. The recommendations carried with them merely the wording of a changes to be made in AR 105-5, specifying the duties of the Chief Signal Officer, these duties being enlarged to include the printing, storage, distribution, and accounting of codes and "in time of war the interception of enemy radio and wire traffic, the goniometric location of enemy radio stations, the solution of intercepted enemy code and cipher messages, and laboratory arrangements for the employment and detection of secret inks."

7. However, before anything could be done actually to transfer the activity a new and very disturbing factor entered into the picture. In March 1929 a new administration took office, in which Mr. Stimson became Secretary of State. For a few weeks no "bulletins" from the cryptanalytic bureau in New York were given him, the intention being to "go slow" until he had become sufficiently well oriented in the duties of his office to warrant bringing to his attention the highly secret activities engaged in by War and State Departments by means of funds provided in large part by the latter Department. Early in May 1929, however, the time was deemed ripe for this measure, but it was with some trepidation that a few translations of Japanese code messages were placed on Mr. Stimson's desk. His reaction was violent and his action drastic. Upon learning how the material was obtained, he characterized the activity as being highly unethical and declared that it would cease *immediately*, so far as the State Department was concerned. To put teeth into his decision he gave instructions that the necessary funds of the State Department would be withdrawn *at once*. It was only after considerable pressure by the A. C. of S., G-2 that he was dissuaded from this course, which might have had serious consequences by suddenly throwing out of employment the six people concerned, at a time of severe economic depression. For these workers had only special training in a field wholely useless to commercial, industrial, shipping or banking firms, or to other government departments, or to educational institutions. An arrangement was therefore made to close the office immediately so far as active work was concerned but to keep the personnel on the payroll for the time necessary to wind up affairs, and get the files in shape ready to turn over to the Signal Corps. This took a couple of months, and at the end of June 1929 the employees were given three months' pay *in advance* in a lump sum, to tide them over the period in which they might be jobless. Since they had been paid out of "confidential funds" they had no civil service status and no retirement benefits; moreover, they were ineligible for transfer to other Government positions. The danger was, of course, that their dissatisfaction with what must have appeared to them as highhanded, arbitrary action on the part of a new official, and that their helplessness in the serious personal situation created for them by his drastic action might lead them to indiscretions which might prove most embarrassing to the Government and have serious consequences upon national defense. It turned out that whatever their private feelings, all the dis-

charged personnel, except the chief beneficiary of the old regime, remained loyal and did the best they could to find jobs.

8. In October 1929 I was sent to New York to take over the boxed up records and files and to oversee their transportation to Washington. The cryptanalytic activities, research, and training now being under the Chief Signal Officer, steps were taken to reorganize the bureau and its work. The funds available were, of course, very slim—only what remained of the War Department's contribution of $10,000 for the FY 1930 was available, because the remainder of the State Department's share of $15,000, as indicated above, had already been withdrawn by the State Department. An offer of employment was made to Mrs. Wilson, the Japanese expert with Yardley, but she was unable to accept, since it involved moving to Washington and she had a husband and child in New York. Another employee, Mr. Victor Weisskopf, had a business in New York and refused to move to Washington. The female clerical employees were deemed unsuitable for our purposes and, moreover, having no Civil Service status they could not be taken on by transfer. An offer of temporary employment was made to Yardley but he refused the tender. Instead, he proceeded secretly to prepare a book which first appeared in the form of articles in the the Saturday Evening Post and which in much expanded form later appeared under the title *The American Black Chamber*. The book and articles were highly sensational and made damaging disclosures concerning the most secret activities ever conducted by the Government. Before the appearance of the articles and book, however, he had taken certain steps to protect himself from possible prosecution for his disclosures, among which was to resign his commission as major in the Military Intelligence Reserve. Of course, had the authorities understood the real purpose of his resignation they might have prevented it so as to retain some hold on him. But being in ignorance of the real motives and deeming it just an act of pique, the resignation was accepted. The unfortunate consequences attendant upon the publication of the book need no elaboration herein. Suffice it to say that [text withheld] our precarious relations with Japan were brought to a boiling point when about 30,000 copies of the Japanese translation of *The American Black Chamber* were sold in Tokyo in a period of less than a month (perhaps the book was subsidized by the Japanese Government itself). The bad odor into which all cryptanalysts and cryptanalytic activities fell, as a result of the difficulties which the publicity given the matter by Yardley's disclosures occasioned high government officials, had a bad effect upon the attempted reorganization of the cryptanalytic bureau by the Chief Signal Officer. *Funds were hard to get*, and State Department support was lacking, if not in the other direction altogether. The most serious consequences of Yardley's disclosures, however, came 10 years later and their effects can hardly be estimated. I refer here to the jolt which his book gave the Japanese cryptographers, leading them out of their blissful ignorance and causing them to develop really complex methods which are now giving us many difficulties. The same is true probably as regards the German and Italian cryptographers—their

education has been entirely at Uncle Sam's expense and the final consequences of Yardley's work can not yet be foreseen. They may well turn out to be disastrous.

9. However, the Chief Signal Officer proceeded, energetically as possible under the circumstances, to carry out the mission assigned him. The code and cipher solving section was placed under the War Plans and Training Division since the compilation section was already there. A rather detailed directive which was prepared by G-2 and approved by the Secretary of War (Exhibit 4), became the guiding plan of the reorganized service, which was now named the Signal Intelligence Service. Its personnel consisting of myself and one or two clerks soon was augmented by a half dozen more employees. Training literature and courses were prepared and put into good usage at once. A great deal was done in expanding our cryptographic work also, by preparing reserve editions of existing codes, compiling new codes and ciphers, developing cipher apparatus, and so on. Cryptanalytic work was put on a firm basis of research and training, with emphasis on the latter, *for there* existed no intercept service and the raw material could not be obtained [text withheld] Hence an intercept service now was organized and grew very slowly. All phases of signal intelligence were unified under one service and taken under study and action. Moreover, cooperation with the Navy in the work was also initiated. How the activity has expanded since then requires no comment at this time. However, a few words about relations with the Navy are pertinent.

10. Cryptanalytic activities in our Navy Department were practically non-existent until after the close of the last war, during which, as was noted above, whatever problems they had in cryptanalysis were referred to MI-8. But in 1921 the Navy, recognizing the important role which cryptanalysis was bound to play in the future, began building up a large unit in the Navy Department, with echelons afloat. Whereas the Army placed emphasis upon civilian training, the Navy placed emphasis upon officer training; and for each dollar the Army was able to obtain for cryptanalytic and cryptographic work the Navy was able to obtain three to five dollars, until by 1939, as far as concerned numbers of officers and civilian personnel engaged in these activities, amount of equipment on hand, and funds available for research, the Navy had considerably outstripped the Army. However, it may be said, with some justifiable pride perhaps, that while they were ahead of us in quantity we were ahead in quality, for all the important developments in both the cryptographic and cryptanalytic fields must be credited to Army personnel. At first, cooperation between the two services was intermittent and at times very indifferent—the usual mutual suspicions and jealousies pervaded our relationships. But, happily, for the past three to five years cooperation has been much more wholehearted, with the result that it may now be said without reserve that, as regards their cryptographic and cryptanalytic activities, cooperation between the Army and Navy is so close as to be the same as though they were under one head. This, of course, is as it should be and must be in order to gain the desired result from such activities.

11. It would be of utmost value to the winning of this war if the Government were now in a position to read the codes and ciphers of all the foreign powers whose actions and probable intentions are of interest and importance in our prosecution of the war. *It could have been in this fortunate position had it given to cryptanalytic studies the attention which it deserves during peace time and had provided funds for their continuity on a scale sufficient for the purpose for which they are intended.* The matter can be summarized very succinctly in this statement: Actual or physical warfare is intermittent, but mental, that is, cryptanalytic warfare is continuous. . . .

* * *

June 29, 1942

William F. Friedman,
Head Cryptanalyst.

From SRH 134. *This official history, written by Friedman in 1945, traces the history of the SIS from its modest beginnings through its triumph in decrypting the Japanese diplomatic machine cipher system. It should be noted that Friedman had no doubt that the activities in which the Signal Intelligence Service was engaged were quite illegal.*

EXPANSION OF THE SIGNAL INTELLIGENCE SERVICE FROM 1930 TO 7 DECEMBER 1941

As a result of War Department General Staff action it was directed by the Secretary of War, on 5 April 1929, "That the Signal Corps be charged with the duties pertaining to the solution of enemy codes and ciphers and the detection of secret inks in War, in addition to those duties with which they are now charged pertaining to the compilation of codes and ciphers required by the Army and to the interception of enemy radio and wire traffic in war."

* * *

. . .the Signal Intelligence Service was to be organized primarily on the basis of *training for war*, rather than for active operation for enemy interception and solution of the communications of foreign governments or armies. However, it was also

stated that if information of present or immediate value to G-2 should be intercepted and solved, such information would be acceptable to G-2, but it was to be clearly recognized and regarded as a by-product of the training work, and not as the fruit of the functioning of the Signal Intelligence Service in peacetime.

But in addition to this foregoing reason for the emphasis on training, there was another important reason. Because of the rigidity of our laws regarding interception of communications, the activities of the Signal Intelligence Service had to partake of the nature of a clandestine activity, since it was illegal to intercept messages, and the penalties for divulging even the existence of a message were severe. The law did not exempt anyone from its penalties, and therefore, the War Department and all the people connected with the work of interception and solution of the communications of foreign governments realized the necessity for keeping the activity secret. By emphasizing the training aspects of its activities, it was thought that the illegal nature of some of the work of the Signal Intelligence Service (interception and solution of foreign communications) could be more easily defended if word of these activities should "leak out." The foregoing reason for secrecy was, of course, to be added to another important reason for keeping the activity secret - namely, the requirement to keep from foreign governments the extent of our success with their communications, and even the fact that we were successful in reading any of such communications. Under such circumstances, therefore, it was only to be expected that the normal channels for obtaining of funds for such an activity would be made somewhat difficult and they were. Up to this time, it must be understood, the War Department support for the solution activities came from Military Intelligence Division Contingent Funds, which are not subject to review by the Controller General.

For one reason or another, none of the six persons who had been working in the old MI-8 Section when the Chief Signal Officer took over the solution activities from G-2 could be added to the staff of the Signal Intelligence Service, which then consisted of one cryptanalyst, (P-5, $4,600) and one clerk-typist (CAF-3, $1,620). A whole new organization had therefore to be built-up with the very scanty funds ($6,666.68) that remained from the original War Department contribution of $10,000 for the rest of the fiscal year 1930. Therefore, to begin with, the real establishment of a permanent Signal Intelligence Service had to await the availability, to the Chief Signal Officer, of funds specifically for the purpose; and then, of course, the long period of training required to produce cryptographic and cryptanalytic skill was another factor that resulted in what may appear to be a rather slow development, in addition to the usual lack of funds.

However, the hiring of new personnel did not have to await the availability of funds, for until the Chief Signal Officer was able to include in his own estimates the specific funds necessary for the support of the Signal Intelligence Service, he could draw by allotment upon the funds available to the Assistant Chief of Staff, G-2. These, however, amounted to only $10,000 per annum. The sum of $6,666.68

was allotted by the Assistant Chief of Staff, G-2, to the Chief Signal Officer for the payment of personnel engaged in code and cipher work on 16 December 1929 for the balance of the fiscal year 1929.

On 4 January 1930 the Secretary of War was requested by the Chief Signal Officer to authorize the employment of four junior cryptanalysts (P-1, $2,000 per annum). Since the G-2 funds ($10,000 per annum) were available to the Chief Signal Officer the FY 1930 and 1931, this request was approved quite promptly; three persons were obtained from Civil Service rosters of eligibles in scientific pursuits (junior mathematicians, etc.) and appointed. An additional person was obtained by Schedule "A" or excepted appointment for the position of Japanese translator (SP-5, $1,800 per annum) because no Civil Service roster of eligibles was available for selection. On 2 September 1930 an additional person (SP-5, $1,800 per annum) was appointed, making the original staff of the Signal Intelligence Service a total of seven persons by the end of 1930. Except for one or two changes in personnel and the addition of one or two clerk-typists, the technical staff was not augmented until July 1938. In 1936 and 1937 a cryptanalyst was sent to each of the Panama Canal and Hawaiian Departments to work as advanced echelons of the Signal Intelligence Service, and these two persons' positions were filled by two additional candidates selected from Civil Service rosters. However, by the end of 1938 both cryptanalysts who had been sent to overseas stations were back in Washington, for the experiment was not a success, and we badly needed them here. What could one lone cryptanalyst do in Panama or Hawaii?

The years 1931 to 1936 were particularly trying ones - promotions were out of the question, and further expansion was greatly handicapped by the program of economy imposed upon the War Department during the depression. Several examples may be cited to illustrate our attempts to expand the Signal Intelligence Service over the years 1931-1938 and the more or less fruitless results thereof.

On 14 October 1931 the Chief Signal Officer requested approval of a project to include four additional positions in the Signal Intelligence Service, involving an increase of $7,240 in his estimates for salaries for the fiscal year 1934. As inclosures, the Chief Signal Officer submitted schedules showing the number of people engaged in Signal Intelligence work in fiscal years 1928-1931 and projecting the numbers estimated by 1934. The request for the four additional positions was "not favorably considered at this time" by the Adjutant General. The reason given was the necessity for holding estimates to a minimum for the fiscal years 1934: "It is not contemplated outhorizing new projects unless current or prospective funds are available."

Again in 1932 an attempt was made to attain urgently needed personnel, with no favorable results. It was stated that the need for expanding the code production program was urgent. In addition to the code compilation duties of the section, there were those of conducting research in solution as well as certain administrative duties in connection with correspondence courses, reserve officer

instructional training courses, and the regular administrative activities concerned in the use, distribution and improvement in code and cipher communication by the Army, the development of cipher apparatus, methods of secret intercommunication between the Army and Navy, the development of radio intercept and radio direction-finding methods, work in secret inks, etc. The assistance of G-2 was sought at the time, since it was thought that in view of the interest registered in the work of the Signal Intelligence Section on the part of the Assistant Chief of Staff, G-2, and the Chief of Staff, it would be the psychological moment to take the matter up once more in the hope that means might be found to add to the personnel of the section, and thus enable it to carry on in an effective manner. Whether or not the support of the Assistant Chief of Staff, G-2, was obtained, the available record does not disclose; however, even if this support was forthcoming, the attempt remained fruitless.

In 1936, the Chief of the Signal Intelligence Service recommended that the time had come to organize the Signal Intelligence activities if the Chief Signal Officer upon a more extensive basis, "in order that personnel for efficient operation may be available when the situation will require their services." It was also considered essential to provice opportunities for advancement for the personnel already employed, in order that a restricted field might be attractive to them. Otherwise, the Signal Intelligence Service would "become merely a training ground for other departments."

A five-year expansion program was recommended, which would increase the total personnel to 21 by 1942, with a total budget of $54,660.

Various obstacles impeded the immediate approval of this plan. In the first place, in order to be able to keep our trained personnel, long-overdue promotions were very necessary; but any proposal for an increase in the salaries of the personnel in the Signal Intelligence Service was held to be objectionable.

(For several years, owing principally to measures of economy imposed by the President and Congress, it had not been possible to provide administrative promotions for any Signal Corps employees. In addition, the President had directed that no promotions were to be included in the 1937 budget.)

A second obstacle was that the personnel and equipment assigned to the Signal Intelligence Service fully occupied its available space, and because of the critical shortage of office and storage space in the District of Columbia, no additional space was likely to be secured for the expansion of that organization. It was suggested that additions to the existing force would overcrowd the area and be detrimental to health and comfort as well as impair the performance of their duties.

This request for personnel was not approved and the four additional positions had to be deleted from the estimates. One of the contributory factors which brought about this deletion was the lack of support from representatives of G-2. Assurance had been obtained from G-2 on advance that it would cooperate in

defense of the item, but its representatives "failed to appear at the hearing when held." Note the following extract from a very interesting memorandum dated 18 February 1936, to the Chief Signal Officer, again requesting an increase in personnel for the Signal Intelligence Service:

> "9. Under the date of March 20, 1935, the Chief Signal Officer requested authority to present in connection with the 1937 estimates, a requirement for two (2) assistant cryptographic clerks at $1,620 per annum, and two (2) junior cryptanalysts at $2,000 per annum. The War Department approved the inclusion of this additional personnel in the Signal Corps estimates. The limiting figure, designated by the War Department under date of August 5, 1935, for Project #1, "Personnel", of the Signal Corps estimates to be submitted to the Bureau of the Budget, was reduced to such a point as to necessitate the deletion of these four positions from fiscal year 1937 estimates. One of the contributory factors in the necessity for this deletion was, no doubt, the lack of support by representatives from the Assistant Chief of Staff, G-2, whose assurance of cooperation in defense of this attempt had been obtained in advance, but who failed to appear at the hearing when held."

At that time it was the opinion of Major W. S. Rumbough, Officer in Charge of the War Plans and Training Division, of which the Signal Intelligence Section was a part, that such "a serious shortage of trained personnel exists in the Signal Intelligence Service," that it could not "fully perform its peace-time mission."If this shortage should "be allowed to continue, no Signal Intelligence Service worthy of the name will be available during the early phase of an emergency when the most valuable results should be expected from this agency."

The memorandum of 18 February 1936 recommended that if funds in the amount of $7,240 accrue by savings, under Project #1, fiscal year 1937, that these savings be used for the employment of two Assistant cryptographic clerks at $1,620, and two junior cryptanalysts at $2,000, to be obtained and trained in this office as soon as possible; alternatively, that if no such savings can be foreseen, funds be diverted from other projects and allocated to Project #1, fiscal year 1937, for the foregoing purpose. But, as already noted, the attempt was fruitless.

It may be stated that about this same time, in May 1936, whereas the Signal Intelligence Service had a total of some seven or eight people, the Navy had some forty, and even the small unit at the United States Coast Guard had seven people. [text withheld] All attempts to increase the complement of seven people comprising the staff of the Signal Intelligence Service were more or less fruitless

until the fiscal year 1938, when four more positions were finally authorized. No doubt one of the factors which led to the final approval of the repeated requests for expansion was the recognition on the part of the high authorities of the War Department of the importance of the work being done. A program of code compilation was being vigorously pursued under severe handicaps; new codes and ciphers were being prepared, printed and placed in storage with two, and sometimes three or more editions in reserve to meet all contingencies. (It is necessary to note that in 1933 the duties formerly assigned to the Adjutant General in connection with the printing, distribution, and accounting for codes, were transferred to the Chief Signal Officer,) thus integrating all cryptographic work in the Army within one organization—the Signal Intelligence Service under the Chief Signal Officer.)

Very important progress in research and development of new cryptographic apparatus and devices was being made; and a high-speed, electrical, cryptographic machine of highest security had been invented and developed by our chief cryptanalyst—this machine being far in advance of anything that had hitherto been known. Moreover, this machine was going into practical usage for secret intercommunication among War Department and the Commanders of overseas departments. An intercept service was being organised to provide the raw material for the cryptanalytic training activities, the first station to be established being that at Fort Monmouth, New Jersey, with additional stations being contemplated in the overseas departments. On the cryptanalytic side much progress had already been made, and by 1934 the training program had reached the stage where actual solutions of current Japanese diplomatic messages were being achieved daily. It is, however, a commentary on the peculiar situation which existed to state that so fearful was the Chief Signal Officer that news of the "illegal" activities of the Signal Intelligence Service might leak out, that these solutions were not issued as "bulletins" or distributed to anybody. Occasionally, one would be shown to the Chief Signal Officer, and it is possible that he would show a translation to the Assistant Chief of Staff, G-2, but it is doubtful if dissemination went any farther than that. When important visitors from the War Department were brought by the Chief Signal Officer to the quarters occupied by the Signal Intelligence Service for inspection or other official business, it was important to emphasize that such solution work as was being accomplished was only a by-product and part of the training being conducted, and that no use was made of the product. It was not until 2 March 1935 that "publication" of the bulletin was started, and G-2 began receiving on a more or less regular schedule the translations of Japanese diplomatic messages resulting from the "training." What distribution or dissemination G-2 made is, of course, not known to me, except by indirect evidence.

It was not until 1939 that any considerable increase in funds for the Signal Intelligence Service was provided, as is shown by the following letter:

September 27 1939

"SUBJECT: Signal Intelligence Service
"TO: The Chief Signal Officer

"1. You are authorized to employ the following designated additional civilian personnel from October 1, 1939, at the annual salaries indicated.

1 Principal Cryptanalyst @ $5,600.	$5,600
2 Associate Cryptanalysts @ $3,200	6,400
2 Research Analysts @ $3,200	6,400
2 Assistant Cryptanalysts @ $2,600	5,200
2 Junior Cryptanalysts @ $2,000	4,000
2 Cryptanalytic Aides @ $1,800	3,600
4 Principal Translators @ $2,300	9,200
1 Principal Clerk @ $2,300	2,300
1 Principal Stenographer @ $1,800	1,800
3 Cryptographic Clerks @ $1,800	5,400
1 Senior Tabulating MachineOperator @ $1,800	1,800
3 Assistant CryptographicClerk @ $1,620	4,860
2 Tabulating Machine Operators @ 1,620	3,240

"2. It is desired that you establish and operate a monitoring station at Fort Hunt, Virginia, and purchase such of the following listed equipment as may be necessary and procurable within the funds allotted:

10 Radio Sets, SCR 243 (or equivalent) @$260	$2,600
29 Radio Sets, SCR 244 (or equivalent) @$195	5,655
18 Recorders, BC 17 @ $1,300	23,400
12 Recording Equipment Tape @ $2,000	24,000
9 Diversity Antennae @ $3,000	27,000
14 Diversity Receiving Equipment @ $1,400	19,600
TOTAL	$102,255

"3. The authorized strength of the Second Signal Service Company is increased by the addition of the following listed personnel. The authorized strengths of Signal units from which these men are transferred are reduced by the corresponding grades and specialist ratings. The allotment of enlisted men to the Signal Corps is increased by twenty-six privates (grade 7). No increase in grades above grade 7 or in specialist ratings will be made until such time as additional grades and ratings become available (probably Nov. 8, 1939).

1 Master Sergeant
1 Technical Sergeant
1 Staff Sergeant
1 Private lst Class, spec. 1st class
6 Private lst Class, spec. 2d class

6 Private lst Class, spec. 3d class
6 Private lst Class, spec. 4th class
4 Private lst Class, spec. 5th class

"4. It is desired that you submit the name of and other pertinent data concerning a Regular Army Officer to be assigned as assistant to the officer in charge, Signal Intelligence Service, and the names of and other pertinent data concerning nine Reserve Officers for active duty under the provisions of the Thomason Act.

"5. Funds in the amount of $41,050 from the Administrative Reserve Signal Service of the Army and in the amount of $50,000 from the reserve now in an unallotted status, subject only to direction of the Secretary of War, will be released to you for the salaries of these civilian employees, for the purchase of additional equipment, and for the expenses incident to operation of the Signal Intelligence Service. The balance necessary for the purchase of equipment will not be available for obligation until the total deficiency of $175,405, required for the expansion of the Signal Intelligence Service has been covered by Congressional appropriations.

"6. You will make necessary arrangements in collaboration with A.C. of S. G-2 to obtain Civil Service exemptions required.

"By Order of the Secretary of War:

/s/ WILLIAM W. DICK
Adjutant General"

The total number of additional personnel for the Signal Intelligence Service in Washington authorized by the foregoing letter was twenty-six; with the original staff of nineteen people, the Signal Intelligence Service staff was to be forty-five persons. Steps were immediately taken to hire the new personel, have them cleared, and to start them in training - a rather lengthy process. Special dispensation had to be obtained from the Civil Service Commission to hire these trainees outside the Civil Service regulations, because no rosters of eligibles in cryptographic or cryptanalytic work existed. In order to obtain the support necessary for such an unusual procedure the Secretary of War requested approval by the President on 26 October 1939 to have the Civil Service regulations suspended so as to permit the employment by the Signal Intelligence Service of not more than twenty-six persons on a temporary basis until 30 June 1940. Through the intervention of the White House, the approval requested was obtained.

The unfavourable way in which the war in Europe was progressing so far as concerned Britain, led to desires to expand the Signal Intelligence Service even more, and as fast as possible. The urgency for cryptographic production to meet the needs of a large United States Army in case the United States became a belligerent was apparent; the output of the cryptanalytic staff was impressive enough to G-2 to warrant further increase of that staff. By September 1940 the Signal Intelligence Service, without the help of any other staff, had succeeded in a most momentous

achievement. [text withheld] - the solution of the Japanese diplomatic machine designated by them as the "B Machine" and by us as the "Purple." Texts of highest strategic and diplomatic import were being furnished G-2 daily, the value of which was recognized by the Assistant Chief of Staff, G-2, the Chief of Staff, the Secretary of War, and the President. The conduct of our difficult negotiations with the Japanese in regard to the situation in the Pacific was no doubt being guided from day to day by means of the solutions furnished the War Department, the State Department, and the President.

On 16 October 1940 the Chief Signal Officer requested of the Assistant Chief of Staff, G-2, authorization for two further expansions of the Signal Intelligence Service, one of which, to begin 1 January 1941, would involve appointment of forty-eight additional civilian employees at annual salaries totaling $85,580, half of which ($42,790) would have to be provided during the fiscal year 1941, then already in progress. No funds for this purpose were available to the Chief Signal Officer, but this expansion was approved by the Acting Assistant Chief of Staff, G-2, with the concurrence of the Assistant Chief of Staff, War Plans Division, on the very next day.

The second request, made on 16 October 1940, was for expansion involving employment of forty-two other employees, who were to begin work on 1 July 1941. This plan was approved in principle by Brigadier General Sherman Miles, Assistant Chief of Staff, G-2, on 17 October 1940, but its carrying out was postponed until the time for the preparation of the budget for fiscal year 1942. The paragraph is of interest:

> "3. The complete expansion of the Signal Intelligence Service to place it on a wartime basis beginning July 1, 1941, as recommended in paragraph 1c and inclosure of the basic letter, is not essential at the present time. The recommendation, however, is for funds to enable this expansion to be begun on July 1, 1941. The uncertainty of the future and the necessity in any contemplated expansion of this service to make provision for a time lag incident to selection and training of new personnel make it necessary to provide for an increase in personnel far in advance. It is recommended, therefore, that funds be made available in the fiscal year 1942 budget to provide for total expansion of the Signal Intelligence Service. If conditions develop prior to 1 July 1941, which make this additional expansion unnecessary, the funds need not be expended."

The letter from the Chief Signal Officer to the Assistant Chief of Staff, G-2, on 16 October 1940, contemplated an expanded Signal Intelligence Service for fiscal year 1942 amounting to 127 persons. The pressure of events was such that the full program must have been approved, for on 7 December 1941, instead of having only eighty-five people, as would have been the case had only the first increment been approved, the strength of the Signal Intelligence Service was as follows:

	Washington	Field	Total
Officers	44	1	45
Warrant Officers	-	-	-
Enlisted	28	149	177
Civilian	109	-	109
Total	181	150	331

The staff was organised as shown in the accompanying chart, with the following sections and personnel:

	Officers	Civilian	Total
Administrative	2	2	4
Personnel	2	6	8
Cryptanalytic			
Japanese	10	24	34
German	1	15	16
Cryptographic	16	10	26
Laboratory	4	-	4
Communications	5	2	7
Tabulating (IBM)	1	15	16
"Trainees" in classes	-	22	22
Total	44	109	153

. . .The nineteen people in professional grades also include Japanese translators; only a few expert cryptanalysts were therefore on hand among those nineteen.

The necessity for producing codes and ciphers has already been mentioned and the staff of 26 persons was hardly adequate for the large volume of work to be done. The production of our electric cipher machines (Sigaba) was under way and there were multitudinous details to be dealt with in that project above: the preparation of instructional manuals for the maintenance and operation of the machine, the elaboration of keying arrangements; the elaboration of what shall go into spare parts kits, etc. Also, the plans for the production of Converter M-209 were under way— a very large project in itself. Besides all this, keys and control tapes for the electric Converter M134A had to be prepared on a current basis, to maintain security of current communications; strips and key lists for the widely distributed Strip Cipher Device M-138A had to be prepared in large quantities; constant liaison with the Navy Cryptographic Division, for the production and distribution of cryptographic material for joint communication required much time, etc. Also, plans for the production of an automatic teletype encipherment system invented by Signal Intelligence Service personnel were being brought to fruition.

The ever-expanding requirements of traffic for the cryptanalytic staff meant expansion in the facilities and personnel of the Second Signal Service Company. Seven monitor stations were in operation by 7 December 1941:

1 - Fort Hancock, New Jersey
2 - Fort Scott, Presidio of San Francisco
3 - Fort Sam Houston, Texas
4 - Post of Corozal, Panama Canal Department
5 - Fort Shafter, T. H.
6 - Fort McKinley, P. I.
7 - Fort Hunt, Virginia

Also, of course, a good portion of our traffic came from the United States Navy, which had a large station at Bainbridge Island, Washington, and another at Bar Harbor, Maine. The mere recording and indexing of the large volume of messages constituted a task of no small proportions.

Hence, even with the large expansion of the Signal Intelligence Service there was much more to do than hands to do with. Consider what was done in the field of solving and translating Japanese diplomatic messages alone. By a special agreement between the Chief Signal Officer and the Director of Naval Communications, all work on Japanese diplomatic traffic was divided up between the Army and Navy on the basis that Army would process all messages of even date (cryptologic), Navy, all of odd date - with full exchange of technical data and results. Thus, in collaboration with the Navy and with a total of only 34 persons, the Signal Intelligence Service was attempting to decode, decipher, and translate its half of the traffic for which the Japanese must themselves have had several hundred persons, and the Japanese, of course, did not have to translate the material, a job which was quite difficult for us because of linguistic difficulties and paucity of qualified translators. Moreover, the Japanese had the necessary keys; we had to solve them, and in many cases solution had to await the accumulation of traffic - it could not always be done with a single message, so that occasion delays in solution were inevitable from the very nature of the systems involved. Also, another factor had to be taken into account: the time required to forward the intercept traffic to Washington. Lacking facilities and personnel to prepare all the traffic, encipher it, and transmit it to Washington, some of it had to await shipment by air mail, and this factor alone occasioned delays. As has been aptly said by General Miles: "The astonishing thing, gentlemen, is not that these messages were delayed, but that they were able to do it at all. It was a marvelous piece of work."

WILLIAM F. FRIEDMAN
Director of Communications Research

Prepared on
4 December 1945

From SRH 135. *Army success in signals intelligence operations prior to World War II was dependent not only on the core of skilled cryptanalysts at SIS headquarters, but on the men who manned what we now call the "front end" of the system: the Signal Corps intercept operators. The Army's Chief Signal Officer, Major General Joseph O. Mauborgne, describes the Army's existing intercept organization and suggests a way to improve it in this 1938 letter. The 2d Signal Service Company he proposed was activated on 1 January 1939.*

WAR DEPARTMENT
Office of the Chief Signal Officer
Washington

OCSigO-320.3-RID September 2, 1938

SUBJECT: Signal Intelligence
TO: The Adjutant General

1. The Signal Intelligence Service in Washington depends for the material with which it works, upon Signal Intelligence Detachments in Hawaii, Panama, Ninth Corps Area and Eighth Corps Area. These signal intelligence detachments are parts of the Signal Service Companies located in the same corps area or department. There has been ordered set up as part of the Tenth Signal Service Company in the Philippine Department, a signal intelligence detachment of 10 men. In addition, so important has the War Department considered the work of the Signal Intelligence Service, it has been thought essential to detach 17 men from the Provisional Radio Intelligence Company at Fort Monmouth, New Jersey, and have this detachment act as a signal intelligence detachment. This last is done even at the risk of crippling the important tactical activities of the Provisional Radio Intelligence Company (to be designated as the 1st Radio Intelligence Company as of November 1, 1938).

2. Whereas the results achieved by the Signal Intelligence Service in Washington are treated with utmost in care and secrecy, equal measures of secrecy are not taken with the personnel of the signal intelligence detachments in the field. The personnel of the signal intelligence detachments cannot long be unaware of the nature of the work in which they are engaged and the ultimate secrecy of the system as a whole depends just as much upon them as upon the personnel in Washington. At present the choice of signal intelligence detachment personnel is left to the corps area and department signal officers and there is no doubt that they exercise every possible precaution. However, in the present form of organization much is entirely out of their hands and beyond the control of the Chief Signal Officer. For example, a skilled member of the signal intelligence detachment in Hawaii is returned to the mainland. Unless he is in Grade 4 or above he is reduced

to the grade of private and returned for haphazard assignment by the normal process. Even if he is eventually reassigned to a signal intelligence detachment on the mainland, he must begin afresh in the grade of private and work himself up. Knowledge of this actuates many to separate from the service; every such man separated from the service carries with him a fairly accurate knowledge of the work upon which the Signal Intelligence Service is embarked and he constitutes just one more threat to the secrecy of the work. He is a far greater threat when separated from the service since he is no longer under military surveillance.

3. The haphazard movement of the enlisted personnel engaged in signal intelligence work also makes their training more difficult and lessens the effectiveness of the Signal Intelligence Service. The useful member of the signal intelligence detachment must be first of all an excellent radio operator and beyond that must acquire skill and experience peculiar ro signal intelligence work: the acquisition of this skill and experience requires from six months to a year under competent instruction. At present, it is not possible to surely retain trained men: indeed it is not even possible to surely retain competent instructing personnel.

4. The remedy to this situation is a signal service company, detachments of which are stationed in the various corps areas and departments as required. The personnel could then be transferred from detachment to detachment without loss of grade or rating and control over the personnel would be increased. To minimize the number of highly skilled personnel separating from the service, the grades and ratings of the company should be considerably higher on the average than is normal in the Army. After many years of experience, the Navy Department adopted just the form of organization here recommended. Obviously, the ideal cannot be achieved by mere statement. However, a great step forward in the secrecy of signal intelligence work and in the training of signal intelligence enlisted personnel can be taken by organizing the several signal intelligence detachments into a signal service company. This can be done without request for any additional men, grades, rating, housing, transportation or equipment.

5. It is therefore recommended that there be organized the 2d Signal Service Company. The personnel necessary are to be obtained by withdrawing from the various service companies the signal intelligence detachments of which are now part of them and by a temporary decrease in the 1st Radio Intelligence Company. (It is proposed not to alter the Tables of Organization of the Radio Intelligence Company, but merely to leave vacant such grades and ratings as are taken to make up the 2nd Signal Service Company: when increases in signal intelligence personnel are granted the Radio Intelligence Company will be permitted to regain its table of organization strength.) Inclosure No. 1, Table of Organization of the 2nd Signal Service Company, shows the strength, grades and ratings of the proposed company. Inclosure No. 2 shows the men, grades and ratings taken from the various companies in order to constitute the Signal Intelligence Company. It will be seen that the organization of the Signal Intelligence Company requires no addition-

al men, grades or ratings from outside the Signal Corps itself. The matter of housing will not be concerned since the detachments are already housed. No additional transportation or equipment will be required because of the organization of the company. The company will be commanded by the officer in charge of the Signal Intelligence Detachment at Fort Monmouth. Detachments of the company will be stationed in the various corps areas and departments just as they are now: they will be attached to the local organization for rations and quarters (the same organizations with which they are now rationed and quartered): their work will be supervised by the corps area or department signal officer concerned, except in the case of the detachment now at Fort Monmouth which will be supervised by the commanding officer of the company.

6. It is intended that the 2d Signal Service Company shall function under general instructions issued by the Chief Signal Officer. Plans for its expansion in time of war and its use in war will be recommended by the Chief Signal Officer for inclusion in the several colored war plans, and the mobilization plan.

/s/ J.O. MAUBORGNE
/t/ J.O. MAUBORGNE
Major General
Chief Signal Officer of the Army

From *The "Magic" Background of Pearl Harbor, Volume IV, Appendix* (Washington, D.C.: Department of Defense, 1977), p. A-89.

The Japanese government dispatched this diplomatic communication to its envoys in Washington, Special Envoy Saburo Kurusu and Ambassador Admiral Kichisaburo Nomura, on 22 November 1941. It was intercepted and translated by the Army's Signal Intelligence Service on the same day. In the aftermath of Pearl Harbor, its language took on a new ominousness.

FROM: Tokyo
TO: Washington
November 22, 1941 (Urgent)
#812

To both your Ambassadors.

It is awfully hard for us to consider changing the date we set in my #736a. You should know this, however, I know you are working hard. Stick to your fixed policy and do your very best. Spare no efforts and try to bring about the solution we desire. There are reasons beyond your ability to guess why we wanted to settle Japanese-American relations by the 25th, but if within the next three or four days

you can finish your conversations with the Americans; if the signing can be completed by the 29th (let me write it out for you—twenty-ninth); if the pertinent notes can be exchanged, if we can get an understanding with Great Britain and the Netherlands; and in short if everything can be finished, we have decided to wait until that date. This time we mean it, that the deadline absolutely cannot be changed. After that things are automatically going to happen. Please take this into your careful consideration and work harder than you ever have before. This, for the present, is for the information of you two Ambassadors alone.

* * *

Trans. 11/22/41 (S)

ARMY 6710 25138

From SRH 115. *This excerpt from hearings held by the Army on the roots of the intelligence failure that led to Pearl Harbor demonstrates all too vividly the feeble resources of the Military Intelligence Division on the eve of war. It also shows how tightly "Magic" was held: Brigadier General Hayes W. Kroner, the head of MID's Intelligence Branch in 1941, was unaware of its existence. This is the transcript of an interview of Kroner conducted in September 1944 by Colonel Carter W. Clarke, Deputy Chief of the Military Intelligence Service. The General Miles mentioned in the text was the hapless Brigadier General Sherman A. Miles, Assistant Chief of Staff, G-2, at the time of the Pearl Harbor attack. "Minxler," whom Kroner describes as the individual who furnished mysterious source materials to one of Kroner's subordinates, was actually Colonel Rex A. Minckler, Chief of the Signal Intelligence Service at the time.*

Place: Room 2C637 Pentagon Building, Washington, D.C.
Date: 13 September 1944
Time: 1430 - 1510

Present: Brigadier General Hayes A. Kroner
Colonel Carter W. Clarke
Lt. Col. E.W. Gibson

Brigadier General Hayes A. Kroner, having been sworn and warned of his rights by Colonel Carter W. Clarke, gave the following sworn testimony:

Col. Clarke: Will you state your name, rank and station.

Gen. Kroner: Hayes A. Kroner, Brigadier General. Station Rio de Janeiro,

Military Attache.

Col. Clarke: When did you first come on duty in G-2, Department General Staff?

Gen. Kroner: About the first of March 1941.

Col. Clarke: What were your duties at that time?

Gen. Kroner: I was assigned to the British Empire Section of the Intelligence Branch, G-2 but before taking up those duties I was sent to England for a period of observation of the war. I returned from England early in June, about the middle of June 1941, and took up my duties of Chief of the British Empire Section, G-2 at that time.

Col. Clarke: How long did you continue on that duty?

Gen. Kroner: Approximately one month.

Col. Clarke: And then what did you do?

Gen. Kroner: About the middle of July I was informed by the retiring Chief of the Intelligence Branch, Col. C. H. Mason, that he was leaving G-2 and that he had been instructed to turn the Branch over to me as next senior officer. I immediately took over charge of the Branch and for the next several months was acting in charge and later on I was appointed Chief of the Branch. To the best of my memory it was about September 17 that an order was issued by the Executive Officer, G-2 appointing me as the Chief of the Intelligence Branch, which position I held until sometime in the month of December, when General Lee became Acting Assistant Chief of Staff, G-2 and I was then verbally relieved from Chief of Intelligence Branch and made Deputy to General Lee.

Col. Clarke: What did the Intelligence Branch consist of principally?

Gen. Kroner: I found the Intelligence Branch, in July '41, to consist of a very small Administrative Section and of several geographic sections and an Air Section. The Administrative Section was in process of transition. Because of the impact of the war and more information coming into G-2, there was a greater need for proper handling and dissemination of that information. The only geographic section of G-2 which appeared to be expanding at that time was the Latin American Section. By the 10th of October—referring here to the official chart on record—the Intelligence Branch consisted of a headquarters or the Administrative Section, Contact Section, Situation Section, Dissemination Section, and the Air and geographic sections composed of the following: Air Section, British Empire Section, Western European Section, Central European Section, Eastern European Section, Southern European Section, Far East Section, and the Latin American Section. The several

European sections had been set up to deal with the increased information coming in from the European war and, together with the British Empire Section, it was considered adequate to handle the war in Europe. The Latin American Section was expanding for obvious reasons of hemisphere defense. The Far Eastern Section at this time had not undergone any material change, so far as I can remember, for several months. This organization, with a few changes, continued during my tenure of office as Chief of the Branch....

Col. Clarke: I understand you to say then that you were Chief of the Intelligence Group from about July through Pearl Harbor, December 7?

Gen. Kroner: Yes.

Col. Clarke: During that time was there any recommendation made—first let me ask you this—who was the Chief of the Far Eastern Section?

Gen. Kroner: Col. R. S. Bratton.

Col. Clarke: During that time was there any recommendation made to you as Chief of the Group for any increase in personnel or expansion of its intelligence gathering activities?

Gen. Kroner: Not any to give me any trouble - there was some minor increase of a clerk or two and perhaps one officer, I don't remember, but nothing in the line of expansion as I have referred to in the European Section. I would say this further, that one of their Far East experts.Col. Pettigrew, was taken from the Far Eastern Section at the time to assist in the reorganization of the Headquarters dissemination, so that I had very close to me at that time an experienced Far East officer on my staff.

Col. Clarke: Who was that?

Gen. Kroner: Pettigrew. It was, I think, worthy of note just here that Col. Betts, who was the Chief of the Situation subsection, whom I called my G-2-G-3 officer on my own staff, Col. Pettigrew being so-called G-1-G-4 officer, together with my own experience in the Far East, that with Col. Bratton it was a fairly good team of Far East trained officers at the head of the Intelligence Group.

Col. Clarke: Was there any action taken by the Chief of the Far Eastern Group that would lead you to think that any difficulties or hostilities were expected in the Orient that would affect the United States?

Gen. Kroner: None specifically as to direct threat in regard to time or date or place. Japanese possible lines of action were often discussed, as you might expect among officers as closely allied as the ones I mentioned above with Far East training and influence. I left the evaluation of information pertaining to the Far

East and its interpretation initially to Col. Bratton, and in that over-all sense to Col. Betts.

Col. Clarke: What was your chief source of information with regard to the Far East?

Gen. Kroner: Military Attache reports and translations of books and journals which were received from various sources, so far as I was aware.

Col. Clarke: You had no secret intelligence service?

Gen. Kroner: No.

Col. Clarke: Was any attempt made to create any during the time that you were in charge?

Gen. Kroner: Yes. I remember the time—I don't remember exactly—but I remember an instance which was partially fulfilled, I believe, that a former Far East trained officer, who I think was retired and living in California, Captain or Major W. C. Clear, was brought into G-2 and given secret briefing by Gen. Miles, to the best of my knowledge, and sent out to the Far East, I think to Singapore, in order to initiate some secret intelligence, of which I have no detailed knowledge.

* * *

Col. Clarke: Did you have access to a source of information which we know as Top Secret or the British known as Most Secret?

Gen. Kroner: Meaning communications information?

Col. Clarke: Signal intelligence.

Gen. Kroner: No, none whatever.

Col. Clarke: You mean you didn't get it or your Branch didn't get it?

Gen. Kroner: I personally as Chief of the Branch did not get it. I was aware that something, which later I found out to be of this nature, existed, but I was given to understand, particularly by Col. Bratton and Col. Pettigrew, who sometimes handled the matter for Col. Bratton, that he received information from Col. Minxler, whom I knew to be in the Signal Corps, which perhaps had to do with Japanese troop movements, which he by long custom and by General Miles special desire, was to handle himself directly with Gen. Miles.

Col. Clarke: Then you don't know what Col. Bratton did with this stuff other than give it to Gen. Miles?

Gen. Kroner: No official information. I frequently remember seeing him leave his office with several parcels under his arm and be gone for some hours, but I felt it was my duty to follow the established procedure which was apparently pleasing to my chief, and I didn't question

the procedure.

Col. Clarke: During the time that you were Chief of the Intelligence Group you never had access or never saw any of this material yourself? When did you first see it?

Gen. Kroner: I only saw the material, which later I learned was called material, when I used to receive it from Minkler's hands when Bratton was absent, and lock it up in my safe and give it to Bratton without sorting it out. In other words, I understood, without any specific orders from Gen. Miles, that he wished it handled that way and therefore I did not violate that procedure.

Col. Clarke: Do you know if any estimates were written in the Far East Section based on this material or any prognostications, forecasts, or predic tions?

Gen. Kroner: I do not.

Col. Clarke: If any had been made you would have seen them, wouldn't you, as the Chief?

Gen. Kroner: I think so because estimates were accustomed to being made, not only at regular intervals, but also special estimates from time to time would be made, the Far Eastern part of which was always prepared initially in the Far East, held by Col. Bratton or under his direction brought into Col. Betts, who revised it and fitted it in with information from other geographic sections. I assumed that the Chief of the Far Eastern Section used all the information at his disposal to make a complete estimate and as accurate an estimate as possible.

Col. Clarke: Did there exist anything like a central evaluating section where all information came in and was there melted into one estimate or report or summary?

Gen. Kroner: No. There was a trend toward that at the end of the year but we didn't get anywhere with it. It was just in the planning stage.

* * *

Col. Clarke: I would like to ask you one more question. In any estimate from the time you took over the Intelligence Group up to and including Pearl Harbor, was there ever any prediction or forecast made of a possible attack on Pearl Harbor?

Gen. Kroner: None to my knowledge. I have in mind the last estimate that was made before Pearl Harbor, which was an estimate covering a future period from December 1 to sometime in 1942.

Lt. Col. Gibson: Did you consider it a capability of the Japanese to successfully attack Pearl Harbor with bombers?

Gen. Kroner: No. The matter was discussed -

Col. Clarke: Did you identify this document?

Gen. Kroner: Yes. I identified it - this is the document to which I referred - IB 159, November 29, 1941. This particular estimate was considered by the whole division, not only the Intelligence Group but by General Miles himself, as perhaps the most important we had ever gotten out. That importance lay not in so much the danger that we saw from Japan, although danger in that field was pretty thorough ly discussed, but primarily because Gen. Miles wished to focus War Department thought on the defeat that could be administered to the Nazi powers. In the preparation of the estimate each geographic section in the Intelligence Branch prepared its part. Colonel - now Brigadier General - Thomas J. Betts put the several estimates together and did what we called "polish them up." He and I discussed the lines of action and the capabilities of all the warring powers and especially of each potential enemy to the U.S.A., and I took them to Gen. Miles where they were finally altered to suit him or approved. This particular estimate does not include in the lines of action open to Japan, an attack on Pearl Harbor, and I remember that so distinctly because when the word came through the radio on that fateful Sunday, December 7, that Japan had attacked Pearl Harbor, I was sitting in my office in the Munitions Building reading from this paper the Japanese capabilities. Therefore from my point of view, I feel that Japan's potential capability against Pearl Harbor was left from this estimate because neither Col. Betts nor I had any information which would lead us to believe that they were capable of or planned to do so.

Col. Clarke: I would like to ask one final question again just to reiterate the fact that you personally had no knowledge of what Col. Bratton did with this most secret material or to whom he showed it?

Gen. Kroner: That is correct, except to Gen. Miles.

Col. Clarke: And you don't know what Miles did with it.

CHAPTER III

Accepting the Challenge

The technical success of American cryptanalysts could not prevent the Pearl Harbor debacle: the intercepted Japanese diplomatic communications had not contained the details of Japanese military planning. In the aftermath of Pearl Harbor, American policymakers realized that some better way had to be found to produce finished intelligence from COMINT intercepts. Secretary of War Henry L. Stimson called upon the services of the distinguished Chicago lawyer Alfred W. McCormack to solve the problem. McCormack recommended the establishment of a Special Branch within the Military Intelligence Service to handle highly sensitive signals intelligence. This proposal was adopted, and McCormack was commissioned as a colonel and became deputy head of the new organization. McCormack tells the story of the inception of the Special Branch in SRH 116, Origin, Functions and Problems of the Special Branch. The excerpt from SRH 141, Papers from the Personal Files of Alfred McCormack, Colonel AUS, Special Branch, G-2, Military Intelligence Division, War Department, Volume II, details some of the problems surrounding the effort.

From SRH 116. *Writing in 1943 to his superior, Colonel Carter W. Clarke, the Chief of Special Branch, Colonel Alfred McCormack describes the organization they both had helped to shape.*

ORIGIN, FUNCTIONS AND PROBLEMS
OF
THE SPECIAL BRANCH, M.I.S.

April 15, 1943.

MEMORANDUM FOR COLONEL CARTER W. CLARKE:

Subject: Origin, Functions and Problems of the Special Branch, M.I.S.

Following our recent discussions, I am putting down in this memorandum what seem to be the important facts relating to the Special Branch, in the hope of clarifying the problems now confronting us.

A. *Responsibilities of War Department for Intelligence Derived from Cryptanalysis.*

The outstanding feature of "black chamber" activities in the United States is that they are performed almost exclusively by the armed services and that the great bulk of the work is done by the Army. The F.B.I. and the Coast Guard operate in certain limited fields. The Navy confines itself exclusively to naval traffic. The Army is responsible not only for military and M/A traffic but for the large residual field that is loosely called "diplomatic," which includes the great bulk of the important traffic over commercial, official and semi-official radio networks throughout the world.

[text withheld] From the standpoint of the Army the present U.S. arrangements are the most desirable, especially in time of war. The Army is not dependent upon the State Department, [text withheld] for its information about all the complicated cross-currents of political and economic diplomacy and for the enormous amount of intelligence that is found in foreign official messages. On the contrary, the State Department is dependent upon the Army, which now controls the sources and determines the order of priority in which those sources will be exploited.

The continuation of Army-Navy control over such sources is important for the immediate necessities of war, and it is at least equally important for the long-range future. The availablility of important intelligence from cryptanalytic sources, during the critical 18 months prior to December 7, 1941, was due solely to the fact that the Army and the Navy, in the face of difficulties and even legal prohibitions, were able to maintain skeleton organizations in this field, in preparation for the day when they would be vital to the national defense. The armed services are the safest repositories of cryptanalytic material and activities, since they can operate with greater

secrecy and with a longer-range viewpoint than can the political agencies of the Government. The chances of continued cryptanalytic progress after the war are believed to be better if control of the field remains in the armed services than if the non-military fields are taken over by a civilian agency.

However, control involves responsibilities, and in case of the diplomatic traffic it involves specific commitments to the President and to the State Department to get as much usable intelligence as possible out of the material.

B. *Handling of Intercept Intelligence Prior to the War.*

When this country declared war, both the intercept work and the cryptanalytic work in the diplomatic field were divided between the Army and the Navy, though actually most of the work was being done by the Army. The combined intercept and cryptanalytic facilities of the Army and Navy had produced some 7,000 decrypted and translated messages in the 6 months before Pearl Harbor, or an average of about 300 per week, of which only 1,561 were considered of enough significance to be filed for future reference. The responsibility for bringing important messages to the attention of the Secretary of War and the top officers of the Army was vested in the Chief of the Far Eastern Section, M.I.S. O.N.I. served the President, the Secretary of the Navy and the top officers of the Navy.

In M.I.S. the material was handled as follows: Each day's batch of messages was examined by the Chief of the Far Eastern Section. Those not considered important were put aside for burning. Those that were thought important were circulated to the Secretary of War, the Chief of Staff, the Assistant Chief of Staff, Op.D., and the Assistant Chief of Staff, G-2. One copy of each circulated item was put into a locked file; the other copies were burned after they had been returned by the readers. No personnel were assigned to a continuous study of the material; hence very little could be done to put any of it together in connected form. The Chief of the Far Eastern Section, M.I.S., having as such a full-time job and limited personnel, could do no more with the messages than carry the important facts in his head.

C. *Decision of the Secretary of War Concerning Exploitation of Cryptanalytic Field.*

When the sudden attack on Pearl Harbor occurred, it became apparent that the event had been clearly foreshadowed in the Japanese traffic of 1941. The Secretary of War, and no doubt others, than concluded that the traffic had not been given sufficiently close attention, and that some agency should be set up to deal with cryptanalytic intelligence in a more thorough-going fashion than previously had been thought necessary. The Secretary decided that the job ought to be undertaken by a lawyer having a special type of competence and training, such as may be acquired in the handling and presentation of large cases involving complicated facts.

After consulting with the Assistant Secretary, Mr. McCloy, about possible candidates, the Secretary authorized Mr. McCloy to offer this assignment to me, my experience over a number of years having been along the indicated lines. The mat-

ter was put up to me early in January, 1942, and after some discussion I agreed to undertake the job, resigned from my law firm, and took office as a Special Assistant to the Secretary on January 19, 1942.

On that day I received my instructions from Mr. Stimson. Briefly, they were that I was to study the problem and determine what had to be done in order to expand the cryptanalytic operations to meet the requirements of war, and to make sure that all possible useful intelligence was derived from the cryptanalytic material. Both the Secretary and Mr. McCloy emphasized the need for close and continuous study of intelligence derived from cryptanalytic activities and of piecing such intelligence together in connected form.

For two months I studied the back materials, investigated production facilities, had numerous conferences with Mr. McCloy, General Lee and others interested, and made recommendations as to what should be done and how the work should be handled. The details are no longer of any importance. Everyone agreed that there was a very large job to be done.

D. *Organization of M.I.S. Section to Handle Intercepts.*

Shortly after I started work, there was set up in the Far Eastern Branch of M.I.S. a section which was to follow and report upon the cryptanalytic material. It soon became apparent that there were at least two fundamental differences of opinion between the officer chosen to head that section and myself.

First, I disagreed with the notion that any reserve officer, or any civilian who had been graduated from college, was qualified to handle cryptanalytic intelligence. It seemed to me that the job could be done effectively only by persons with very special qualifications; that the most careful selection of personnel was necessary, and that only individuals of first-rate ability and suitable training should be taken into the work.

Second, I disagreed with the method that was adopted for reporting the intercept material, which was to take what looked interesting and to pass it along in paraphrased form, without any attempt either to check or evaluate the information or to supplement it by collateral intelligence. It seemed to me that the Secretary, the Chief of Staff and the others to whom reports were made were entitled to have every item carefully checked, evaluated and supplemented by all possible sources of intelligence, and that their time should not be wasted in reading odd and unchecked bits of information not related to attendant circumstances and given their proper value. Further, it appeared to me that the daily reporting of current messages was only one part of the job; and that the real job was to dig into the material, study it in the light of outside information, follow up leads that it gave, and bring out of it the intelligence that did not appear on the surface.

E. *Organization of Special Branch.*

My investigations of the intercept and cryptanalytic problems brought me in contact with you, and we had many discussions on the subject and some discussions with General Strong. His thinking was along the same lines as ours and he

approved of our conclusions. The upshot was that the M.I.S. section in charge of cryptanalytic activities was made the Special Branch, with you as its Chief. We moved into common quarters and worked together, your staff (part of M.I.S.) and my staff (part of the Secretary's office) being made into a single working unit as fully as if they were all part of the same agency. You concentrated on pushing the expansion of the intercept facilities, on setting up a workable system of priorities, and on the many technical problems that were encountered. You were fully familiar with those problems and had arrived at the same conclusions that I was reaching, with respect to the necessity for a great expansion of the intercept facilities and for an attack on the cryptanalytic problems on a much broader basis. You were largely instrumental in inducing the Signal Corps to embark upon the program that it is now carrying to completion, involving the acquisition and development of Arlington Hall, the location at Vint Hill of one of the largest intercept stations in the world, the expansion of facilities at Two Rocks, California, and elsewhere, and a personnel program reasonably adapted to requirements of a war-time job.

Meanwhile, I concentrated on recruiting a suitable staff and on the problems involved in getting intelligence out of the intercepts and devising methods of checking, evaluating and reporting it and of keeping track of it by suitable files and indexes. General Strong and you felt that it was desirable for me to go into the Army, and I was commissioned in June. Thereafter the Special Branch absorbed the staff that the Secretary's office had assigned to me.

F. *Work of the Special Branch.*

* * *

It seems fair to say that we have a good organization of people well above the average level of competence, who work full steam and on the whole have given a good account of themselves. Our so-called "Magic Summary" appears to be accepted as a satisfactory job of reporting. At the Navy's request a copy now goes to the Secretary of the Navy, and at the State Department's request copies now go to the Secretary of State and to the Assistant Secretary of State who follows cryptanalytic intelligence.

A great deal of our work does not get into the "Magic Summary." I think we probably do more work in deciding what to exclude from the Summary than we do on items that are put into it. We try to avoid reporting more details, and we consider that those to whom we report should not be bothered by material which, if properly checked and studied, would be found to be of no value.

A lot of our work, from the reporting angle, consists in feeding information to the M.I.S. geographical sections, to other agencies of the Department, and to outside agencies. We employ one officer full-time in verifying Order of Battle information and reporting such information to the O/B sections and the Air Branch of M.I.S. When security considerations permit, we pass on economic information to

the B.E.W. We are constantly called upon for information by those in the State Department who have access to our material, and we employ one officer full time in serving the State Department and getting necessary information from them. We prepare periodical reports on South American information for the Coordinator of Inter-American Affairs. When information is of a sort that the Assistant Chief of Staff, G-2, should bring to the attention of other agencies, such as the O.S.S. or the O.W.I., we prepare reports or paraphrases for his signature.

The whole body of intelligence which flows out of intercept material, into the various sources that have been mentioned, adds up to a considerable amount. This memorandum will not attempt to evaluate it, as compared with other sources of intelligence, but it may be worth while to mention a number of examples of important intelligence material, with which the readers of the "Magic Summary" will be familiar:

a. Practically the only good information about the relations between Japan and Russia has come from the intercept material. Much of it has not been obvious on the face of the material, but has required a great deal of study and collateral research in order to piece it together. (At a time when almost everyone expected Japan to attack Russia, and when M.I.S. went on record as predicting such an attack at an early date, we had concluded from the intercept material that Japan had no intention of attacking Russia, but wanted to keep out of war with Russia at all costs.)

b. The best information about the attitude and intentions [text withheld] following the African invasion, came from that source.

c. That source has also yielded, in addition to considerable information not otherwise obtainable about Japan, the most accurate and dependable information about the relations between the Japanese Government and its Axis partners and about trade between Axis Europe and the Far East. [text withheld]

Many other examples of lesser importance, but of the same general type, might be given.

It would take a lot of space to give a good picture of what might be called the "detail intelligence" that we get, of its present value and of the future value that it may have as it gradually builds up facts. Perhaps the picture can best be given by the following illustrations:

The nature of the materials bearing on the Far East is such that the most astute person, even if an expert on the Far East and possessed of a photographic memory, would derive few connected impressions—and very little usable information—from merely reading the messages from day to day. They must be pieced together by the most painstaking and laborious process, involving collateral investigation, often of minute points. The work is very difficult, but the rewards in the way of intelligence are substantial. For example:

As you know, we are in possession today of enough information about Japanese shipping to and from Indo-China and Thailand so that we have a pretty

clear picture of the movement of supplies on those runs and of the problems that Japan is encountering in getting raw materials out of those areas and keeping them supplied with the minimum of essential imports. Our information has been put together from an infinite number of scraps of fact. As you recall, the material on this subject was not at first very promising. It looked hopeless to make any connected sense out of the garbled texts, incomprehensible ship names, abbreviations and alphabetical designations, and the inconsistent tonnage figures, loading reports and ship schedules, especially because in many cases the key messages had not been intercepted.

Finally, however, by struggling with the S.S.D. translators, doing research on Japanese merchant vessels, gradually identifying ship names, eliminating duplications of cargo information, checking ship tonnages and schedules and, in general, applying what might be called high class detective methods, we built up a picture that is clear and substantially complete in its principal parts. Having built up that picture, it is now possible for us to follow the pertinent messages from week to week and to understand what they mean. Had the job not been done, the current messages would be largely incomprehensible.

Since Japanese shipping has been selected as an illustration of the piecing together of incomprehensible bits of intelligence into a connected whole, it is interesting to note that we arrived at several conclusions about Japanese shipping which made it necessary to change previously accepted figures. For instance, we established that the Japanese have been employing at least 450,000 tons of merchant shipping in the South Pacific, whereas the J.I.C., apparently with the approval of the Navy, recently published a study which showed that only 300,000 tons of shipping were employed in moving goods to and from that area. We brought our findings to the attention of O.N.I., whose people first explained them away. A few days ago, however, we were advised informally by O.N.I. that they now agree with our findings and that, while they do not want to revise their published figures at present, they will make the corrections when they next issue a report.

This little story has a pertinent moral. Until we gave them the above and certain other findings on Japanese merchant shipping, the O.N.I. people were polite and cooperative, but they stopped short of giving us their own secret information. But, when we brought them to our office and explained what we were trying to do and how far we had progressed, they offered to put at our disposal all their own information on the same subject. Since that time, which was last fall, they have prepared for our special use and delivered to us each morning a summary of all information received on the previous day about merchant shipping in the Far East, from sources other than our own material.

From this daily report, pieced together with our other material, we are building up a wealth of evidence on the movements of Japanese vessels and cargoes. We have hopes that the time is not far distant when we will have the whole picture of Japanese shipping and water-borne trade reconstructed to a point where its main

outlines will be clear and many if not most of the important details will be known.

The above is given as a sample of the work that we are trying to do; and while this memorandum is not intended as an analysis of S.S.D. traffic, present or potential, it may be worth while to carry the story just a little further:

Japanese shipping is only one of the important subjects on which the intercepts are gradually building up connected and definitive information, not obtainable from any other source. Referring only to the Far East, it is our hope that over the next year, if the same kind of material keeps coming in and if sufficiently painstaking work is done on it, we will have the Far Eastern picture—except perhaps for the East Indies—pretty well reconstructed in its economic and political aspects and be able to make increasingly accurate diagnoses of Japanese capabilities, difficulties and plans.

The story of the Dutch East Indies is buried, we think, in the water transportation traffic of the Japanese Army. The cryptanalysts at Arlington Hall think they have solved the cryptographic system in which this traffic is sent and that in 1, 2 or 3 months they will have built up code values to a point where the traffic will be completely readable. If that should prove to be true, then the East Indies will be opened up from the intelligence standpoint and the geographical coverage of the Far East will be complete.

G. *Increase in Volume of S.S.D. Material.*

Meanwhile, coverage is being extended, new systems are being solved and translation and processing facilities are being built up. [text withheld] In the 6 months before Pearl Harbor almost all the traffic produced was Japanese, with a scattering of German [text withheld] messages. A large volume from many sources is now handled, and language coverage has increased [text withheld]

The recent solutions of the German Key Word Code and the Japanese M/A Code represented substantial progress in cryptanalytic work; and the expected solution of at least one of the highest grade Japanese military ciphers—and possibly of the whole Japanese military system—will, if it occurs, be an event of major importance from the intelligence angle.

Intercept coverage has been extended by the development of 3 large fixed monitoring stations, giving approximately global coverage for what is broadly described as "diplomatic" traffic, and by field radio intelligence companies. Not only do the new stations permit more intercept facilities to be used, but the better antenna installations and better equipment make it possible to listen to circuits at times when previously they could not be heard. For example, until completion of a recent installation at Vint Hill, the Berlin [text withheld] circuit could be listened to for an average of perhaps one or two hours per day. Now it is estimated that the good listening hours have increased to 8 to 10 hours per day, and possibly more. When the Fairbanks station—the only one that can listen to traffic between Tokyo and [text withheld] —gets new antennas, as it will when the spring weather comes, the amount of traffic intercepted from those circuits should increase from a mere

driblet to a substantial volume.

During the month of March we received 4,500 deciphered messages from Arlington Hall. This was still only a fraction of the available material, as may be shown very readily by the figures for the messages [text withheld] during March.

	Total
Japanese Army and weather traffic	91,596
Other traffic	22,489
	114,085

The bottleneck—by reason of which this Branch received only 4,500 messages from Arlington Hall in March, as compared with our 22,000 (excluding Japanese military) [text withheld] lies in the processing and translating facilities of Arlington Hall, which are largely a problem of civilian personnel. They had 105 civilians on December 7, 1941; they had 1,754 on February 1, 1943 (the last date when we obtained exact figures). They now have over 2,300 and their T/O calls for 3,683 by June 30, 1943. It is estimated that—apart from the problem of Japanese military tarffic—the volume of S.S.D. material coming into the Special Branch will at least double by the end of June. It will continue to increase as the successive bottlenecks are eliminated. More traffic will be intercepted; more will be decoded; more will be translated. Leaving out of account the Japanese Army traffic, the total volume could easily increase four-fold by the end of the year.

This increase of material emphasizes our manpower problem. But the problem exists independently of the question of volume,and the factors involved in long-term planning are much more important than merely the question of handling a certain number of intelligence items per day.

H. *Basic Factors in the Problem of Cryptanalytic Intelligence.*

Certain considerations that are fundamental to our problems may be mentioned:

a. An effective intelligence agency—especially one that must deal with such difficult material as decrypted intercepts—cannot be built up by writing a T/O and filling the places with what personnel happens to be available. To do the work well, a man must have not only a broad education and background of information, but must have more than his share of astuteness, skepticism and desire to solve puzzling problems; and he must have a capacity for laborious detail work that very few people have. As you know, we have had 2 cases of men who proved incapable of doing our work, though both of them had had fairly successful careers in civil life. Not only were they able to produce nothing by their own efforts, but they used up so much time of others working in the office, and made so many mistakes that it took time to correct, that we found our net efficiency increased by taking them entirely off the work and inventing jobs to keep them busy until they could be assigned elsewhere.

b. One principal reason why exceptionally qualified personnel are required in the intelligence agency that deals with cryptanalytic material is that such an agency cannot afford to make mistakes, because it tends to become a focal point in intelligence activities. There are several reasons for this:

(1) Intelligence from intercepts, where the material is first-hand and of dependable origin, is the most reliable information and frequently the first to arrive. Hence it is looked to as a primary source of high-grade intelligence.

(2) Much of the intercept material consists of odd pieces of information and sometimes no more than a clue, which can be understood or followed up only in the light of information that must be obtained from other sources. Hence the processors of intercept intelligence tend to draw into themselves—and must draw into themselves to be effective—the intelligence output of other agencies. This they must put together with what they have; and if their own information is good they are likely to come out with more accurate and better evaluated information than is elsewhere available. We see this constantly in comparing our information on various topics with information put out by the B.E.W., O.S.S., J.I.C. and other agencies.

(3) Because they must constantly seek information from outside sources, those who deal with intercept intelligence have an opportunity to learn what the good sources of information are on a wide variety of subjects. In view of the multiplicity of intelligence agencies and would-be intelligence agencies in Washington, the large amount of duplication of work, and the penchant of certain agencies to bring forth a stream of classified reports that are inaccurate and, in many instances, not much more than irresponsible guesswork, this is a very important point. (For instance, though the Joint Intelligence Committee is among the least of the sinners in this respect, I think it fair to say that its Weekly Summaries in the past two months have contained a number of inaccuracies and some positively erroneous or misleading information, which this Branch, at least, would never have put out under any circumstances.)

c. The guiding consideration in the internal arrangements of the organization that handles cryptanalytic material, and in its methods of dealing with outside persons and agencies, is the consideration of security. One lapse of security is all that is necessary to dry up a radio intercept source. Therefore, both on the officer level and below, only persons of the greatest good sense and discretion should be employed on this work. This consideration is basic, since intercept information involves a different kind of secrecy than does most other classified information. It will make no difference a year from now how much the enemy knows about our present troop dispositions, about the present whereabouts of our naval forces or about other similar facts that now are closely guarded secrets. But it will make a lot of difference one year from now—and possibly many years from now—whether the enemy has learned that in April 1942 we were reading his most secret codes. Not present secrecy, not merely secrecy until the battle is over, but perma-

nent secrecy of this operation is what we should strive for. That may be too much to hope for in a democracy; but if it is possible to attain or approach it we should try to do so.

d. An essential job of the Special Branch, which must be done if it is to produce this maximum usable intelligence, is to establish intercept priorities, keep them constantly in tune with intelligence requirements and see to it that those who operate the intercept stations shall understand and follow them. Only a small fraction of the world's radio traffic can be listened to, with the facilities that are at hand or obtainable. To deal with the priority problem there must be a continuous appraisal of materials coming from the various circuits, of the probable intelligence value of what might come from other circuits and of the week to week necessities from an intelligence angle. The whole question is infinitely complicated and time-consuming, as witness the fact that you and Col. Taylor and I spent many days on the last priority directive. But it is an absolutely essential job to be done. With Col. Taylor going to London we will have to find some other man to spend a good part of his time on the intercept priority problem.

e. Another essential job is to establish cryptanalytic priorities and keep track of cryptanalytic projects. Cryptanalysts are scarce and their time must be used to best advantage. This requires a degree of liaison that we have not yet been able to realize, from lack of man-power. This problem, moreover, is closely interwoven with the intercept priority problem. If you are to put the cryptanalysts on a new project when they have finished the one that they are now working on, you must devote a part of your intercept facilities to the building up of a large volume of traffic in the as yet unreadable code, so that when the time comes to tackle it the cryptanalysts may have enough materials to do the job.

f. Still another essential function of the Special Branch is to supply the cryptanalysts with leads and clues, and with intelligence in general. The art of cryptography has outstripped cryptanalysis, to a point where high level codes and ciphers are no longer broken by cryptanalytic methods alone, even though modern machinery is capable of almost miraculous performance in the analysis and synthesis of cryptographs. Today it is collateral intelligence which solves high-grade cryptographic systems. While that intelligence can come from a number of sources, in the nature of things the best source is the intelligence organization that struggles day by day with the cryptanalytic output and is familiar with what the cryptanalysts are trying to do and what their needs are. From the long term standpoint the Special Branch's function as a feeder of intelligence to Arlington Hall is hardly less important than its function of getting intelligence out of what Arlington Hall produces. We have done a lot of work along this line; but we would be doing a great deal more if we had more help.

g. The experience of the Special Branch has proved that astute people working on the special materials have opportunities to furnish intelligence that leads directly to the solution of codes. Lt. Littlefield, for example, is directly

responsible for the recent solution of the cryptographic system used by the Germans in communicating from Berlin to agents in South Africa. From his study of other intercept material he came to the conclusion that a certain class of unreadable radio traffic was being beamed to South Africa, although the intercept people, including those of the Coast Guard, were positive that it was being beamed to South America. He insisted on this position, and informed the cryptanalysts what he thought the messages might deal with; and they applied probable meanings to the messages that they had. The solution of the code followed very quickly, and the contents of the messages proved that Lt. Littlefield's guesses had been correct.

h. Intercept coverage and cryptanalytic work has one very important purpose that is sometimes lost sight of, in addition to the job of getting intelligence out of the messages. That purpose might be described as protective monitoring. This has many phases, of which the following are illustrations:

(1) We get from S.S.D. a large volume of samplings of [text withheld] traffic, some of which has to do with ship movements, deliveries of airplanes and munitions, assignments of military personnel, placing of orders in the United States, and other subjects having military aspects. Almost none of this material is ever reported by us. Nevertheless we follow it very closely, in order to make sure that it does not become a source of valuable information to the enemy... [text withheld] It is our practice to check each item of information to determine whether it is one that the enemy could not get from other sources, whether, if it is, the information is of importance and, if it is important, whether the degree of importance warrants taking some action. Generally our conclusions have been negative; but in one or two instances General Strong's attention has been called to such a problem and he has alerted those dealing with [text withheld] to the dangers involved in giving certain information and in doing business in such manner as to require too much use of the radio.

(2) Another aspect of "protective monitoring" is to keep on the alert for any evidence that the enemy is reading our own codes or the codes of other nations. Since everybody appreciates that codes will be changed or abandoned if the users discover that other countries are reading them—and since, therefore, everybody tries to be very careful about transmitting information from intercept sources—the most meticuluous "detective work" is required in dealing with this problem.

* * *

(3) Still another aspect of this subject is to keep track of the enemy's sources of information and to keep posted about what he knows. Prior to the landings in North Africa, attention was directed to all available traffic that might reveal the enemy's knowledge, and it was examined with great care with that in mind. The cutting down of Axis code communications by Chile and later by Argentina was brought about by our State Department because they knew from

intercepts what kind of information the enemy was getting, knew how much pressure on the two countries was justified by the facts, and knew, finally, what ace they had in the hole in case they should be forced to use it. The location by [text withheld] intercept activities, of enemy agents who were sending valuable information to Berlin and Rome, has enabled them to deal with the problem in some instances in a different way, viz., by buying up the agents and getting control over the Axis source. There are several places in the world today where the problems of Axis communications are a live and important issue.

i. U.S. operations in the field of cryptanalytic intelligence are relatively limited. For various reasons, including the piety of the State Department and the fact that our Army was starved for funds prior to the war, we entered the war with relatively little experience in cryptanalytic matters, and with even less experience in dealing with intelligence from intercept sources. This is certainly true as compared with the British, and we have reason to suppose that the Germans—and to suspect that the Russians—were also far ahead of us. While we have made progress, we have a long way to go. Large as it is, our S.S.D. operation is on a much smaller scale than the various comparable operations of the British. This is also true of the intelligence side of the picture; and so long as it remains true, we will continue to be at a disadvantage

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m. There is one aspect of our relations with the British in intelligence matters that has struck me very forcefully. Our intelligence agencies in Washington appear to spend a lot of their time keeping information secret from one another, in competing for credit and in beating one another into print. All of them have some liaison or other with the British intelligence agencies; and for some reason they are freer in giving information to the British than to one another. The British do not keep their information in water-tight compartments, nor do their various agencies seem to care who gets the credit. They are so set up that their intelligence is put together and evaluated; and the job is done promptly. This gives them a great advantage over us in intelligence matters.

n. We have had enough to do with the British to have discovered that there is a considerable amount of intelligence which they withhold from us, not especially by design, but because we do not ask for it. Sometimes it is not asked for because nobody knows it exists. Recently, for example, we have discovered that certain intercept information about Continental Europe, which does not flow regularly into any American channels, is available to us at the Embassy, merely because we deal with cryptanalytic material and have established a certain amount of confidence in our judgement and discretion. If Major Heneman, who has pursued this contact, were not encumbered with a large burden of other work, and could spend half his time at the Embassy, I am confident that he could bring into the United

States channels of intelligence a substantial amount of valuable information that either does not get into those channels at present or gets into them too late to be of the greatest value.

o. A fairly important problem that we have—one that will grow with the volume of traffic—is the problem of increasing the proportion of Arlington Hall intercepts which are at least scanned for their intelligence content. The problem exists in all languages covered, but it is particularly acute in the Japanese. Because of the shortage of cryptanalysts and translators, not all decipherable messages can be deciphered, and not all that are deciphered can be translated. There is a scanning and selecting process at both the cryptanalytic and the translation stages. This is done by the cryptanalysts and translators themselves; and on the whole they do a good job. However, to insure that no useful intelligence is missed, the organization handling the intelligence should participate in the process of selection and should continually educate the cryptanalysts and translators in the week to week intelligence needs. This is done in the British Black Chamber organization, and it is done in the Navy organization. We have assigned Capt. Ervin as liaison with Arlington Hall, and he will be able to do this to some extent. However, there are so many liaison requirements that an additional officer will have to be provided before long, if we want to be sure that the work is done thoroughly. In addition, there is a specific need for a man familiar with the Japanese language, to deal with Japanese translators. We have such a man, Dr. Creel, who because he is also a Chinese scholar can help the translators on one of their most difficult problems, which is to identify Chinese names from their Japanese Kana versions. He has already helped them a great deal. But, until we get some additional personnel, he cannot take much time away from the day to day job of handling Far Eastern material.

p. The WT/I field, and the relations of the Special Branch and Arlington Hall's work in this field, are matters that are now under study, and I mention the subject only for the record.WT/I—the derivation of intelligence from radio traffic by all means short of cryptanalysis- [text withheld] It has, of course, numerous applications in the field; and it is of special importance to the Navy. Arlington Hall has been experimenting with Japanese Army traffic from the WT/I angle; and the prospects for deriving intelligence from it look promising. But the development of this work, to judge from what I have seen of it thus far, is going to require a close liaison with the military intelligence and, from our standpoint, the full time of at least one man....

I. *Personnel Situation of the Special Branch—Officers and Civilians.*

In the foregoing somewhat discursive remarks, which by no means cover the whole subject, I have tried to show that our problems have many sides, that the field of cryptanalytic intelligence is important, and that there are great opportunities in this field if we are prepared to seize them.

Whether or not the objectives that we have in mind are sound, I think the problems at least are of some real importance to the country. The adage that knowledge

is power is nowhere truer than in the field of international relations, especially during a war and in preparation for peace. We are gaining knowledge and experience in many parts of the world, some of it rather expensively; but we still have a lot to learn. In the field of intercept intelligence we have at hand, in my opinion, one of the greatest potential sources of information; but we are not making the most of it. We need to raise our sights.

The above statement of our problems may indicate why the present manpower of the Special Branch is not adequate to do the job that we want to do. A quick picture of our manpower (excluding you and myself) may be given as follows:

Total officers	30
Civilians comparable to officers	9
	39
Deductions must be taken for:	
Officers who work in the Cryptographic Security Section and Radio Communications Section (transferred from C.I.G.) who have nothing to do with S.S.D. material	5
Officers who do purely administrative work, which is very heavy because of security requirements and the large volume of paper work that passes over your desk	3
Officers about to be transferred to Ground Forces (2) and to London (1)	3
Mr. Bingham, who has enlisted and is about to be inducted in the Army	1
	12
Balance	27

To get the net working forces on the intelligence job, certain additional deductions of men on special assignments must be taken, as follows:

Major McKee (Order of Battle specialist)

Capt. Berle (Liaison with the State Dept.)

Capt. Calfee (Only technically assigned to the Branch, doing most of his work for AIS. . . .)

Capt. Ervin (in training at Arlington Hall, to be a liaison officer with

that organization)	
Mr. Randolph (about to commence training at Arlington Hall, to work on WT/I material)	
Lt. McCluney (temporarily spending full time on personnel work)	
Lt. Wilkinson (just relieved as Security Officer and engaged in training his successor)	7
Present net working force on intelligence material	20

According to their work and the parts of these 20 men are assigned as follows, the world that they keep track of:

Editing "Magic Summary" and studies	3
Reading and routing collateral intelligence material from regular sources	1
Biographical Section	2
Far East	6
Near East	1
Eastern Europe	1
Central and Western Europe	3
Southern Europe and Africa	2
Latin America	1
	20

Considering the volume of material that we have to handle and the job that we are trying to do on it, the figures above speak for themselves.

* * *

Alfred McCormack,
Colonel, G.S.C.

From SRH 141-2. *In a moment of discouragement about the Army's relative lack of success in exploiting Japanese military (as opposed to diplomatic) communications, McCormack wrote this memorandum to his immediate superior. Like a great many of his memoranda, it dealt with personnel. The B Branch of MIS, mentioned in the correspondence, handled Japanese military decrypts; A Branch handled diplomatic materials; C Branch, the German intercepts provided by the British. Ironically enough, at the time he wrote, SSA and Special Branch were on the verge of a definitive breakthrough in deriving intelligence from Japanese Army messages.*

3 Jan 44.

MEMORANDUM FOR COLONEL CLARKE:

Subject: Personnel Problem of B
Section, Special Branch.

1. This attempts to state the problem of getting intelligence out of the Japanese Army material, specifically from the standpoint of personnel requirements.

2. The United States entered the war completely unprepared to deal with Japanese Army cryptography; we were not then reading, and had never seriously attempted to read, any high-level Japanese Army cipher system. (For that matter we had never tried to read the German military systems either).

3. The first break into a high level Japanese system occurred some time in March or April 43, when the Wireless Experimental Center at New Delhi got into the [text withheld] water transport) system. By that time enough was known about the high level systems of the Japanese Army to permit a decision as to the order in which they should be worked on and the division of the work among the 4 large cryptanalytic units (Arlington Hall, the GC&CS in England, the WEC in India and the Central Bureau at Brisbane). Arlington Hall by agreement was made the directing center of Japanese Army cryptanalytic activities; and in dividing up the work it assumed the primary burden of the bookbreaking job on [text withheld]

4. As of April there was no American experience in intelligence work on Japanese high level decodes. In a study written up in that month we expressed confidence in the ability of the Special Branch to handle the material that was expected to flow in after a couple of months, though we did say that a transfer of personnel from other work would be required, and that our other work would be impaired, unless personnel could be recruited promptly and trained.

5. Not until the middle of June did we get approval for additional personnel. By that time our work had expanded far beyond the new allotment of 20 officers; we were given additional jobs to do, faster than new personnel could be recruited; and we were not able to put adequate personnel on the JA work.

6. Having no experience to guide us, both Arlington Hall and ourselves had under-estimated the difficulties that the Japanese systems would present; specifically (it now seems to me), both had underestimated the amount of intelligence and research work that would have to be done in order to build up the water transport codebook and get intelligence out of the messages. Both organizations, therefore, were unprepared for the job that this material presented.

7. By June, it was clear that, in order to capitalize on the opportunities presented by [text withheld] and other systems then in process of solution, Arlington Hall would have to increase its personnel by a minimum of 2,000 people. Studies designed to present the problem to the appropriate authorities were commenced. By August a request for the necessary personnel, accompanied by a T/O and manning tables, had been submitted. It appeared on the face of the study that a critical situation existed. Nevertheless, 4 months passed without effective action being taken; and only within the last few days has Arlington Hall received the authority necessary to commence recruiting.

8. In other words, 6 months after a critical need for at least 2,000 persons was obvious to anyone familiar with the problem, the lengthy and difficult job of recruiting such personnel is just being started.

9. Meanwhile, upwards of 200,000 Japanese Army messages (in [text withheld] and other partially solved systems) have piled up on the shelves at Arlington Hall, unread. These messages would be readable if the necessary personnel were available. Most of them will never be read, because the priority of current traffic, the increase of readable current material at a rate faster than the recruitment of personnel, and the sheer necessity of moving forward from one period of a system to another, in order to preserve cryptographic continuity, will make it impossible ever to allocate personnel to decipher and translate any substantial portion of these messages.

10. How much priceless intelligence is locked up in these unexploited and unexploitable messages is anybody's guess. It is anybody's guess, also, how much information of operational importance has been lost, because when the opportunity came along we were not ready for it.

* * *

77. One thing is sure. If every limitation of personnel allotments were removed, and the Special Branch were allowed to recruit (as the British GC&CS do) qualified personnel from wherever they might be found (officers, enlisted men and women and civilians), it would still be impossible, even within the next year, to find and train the number of qualified persons necessary to keep up with the ever-increasing opportunities which the Japanese Army traffic will probably present.

78. The writer would sum up the situation presented by the Japanese Army traffic as follows:

a. In our exploitation of this field we are far behind where we should be, or where we might have been had the job been seen in its true proportions and been given the necessary priorities in manpower and facilities.

b. We have arrived, nevertheless, at a point where an opportunity is presented to increase our Japanese intelligence a thousandfold.

c. If we act vigorously, giving this job the kind of priority that the British have given their work on German "E," we have the chance of getting into Japanese Army cryptography so deeply that we can never be dislodged from it by changes in systems or by devices employed by the enemy.

d. If we act vigorously, at the very least we can open up sources of intelligence that will certainly be of great importance, and might even be of decisive importance, in the Pacific war.

e. Except for the matter of I.B.M. machines at Arlington Hall, the problem reduces itself almost wholly to one of obtaining qualified personnel, when they are needed and not 6 months later.

f. If we go on the way we have gone to date, we shall continue to miss opportunity after opportunity, and at the end we shall have paid for the lost opportunities in lives and wasted resources.

79. The foregoing appears to confirm the opinion that you have expressed, that Arlington Hall's increase of personnel should be raised from 2,000 to 5,000, amd that it should be allowed to go forward to recruit 5,000 qualified persons as promptly as possible. When the Wireless Experimental Center in India, with a much more limited mission, already employs 5,000 personnel and is moving to increase that number as rapidly as personnel can be found, an increase of at least 5,000 persons for Arlington Hall would seem to be indicated.

80. An increase of personnel for B Section of the Special Branch from 55 to 280 officers and from 22 to 120 enlisted women or equivalent personnel is a drop in the bucket alongside of the Arlington Hall requirements. It is, moreover, no over-estimate of the requirements, if the British organization is to be taken as a model. Hut 3 at B.P., an intelligence section dealing with high-level German traffic solely from the current operational standpoint, had 328 persons working in May; and this is exclusive of administrative personnel. In the two principal sections dealing with the longer-term aspects of German military traffic there were 257 persons and 179 persons (again exclusive of administrative personnel), or a total in the 3 operations of 764 persons. This total is exclusive of a Tabulating Section of 239 persons, and takes no account of personnel on the intelligence side of the operation at the War Office and the Air Ministry. The Special Branch must perform not only the functions performed at B.P. but a number of those performed by the Service Ministries in London.

81. This situation is a challenge to the War Department to tackle a new kind of job, one not easy to understand and not easy to fit into a familiar pattern of organization, and one that requires considerable imagination and a particular type of personnel.

82. It is also an intellectual challenge to the United States Command. The victory of the British over the Germans in the radio intelligence field is a great intellectual victory of one leader and one people over another. The Germans have been outwitted at every turn; their most secret military communications are read every day; their most elaborate security precautions count for nothing. Why were the British able to get to the "Scharnhorst" and sink her? Simply because they were able to arrange their tactical dispositions and deception measures in the light of knowledge, derived from reading messages in what the Germans still consider an unbreakable cipher, of the vessel's precise mission, the nature of its escort and the exact time when the battle convoy was going to leave Lopphovet.

83. Except for whatever our Navy has been able to do, we have achieved no corresponding victory over the Japanese. To date, in the field of radio intelligence, we have met largely with failure.

84. The chances for victory, however, lie before us; the only question is whether we have the vision to see them and the imagination and energy necessary to seize them.

Alfred McCormack, Colonel, General Staff
Deputy Chief, Special Branch, MID

CHAPTER IV

Training the Force

The very large signals intelligence effort mounted by the U.S. Army in World War II demanded masses of trained personnel. For most of World War II, officer and enlisted cryptologic personnel were trained at Vint Hill Farms in Warrenton, Virginia, which was also the site of the Signal Security Agency's Monitoring Station Number 1. The "Official Story" of officer training is contained in the excerpt from SRH 358, History of the Training Division, Signal Security Agency. A more informal account of the human side of the training process as it affected enlisted ranks can be found in the "Third Battle of Manassas," an unpublished manuscript prepared by some of the trainees.

From SRH 358. *An excerpt from the History of Training Division, Signal Security Agency, discusses the training of cryptologic officers at Vint Hill Farms Station during World War II. Indicative of the fact that the Agency (and the Army) reflected all too well the prejudices of the time is the fact that all officers selected not only had to be mentally and physically fit, but also "of the white race."*

CHAPTER IV

HISTORY OF SCHOOLING OF COMMISSIONED OFFICERS IN THE VINT HILL FARMS SCHOOL VINT HILL FARMS STATION WARRENTON, VIRGINIA, 17 March 1941 to 1 January 1945

* * *

10 March 1942 to 5 October 1942

On 10 March 1942, the training of commissioned officers was initiated in the Cryptographic Division, Fort Monmouth, New Jersey. The Cryptographic Division was then a part of and under the supervision of the Enlisted Men's Department, Signal Corps School, Fort Monmouth, New Jersey, and had been organized primarily to train enlisted men in cryptanalytics and linguistics. The training of commissioned officers was initiated primarily because of the need in various Signal Corps and Army Air Forces units and installations for personnel qualified as Message Center Officers, Cryptographic, MOS 0224. It was certain that emphasis in such training should be placed on cryptography and, therefore, that a school organized to teach cryptanalysis would apparently not be the proper place to give such instruction. However, the Cryptographic Division was the only Signal Corps school then existent which could not only teach the operational phases of War Department systems but could also demonstrate to the students by cryptanalytic methods, their weaknesses and thus emphasize to them their responsibility for the security of such systems.

On 10 March 1942, a group of seventeen officers, assigned to the Signal Corps, were placed in such training and fifteen were graduated after a period of approximately ten weeks. All of the group graduated were transferred to the Army Air Forces for cryptographic security duties. Additional officers were assigned for training from both the Signal Corps and the Army Air Forces from that date until 5 October 1942, so that the average number graduated per month during that period amounted to ten, of which approximately 50 per cent were assigned to duty with the Army Air Forces and the remainder to duty with the Signal Corps.

Since the commissioned training during this period dealt with relatively small classes, only two commissioned instructors were needed and these were provided from officers assigned to the Staff and Faculty, Signal Corps School. The instructors were required to be trained as Cryptanalytic Officers, General, MOS 9600, with special additional training in the operation and analysis of War Department systems.

All commissioned students were required to have an AGCT grade of 130 or better, an analytical mind, and preferably a college education. All had to be cleared under the provisions of classified AGO letters pertaining to the clearance of personnel for cryptographic duties. Due to the fact that almost all position vacancies were in overseas units or installations, composed of or operated by white troops, all officers had to be of the white race and physically qualified for overseas service.

The problems encountered in this phase of the training conducted by the Cryptographic Division were relatively few and based primarily on the difficulty in obtaining current and pertinent instructional material and on the difficulties created in the scheduling of training on classified material by reason of the delays incurred in obtaining cryptographic clearances. As the student body increased, the further problem of finding adequate classroom space was created. No additional space was available at Fort Monmouth, and as a consequence, the school was placed on a two shift basis.

No reports have been received criticizing the adequacy of the training given commissioned officers during this period, but it can be properly acknowledged that by reason of the speed-up created by the demands for trained officers, the training was at best weak because the theoretical and technical phases had to be emphasized at the expense of practical application, and as in most types of school training given to commissioned officers, little or no opportunity was allowed to them to gain experience in the administration and handling of troops.

Enlisted overhead for the Cryptographic Division during this period were assigned to the Second Signal Service Company, Washington, D.C. and on detached service with the 15th Signal Service Regiment, Fort Monmouth, N.J.

5 October 1942 to date

During the summer of 1942, negotiations were initiated to determine the feasibility of moving the Cryptographic Division to some location near Washington, D.C. This was deemed advisable in order that closer liaison could be obtained with the Signal Security Agency, so that more current cryptanalytic information could be obtained, and so that more physical space would be available for both commissioned and enlisted training.

On 5 October 1942, pursuant to authority contained in paragraph 2, S.O. #272, Hq. Fort Monmouth, N. J., dated 4 October 1942, all overhead and student person-

nel then assigned for duty to the Cryptographic Division were transferred from Fort Monmouth to Vint Hill Farms Station, Warrenton, Virginia, a Class IV installation. At Vint Hill Farms Station, the name of the school was changed to the Signal Corps Cryptographic School. The transfer of the school, although well intended, was unfortunate at the time, due to the fact that Vint Hill Farms Station was then only in the initial stages of construction and certainly not, at that time, a proper place for the operation of a special service school. Due to the size of the student body and the initial lack of classroom facilities, it was necessary, until all of the present school buildings were completed in April of 1943, to operate the school on two shifts, which necessarily resulted in cutting down the effectiveness of the instruction given. However, once the physical facilities were completed they were entirely adequate except in rare cases when it has been necessary to turn down unanticipated training demands.

During the remaining part of 1942 and during 1943, the courses of instruction given to commissioned officers were increased to qualify officers in the following military occupational specialties:

Message Center Officer, Cryptographic	MOS 0224
Cryptanalytic Officer, General	MOS 9600
Cryptanalytic Officer, Translator	MOS 9604
Cryptanalytic Officer, Traffic Analyst	MOS 9605

In January of 1944, a section was added to the school to instruct officers (as well as enlisted men) in the installation, maintenance and repair of cryptographic equipment and to qualify officers with the following military occupational specialty:

Cryptographic Equipment Maintenance & Repair Officer MOS 9600.

In May 1944, pursuant to directive of the Chief Signal Officer, instruction of Message Center Officers, Cryptographic, MOS 0224, was made the responsibility of the Eastern Signal Corps School, Fort Monmouth, N. J., and was discontinued by the Signal Corps Cryptographic School.

In June 1944, it was recommended by the Chief Signal Officer and approved by the Commanding General, ASF, that the school henceforth be known as the Vint Hill Farms School.

During the period under discussion, all commissioned overhead for the school have been assigned to and furnished by the Signal Security Agency, and all enlisted overhead have been assigned to and furnished by Detachment, Second Signal Service Battalion, Vint Hill Farms Station. No Table of Organization has been created for this purpose, but commissioned grades and enlisted grades and ratings have been allotted, such allotment being related directly to the training demands and thus increasing and decreasing as the training demands increased or decreased. This has resulted in a desirable flexibility of overhead and has proven entirely adequate to serve the training demands of the school. All overhead, though being furnished by the organizations indicated, have with few exceptions been graduates of the Vint Hill Farms School. All commissioned overhead with few exceptions have

been either enlisted students or overhead in the Vint Hill Farms School prior to their being commissioned.

The primary problems in all the courses given by the Vint Hill Farms School have been to provide sufficient personnel to meet theater demands and to keep the courses current in a constantly changing field. The first of these two problems is an unsolved one. Although it is believed that sufficient commissioned personnel have been trained to met theater demands prior to this date, it has been primarily a result of fortunate assignment of officers to the courses given. At no time has adequate information been forthcoming from higher headquarters on which a reasonably accurate estimate of future training demands could be based. When it is considered that all of the courses given by the Vint Hill Farms School must differ in the fundamentals thereof, dependent upon the theater in which the student is to be assigned, the problem in making a reasonably accurate estimate is self-evident, but by the same token, it is also self-evident that a bad guess would result in an excess of officers being trained for one theater and an insufficient number trained for another. The problem of keeping the courses current has been met by constant and close liaison with Signal Security Agency and by requesting through the Signal Security Agency, reports from the theaters pertaining to the adequacy or inadequacy of the training being given.

The methods of instruction have varied with the different courses. Originally, when adequate time was available, emphasis was placed on individual study. However, as demands for commissioned personnel increased, it was necessary to speed up the courses. Lectures, demonstrations and individual and team solution have been the principal methods of instruction used in cryptanalytic and traffic analytic courses. Lectures and independent study have been the principal methods of instruction used in language subjects. Lectures, demonstrations, independent study and coach-and-pupil-method have been the principal methods of instruction used in the cryptographic equipment maintenance courses.

Adequate commissioned student personnel have been available for training and with the exception of those officers on detached service from their units, all student officers have been assigned to the OSCRP, Advanced Radio Communications School, Arlington Hall Station, Virginia and placed by such organization on temporary duty at the Vint Hill Farms School. The mental qualifications and educational background of all officers sent to the Vint Hill Farms School for training have been adequate. In general, they have been required to have an AGCT grade in Groups I or II if college graduates, and in Group I if high school graduates. Also, all officers were required to possess analytical ability. With few exceptions, drop-outs have been caused by the lack of analytical ability, an ability which cannot be readily pre-determined but will reveal or fail to reveal itself only during the course of instruction.

With the exception of the normal field and technical manuals used for general military training, all training has been based on special texts, documents, devices,

charts, mock-ups, etc., prepared either by Signal Security Agency or by the instructional overhead of the school. This situation has been necessitated by the fact that almost all technical instruction is of highly classified nature and that it is not intended that information pertinent thereto be available to the army at large.

* * *

The present organizational status of the Vint Hill Farms School is that it is a special service school operated under the direction of the Chief Signal Officer for training personnel of the army in cryptanalytic, traffic analytic and cryptographic equipment maintenance subjects. The Commanding Officer, Vint Hill Farms Station is also Commandant of the Vint Hill Farms School. The Director of Training of Vint Hill Farms Station is directly in charge of training in the school. The school receives technical information and aid from the Signal Security Agency, and the Commandant of the school is responsible to the Chief Signal Officer, through the Commanding Officer, Signal Security Agency, for the adequacy of the training conducted.

* * *

From *The Third Battle of Manassas. This highly unofficial history of the training of Army enlisted signals intelligence specialists conveys a good sense of the flavor of training camp life in World War II. Lambros D. Callimahos, the "flute-playing, Esperanto-speaking, Egyptian-born Greek" lieutenant mentioned in the text, went on to a distinguished professional career in the National Security Agency. In an introduction he wrote to the original manuscript, Callimahos commented that "Sometimes it is a bit catty, sometimes biting in its remarks; nevertheless this history is a lot more honest than other histories I have read labeled 'official'."*

THE THIRD BATTLE OF MANASSAS

* * *

THEY FELL OUT IN FRONT OF THE ORDERLY ROOM

At eight o'clock on the morning of 5 October 1942, approximately 250 speculative enlisted men and three officers, each with a baloney-as-usual box lunch, assembled along the Jersey Central siding in Fort Monmouth, N.J. A coach train backed in from the direction of Eatontown and stopped with the baggage car near

the general site of the mountainous pile of foot lockers and barracks bags. A detail consisting of about fifty strong "volunteers" was picked to stow the mountain on the train. This done, the men got aboard under the guidance of Lts. J. T. Guernsey, W. P. Bundy, and R. L. Markland and waved goodbye to about thirty fellow students who were left behind, some to pack up the school supplies for forwarding, others to carry the school banner to OCS. During the entire embarkation procedure, the Post Band played familiar airs and cheered the School on to new adventures—or were they just celebrating the departure of the "geniuses" who, in some companies, drew no KP or detail?

The destination of the movement was, except to knowing few, only a subject for rumor. Stories were current of Arlington Hall and other comfortable places in or near Washington; another version had it that the future home of the school would be an old estate in Virginia with a mansion house....After traveling over the rails of most of the lines in the east and south for about ten hours and finally ending up behind a Southern Railway locomotive with a bright green shell around the boiler, the men and officers arrived in Warrenton, Virginia, where they were met by a diverse collection of trucks and conveyances and most of the Warrenton populace.

* * *

The trip from Warrenton to the new home was, for some, a sightseeing tour; for those jammed into the front of the trucks, it was a period of slow suffocation inside raincoats. It had rained most of the afternoon and was still drizzling. The sight that greeted the men upon arrival was one of mud and desolation; and the grim discovery that straddle trenches served for latrines dropped the "campustry" majors to even lower depths. Morning brought a more cheerful outlook, because the sun was bright and the leaves were green. When it was realized that eating or washing required, for most men, a trip across the post, the cheerfulness evaporated again.

Although, at the time, few people knew it, Company "B" already existed on paper and included the "Schoolboys," 25 "linguists" of questionable proficiency, and three untutored non-coms, "Lil Abner" Hodges, "Louie" Fragassi, and "Repulsive" Ahearn. These diamonds-in-the-rough were somewhat doubtful as to how to handle the "new fellers" who were "pretty much like ordinary people—smart, but kinda mad". Lt. Nixdorff, he of the long chin, was company commander, in a remote sort of way. The "first sergeant"....had a pat solution for every difficulty: "You'll have to make your own provisions for that." When Lt. Marion became Company Commander a month later, nobody knew the difference.

Company administration was strictly a hit or miss affair. Paper work consisted of a detail roster that included everybody. There was only one copy of this and Jones, who had it, could never be found. As a consequence, the efforts of Hodges and Co. to control goofing off were largely nullified. Reveille, also handled by Li'l Abner, was an indeterminate proceeding. It was held under blackout conditions

where "Barrack so-and-so all presnnnneraccounted FOR!!! was a mere formality—except that Ahearn's report from the one-holer generally agreed with the facts.

The Orderly Room was a clapboard shack at the main gate that looked like a tool shed (and was). With the detail situation very much out of control, a clerk was needed to get out additional lists of names. A private named Griffin, who was more at home with a typewriter than a shovel, volunteered, and genuine administration got a definite, if modest, start. A week or so later, the Orderly Room moved to a leaking tent behind Barracks 10, which at the time was only a pile of prefabrication in the rain. When it was at last put together (at a cost rumored to be $3,030 without steps and screens), the company headquarters moved inside and Lt. Guernsey took over as CO. In less than a month, a telephone had been installed and the Company had established communication with the rest of the Post, proving that the Signal Corps could do the job if the customers would just be patient. The tent became a telephone booth outside of which long lines of patrons formed at odd hours of the night and morning.

Shortly afterwards, a group of officers and "non-com material"...left to start "C" Company (later Hq. and Hq. Co.), whose original function was basic training for an assortment of illiterates, ex-convicts, gittar players and spare parts who had shipped in when nobody was looking. Hodges' bunch moved over, too.

In those days the immediate ambition of every student was to get in one day a week of school. The company was growing: classes were filled and were run in shifts. Life was mostly detail—chopping trees, digging post holes, laying sidewalks, and cleaning the (outdoor) latrines. Life centered around those woodsy chapels: while the dry and shining bowls in the regular latrines remained unblemished, men from "B" and "C" companies shared a common interest in an incredible twenty-holer on the corner across from Barracks 1. There they would meditate amid the fragrance, the "C" men eating candy or munching an orange, the "B" men reading Tristan and Isolde or a volume of T. S. Elliot. . . .

Having been specially selected at processing centers because of superior mental and educational qualifications, the men were put to work at digging and moving logs. One count showed forty three years of college in one ditch (8 EM); the postholes were likewise "educated." Products of the lumbering activities were classified into (a) logs, (b) branches, (c) trimmings. On odd days the log poles and brush would be moved to one side of the area "to make way" for further developments; on even days they would be moved back again "to make way" for still other developments. This went on until all concerned ran out of developments. It was then decided to burn the brush piles and carry out the logs. Those who goofed off got a week's KP—which was in many ways a relief. . . .

During this rugged period while construction was still in progress, casualties were not uncommon. The uncharted maze of trenches, later used as ditches in which to lay sewer and water pipes, probably taking the largest toll. Somehow there seemed to be very little cooperation between the engineers digging the

trenches and throwing up the breast works and the other combatants on night operations. While on a special mission one warm October night, Afflerbach, clad in GI undies, walked into a thirteen foot ditch but relaxed (or was relaxed) enough to suffer nothing worse than mortification. On the other hand, the same ditch was responsible for a wrenched leg and three broken ribs from two other victims that same night. . . .After that, extreme caution was observed by the personnel of the Company; anything that looked like a ditch was avoided, and the dim morning hours found dozens of men gingerly stepping over the shadows of trees.

Social life on the Post was somewhat suppressed by the lack of facilities. Over in "A" area there was a barracks that had been converted into a day room, mail room, library, special services office and PX. The latter consisted of a twelve-foot counter and three shelves, mostly empty; besides, it was nearly a mile away. Dinner invitation extended by the Warrenton folk (that was before the native money-grabbers made a mockery of "Southern hospitality") generally had to be declined: eleven miles each way was a long walk, even for the Signal Corps. When Sgt. Parker tried to organize an orchestra, the response to first call consisted of five trombonists and two xylophone players. It was several months before a combination with the customary assortment of instruments could be gotten together.

* * *

When Griffin was away or ill, Owens took reveille with an intonation that added to the Owens legend. In Hodges' day, the vocal side of reveille had been nothing more exciting than a succession of strange noises in a Kentucky twang. When Griffin came along, he enlivened the proceedings with a haughty "reh-PORHT!!" and a battery of announcements and involved instructions proclaimed in his best theatrical manner. Against this professional competion, Owens staked his bid for fame on an unmelodious "RE-E-E-E-E-E-E—-PORT" delivered in a droning monotone. With the Griffin-Owens team running things, the men could depend on a reveille in harmony with the dizzy events of the later hours.

About this time, Lt. Volm, deciding that it was time for recreation and beautification, began the Area Cleanup Project. Lt. Kunzman became sidewalk engineer and used for his theory of construction "straight logs, only straight logs." This meant that logs would be toted in for the walk one day and out the next—for longer and straighter ones. Again big brush piles burned in the middle of the "stadium." Lts. Guernsey and Vultee would stand about the huge fires warming their hands (?), saying "more branches on this side," and, "more twigs over there. . . . let's get a move on."

Danny Volm was a skillful "improviser." When the sidewalks needed gravel and it was not forthcoming from the engineers, he would stroll up to the main gate, and, as the trucks approached with gravel for the Colonel's walks, would swing aboard and holler, "Down this way" and bring them to the company area. In this

manner several hundred tons of shale were obtained for a 220 yard race track that ran around the area between the barracks and divided Goldbrick Park in half. It was boycotted by everybody: Afflerbach tried to use it, but recognized the disadvantages of ostracism in time. Later it was removed, as painfully as it had been built.

The Day Room began to shape up under Volm technique. Huge slabs of masonite for the new white barracks in "C" company disappeared, only to reappear on the walls of the day-room, neatly squared off with lathes gathered in the same manner. . . .

Inspections were frequent. On Saturdays the inspection party followed a transposed route among the barracks in an attempt to catch the boys warming their hands around the stoves instead of standing by their bunks. . . .This "hit-em-where-they-ain't looking" strategy worked occasionally, particulary in Barracks 1 (the goat: Kilgore). Captain Guernsey was a no-haircut gigger, especially when the barber shortage was acute. Homer Baker got it for "dust in ear"—lint from an OD towel, it was. Lt. Vultee specialized in upper bunk gigs where you could get an eye-level view of the wrinkles in the bottom sheet. Lt. Kunzman who usually inspected with him, however, specialized in lower bunk "gigs" which were more in line with his qualifications. . . .Lt. Volm liked to look for food which he ate (except Biern's beer-cheese), leaving a gig slip in gratitude. At foot-locker inspections, the barracks leader was required to wriggle around in the airspace above the ceiling vents in a nothing-up-here-but-us-chickens act. All kinds of junk were discovered: radios, a crate of oranges, satchels, volumes of poetry in limp leather, and Wilhelmy's six-month file of the New York Times. (This practice was ended when somebody fell through the ceiling). Epps was caught with an axe in his footlocker; Jurgens had silverware in his overcoat; Oppenheimer had an aspirin under his bed.

Cold days also bred disease. One after the other, barracks came down with measles or allied bugs that led to bigger quarantines. Finally the whole Post was put in a quarantine based on the following principles:

1. That men living off the Post were immune.
2. That the germs distinguished between enlisted and commissioned personnel.
3. That the men ceased to be carriers every third day but became dangerous again on the fourth (the issuance of passes on Mon.-Thu.-Sun., etc., was based on this principle).
4. That short periods of immunity occurred in a scheduled manner (this permitted operation of the PX on a shift basis).
5. That contact was dangerous in training activities but harmless while on detail.

* * *

ADMINSTRATION FOR ALL CONCERNED

It wasn't until three or four days after our arrival at Vint Hill that the administration overhead took up duties in the barn in the now "B" Company area....Lt. Guernsey opened his office in the rear east room of the barn. Of course, the school had to have a phone so immediately one was supplied (a crank-type affair). There was a trunk line—to one place, Post Headquarters in the big house—but to get there it went across the floor of the office, down the hall and over the fields. If you had business with other than Sgts. Enright and Jones you had to go for a hike. After all, it was only a little less than a mile over to the orderly room at the present site of the main gate. Besides, if it was Lt. Nixdorff you were looking for, he wasn't there!!

One of the big jobs which had to be done again was the roster of EM in school who were eligible to be T/5s. Of course, we had made a roster before we left Ft. Monmouth; what happened to that nobody knew. Anyway, on October 27th the post-hole diggers got their rank. By that time, it was time to move and the school set up headquarters in the telephone building, except that Reproduction, Supply and Plans & Training stayed in the (unheated and dimly lighted) attic of the barn. Those were the days of easy ratings. Radio personnel were changing stripes as frequently as they changed underwear. Then it was learned that all the overhead were to become at least T/5s, so up to AHS went a list of men recommended for promotion. Everybody was put on the list but SNAFU—only about one-half of the men recommended were promoted.

There was a gnashing of teeth and much weeping and wailing—and no chaplain to issue TS slips. (Sgt. Bruce "I have a few ah-nowns-ments, fel-lows" Parker acted as a sort of chaplain, but he was busy most of the time figuring out schedules for the "Green Dragon"—a converted auto trailer which linked the camp with the outside world.) It took almost two weeks to arrange to have the other EM in overhead promoted to T/4; after that, there was rank all over the place.

During the latter part of November the office of the school was moved across the post to the present school supply building. Three space heaters (the regular quota for heating buildings in the Sunny South) were installed. It was hard at first for the Warrenton Commandos—Lt. Guernsey, Sgt. Kane, and Sgt. Hawes—to adjust themselves to the vagaries of the temperature in this new office. After they stood around the stove for two hours, the icicles would melt and they could slowly work back to their desks and get administration underway. By noon the building would be so hot to stand, while the atmosphere would be blue from the smoking of the stoves and the Commandos.

* * *

...Sunday classes were scheduled on alternate week-ends for all personnel from 0800 to 1645 during January through April 1943. Target practice with a knife was furnished by Lt. Mann in the main office, the target being the then present calendar month. However, instruction was not of the best for he couldn't hit the target as often as the students.

In the early part of April it was decided to have post headquarters and the school together. And for the fifth time the administrative staff was packing up and bossing a bemused bunch of men who were wandering through the bushes with typewriters, file drawers and in-baskets. Now though, it was clear that progress had been made: for the first time, the school headquarters looked like an office and was uncluttered with dirty stencils, crates, mess tables and student officers.

* * *

...the desk in front of Afflerbach is not occupied but it is reserved. Perplexed student officers spend days at this desk filling out multitudes of forms, screaming they had already filled them out at Arlington. After the first day they become hoarse, the second day they give their occupations for the last five years in answer to an inquiry about their grandparents' dates of birth, and on the third day they are veteran student officers. Lt. Callimahos is over in the other corner but is heard from all the time. His byline: "Don't you know how to report to an officer????". . . .

It was during this period that the output of memorandums reached its peak. Although Capt. Guernsey and Lt. Vultee were only four feet apart, they found it necessary to carry on communications by indirect discourse. The Lt. would jot down notes to be typed by Sgt. Doering who would route them through Sgts. Jurgens and Kane up to the Captain, each Sgt. retaining a copy for file. Memos for general distribution were written by the officers, including Lt. Callimahos, and were sent down to Reproduction for ditto-ing, while over in the corner Sgt. Kane kept up an envious grumble about the days back in Monmouth when he put out all the notices.

When the paper shortage began to be felt, economy was effected by substituting buckslips for individual copies. As the practice grew, magazines, bulletins, and other printed matter came to be circulated by this means, "FYI" and "Note and initial below." Eighty-page copies of Tactical and Technical Trends would be sent out to thirty-odd people in six different buildings "to be returned promptly." Instead, they would disappear. Sgt. Doering, who used to be a statistician, got out the calculator and some probability tables and estimated that buck-slips issued in May could not, the way things were, be expected back before the middle of November. Runners were sent out to find the missing buck slips, but no luck. The device of including breezy comment (e.g. "Pages will not be dog-eared") was tried, without success. Finally, Lt. Vultee blasted out with his famous memo on "Bucking of Buck Slips" in which negligent "buckees" were charged with retarding the war

effort and were warned that "such impedition will not be tolerated." Everybody reached for his dictionary and awaited the next dispatch. . . .

* * *

. . .as Rosh Hashana approached. . . .Almost the entire student body exhibited religious fervor and a sudden desire to attend services. For this, of course, a three-day pass was necessary.

Equinoctially, these "Passover passes" (the term applied to both Passover and Yom Kippur) brought on righteous indignation in some quarters because "They get off at Christmas or New Year's, too, and that ain't fair!" The other quarters said "Yes" and went on pass anyway. . . .

. . .the Room 31 gang. . . .had started a map in the second stall of the latrine down the hall from the office, a map which included some of the prominent personalities of the period. Irritated (no doubt, by the misuse of government property), Owens issued a notice to "all EM" warning them that "anyone found guilty of writing on, marking or in any way maliciously defacing any wall, partition or other part of the school buildings will be subject to severe disciplinary action."

Though the map grew and grew, Owens couldn't catch anybody. As its reputation spread, visitors from other buildings and even the Company came over to see the newest "terrain features."

Captain Guernsey regularly passed by the officers' stall in order to keep abreast of developments. . . .

* * *

The Legal Department moved in shortly afterwards and immediately took over. . . .They seemed to regard the school headquarters as intruders. Business was brisk. One day somebody who said he was a representative of Armour & Co. called up and insisted that Lt. Pratt had some chickens for sale at his farm. The "Legal Eagle" explained that this was an army post, that, anyway, we were using all the chickens we could handle. . . .

* * *

The Chief Clerk has also always had a secondary function—that of a combination John Anthony—Ma Perkins—medicine man for the soul. At least once a day he received a wailing visitor with a long story of a check that had to be cashed, a telephone call for a life-or-death matter, bonds that had to be bought, or "I want to see Lt. Kunssssman." The EM long ago learned that the simple story is not always the best. There was. . .the lads who felt all right in the morning but now were a little sick, and would like to go to the dispensary, please—passing the PX on the way, of course. Then there were the delinquents sweating out an interview with the Captain

or the Executive Officer and who stood around for fifteen minutes to a half an hour, gazing aimlessly at the ceiling and getting out of people's way while maintaining a pre-execution look of "No, I won't take an eye bandage." And there were the potential OCS men who had been told to report to the Chief Clerk about their applications. They marched down the halls, silently counting cadence; executed a smart column left; and, coming to attention at the Chief Clerk's desk, they were ready to reel off the general orders, the position of the soldier, or a fifty word essay on "Why I want to be an Officer." When they were asked merely to sign their name three times, their relief was so evident they'd have let out a scream (if they hadn't been OCS men).

In addition, the Chief Clerk is often kept quite busy with a security problem peculiar only to School Section "A." Room 36, adjacent to his desk, is the secret classrooms of all secret classrooms, and the subjects taught there are verboten to all outsiders. Unfortunately, the human voice carries; and when Lt. Pratt lectures, the windows rattle in the Big House a half mile away. This keeps the Chief Clerk busy with phone calls from the main gate, as the guards are quite interested in his course, and frequently request repeats on certain paragraphs they missed while checking trucks out of camp. . . .

* * *

EDUCATION IN DARKEST VIRGINIA

* * *

Just at chow time Thursday evening, October 8th, three large commercial vans pulled in to camp with all the worldly possessions of the school that had been left at Monmouth. In addition to the stationer's supplies and personal materials of the students, they had all the furniture, twelve tons of IBM paper, the IBM machines and a three-ton safe. The draft-dodging that went on that night when a detail was needed to unload has never been equalled by any of the "Zoot Suit Clan." The materials were for the most part put in the left of the barn, and the overflow in the firehouse. By eleven PM everything was unloaded but the safe, which was strictly an "Everybody-boss-nobody-do-anything" job. The situation finally got to the point where Lt. Bundy and Lt. Markland gave up and Afflerbach first laid claim to an SSN for safe moving.

Sometime during the following week, school was started with two four hour shifts in the left of the barn, two small rooms on the ground floor, and a barracks. During the formative period of the school most of the overhead either drew their materials and continued their studies or were busy pushing details preparing the buildings. Sgt. Frick did neither but instead went to Washington every night and came in just in time for noon chow. . . .

As soon as lights were available for evening study, a night study hall, optional

to all students, was instituted. The roster for the supervision of the hall was arranged so that one so-called senior instructor and one junior were on each night. This probably became as confused as the army has ever known, with such arrangements as the following prevailing. One night Sgt. Netherton was the person who actually served, but he was doing it for Bailey, who was supposed to have done it for Hurst, who was supposed to replace Afflerbach, who had originally been scheduled for that night. . . .

By November the school quarters had been moved to what later became HQ Company's mess hall. The heating arrangement in the mess hall was poor enough with the best of attention, but to make matters worse, Cpl. Symmes was put in charge of building the fires.

A less apt person for the job could not have been found in all the school. For instance: one cold Sunday, Symmes was the only person in Barracks 1, and though his bunk was next to the stove, he let the fire go out and went to the latrine to finish his usual Sunday bundle of letters.

* * *

In the company by this time things had become well enough organized to attempt a fire drill and gave the twelve Assistant Fire Marshals some practice. Everything went very smoothly until Lt. Mann noticed that Sgt. Bailey had allowed his quarantine men to fall out with the rest of the company and proceeded to inform Bailey that he was in error. To this he received the philosophical reply, "Sir, fire recognizes neither race, creed, or color." This little episode may have been the beginning of the Lt. Mann-Sgt. Bailey feud which lasted for the duration of Bailey's stay at Vint Hill.

On December 13 school was moved to "E" Bldg. No. 1, the first time on the Manassas front that decent quarters were available. There now was allocated one officer instructor to each room in addition to the NCO in charge of the room, and in this arrangement, it seemed that Lt. Mann and Sgt. Bailey were just naturally a team (either by accident or design). Their feud continued, and in addition a race sprung up between them over the progress made. Bailey never was very cooperative in his suggestions to Lt. Mann (Bailey was more advanced) and one time he nearly laughed himself into hysterics after looking over Lt. Mann's problem, glancing out the window as if viewing the weather prospects, making a few pointed observations with a knowing inflection, and watching Lt. Mann swallow the bait and madly try to follow the "clue" which was entirely false. Sgt. Bailey went racing down the hall fairly shouting, "Boy, did I foul Mann up! He'll be there the rest of the winter."

* * *

In the spring of '43, the going about camp really got tough, with mud about a foot deep every turn one took. By this time the mess hall was open (Christmas dinner was the first meal served in it), and the school shift was the conventional A shift from 0645 to 1245; B shift from 1380 to 1900. The first shift was marched to and from school by T/Sgt Van Cleaf, on detached service from the Air Force somewhere out in Washington State, and the second shift by Sgt. Afflerbach. Every morning there was the problem of finding a route to school that involved no swimming to cross the road in front of the E buildings. This problem and the routes finally chosen confused Van Cleaf who missed the turn, went out the main gate, marched down the road (all of this in total darkness), and arrived at school twenty minutes late. Afflerbach, having the noonday sun to maneuver by, did nothing worse than lose a few people when they slipped off the foot bridge over the mud in front of "E" Bldg. 2.

With the coming of spring came a great influx of students and the need for more instructors. As a breaking-in course, the embryonic professors were first given the test of showing their ability with the students in Room 31....No one ever was complete master of Room 31, because the Schwartz boys, Duke (of latrine map fame), and Smitty (Lou) were just invincible. Many are the times that their stories have held up before Capt. Guerney's questioning, though everyone knew they had been in Warrenton long before noon that Saturday. Tarpley and Hodge, rather than face Room 31, chose to become warrant officers and take part in the invasion of Sicily.

During this phase of the campaign, military training was strictly a hit or miss afair supposed to take place during the shift that the men were not in school. What with the large number of men on detail and the "goof off's." very few were out at any one formation. To counteract the rise in goofing off, Griffin and Afflerbach cooked up a surprise roll call one morning and found that the absentees just about balanced the presentees. Before the inevitable three days KP, the boys admitted that they had been (1) in the barracks, (2) in the bushes, (3) in the PX, (4) in "A" Company asleep and unnoticed because of "A" Company's 24-hour schedule.

In May 1943, enough buildings became available to discontinue the two shift basis and also to crack the tradition of the thirteen day week. The training program now was held in the afternoon as the finish of a day and utilized the Kunzman Memorial Obstacle course, the Nason grape vine hang-on-or-get-wet-course, and Sgt. Neuwoehner's tick-infested "creep and crawl" course.

After the demise of Ephron, Clark, Latham, Lehr and Schier, Gramann and Chapman, with Sgt. Nelson as boss, took over the paper grading department and worked madly trying to make at least thirty new problems per day in addition to going over hundreds of papers. With 147 square feet of map behind them, this "General Staff" was masterminded by the excitable, fluet-playing, Esperanto-speaking, Egyptian-born Greek, Lt. Callimahos who simultaneously prepared problems, practiced Morse Code, worked on inventions, played chess, and listened

in on other sections' conversation. Despite a sharp intellect, the Lt. had a gullible streak that was exploited by his buddies whenever the situation was ripe (as it usually was)....

The rest of the summer of 1943 was quiet. Gus Uhl went to Canada just long enough to get a service ribbon and then returned; Corry set a new beer record in the 130 pound class and added acrobatics performed on the railing around the PX; Palmer's room of cripples were all either declared fit or sent home to find jobs, thus freeing him for active duty; and Lamke (Bks. 13 all present or accounted FOO-URP!") was quietly bitching away in the library, able assisted by Oscar Briggs. Bershas and Wiggin transferred their efforts from the language field, probably to fill the gap left when Oppenheimer went to the Southwest Pacific.

* * *

Besides other school equipment, a complete staff of able officers was around at all times. Some made the complete cycle of student, instructor, company executive officer, and back to student...."Big" Bundy and Lt. "Little" Bundy conspired together with some message center problems that seemed to be always planned for the coldest and most uncomfortable day of the month; and although they've been gone for nearly two years, there still stands on the main gate road the buggy little shack they immortalized as "THQ"—a monument to their work.

Autumn of 1943 brought big things and a lot of new instructors. Jungle Jim Metcalf took on instructorial duties above and beyondthe call of malaria control; Elgin and Braswell were salvaged from the Room 31 gang; and the Atamian-Marburger combine was the result of random selection. The "quickie" course came bouncing off the press (really from the pens of Lt. Callimahos and Gerlach) and the first experiment at force feeding was under way. Very few chokings or strangulations were reported.

At the first anniversary at Vint Hill approached, plans were made for a celebration of those who had made the initial trek and were still hanging around. The dinner was held at the Robert E. Lee, one of several outposts of Greek civilization in Warrenton, on the evening of October 5, 1943. Seventeen of the twenty eligibles enjoyed the spaghetti dinner and then returned to Room 318 for coffee (and bourbon, with poker). Sgt. Krueger and Owens, as usual, financed the game and finished by paying off Cpl. Bill Hewitt's wedding expenses. Bill Doering demonstrated a journalistic flair by writing his first full length novel, "Your Life at Vint Hill," . . .a memorial which gave rise to the Old Bastards Club.

* * *

By May, the school had dwindled to the point where each instructor had his own student; many of the Warrenton Commandos saw fit not to plant a garden; and

everyone was trying to get in a couple of extra courses that would help hold stripes. Came the "bust" in ASTP, and then the horde. Every available room (School Section "B" was even declared bankrupt) and spot was utilized for classes, with "The Dome" Rosskopf having the misfortune to draw the Salt Mines (Supply Building) where the tar on the roof melted and spattered freely. He finally got a helper in Les Olin, but Olin decided if he could stand tar he could stand another substance and went to OCS. . . .

On July 4th, (ah, what a day for fireworks!) the first class of WACs came to School Section "A," and what a change in the EM!! Students no longer had to be reminded to shave, and it is said that the sale of Kreml quadrupled at the PX. The one sad note in the coming of the WACs, other than the loss of one perfectly good latrine by the EM, was that, after many long hours of planning and master-minding, Afflerbach was at the last moment informed that a more stable and experienced man would be required to master the co-eds and that Sgt. Nelson would fit exactly (as long as his didn't find out).

The WAC occupation can be divided roughly (or perhaps gently) into three periods: (1) the Nelson or pioneering period; (2) the Ramsey-Snyder or achievement period; and (3) the Palmer or decadent period. During the first of these, the personnel of the group exhibited a timidity, seriousness, and lack of humor for which Nelson claimed credit but which probably reflected the newness of their situation; for although the natives looked upon them with interest and curiosity, they treated them with formality and restraint. During this period of plain living and high thinking, the first personalities to emerge and take definite shape (uh huh!!) were those of Mary Jane, the heroine, and Sue the siren. The classroom held an odor variously interpreted as (a) Chanel Number 7 and Tabu, and (b) GI soap and honest sweat. Toward the end of the period a feud with the guards resulted in a marching formation that was practically all road guides.

During the second period the group became more self-assured, both in their work and in their social relations. During breaks they mingled with the male students, who began to accept them, and their fears regarding the apparent abnormality of the male behavior were quelled as the sheep's clothing gradually disappeared. As the girls attacked their work with more confidence, Summerhalter and Morris became adept at substituting charm for achievement. McMann showed a certain athletic prowess while werstling during breaks, and sedate M/Sgt. Filipczak was occasionally moved to execute trapeze antics on the railing outside the door near the classroom.

There is no positive proof that Sgt. Palmer's presence caused the period of decadence, but it is unfortunately true that many of the brighter flourishes occurred during his brief regime. The trouble was that AR's and SSAR's (School Section "A" Regulations) had never envisaged the entry of females into the school, so that many of the little incidents had to pass unregulated. For example, what could be done when Ginny Blakemore began to put up her hair during class, or when

Summerhalter showed up with curlers in her hair? Both continued working, so not even the crime of loafing could be pinned on them. And the cigarette holders nearly a foot long —- strictly not GI, but apparently not contrary to the rules.

Bell got closer to the borderline when she impaled a marshmallow on a pencil, then toasted it over a match, but she was ahead of the rest of the class and had earned the right to an eccentricity or two. Sgt. Palmer felt that much of the trouble was really the fault of Sgt. Nelson, for everything he (Palmer) did was wither approved by a chorus of "That's just what Sgt. Nelson said", or disapproved by the accusing reminder that "Sgt. Nelson never spoke to us like that." The story had a happy ending, though, for on his birthday the girls sang "Happy Birthday, Sgt. Palmer", and have him some cigarettes, candy, and aspirin—the latter to remember them by, they said.

As the second year staggered to a close, the Old Bastards held a second meeting, again putting out a memorial of the occasion. . . .Although both Bastards and bourbon were scarcer, the party demonstrated that the aging members had lost none of the capacity for celebration. They wondered if they (or anyone) would be around for a Third Anniversary. It didn't seem likely, but then as Lt. Neuwoehner used to say, "We'll never touch Palau and Halmahera!"

* * *

CHAPTER V

Cracking the Codes

The principal Army cryptanalytic center in World War II was located on the grounds of a former women's junior college at Arlington Hall Station in Arlington, Virginia. The main school building housed the headquarters of the Signal Intelligence Service (later redesignated as the Signal Security Agency); operational personnel worked in two large and unlovely temporary buildings run up in ninety days in 1942 and 1943. By the time the war came to an end, 5,000 civilians and 2,000 military personnel were working around the clock to decrypt Japanese military, diplomatic, and other messages. The excerpt from SRH 349, Achievements of the Signal Security Agency in World War II, gives some details of their accomplishments. A message reproduced from SRH 280, An Exhibit of the Important Types of Intelligence Recovered through Reading Japanese Cryptograms, demonstrates that solution of Japanese codes and ciphers could even produce important intelligence dividends on the war in Europe.

Other Army cryptanalysts were located at Bletchley Park, the headquarters of the Government Code and Cypher School (the British signals intelligence organization); with field units; and at General Douglas MacArthur's Central Bureau, an Allied cryptologic unit originally headquartered in Brisbane, Australia. A short history of Central Bureau can be found in the excerpt from A Brief History of the G-2 Section, GHQ, SWPA and Affiliated Units: Introduction to the Intelligence Series (General Headquarters, Far East Command, Military Intelligence Section, General Staff), pp. 66-69.

From SRH 349. *Beginning in 1942, the Signal Intelligence Service was repeatedly reorganized and redesignated, finally becoming the Signal Security Agency, a designation which obscured its major mission.*

THE ACHIEVEMENTS OF THE SIGNAL SECURITY AGENCY IN WORLD WAR II

I. BUILDING THE ORGANIZATION

The Signal Security Agency (SSA) owed its existence in World War II to the basic fact that valuable information may be derived by intercepting communications and reducing them to intelligible form. This fact has two aspects: efforts must be made to protect our own communications against examination by the enemy, while at the same time steps must be taken to derive as much information as possible from enemy communications. The SSA had primary responsibility for both these phases.

* * *

In spite of greatly limited funds, the SIS was able in the years prior to World War II to lay securely the foundations upon which wartime expansion of the SSA was built. . . .

Activity of the SIS consisted of continuation of existing code production projects; establishment of a training program by which a small group of expert civilian cryptanalysts was produced, and another small group of officers, both Regular and Reserve, were trained in the varied phases of signal intelligence; development of intercept facilities to provide material for the cryptanalysts; and, toward the end of the period, the reestablishment, as a practical operation, of solution of current diplomatic traffic. In addition, time was found to do much planning for war and to carry on research and development in cryptographic and cryptanalytic techniques. All of this work was done by a very small staff: Only seven persons from 1930 to 1936—by the outbreak of the War in Europe there were only nineteen.

Thereafter, a series of expansions resulted in the following strength on the day of the Pearl Harbor Attack:

Category	In Washington	In the Field	Total
Officers	44	1	45
Warrant Officers	0	0	0
Enlisted Men	28	149	177
Civilians	109	0	109
Total	181	150	331

Actual operating strength was somewhat less, since 22 of the civilians were still undergoing training and had as yet made no contribution to the work. A comparison of these figures with the strength of V-J Day (14 August 1945) will show the tremendous proportions reached by the wartime expansions:

Category	In Arlington	In the Field	Total
Officers	661	116	777
Warrant Officers	4	11	15
Enlisted Men	565	2139	2704
Enlisted Women	957	257	1214
Civilians	5661	0	5661
Total	7848	2523	10,371

These figures do not include, of course, the more than 17,000 officers and enlisted personnel engaged in signal intelligence activities under overseas theater commanders, nor do they give any adequate indication of the turnover of personnel in the Military District of Washington: by the end of the War more than 18,000 numbered badges had been issued to all categories of personnel at Arlington Hall (headquarters of the SSA) alone. To recruit such a staff and to maintain it despite the many influences which tended to dissipate and to lower strength were tasks requiring strenuous efforts.

The recruitment program was faced not only by obstacles which also beset other wartime agencies, such as the manpower shortage and the need for speed, but also by many problems peculiar to the SSA, most of the activities of which had no counterpart outside the Government from which to draw personnel. Many of its operations required persons of the highest intelligence, possessed of rare skills not easily definable, often demanding, as in the case of the language experts, years of study to produce proficiency. Messages in more than [text withheld] languages had to be translated, yet in only a few instances were competent linguists easily obtainable. This problem was most acute in the case of Japanese, both because a knowledge of Japanese is rare in this country and because the volume of material to be translated was so great [text withheld] The only recourse was to train personnel from the very beginning: ultimately, for example, 428 Japanese translators were trained in this way. The same method proved to be the only solution for supplying competent cryptanalysts: both by the use of training manuals in military cryptography and cryptanalysis and by apprentice training in operating units, the small number of competent cryptanalysts available in 1941 was gradually expanded, but the supply was never equal to the demand.

Moreover, the SSA was called upon to train large numbers of personnel for ultimate assignment to overseas units maintained by theater commanders. This training was given not only in formal courses designed to produce officers and men qualified in the various cryptographic and cryptanalytic specialties but also by

participation in the day-to-day activity of operating units. Much was done also to coordinate training of signal intelligence and radio intelligence units being trained elsewhere in order to keep them abreast of the latest technical developments. In this connection it will be well to digress long enough to point out the trend exhibited during the War of breaking down the centralized authority of the SSA by setting up independent signal intelligence units under theater commanders. Such a change was motivated no doubt by a feeling that it would be necessary to maintain signal intelligence units close to military operations. Yet the experience of the War showed that modern electrical communications are so speedy that distance is no longer a factor that need be considered. Examples will be cited. . .of messages transmitted many thousands of miles, promptly read and translated, and sent back to the proper commander in time for action.

Morale problems were particularly acute, for in addition to those encountered by other wartime agencies, involving living conditions, health, fatigue, and the like, the SSA had a number peculiar to itself. Chief among these was the mixed character of the personnel. Officers, enlisted personnel, and civilians worked side by side, and in each of these groups there were both men and women. A small unit composed of personnel from several of these groups might contain people having varying degrees of prestige and receiving different pay and privileges, yet performing exactly the same type of service. . . .Moreover, there seemed to be no correlation between a category of personnel on the one hand and competence and achievement on the other. Brilliant work was done by individuals in all categories. Had it been possible to operate the SSA entirely with military personnel, or entirely with civilians, some friction might have been avoided, but an SSA made up only of military, or only of civilians, would have lost immeasurably the contributions of the other group. As it was, military personnel had to be stationed with the SSA for both operational and training purposes while having civilian employees made it possible to use the services of many not qualified for military duty.

Another factor not particularly conducive to the maintenance of high morale was the necessity of maintaining complete silence concerning every phase of one's work. Moreover, many of the operations involved nothing but drudgery and considerations of security prevented the individual employee in many cases from getting a clear understanding of how his or her work contributed to the war effort.

Continuous efforts were made to maintain morale at a high level by bettering conditions of work and furnishing employees with aid in the solution of their personal problems. While the rate of separations of civilian employees (4 per cent a month) seemed high, it was found to be actually lower than that of other comparable wartime agencies in Washington. Indeed, giving due consideration to the inherent difficulties, morale in the SSA was really high.

Early in the War space in the Munitions Building, where the SIS had been located from its founding, grew so crowded that larger quarters had to be secured elsewhere. At first it was expected that the SIS would be housed in the Pentagon,

then nearing completion, but before such a move was effected, plans were laid for moving the SIS to a site of its own, preferably outside Washington. The SIS would thus have room for expansion, be relatively better protected from the danger of enemy bombing, and could maintain its security with greater ease if not forced to share a building with other War Department agencies.

The site ultimately chosen after examination of several possibilities was the premises of Arlington Hall Junior College in Arlington, Virginia. This location was close enough to the Pentagon, was not too far from the Eastern Primary Monitoring Station then being planned at Vint Hill Farms, near Warrenton, and in addition made possible the utilization of the housing facilities in the Washington area for quarters for personnel and dependents.

The property was acquired by court action for $650,000, with $40,000 additional for furnishings, and the War Department assumed possession on 14 June 1942. Arlington Hall Station was established as a Class IV installation under the Chief Signal Officer on 25 June 1942. Immediately units of the SIS began to move into the former school building, now the Headquarters Building, Arlington Hall Station, and by 24 August 1942 all of the SIS was at Arlington Hall, the move having consumated without interruption of operations.

Construction began almost immediately on projects designed to convert certain of the existing buildings to military purposes, and by September the program of new construction was in full swing. Besides many smaller buildings, two very large semi-permanent buildings were erected for operations. The first was completed in less than three months time; the second, erected in winter months, took a little longer, but after May 1943 all operating units were housed in the two operations buildings. Other construction provided barracks and mess halls for enlisted personnel, a station dispensary, theater, post exchange, and other service buildings; a motor pool, a fire house and warehouses. The final construction was completed by 1944: while many units have had to work in crowded conditions, adequate space was supplied for all operations. One of the important ancillary structures was a cafeteria, completed early in 1943 and enlarged in 1944, which ultimately provided service around the clock. . . .

The Post was made secure by establishment of a guard detachment and the erection of a double steel fence provided with an alarm system. Another fence was erected around each operations building entrance to which was limited to authorized personnel. Distinctive badges were issued to all categories of personnel and had to be worn at all times. . . .Access to the Post was forbidden to visitors except on official business, and efforts were constantly maintained to indoctrinate all personnel in the necessity of maintaining the physical and operational security of the Agency.

The SIS had been prior to the War a field service under the Chief Signal Officer. Though located physically in Washington, it was not a part of the Office of the Chief Signal Officer but was administered at first through its War Plans and

Training Division and later through its Operations Branch. With the coming of war, however, reorganizations were made by the Chief Signal Officer which resulted in a series of changes of name. The old name of Signal Intelligence Service (SIS), which had existed since 1930, was abandoned for Signal Intelligence Division (SID), and in rapid succession, this became the Signal Security Branch (SSB), the Signal Security Service (SSS), and, finally, on 1 July 1943, the Signal Security Agency (SSA), a name which remained unchanged until the cessation of hostilities. After the organization of the Army Communications Service within the Office of the Chief Signal Officer, the SIS-SSA, by whatever name it was called, was always a part of the Army Communications Service.

The need for enlisted personnel was met by increasing the strength of the Second Signal Service Battalion. This Battalion had been created as a company on 1 January 1939 to supply personnel for the various intercept stations then in existence. Later it furnished a convenient military unit to which enlisted personnel employed in the Military District of Washington and elsewhere for other types of signal intelligence activity could be assigned. In November 1942 the post of Commanding Officer of the Battalion was united with that of the Commanding Officer, Signal Security Agency: in this way it was possible to effect unified control of all SSA enlisted personnel wherever stationed. The Battalion had detachments not only at Arlington Hall Station but all over the world wherever it became desirable to conduct any intercept activity. The Battalion did not, of course, include signal intelligence personnel directly under the control of theater commanders. While the Battalion embodied many unorthodox features—its maximum strength, for example, surpassed 5,000 officers and men and at the end of the War it was commanded by a Brigadier General—it effectively solved the problem of how to administer the amazingly complex activities performed by enlisted personnel working for the SSA.

* * *

It has already been noted that the SSA was administratively and functionally a part of the Signal Corps, but G-2 exercised staff supervision and control. While channels were erected whereby G-2 could exercise this control without at every step going through the Office of the Chief Signal Officer, nevertheless the SSA was primarily a Signal Corps agency, its personnel were Signal Corps employees, and for purposes of supply it relied on Signal Corps facilities.

Since it was increasingly felt by G-2 that the SSA was the most important source of intelligence, even closer control was required and therefore, on 10 December 1944, there came a change. The SSA was removed from the Signal Corps for operational control, which was now assumed by G-2, but administrative control was still retained by the Signal Corps. This cleavage of control was by no means clearcut and sharply defined: the line of division was not straight, since the

organization was pragmatic rather than theoretical, but in the main the differentiation thereafter was operational control exercised by G-2, administrative control maintained by the Signal Corps.

Divided control, such as this was, however, proved far from satisfactory in practice and was ended on 15 September 1945 by transfer of administrative control also to G-2, with the change of name from Signal Security Agency to Army Security Agency (ASA). This had the effect of associating the organization more closely with G-2, the user of one of the two chief products, but it will necessitate that in the future liaison be constantly maintained with the Signal Corps so that not only an adequate supply of trained personnel may be available for the communications side of its activity but also the increasingly closer relationship between signal intelligence and signal security may be maintained by the closest cooperation. Moreover, it also resulted in once more consolidating all responsibility for signal intelligence and signal security in a single organization, since the units formerly under the control of theater commanders were now made a part of the ASA.

As will be abundantly clear from specific references in the two following chapters, the SSA had the incalculable advantage of collaboration with the corresponding units of the United States Navy (OP-20-G and OP-20-K). Liaison with the Navy had long been in progress before the War but throughout the conflict it constantly increased in both the cryptographic and cryptanalytic fields. For some years before the War the Army and the Navy had been collaborating [text withheld] but the Office of Naval Communications, being pressed for personnel and facilities needed by units at work on enemy traffic [text withheld] asked the SIS to take over more and more work. . . .Early in the next year the first SIS mission was sent to England to establish the basis for liaison and in the summer the SIS and GCCS first exchanged permanent liaison officers, a relationship ever since maintained. Special missions have, however, also been sent and received from time to time. Intercommunications by radio, cable, and mail, have constantly maintained. Frequent agreements have been made to avoid unnecessary duplication of effort: the chief of these was reached in 1943 whereby the British assumed primary responsibility for signal intelligence operations for the War in Europe, the SSA, for those for the War in the Pacific, though neither Agency abandoned work in the field of the other's responsibility. This exchange of information has been broadest in cryptanalytic activity: considerations of security have limited cooperation in cryptographic compilation and development to work on systems used in combined British and American operations. . . . [text withheld]

The SSA provided trained personnel for and collaborated with U.S. Army Signal Intelligence Services in all theaters: Mediterrean Theater of Operations, European Theater of Operations, Southwest Pacific Area, China-Burma-India Theater, Central Pacific Area, etc. Collaboration between the SSA and the Central Bureau, Brisbane (CBB), began with the founding of the latter organization by joint action of the Royal Australian Army and the United States Army in the spring

of 1942. As will be later seen, this cooperative effort was maintained by constant intercommunication, particularly in the case of the Japanese Army cryptanalytic problem.

* * *

II. THE PRODUCTION OF INFORMATION

Modern intelligence services are able to derive information useful for military purposes from many sources but the most fruitful and most authentic is the enemy's message traffic and the communication system over which it is transmitted. Indeed, though messages differ in value, experience has proved that there are no messages, no matter how insignificant in content, which have potentially no intelligence value. Therefore, the cryptanalytic attack had to be made not only upon the purely military traffic transmitted by enemy forces but also upon diplomatic, commercial, and private messages as well. Even plain-text messages could not be neglected, but the largest part of the intercepted traffic was, of course, in cryptographic form and required cryptanalytic treatment before it could be read.

While some of the techniques used by the SSA were not strictly cryptanalytic in character, e.g. traffic analysis, secret ink solution, and exploitation of telephonic communications, the production of information involved, in general, the following steps:

a. Interception of traffic in large volume;
b. Traffic analysis of intercepted messages;
c. Solution of the cryptographic systems used;
d. Decryptographing of messages sent in solved or partially solved systems;
e. Translation of such texts as were in foreign languages, and
f. Publication of the texts in a form useful to the Military Intelligence Service.

* * *

A. INTERCEPTION

No cryptanalytic attack upon the communications of a foreign government can hope to be successful unless an adequate supply of intercepted material is available for study; nor can proper measures for safeguarding our own communications be taken without constant monitoring of the traffic sent out by American stations. It therefore became necessary to establish facilities for the interception of radio traffic in large volume.

Prior to the war there were seven fixed intercept stations located as follows:

No. 1 Fort Hancock, New Jersey
No. 2 Presidio of San Francisco, California
No. 3 Fort Sam Houston, Texas
No. 4 Corozal, Panama Canal Zone
No. 5 Fort Shafter, Territory of Hawaii
No. 6 Fort McKinley, Philippine Islands
No. 7 Fort Hunt, Virginia

Constant efforts during the War expanded these facilities greatly. In the end there were eleven fixed stations, many of which were far larger than any operating in 1941. These eleven, which were found sufficient to supply the necessary volume of traffic, were distributed as follows:

No. 1Vint Hill Farms, Warrenton,Virginia
No. 2Two Rock Ranch, Petaluma, California
No. 3 Indian Creek Station, Miami Beach, Florida
No. 4 [text withheld]
No. 5 Fort Shafter, Territory of Hawaii
No. 6 Amchitka, Aleutian Islands
No. 7 Fairbanks, Alaska
No. 8 [text withheld]
No. 9 Bellmore, Long Island
No. 10 Tarzana, California
No. 11 Guam

The three largest stations (at Vint Hill, Two Rock, and Fort Shafter) were equipped with elaborate arrays of high-directivity antennas for all-round coverage. These stations had been located so as to make easy the electrical forwarding of the intercepted traffic to Arlington Hall and the largest portion possible of intercept missions was assigned to them. The supplementary stations, particularly those at [text withheld] Amchitka, Fairbanks, and [text withheld] were located so as to intercept signals which could not be copied at the larger stations, and in general they had antenna systems beamed at specific targets of sectors. The stations at Bellmore and Tarzana were assigned the task of monitoring United States traffic for security purposes. Considerable assistance was rendered to the intercept facilities of the SSA, particularly in the period before the SSA's own intercept facilities were fully developed, by radio intelligence companies stationed on the West Coast and in the Pacific Area.

Among the new items of equipment developed during the War for use at intercept stations were "multicouplers," which allow the signal from one antenna to be coupled to several receivers; a "Hellschreiber Facsimile Recorder," for copying signals of this German system; and a "Time Delay Device," which accomplished a delay of from three to ten seconds between the time a signal is received and the time it is necessary to copy it, making it possible to start a recorder to take down the entire transmission for later transcription.

Intercept activity was coordinated and controlled by staff units at Arlington Hall which supplied the stations with technical advice. Speedy transmission from the intercept stations was effected chiefly by special teletype lines, which came more and more to take precedence over other means such as cable and air mail. From four teletype lines in operation on 7 December 1941, the number of such lines grew until on V-J Day there were forty-six. The amount of money paid for monthly rental of land-line teletype facilities alone reached in August 1945 the large sum of $58,918.02 but this figure does not include the cost of radio-teletype facilities, paid for by the Army Communications Service, for which no data are available to the SSA. Average monthly volume also constantly grew:

December 1943 279,034 messages
February 1943 46,865 messages
July 1945 381,590 messages
August 1945 289,802 messages

Arrangements were also made for obtaining traffic from radio intelligence units operating in theaters of war; from the Navy; from the several offices of the Chief Cable Censor; [text withheld]

B. TRAFFIC ANALYSIS

Traffic analysis, a procedure which first arose from attempts to reconstruct enemy communications networks and their characteristics with the aim of improving intercept facilities, became highly useful also for two other purposes: (1) Through study of the external features of the messages as distinct from the text itself, together with direction finding, by which it is possible to locate the site of unknown radio stations, traffic analysts were able to provide cryptanalysts with much useful information not otherwise obtainable; (2) Statistical study of the fluctuations in the volume of traffic passing in each circuit, and inferences drawn therefrom, became an important source of military intelligence. Traffic analysis can be carried on, of course, independently of successful cryptanalysis: useful information can be derived by traffic analysis even before a message is readable, but when the two techniques are combined, each is aided by the other.

While traffic analysis had been used to a limited extent in World War I, the British were the first to develop the science extensively in World War II. The beginnings of traffic analysis in the SIS date from April 1942. A mission was sent to England to gather information and upon its return it was possible to set up traffic analysis as an integral part of the SIS. As a result of this mission, efforts of the SSA in traffic analysis were to be concentrated on traffic in the Pacific theater, leaving to GCCS the primary responsibility for that in the European, a logical arrangement arising from geographical considerations.

The initial problem in traffic analysis for the SSA was the solution of the code numbers used to indicate message center place names occurring in Japanese mili-

tary messages, and the first success was achieved in September 1942. By the following June nearly all of the twelve main systems had been reconstructed, permitting accurate location and mapping of radio stations and circuits. Four distinct major military networks were identified, those used by the Imperial GHQ in Tokyo, the Southern Field Force, the Water Transport organization, and the Army Air Force. The adequacy of the techniques used was proved when, on 1 April 1944, the Japanese introduced a completely new place-name code which was almost wholly solved within a month, about half of the names being identified within 48 hours. Technical assistance given the intercept stations was responsible, at least in part, for the rapid increase in volume of Japanese military intercepts.

Contributions of traffic analysis to military intelligence began with the location of military message centers attached to unit headquarters. The identification of nets and unit organization revealed troop locations and chains of command, thus giving highly important information concerning the Japanese Order of Battle. Traffic flow analysis—the study of variations in traffic volume and patterns of station activity—gave indications of impending enemy activity. Convoys were detected and followed merely by studying the changes in the pattern of communications in the Water Transport code between various seaports along the route. Analogous studies of patterns in Air Force and Army Administrative codes led to detection of aircraft and troop movements. Analysis of communications between field units and their home depots indicated the location of almost all divisions south of Manchuria. The movement of a unit in the field could be detected from its home depot traffic, or through readdressed messages, or by messages addressed to the unit code name in lieu of a specific message-center location. Finally insight into the general content of diverse classes of messages, gained through traffic analysis, aided in establishing priorities in handling the thousands of messages received daily. Though publication of daily and weekly traffic analysis bulletins began in September 1942, the greatest emphasis on the intelligence aspect of traffic analysis came in late 1944 and 1945. Where deceptive measures are not employed, traffic analysis can yield a very large amount of fairly reliable intelligence; where deception is effectively practiced, deductions from traffic analysis must be used with extreme care. Since, however, there was currently no evidence that the Japanese engaged in deceptive communication measures (a fact which was confirmed after V-J Day), valuable results from traffic analysis were frequently obtained.

C. CRYPTANALYSIS

Cryptanalytic procedures are never stereotyped and permit no easy description. . . . [text withheld] Too much emphasis cannot be placed upon the need for cryptanalytic continuity. . . . [text withheld] It is characteristic of most cryptographers that they tend to introduce new cryptographic features and elements in a conservative manner. Thus, a new system will frequently not represent a radical departure

from its predecessor but will, rather, be merely a refinement and improvement of what went before.

Since this is likely to be so, the cryptanalyst who can start his study of a new system with a good acquaintance with the cryptographic character of the one just made obsolete, and of others used concurrently by the same government, will be at a great advantage. The basic factor underlying all successful cryptanalysis, however, is constant watchfulness for significant details which may provide an entry: one or another of the operations mentioned above may reveal the nature of the system but the surest method is statistical analysis.

In World War I and for many years thereafter, such statistical analysis was dependent upon hand methods alone. The cryptanalyst or his clerical assistants were forced to make frequency counts or other statistical tabulations of the units or text (letters or digits), taken either singly or in groups, by hand. Not only did the process involve an immense amount of drudgery but it was also easily subject to serious error. The eye had to keep the place in a meaningless text while the hand made the necessary indications on the charts. Naturally, the work, to be dependable, had to be painstakingly accurate: the result was that it was time-consuming.

Even under the conditions of World War I, when the volume of intercepted traffic was relatively low, this was already a problem of most serious proportions. As a consequence, steps were taken during the period of peace to find adequate solutions to the problem. The most significant trend in cryptanalytic research and development during World War II has been, in fact, the extent to which machinery has been used to speed up hand methods and also to perform operations which, because of their magnitude, could never have been attempted without such apparatus.

A very large measure of the success of the SSA in cryptanalysis must be attributed directly to this fact. The enormous increase in the volume of intercepted traffic would alone have made hand methods wholly inadequate to accomplish the task set us in this War. Fortunately, none of the enemy nations seems to have realized the possibility of developing such machinery and the necessity of protecting their cryptographic systems against attack by such means, or if they did, as was true in the case of the Germans, the realization was not too clear and insufficient emphasis was placed upon the development of mechanical and electrical analytical equipment. The SSA, on the other hand, has had to keep constantly in mind, while developing cryptographic systems for our own use. . . , the possibility that other nations might also make, during the war or later, similar advances in machine cryptanalytic techniques and to prepare against that contingency. Thus, any new development in cryptanalytic techniques has the immediate effect of causing a converse development in cryptographic techniques, and vice versa. This is the fundamental reason why all research and development in both fields must be carried on within a single organization. [text withheld] Several types of machinery have been used. The first of these is standard tabulating machinery, including machines available on the open market as well as machinery of the same general type modified or

developed expressly for the SSA. The method involves the recording of data on a card in which holes are punched by means of a key-punch machine and the processing of decks of such cards by a number of other machines. [text withheld] While few, if any, cryptanalytic units have failed to make extensive use of these machines, by far the greatest employment of them has been in the solution of the Japanese Army systems. Indeed, the solution and processing of any significant quantity of the hundreds of thousands of messages in those systems would have been impossible without these machines. An indication of the growth of the use of tabulating machines of this type by the SSA in the fact that whereas only 13 machines and 21 operators were at work at the outbreak of the War, 407 machines had been installed at the peak in April-May 1945, involving a total of 1275 persons as operators and supervisors. The monthly rental for these machines reached a peak in June 1945 of $60,982.

In addition to standard and specialized tabulating machinery, another important category of machines was that generally referred to as Rapid Analytical Machinery (RAM). Machines of this category usually employ vacuum tubes, relays, electronic circuits, and photoelectrical principles. A number of different types, designed within the SSA for specific operations, were developed and constructed by the SSA itself or in cooperation with several contractors, and set up at Arlington Hall Station. One cryptanalytic machine, costing almost a million dollars, was basically homologous to an automatic telephone exchange capable of serving a city of about 18,000 subscribers, and the SSA had two such machines. These two machines were capable of performing operations which, if done by hand methods, would have required over 200,000 people. A second cryptanalytic machine, specifically designed to perform a certain type of test by means of electrical relays, served as the equivalent of 6,000 cryptanalysts; and an improved machine of the same general nature, but using vacuum tubes and electronic principles rather than relays, is now almost completed. It is expected to operate at least 500 times faster than the relay type and can be estimated to be equivalent to having 3,000,000 people at work. In the development and construction of these highly specialized cryptanalytic machines the SSA expended several million dollars, but it could hardly have operated without them.

D. SOLUTIONS

Cryptographic systems have grown in complexity very greatly since World War I, and in a brief report such as this it is impossible to give more than an inkling of the length to which many foreign governments have gone in improving their methods. Larger and more scientifically constructed codes were introduced; complex radio procedures and superencipherment systems were added; and intricate cipher machines were developed. By the year 1939, when the outbreak of war in Europe caused the first substantial expansion of the SIS since 1930, cryptanalyt-

ical attack was being centered in accordance with directives from G-2 [text withheld] . . .all systems thus far studied were entirely diplomatic in character; indeed, little traffic of other categories was then being intercepted. Work proceeded along these lines, effecting solutions which will be discussed in greater detail a little later, but so far as cryptanalysis is concerned, this was the situation existing on the day of the Pearl Harbor attack. [text withheld]

(1) Japanese Diplomatic and Military Attache Traffic. The first diplomatic systems to receive attention in the SIS were the Japanese, and from 1933 to 1941 eleven such systems were studied and solved. For the most part they were not greatly advanced in cryptography from those solved before 1930, but in two machine ciphers, the earlier of which had appeared by 1932, the Japanese demonstrated that they had read with profit *The American Black Chamber*, in which Herbert O. Yardley, formerly an officer of the Military Intelligence Division, indiscreetly revealed to the world American successes in solving foreign cryptographic systems.

The machine ciphers presented cryptanalytic problems of greater difficulty, involving not only the reconstruction of a complicated machine but also thereafter the day-to-day recovery of a great number of keys. The second of these machines, introduced in 1938, was much more complex than the first and required almost two years of concentrated study to solve: its solution by the SSA, unassisted by any other cryptanalytic organization, represented an achievement of first magnitude and importance. It is now known that the German organizations attempted the feat and failed, [text withheld] The remarkable feature of this solution was that a machine capable of deciphering the Japanese messages was reconstructed wholly by analysis: the SSA has never seen one of the Japanese machines. The importance of this solution can hardly be over-estimated.

General Marshall, in his now famous first letter to Governor Dewey dated 25 September 1944, and disclosed in the Joint Congressional Hearing in the Pearl Harbor disaster, stated that "our main basic of information regarding Hitler's intentions in Europe is obtained from Baron Oshima's messages from Berlin reporting his interviews with Hitler and other officials to the Japanese Government.". . .

In addition to this machine, which remained in current use until the end of the War because knowledge of its solution was fortunately kept secret during the War, the Japanese also began to use for diplomatic purposes a variety of other high-security systems based on intricate cryptographic principles. [text withheld] The result was that the best efforts of a large staff of the ablest experts working continuously on this problem were necessary to solve the diplomatic and military attache systems. Solution was, even so, effected in nearly all cases, providing a very large volume of translated messages giving significant information as to the intentions of the Japanese, conditions in the Far East, and also of conditions in Europe. Indeed, it has been said that the Japanese military attaches were the best secret agents of the United Nations on conditions inside occupied Europe.

The value of the intercepted Japanese diplomatic and military attache traffic for intelligence purposes can best be illustrated by representative translations, but of the many thousands of messages which appeared in the SSA Bulletin, only a few can be chosen for inclusion in a brief report such as this. . . .

a. Berlin to Tokyo, . . .translated 4 December 1943, sent in the [text withheld] (military attache system). . . .The full text, too long for reproduction here, is a report of a visit made in the fall of 1943 by a subordinate of Baron Oshima to the German western fortifications. The military information contained in this message was of incalculable advantage to the planning of the invasion of France. . . .

b. Berlin (Oshima) to Tokyo, . . .translated 12 August 1944, sent in the [text withheld] (diplomatic) system. This message. . .has been described by officers in MIS as "worth all the expenses of maintaining the SSA." The text describes conversations with the head of the Todt organization, Albert Speer, in which the latter revealed to the Japanese, and, thus to us, highly important information concerning the production of munitions in Germany. . . .

c. Hanoi to Tokyo, . . .translated 1 February 1945, sent in the [text withheld] (diplomatic) system. This message is important because it reveals that the Japanese were interested in obtaining uranium. . . .

d. Moscow (Sato) to Tokyo, . . .translated 30 July 1945, sent in the [text withheld] (diplomatic) systems. This three-part message, the translation of which was available to President Truman during the Potsdam Conference, reveals the activity of Sato, Japanese Ambassador to Moscow, at the time of the conference. . . .It will have been noted that while two of these four messages were translated within two days after they were transmitted, another took about ten days and the fourth nearly a month for translation. Delays of this kind may be attributed to a number of factors. [text withheld] Secondly, a sharp rise in the volume of intercepts may create a backlog of unprocessed messages which may take several days to eliminate. Thirdly, there is the question of translation: in the case of Japanese texts, for example, in spite of the great efforts made to train competent Japanese translators there never were enough of these to keep up at all times with the production of the cryptanalysts. To prevent highly important messages containing information demanding immediate action by MIS from being laid aside until the information was too late to be useful, a policy was adopted of scanning the messages as they became readable in order to sort them according to the degree of urgency. In spite of these difficulties, however, it frequently happened that messages were intercepted, decoded, translated, and placed in the hands of MIS before their addressees might be presumed to have read them. A conspicuous instance of this kind was the famous message by which the Japanese transmitted through the Swiss Government their intention to accept the surrender terms. The fact that the Japanese had accepted the Allied terms was known in the MIS several hours before the Swiss Minister was able to give the message to the State Department.

(2) Japanese Army and Air Force Traffic. The following paragraph is quoted

from a communique which appeared in The New York Times on 4 September 1943: Wewak: Our strongly escorted medium bombers attacked an enemy convoy of five cargo ships and two destroyers which arrived during the night with reinforcements and supplies for the enemy garrison. Coming in at masthead height, our bombers scored direct hits with 1,000-pound bombs on three freight transports, each of 7,000 tons, sinking them. In addition, one of the escorting warships and a 1,000-ton cargo ship sustained direct hits and were left ablaze. Numerous small harbor craft were destroyed by strafing. Intense anti-aircraft barrages were encountered and barrage balloons from ship and shore were employed in an endeavor to halt our low-level attacks. Thirty-five fighters flown in from the rear bases to protect the convoy were intercepted in the air. Twelve of these were downed with eight others probably destroyed and five damaged. Three of our bombers and one fighter were lost.

Note that in the entire communique there is no explanation of the method by which the American commander in the New Guinea area learned of the presence of the convoy at Wewak: the impression is given, as indeed was intended, that the good fortune of the bombing mission in finding the convoy solely was the result of chance. Yet this was not so. A message had been intercepted and read by the SSA (on 20 August, nearly two weeks ahead of time) which foretold to the Japanese at Wewak the arrival there of the the convoy on the first or second: . . . .The message in its English form was forwarded speedily to MIS and thence by radio to the proper commander for his use. This instance is, of course, only one of many which could be adduced to show how in an age of radio communications the necessity of forwarding an intercepted text thousands of miles to a control agency for decipherment and its return when made readable causes little more delay than would have taken place had the cryptanalysts been at work at the points of interception.

In order to prevent the Japanese commander at Wewak from suspecting the truth, precautions were taken, in accordance with rigid regulations, to provide an additional source of the information which he would naturally suppose to be the only one, namely, reconnaissance planes were sent over Wewak. On many occasions, in fact, American commanders were in possession of valuable information provided by the SSA which they could not use because to do so would have run the risk of revealing to the Japanese the fact that their secret communications were being read by us. The ability to continue reading the traffic as a whole was often a military objective of greater importance than that involved in the successful completion of a specific mission.

The bombing of the convoy at Wewak, as just described, is a good example of the effect of the translation of an isolated message—only the third part of a three-part message had been translated in time—but many messages, which individually are less striking, when taken together and coordinated by MIS, permit the accomplishment of even more spectacular results. The following paragraph is taken from a memorandum prepared by an officer in MIS (27 March 1945):

Use of Ultra (= SSA) Information for Attack on Japanese Troop Convoy

1. Information received. ULTRA traffic on and shortly after 2 April 1944 revealed Japanese plans to send a large convoy, designated as the "TAKE" Convoy, to Halmahera and New Guinea. The convoy, consisting of nine merchant vessels and about twelve escorts, sailed from Shanghai for the south in the latter part of April, carrying 12,874 troops of the 32nd Division, about 8,170 troops of the 35th Division, with equipment and other military supplies. Messages furnished the identity of the ships and full details about the troops and cargo loaded on each ship. Traffic analysis disclosed the approximate date the convoy was scheduled to leave Shanghai for Manila and provided current information on the convoy's approximate position on its trip from Shanghai to Manila. Before the departure from Manila on 1 May, messages revealed the following information:

a. scheduled noon positions for each day from 2 May to 9 May;

b. an outline of an alternate route to be followed only on receipt of special instructions;

c. a plan to divide the convoy into two groups on 7 May to a point N of Halmahera, one part (presumably the 35th Division ships) scheduled to go on to Manckwari, and the other part presumably (32nd Division ships)scheduled to go on to Wasile on Halmahera.

2. Action taken. Information on the composition, loadings, movements of the TAKE Convoy was forwarded to the appropriate field commands, as it became available.

3. Operational results. On 26 April the convoy was attacked by submarine at a point 30 m. W of Laoag (NW Luzon) and one ship was sunk. On 6 May the convoy was again attacked by submarine 100 m. NW of Menado and three additional ships were sunk. About 4,000 troops together with ordnance and other supplies were lost as a result of those sinkings, including the Commanding Officer and 2,700 troops (substantially all) of the 220th Infantry Regiment of the 35th Division. Two Japanese divisions, both critically needed as reinforcements, were thus decimated and their effectiveness seriously reduced. Both divisions have since been met in combat. The above information concerning operational results also was received from Ultra sources.

4. Ultra material used. Preparation of the intelligence dispatched to the field commands required the examination and integration of a large number of separate and frequenctly fragmentary messages and traffic analysis.

The fact that the two examples already chosen were both concerned with the sinking of convoys should not be allowed to give the impression that this was the only phase in which intelligence was derived from Japanese Army messages. To quote again from the report already cited as prepared by an MIS officer:

A 28 May (1944) message, available 1 June, mentioned supplies needed by the 18th (Japanese) Army (controlling operations in eastern New Guinea) which must arrive at Wewak by the end of June in order to be of use in "the attack on Aitape."

In a 24 June message, available shortly thereafter, the Southern Army stated that the 18th Army would attack Aitape. Various other fragmentary messages, all showing that an attack on Aitape was planned, were also received. On 25 June there became available a 20 June message from the 18th Army reporting that it was planning an all-out attack against the U.S. Aitape perimeter, to begin about 10 July and giving the detailed dispositions of each division under the command of the Army, plus the planned operations of each division in the attack. Total strength of the forces involved was stated in the message to be about 20,000. . . . All of (this) information was made available to the Commander-in-Chief, Southwest Pacific Area, before the date of the planned attack. . . . The Japanese attack was made on schedule and was completely defeated with heavy losses to the Japanese.

The examples just given show how the product of the Japanese Army cryptanalytic projects was of the greatest value in military operations in the Pacific area. We must now turn to the steps by which the product was made possible. Before the War attempts by the SIS to solve the secret communications systems of the Japanese Army had, for lack of sufficient traffic and cryptanalytic personnel, been fruitless. [text withheld] Immediately after the attack on Pearl Harbor more SIS personnel were assigned to the Japanese Army problems, but little could be done except to sort and file the traffic. Thus, cryptanalytic continuity was broken for a time. [text withheld] Cipher solution may be compared roughly to the operation of demolishing a building by undermining its substructure and causing the building to collapse suddenly; code solution is more like a mining operation, the ore is taken out of the mine bit by bit.

By the autumn of 1942, however, traffic sources had been established and more personnel had been obtained, so that considerable attention could be given to these problems. [text withheld] This historical method, though seemingly a long way round, was really the only recourse and it was fully justified by the results. By January 1943 progress had been made beyond the period of [text withheld] and at the same time encouraging results were being achieved in the recovery of code groups for addresses, which had previously seemed so hopeless a problem. [text withheld] In April 1943 the first break into a current system (that was used by the Japanese Army Water Transport organization was made possible [text withheld]. In this instance the entering wedge was simultaneously discovered (almost in the very same hour) by personnel of the SSA at Arlington Hall and of the CBB in Australia. It was most successfully exploited as the result of the constant collaboration maintained by daily intercommunications between the two organizations.

The result of this initial solution was a reorganization of facilities within the SSA leading to considerable expansion in personnel and services devoted to the Japanese Army problem. Ultimately, the number at work on these problems exceeded that of personnel at work on all other cryptanalytic problems combined, and yet there never were enough trained workers to carry out fully all phases which needed to be done: the man-power situation was such at the time that the

demand for personnel was always greater than the supply, and even when the needs were temporarily filled there always was some delay between the time new personnel reported for duty and the time they were ready to participate effectively in actual operations, because preliminary training was usually essential.

By early June 1943, two months after the initial break into the system, translation of Water Transport messages were being forwarded to MIS. Thereafter, until almost the end of the War, the Water Transport system provided not only a broad picture of the Japanese Army shipping organization and activities but also, from time to time, information regarding specific operational movements of which the logistics problems were discussed in Water Transport messages. To quote once more from General Marshall's letter to Governor Dewey:

"Operations in the Pacific are largely guided by the information we obtained of Japanese deployments. We know their strength in various garrisons, the rations and other stores continuing available to them, and what is of vast importance, we check their fleet movements and the movements of their convoys. The heavy losses reported from time to time which they sustain by reason of our submarine action largely results from the fact that we know the sailing dates and the routes of their convoys and can notify our submarines to lie in wait at the proper point. The current raids by Admiral Halsey's carrier forces on Japanese shipping in Manila Bay and elsewhere were largely based on timing of the known movements of Japanese convoys, two of which were caught, as anticipated, in his destructive attacks."

Although undoubtedly General Marshall included in this tribute to the signal intelligence services the very outstanding contribution from the signal intelligence service of the Navy, for fleet movements are mentioned, the bulk, however, of the information of the type cited came from the SSA.

Solution of the main Ground system was effected by a series of discoveries that began in May 1943 and culminated in decipherment of messages in September of that year. Also, by the summer of 1943, solution of the address system had reached a point where the addresses of current intercepts were readable. Reconstruction of the address code books, which had hitherto been carried on exclusively by a British organization in India, known as the Wireless Experimental Center (WEC), was now undertaken at Arlington Hall.

The order of battle intelligence derived from daily lists of the addresses of Japanese Army units was a useful adjunct to the text of the messages and even supplied knowledge of military operations in periods when the messages themselves were not readable. Thereafter, despite repeated changes and innovations made by the Japanese in their cryptographic systems, solution was continuous, though on occasion it was temporarily delayed. The knowledge of Japanese cryptographic practices and previous solution of the basic code book permitted the reading of periods which, from a cryptanalytic point of view, were as difficult as the systems encountered at the time of Pearl Harbor attack, systems which had then been considered hopeless of success.

Two major technical problems which had to be solved in 1944 were the introduction by the Japanese on 1 August of a new cryptographic practice which disguised the system indicators and a radical shortening of the life of one of the keying elements used in the Administrative systems. The uncovering of the disguise in the case of each system indicator was, of course, a prerequisite to the subdivision of intercepted messages into their respective systems preparatory to any other steps toward solving or reading the messages. Though the introduction of this feature might have been a major cryptanalytic disaster, it fortunately turned out to be only a nuisance, because it was at first effected by an insecure method, and speedy solution was therefore possible. Subsequently the Japanese modified the method to the point where, had it been used initially, solution would have been almost impossible. With continuity of solution, however, aided by information from cryptographic instruction messages and captured materials, this handicap was overcome.

The problem presented by shorter intervals (five days instead of three weeks) between changes of keys, was essentially one of carrying on analysis of one of the steps of encipherment with only about a fourth of the traffic previously available, was eventually solved by a combination of methods, namely, very careful correlation of every piece of intercepted traffic, the use of tabulating machinery, which enabled a tremendously large number of operations to be made in a short time, and the use of photoelectric equipment to exploit phenomena resulting from messages with identical or nearly identical text but cryptographed with different keys.

Once the Japanese began to suffer military reverses, their cryptographic materials were frequently captured and these soon came to play a vital role in solution. Especially important was the capture of the basic code books, or of the key books which the Japanese could not easily replace with new editions and which therefore were occasionally continued in effect for some time after their capture. The complete reconstruction of such code books and key books would have been a long and painstaking task which would have resulted in delays in production of intelligence and possibly also in some diminution of its reliability. Yet the continued capture of such materials was not an unmixed blessing, since whenever a capture was known or even suspected, the Japanese naturally changed as many of their other cryptographic materials as possible.

Thanks to the care with which information obtained from the translated messages was used by field commanders, the Japanese seem never to have suspected the possibility of cryptanalytic compromise but, as they began to realize that Allied Forces were able to anticipate their plans, they attributed our success to espionage activities. The following extracts are taken from a message, intercepted and read by the SSA, which was sent from Pinrang to Piru (RIYA Communications Officer) on 18 December 1944. . .

***

". . . .there are substantial indications that the enemy has understood our important plans in the Burma and Philippine areas. Therefore, we are inclined to be somewhat doubtful about the codes now in use (and) each unit commander must multiply his alertness toward counter-espionage . . . . This is an order. Furthermore, you should exert your best efforts towards overcoming the deficiencies in the counter-espionage set-up, and towards perfecting it. If you fail to do this, troubles will arise, and you must take resolute action in facing them, without a thought for yourself."

Because of actual or suspected compromise, however, changes were made so frequently and complications so often introduced in the Ground systems that analysis became more and more difficult. By the end of the War the Ground problem reached the point where the time required for solution made the production of current translations seemingly impossible. The general intelligence value and the special cryptanalytic interest of the problem, however, warranted studies of the last unsolved period of the highest-echelon Japanese Ground Force system, for which no captured material or special cryptographic intelligence were available. These studies, successfully carried out during the final months of 1945, demonstrated that the development of cryptanalytic attacks had kept pace with the ever-increasing complexity of Japanese cryptographic procedures.

On the other hand, no compromises or suspected compromises took place in the case of the Water Transport systems, and in the latter, the Japanese moved in an orderly fashion to make their periodic changes. Consequently, the cryptanalysts were less hampered by frequent or sudden changes and a fair proportion of the messages in each key book were read currently. Had no compromises been made in the ground systems, the same success might have been experienced. Therefore, it is a moot question whether compromised material gave an overall advantage or not.

For lack of sufficient personnel and because of the special interest of GCCS in the air systems, the SSA did not concern itself to any considerable extent with those systems until late in 1944. Thereafter, more and more attention was devoted to the air problem and the SSA eventually made large contributions to current solution.

After some early compromises in 1944 the Japanese signals systems were read from time to time. The cryptography used was such that, with the limited volume of traffic, solution would have been extremely difficult without a compromised code book, but fortunately at different times several successive editions of the signals code books were captured, along with the key books for a number of periods. The text of these systems, which discussed call-sign frequencies, and methods of handling traffic, was of special interest primarily to our traffic analysts.

While the study of low-echelon Japanese systems was never considered a primary responsibility of the SSA, reports from field agencies were examined here and their contents served as a guide in the training of military personnel destined for field agencies. The SSA did actively participate in the solution of the low-eche-

lon air system known as "BULBUL" but only as a support for the cryptanalytic unit in the India-Burma Theater.

The impression has already been given that had more personnel been made available and at at an earlier date, solution of Japanese military communications might have been expanded and expedited. Yet it should be pointed out that had all the U.S. Army personnel working on the Japanese Army problems, not only at Arlington Hall Station but also in the Central Bureau at Brisbane, in the Hawaiian Islands, and in the India-Burma Theater, been grouped together at one center and solution activities thus been concentrated, considerable unnecessary duplication, especially in the field of translation, would have been eliminated. On the other hand it must be admitted that had such a consolidation taken place problems of administration would have been greatly increased but the advantages gained by the increase of trained workers all applying their efforts in a coordinated attack would have outweighed by far any administrative difficulties. As it was, where circumstances permitted, duplication was eliminated and, considering the great distance between the agencies concerned, cooperation and coordination effected by the interchange of mail and telegraphic communications was good.

In retrospect, it may be noted that in the signal intelligence field the consequences of lack of continuity and unpreparedness for effective operation immediately upon the outbreak of hostilities are nowhere more clearly demonstrated than in the case of the Japanese Army high-echelon secret communications. It is a fact that, during the entire period from 7 December 1941 to the summer of 1943, none of these communications was being read. Had this been otherwise, the military situation might have been quite different. To judge purely by the disastrous effect that the solutions obtained by us after the autumn of 1943 had upon Japanese operations, it is legitimate to think that the important early Japanese penetrations to the south might have met with greater obstacles and that as a result the War in the Pacific might have been terminated many months earlier. If an adequate staff of cryptanalysis had been engaged in studying Japanese Army traffic continuously from 1939, when the systems were solvable with comparative ease, complete continuity could have been maintained from the very outset of the War. After 1939 the systems became more difficult but never more difficult than they were in 1945 when, because of the possession of a background of knowledge and experience built from successful reading of earlier periods, they were solved.

* * *

(4) German Army and Air Force Traffic. It has already been noted that a logical division of work between the British and the U.S. Governments resulted in concentration of the SSA on solution of Japanese diplomatic communications and Japanese military traffic in the Pacific theater, leaving the exploitation of German and Italian military traffic in the European theater the primary responsibility of the

British. [text withheld] In the tense days of early 1942, however, the advisability of insuring against the contingency that the British organization working on enemy communications might be put out of operation by enemy action led to the establishment of an SSA unit to serve as a back-up. Though the SSA played the minor role in the work on German Army and Air Force and Italian Army and Air Force traffic, nevertheless it made noteworthy contributions.

The German Armed Forces employed two basic types of cipher machines. One of them, a modification of a commercial machine known as the Enigma, produced cryptograms of a very high order of security, but faulty usage, Teutonic love of order, and addiction to stereotyped modes of expression made it possible for the British to solve a very large portion of all the messages transmitted, yielding intelligence of the highest value. In this work the SSA served as a cooperating and assisting echelon, contributing new ideas, techniques, and machinery. As a result of excellent coordination of basic research and development with practical operations, SSA engineers invented and built an electronic solution machine far in advance of anything hitherto known for solving messages in the most complicated form of the Enigma machine as used by the Germans.

In addition to the foregoing, specialy selected messages were sent from England to Arlington Hall for study and solution by SSA special machinery. The necessity for speed brought into use special communication channels and there were cases wherein the answer to a specific problem was obtained by the SSA, wired back and in the hands of the GCCS cryptanalysts within 90 or sometimes as few as 60 minutes.

* * *

The German Armed Forces also used a series of complex cipher machines for enciphering teleprinter communications among their highest echelons. Here again the SSA collaborated with [text withheld] in inventing and designing new machinery as well as in testing new techniques and procedures. Two machines in particular, invented, designed, and built either entirely at Arlington Hall Station, or by an outside contractor working under the direction of SSA engineers, [text withheld]...were successfully employed [text withheld] In addition to making an important contribution to the victory in Europe, the experience the SSA gained in such collaboration will, of course, be very useful to the U.S. Army in future research in this field.

Mention must also be made of our contribution in the signal intelligence operations in the Mediterranean Theater. Here again the SSA furnished key and basically-trained personnel for Signal Corps units working in collaboration [text withheld] on both German and secret communications.

* * *

(8) Commercial Code Traffic. Exploitation of the information to be obtained from decoding traffic [text withheld] in public commercial codes was carried on more or less continuously after early 1943. This activity was at first confined largely to codes in the chief languages of Europe but was ultimately extended to include also a group of Japanese commercial codes which provided a rich mine of militarily useful information concerning conditions in the Far East.
(9) Special Problems. In addition to the traffic already described, the SSA had to face a number of other special problems requiring other techniques.

These included the transcription of shorthand documents; the solution of open codes, a type of cryptography in which a secret text is hidden within an ostensibly harmless message; the transcription and translation of "scrambled speech," that is, telephonic and radiotelephonic conversations in enciphered and unenciphered form in foreign languages; and the solution of secret ink messages. The last named type involved much work for the Office of Censorship as well as for MIS. In this field the SSA technicians accomplished feats not duplicated elsewhere: the recovery of printing on documents which had been printed by use of inks soluble in water, In the case of two documents very valuable code materials were recovered for the Navy; one involved a German, the other a Japanese code book.

E. SOME GENERAL REMARKS

The remarkable success which the cryptanalytic units obtained must not be allowed to create the impression that any of the tasks was accomplished without skill, training, patience, vigilance, and mental labor of the most exhausting kind. A description of the essential features of a solved cryptographic system may often seem simple and it may be imagined therefore that solution was easy, but this is rarely the case. Frequently, a simple cryptographic trick may be as difficult to detect as one of the more complex varieties; in cryptanalysis the effect of some minor complicating factor, inserted solely to prevent solution, may prove to be a serious stumbling block, though occasionally it may also prove to serve in the end as the entering wedge leading to solution.

The time and effort needed for solution, of course, vary with the system. A simple substitution cipher may require only a few minutes' work by a single analyst; other systems may be so difficult that the entire efforts of a number of persons working for many months are needed. Of the two basic types of cryptography, codes and ciphers, reconstruction of the former is, as has already been noted, a slow, laborious process, each code group having to be identified singly, and the larger the code, the longer the time needed; solution of a difficult cipher may take equally long but success is instantaneous rather than gradual—at one moment the cipher is unsolved, the next it is solved. The reconstruction of a cipher machine is, of course a very long process, but when this is finished, the keys used in each day's traffic may still have to be solved as they appear. For this reason, even when the

machine has been reconstructed, reading of current traffic may be delayed until enough traffic all in the same specific key has been received to permit solution.

Systems differ so greatly that a counting of solved systems is no adequate indication either of the volume of work accomplished, or of the brilliance of the achievement of the cryptanalysts. During the War a group never numbering more than twenty, and for a long time many fewer, succeeded in making readable approximately twenty-five systems. In the same period a group of about eighty persons were needed for the solution of a single system. For this reason the efficiency of the two groups cannot be evaluated in terms of the number of systems solved.

* * *

. . .By August 1945, however, the traffic [text withheld] had been studied and translations were currently being prepared in large volume. The number of these translations is really the best gauge of the cryptanalytic achievements of the SSA, since they are the final products of the cryptanalysts, assisted by the combined efforts of intercept operators, clerks, translators, editors, typists, and proofreaders....Factors causing fluctuation of volume were complex: it is not always possible to explain declines, but on occasion the introduction of new cryptographic techniques had the effect of slowing up production temporarily until solution was achieved.

After cryptanalysis the messages in almost every instance still had to be translated—a small percentage of the messages are transmitted by their originators in English—and after the translations were prepared in draft form, they had to be checked for diction, accuracy, and format, and then typed for reproduction by the "Ditto" process. "Master copies" of the translations were then once more proofread for accuracy of typing and the required number of copies prepared. Following this, they were forwarded at frequent intervals during the 24 hours to MIS. In certain cases, where urgency required it, forwarding was either by special courier or by electrical means, over special cryptographic circuits.

Even then, the task of the SSA was not finished, for it was necessary that the daily "SSA Bulletin" of translations be read carefully by personnel whose duty it was to compile therefrom voluminous information which would, in turn, be useful to the cryptanalysts working in other problems. Thus the fruits of the labors of one working unit could be at the disposal of any others that might need it. In this connection it may be stated that the free exchange of information and results among the traffic analysis units, the cryptanalytic units, the translation and "bulletin" units, the communications-security units, and so on, is absolutely vital to success in the whole cryptologic field.

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From *A Brief History of the G-2 Section, GHQ, SWPA. In the aftermath of World War II, the G-2 section of U.S. Armed Forces, Far East, commanded by General of the Army Douglas MacArthur, devoted some of its energies to preparing histories of its successes in the war in the Pacific. Included in A Brief History of the G-2 Section, GHQ, SWPA and Affiliated Units: Introduction to the Intelligence Series was a short history of MacArthur's own World War II COMINT organization, a collaborator—and rival—of Arlington Hall.*

CENTRAL BUREAU (CB)

Central Bureau, a combined Australian-American organization, was activated on 15 April 1942 under the command of Colonel Joe R. Sherr, one of the officers evacuated from Bataan. From its inception until the end of the war, the Bureau operated under the direction of Major General S.B. Akin, Chief Signal Officer of the Southwest Pacific Area, who was largely responsible for its establishment and technical development.

The first contingent of American signals intelligence personnel to reach Australia after the outbreak of war consisted of six officers and eight enlisted men who comprised the 837th Signal Service Detachment. These men left the United States on 16 April 1942 on the last scheduled Clipper flight to Hawaii. As all regular runs from Honolulu to Auckland, New Zealand, had been discontinued, they had to "sweat out" the remaining 7000 miles of their trip as space became available on USAAF and RAAF planes. From Sydney, they proceeded to Melbourne to join the GHQ established by General MacArthur. Within the next two months the American contingent was augmented by 12 additional enlisted men and 3 officers, including Major A. Sinkov who took over the command of the Detachment.

The Australian Army component of Central Bureau was the Australian Special Wireless Group which had seen considerable service against the Germans in Africa and the Near East and which included some British personnel who had escaped from Singapore. The Australian Air Force component consisted of personnel assigned from Victoria Barracks, Melbourne.

In the field at that time, Central Bureau maintained radio personnel as follows: AIF /Australian Imperial Forces/ - No. 51 W/T /Wireless Telegraphy/ Unit and the RAAF - No. 1 Wireless Unit. Attached to the latter as special instructors were three U.S. signal intelligence personnel (Lt. Howard W. Brown, Sgt. John J. Phelan, Sgt. Carl Card) who had been evacuated with Colonel Sherr from Bataan.

The 837th Signal Service Detachment was deactivated in May 1943 and replaced by the Signal Intelligence Service (still a component of Central Bureau) under Col. Harold S. Doud, with Capt. Chester W. Ray as Commander of Troops. In the autumn of 1943, Colonel Sinkov became Commanding Officer, SIS, and

During the 1920s, Herbert O. Yardley headed the legendary "Black Chamber," a secret cryptanalytic bureau jointly funded by the War and State Departments. Forced into retirement, he sought to recoup by writing a sensational exposé of American intelligence activities. (NSA)

This brownstone house in New York City served as the headquarters for Yardley's organization. (Louis Kruh)

The brilliant cryptologist William F. Friedman became the first head of the Army's Signal Intelligence Service (SIS). (George Marshall Foundation)

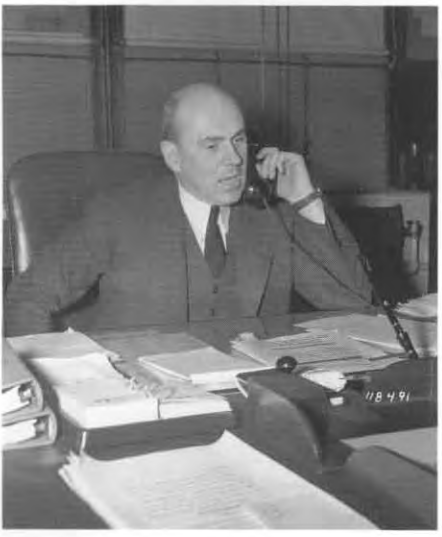
A rare photograph taken of Friedman and his small SIS staff around 1935. (INSCOM)

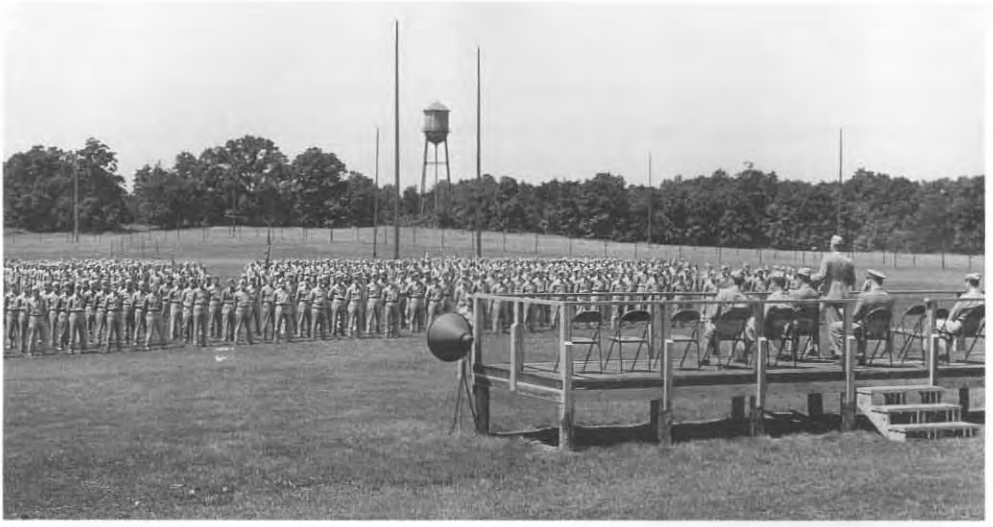
From 1929 to 1942, the headquarters of the Signal Intelligence Service was located in the Munitions Building, a large temporary structure built in World War I. (NARA)

A member of the 2d Signal Service Company operates a radio direction finder on Hawaii shortly before World War II. The company served as the collection arm of SIS. (C.T. Duval)

The battleship *Arizona* sinks under Japanese attack at Pearl Harbor. The success of the Signal Intelligence Service in breaking the Japanese diplomatic machine cipher could not forestall a Japanese military surprise. (DAVA)

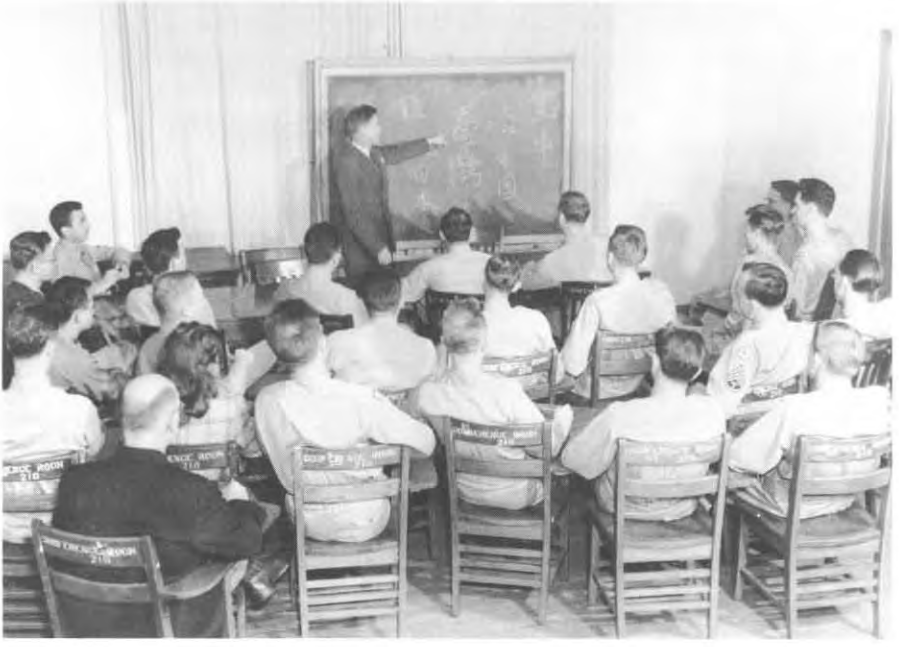
The perceived American intelligence failure at Pearl Harbor led top Army leadership to find ways to better exploit the potentials of communications intelligence. Clockwise, Secretary of War Henry L. Stimson, Assistant Secretary of War John J. McCloy, Assistant Chief of Staff for Intelligence Maj. Gen. George V. Strong. (NARA)





A graduation parade at Vint Hill Farms School in Warrenton, Virginia. Successful prosecution of the signals intelligence war demanded thousands of trained Army cryptologic specialists. (INSCOM)

A Japanese language training course conducted at Arlington Hall Station, Virginia. (INSCOM)



A former women's junior college, Arlington Hall was taken over by the War Department in 1942 and became the new headquarters of the Signal Intelligence Service. (INSCOM)

Staff heads of the Army Signal Security Agency pose for a group portrait at Arlington Hall Station in 1944. (INSCOM)

Army cryptanalysts at Arlington Hall Station work in an open bay in one of the large temporary buildings constructed to meet the needs of the Signal Security Agency's growing work force. (INSCOM)

Masses of calculating machines were used at Arlington Hall to process and exploit Japanese military traffic. (INSCOM)

Capt. I.W. Wolfe, Commander of Troops.

Central Bureau expanded rapidly. Its strength in 1943 was well over a thousand men and women. Technical direction under General Akin was vested in three assistant directors who were the ranking officers of the three largest contingents: Colonel Sinkov for the Americans; Lt. Col. A.W. Sandford for the Australian Military Forces, and Wing Comdr. H. Roy Booth for the Royal Australian Air Force.

The Bureau brought under a unified control personnel from the signal intelligence services of five nations. Included were the following military and naval forces: Army of the United States, Australian Imperial Forces, Australian Military Forces, Australian Women's Auxiliary Service, British Army, Canadian Military Forces, Royal Air Force, Royal Australian Air Force, Royal Australian Navy, Royal Navy, United States Women's Army Corps, Women's Auxiliary Australian Air Force, United States Army. The United States Navy was not included.

In order to avoid duplication, promote smooth inter-service relationships, and assure the maximum benefit from the pooling of resources and centralizing of control, representatives of each of the 14 component services were detailed to work on all of the major problems. Personnel were placed where they could work most effectively regardless of nationality or the component to which they belonged. Before the war came to an end the personnel strength of Central Bureau was more than 4000 and there were detachments in all parts of the Southwest Pacific Area. Of this number about fifty per cent were American personnel.

Since the work of Central Bureau was always closely connected with GHQ, the organization followed General MacArthur as he moved northward. This took the headquarters of Central Bureau from Melbourne to Brisbane (September 1942), to Hollandia (late summer 1944), to Leyte (October 1944), to San Miguel (Luzon) (May 1945), and to Tokyo (September 1945). The first move came in September 1942, when GHQ was moved to Brisbane. In Brisbane the administrative control of the American contingent passed (February 1943) to USAFFE. Operational control, however, remained with GHQ throughout the war.

In November 1945, its mission accomplished and a fine record of cooperative effort and notable achievement to its credit, Central Bureau was deactivated. General MacArthur commended the organization for its outstanding achievements and awarded the Legion of Merit to ten of its members.

From SRH 280. *This intercepted message from the Japanese Ambassador to Nazi Germany, Baron Oshima, contains useful technical information from inside the Third Reich, including data on German experiments with jet planes and rocket bombs. The Goebbels referred to was Joseph Goebbels, the infamous Nazi propaganda minister.*

From: Berlin (Oshima)
To: Tokyo
26 July 1944 #756
A 4 part message complete.

Urgent.

In recent statements made by GOEBBELS as well as some that appeared in the German newspapers and magazines, it is frankly admitted in their explanation of the European war situation that German weapons have to yield the palm to the enemy in both quality and quantity. However, at present the Germans are striving to improve the quality and increase the quantity of their weapons, and there are not a few people who say that in time Germany will be able to make up for her present technical inferiority [a]. . . .The Military and Naval Attaches have doubtless sent you detailed reports regarding this matter, but as I thought it would be necessary in order to get an estimate of the war situation in general, I am sending you merely the following outline regarding the new German weapons. Moreover, although quite a number of announcements have been made already with regard to this subject, since there are some very important matters in this message relating to military affairs, I wish you would treat this message with particular care.

1. Weapons connected with the Army:

(a) Tanks: I have already sent you information regarding the Tiger and Panther Tanks, but it seems that they are placing especial emphasis on the production of Panthers in large quantities.

(b) Assault Guns: This gun is primarily a weapon to be used for the smashing of the enemy's pillbox machine gun bases in cooperation with the Infantry, but it is often used also in anti-tank warfare. This is one of the weapons concerning which the Germans are placing great emphasis at present so far as production in large quantity is concerned. It is an 88 millimeter gun (the same as the gun on the Tiger) and has a crew of four men.

Part 2.

(c) The Panther Terror:[b] This is a kind of rocket gun that can be used by two soldiers, and is a weapon for close-range fighting to be used against tanks.

(d) The Panzer Fist:[c] This is the same kind of gun as the above, but it can be used by one person.

(e) Trench Mortars:[d] These weapons could hardly be called a new weapon today, but their size has been increased (up to 15 centimeters) and they are being used in large quantity.

(f) Robot Tanks (Goliath):[e] This is a small-type tank controlled by radio waves, and it seems that its effectiveness depends on the configuration of the ground.

(g) The establishing of artillery divisions with the self-propelled gun units acting as the main strength: The object of such a division is to concentrate the use of artillery.

I wish that in paragraph (c) above you would amend the words Panther Terror

to read Panzer Terror.

2. Weapons connected with the Navy:

(a) A New Type Submarine (Very Secret): This new type submarine scarcely shows itself on the surface of the sea, and has long-range maneuverability. At present it is in process of construction and its effect will first be felt from about September, and by November or December it is said that greater results will be effected by its use in great quantity.

Part 3.

(b) Torpedo Boats: I have nothing to add to what I have already reported to you concerning these boats.

(c) A Small-type Submarine (Very Secret): This is a submarine that has been improved one degree and seems to be a weapon that has two torpedoes to be ridden by one man. It is to be used in areas near the seashore.

(d) Special Torpedo (Very Secret): This is a torpedo which by means of special equipment has been made almost 100% effective in hitting the mark, and its testing has already been completed.

(e) The High Speed Boat:[f] This in itself is really not a new weapon, but a new type is being produced with a speed of 40 knots an hour, and having a Diesel engine. For this reason it has the special merit of not easily catching fire when damaged. It seems that the Germans are putting forth efforts to produce this boat in large quantity.

(f) Special High Speed Boat (Very Secret): This is a high speed boat to which has been added the principle of radio wave control, and it seems that its explosive power is especially great.

3. Weapons connected with the Air Force:

(a) The German are adding substantial improvements to the speed, armament, ammunition, and way the armor is put on, etc., in their various types of fighter and destroyer[g] planes, and besides that they are of course placing special importance upon the production of these planes in great quantity. Furthermore, in the near future propellerless planes are also going to make their appearance, and it seems that these planes will have especially high speed (this last paragraph is very secret).

(b) For the time being dive bombing has been suspended and as a substitute they are using ground attack planes (SCHLACHT FLIEGER). These planes cooperate with ground fighting, and considerable results have already been achieved in the destruction of enemy tanks (Captain RUUDERU alone, it has been announced, has destroyed more than 200 tanks).

Part 4.

(c) The main strenth of anti-aircraft guns lies in the 88 and 105 millimeter guns, it seems. However, 120 and 150 millimeter guns also are gradually being used in large quantity. Matching the improvement in shells the Germans are trying also to increase the power in their aircraft. Again it seems they are also using rocket guns.

(d) There has been a great deal of improvement in night fighters since last winter but in day-light air raids also special units, STORM GRUPPE, have recently been organized (within 2 minutes 1 American four-motored plane—10G— and —M—). They will at an appropriate time be newly established and although it may not be possible to call them new weapons, in outline they serve as an indication of the earnest efforts which Germany is puting forth in order to regain command of the air.

(e) Special Type Aircraft (Very Secret): It seems that a study is now being made with regard also to a bomber plane which will unite the rocket gun with the principle of radio wave operation.

4. Equipment for Long Distance Bombardment (Very Secret): I have already described to you in various telegrams the V-1, and it seems that preparations have already been made for the use of a more effective weapon than this. It will have five times the effect of the weapons thus used in the past. And again it is said that they will have a weapon whose effect will extend to a square of more than 1 kilometer. However, it is not clear as yet just when both these weapons will be introduced. It is anticipated that with regard to these weapons there will be both substantial developments and improvements made in their construction.

5. The weapons in which the Anglo-Americans made particularly great progress in the past were first of all the direction finder and then radio wave weapons in general, but in both these spheres the Germans by special efforts seem gradually to be catching up with the enemy. It seems that in weapons connected with rockets, because of the fact that the Germans as usual have had longer experience, Germany is temporarily in the lead. Again improvements and progress in explosives have been best indicated in the V-1 and it seems that this improvement has been very conspicuous.

a - V.H. 1891.
b - SCHRECK.
c - The Kana spelling for this word is HUAASUTO, which is doubtless the German word for FAUST.
d - WERFER.
e - The Kana spelling for this word is GORIAATO.
f - SCHNELL BOTE.
g - ZERSTOERER.

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CHAPTER VI

Producing Intelligence

The decryption of encoded and enciphered enemy traffic was only the beginnings of the signals intelligence process. The messages had to be placed into a wider intelligence context. Until June 1944, when there was a general reorganization of the whole War Department intelligence structure, this was done by the members of the Special Branch, Military Intelligence Service. In the excerpts from SRH 185, War Experiences of Alfred McCormack, the father of the Special Branch gives an insider's account of the infighting that went on within War Department intelligence. Unlike most of the other Special Research Histories released by the National Security Agency, this document was originally prepared after the war as an unclassifed study; the reader will note that McCormack does not mention that the Special Branch dealt with signals intelligence.

The Special Branch not only exploited U.S. Army successes against Japanese diplomatic and later military communications, but also entered into an agreement to share signals intelligence with the British. As a result, after 1943, the United States was able to secure from the British the results of their unparalleled success in reading high-level German messages. See the excerpt from SRH 141-2. The type of intelligence windfall that resulted from this source is documented in the excerpt from SRH 005, Use of MX/CSS ULTRA by the War Department.

From SRH *185. In these excerpts from his unpublished memoirs, McCormack tells all about the Special Branch—except what it actually did! "Cravath methods" refer to the highly selective and personalized recruitment procedures used by his old law firm. At the time he wrote this account, McCormack had returned to a successful law practice. After reentering civilian life in 1945, he had briefly served as the State Department's first Director of Intelligence and Research. However, he apparently encountered the same kinds of bureaucratic resistance to intelligence work at the State Department as he tells us he met in the War Department.*

31 July 1947

WAR EXPERIENCE OF ALFRED McCORMACK

Early in January 1942, McCormack was asked by McCloy to do a job in the War Department in connection with military intelligence, and he took office on January 19 as a Special Assistant to the Secretary of War. In March he submitted his recommendations to the Secretary and was given the job of putting them into effect. A special section was created by G-2 to assist in the work, and in May 1942, Colonel (later Brig. General) Carter W. Clarke, with whom McCormack had become acquainted and whom he strongly recommended, was made head of that section.

Urged by the Assistant Chief of Staff G-2, General Strong, to go into the Army, McCormack at first declined but later concluded that his job could be done more effectively if he were an officer on the G-2 staff. He was commissioned as a Colonel on June 24, 1942, reversing roles with Clarke, who thereupon became Chief of a newly created "Special Branch" of G-2, with McCormack as Deputy Chief.

From then until the end of the war McCormack and Clarke, whose talents were complementary, worked as a team. McCormack took charge of the research and intelligence work and the recruiting and training of personnel, while Clarke concerned himself with administration, security, relations with G-2 and outside organizations and innumerable problems involved in organizing and building up units of the Army whose work produced the raw materials of intelligence, and for which Clarke assumed a continually increasing responsibility as the war progressed. Clarke was also employed on a number of important missions for the War Department Staff.

Both Clarke and McCormack considered G-2, as it existed in 1942, to be inadequate for the intelligence job that the war required, and they sought to use the Special Branch as a means of building up a more effective intelligence organization in the War Department.

The original assignment of Special Branch was the preparation of a daily intelligence report, but the work which that entailed provided many opportunities for

the production of useful intelligence, which the personnel of the Branch were quick to grasp. In August, 1942, McCormack, having established the form of the report and the methods to be used in the preparation, turned over the work to Henry W. Rigby, who had been a Cravath associate from 1937 to 1939, before going to the Providence firm of Tillinghast, Collins, & Tanner, and who had followed McCormack into the War Department in March 1942. Rigby's immediate assistant until August, 1944, was a Cravath associate, Louis T. Stone, Jr. . . .

McCormack used "Cravath methods" in the recruiting of personnel for the Special Branch, taking on only highly qualified persons. There were so many lawyers in the Special Branch that it used to be referred to humorously as "the best law office in Washington". McCormack believed, and his experience confirmed, that lawyers as a class are better fitted for intelligence work of the type that must be done in the War Department, i.e., what the Army calls "strategic intelligence", than is any other group in the community, because their training teaches them to deal with evidence, to be inquisitive and skeptical, to pursue an investigation through to a conclusion, to meet unfamiliar situations of fact and, most important, to do very detailed work without losing their sense of values.

After freeing himself from responsibility for daily reporting, McCormack turned his attention to specific problems of intelligence, being convinced that intensive and exhaustive research work would furnish dependable answers to many questions on which G-2 at the time could do no better than speculate. Every job that was done revealed new opportunities and emphasized the need for more personnel, and the results were good enough so that the personnel allotments were provided, though usually after long delays and much paper work. McCloy had an active interest in intelligence, followed the work of the Special Branch and helped out frequently; and the fight for personnel was made easier by high praise which the Branch received from time to time from General Marshall and other high officials, and occasionally from the President.

By the Fall of 1942 it was apparent to McCormack, and also to Clark, that G-2 had no dependable current information about the war in Europe. The reason was a simple one, but nobody seemed to realize it. There was a military attache in London with a large staff. He sent reams of paper back to Washington, which he had gathered from the British intelligence agencies; but the British did not regard military attaches as being entitled to top level information and so what the attache office sent home was seldom more than could be published in the newspapers. It was solemnly studied in G-2, though there was in the organization an almost universal suspicion of the British and a tendency to disagree with British conclusions, simply because they were British conclusions. Some of the G-2 "intelligence" on Europe was fantastic. For instance, at a time when the German Air Force had about 5,000 operational planes of all categories, there were devout believers in G-2 in a rumor picked up by an attache in Roumania that the Germans had 10,000 spare airplanes hidden in the Black Forest.

One of the bothersome characteristics of G-2 was a certain supine attitude toward intelligence. Everybody knew the classical Army doctrine that the three steps in intelligence are collecting, evaluating and disseminating, but nobody seemed to give much thought to the fact that evaluation and dissemination are worthless if what is collected is worthless. The attitude was in part a reflection of the viewpoint of the G-2 colonels, who regarded it as their function to make predictions. They operated in the manner of soothsayers. They showed no indication that their information might be inadequate. They seemed to think that they already knew enough to answer whatever questions might be put to them concerning the enemy countries.

G-2 organization as a whole did not appear to know that there was a war on. Except for the fact that they were required by departmental order to work on Saturdays and that some of them had to appear Sunday morning for a meeting with the General, they operated their organizations just as they had in peace time. Promptly on the dot of 5 p.m. the whole organization went home. There was no special sense of hurry or urgency and the job that did not get done one day would go over to the next unless the job had a deadline. If the job had a deadline, it was turned out on that deadline and it was good or bad, depending on whether the time was sufficient to get the job done.

The Special Branch had a different attitude toward hours. Every day's work had to be done that day and if it was not done by 5 p.m. the personnel stayed on and finished it. The Branch was hardly ever closed before 11 p.m., and it opened very early in the morning because Clarke's hour of arrival was never later than 7 a.m. and he not infrequently got in at 6. McCormack never went home before 7 and worked at night whenever there was any reason to do so.

McCormack had an early experience which he never forgot. At 4:40 one afternoon he went to the Chief of the European Branch of G-2 to get some information. The campaign in North Africa was then under way and the information, though not of any vital significance, was pertinent to a job that might have been useful in connection with that campaign. The Colonel apologized for not being able to get the information until the following morning. It was a fixed rule of his branch, he said, that all personnel must start putting their papers away by 4:40 p.m., in order that their desks might be clear and might be inspected and the files locked by 5.

In the two years of life of the Special Branch it grew in size from a dozen officers and civilians to a total of 100 officers and 300 civilians and enlisted personnel in Washington, and 80 officers abroad, stationed with the field commands and at other key places, and it had been given a directing responsibility for the work of Army units outside of Washington numbering several thousands of persons.

McCormack's work in early 1943 had to do largely with the war in Europe. At that time the relations between the War Department and British intelligence organizations were conducted at the top level; there was no working liaison and no important flow of the raw materials of intelligence from the British organizations

to the War Department. In April, McCormack was sent to England as the representative of the Assistant Chief of Staff G-2, to work out arrangements that would insure that the American field commands would be furnished promptly with all relevant British intelligence, and that the War Department would have access to British intelligence in all its aspects.

McCormack spent two months making a study of the British Intelligence agencies and reporting his findings to Washington, with recommendations for methods of coordinating British and American intelligence work on the European war. He was greatly impressed by the work of the British intelligence agencies and the high quality of their personnel, and he learned many lessons from them which he applied later in G-2. He found that British intelligence had a first call on military and civilian personnel—a startling contrast to the United States, where intelligence had in general a low priority for personnel or no priority at all.

McCormack and Lt. Col. (later Colonel) Telford Taylor, . . .who had accompanied him to England, worked out with the British a plan for coordinating British and American intelligence work for the German war and it was gradually put into effect as personnel were obtained. It involved establishing a unit of the Special Branch in England, headed by Colonel Taylor, converting certain British intelligence units into joint British-American units, and creating a new system of communications for the transmission of operational intelligence to American commanders.

* * *

On his return from England in June, 1943 McCormack set up a new unit under Capt. (later Lt. Col.) William R. Perdue of the Cahill, Gordon firm and Lt. (later Major) John W. O'Boyle, a Milwaukee lawyer, who had served as Judge Patterson's law clerk in the Circuit Court of Appeals and, before going into the Army, had held a number of important assignments in the Lend-Lease Administration.

The purpose of the unit was to exploit Japanese intelligence material with primary attention to the Japanese merchant marine.

No two intelligence organizations among the Allies could agree at that time on the amount of Japanese shipping at the start of the war or the amount of tonnage that had been sunk, and there were estimates of Japan's shipping position that varied by millions of tons. Clarke and McCormack were agreed that the Japanese merchant fleet was the primary military objective in the Pacific War and that the employment of that fleet was the best clue to the logistic problems of Japan and to her economic situation and military capabilities. Seeing an opportunity to do an important intelligence job in that field they requested, and after some months of delay obtained, 55 officers and 22 enlisted WAC's for the Perdue-O'Boyle unit.

The job was complicated by language problems. Not only was much of the intelligence material in Japanese, but the pre-war ship lists were a riddle because

the Japanese had an annoying habit of giving the same name to a number of ships (42 ships in one instance) and an equally annoying habit of rendering a single ship name into the kana syllabary in several different ways. Experts in the Japanese language were needed, and there was a great shortage of them. Again applying "Cravath methods", McCormack persuaded Harvard to release Professor Edwin O. Reischauer, its Director of Japanese Studies, and with Reischauer's assistance recruited the best staff of Japanese linguists in Washington.

The intelligence work on the Japanese merchant marine, which later became a joint Army-Navy operation under McCormack's supervision, was slow in getting under way, because of the perpetual difficulty of getting personnel;, but it proved to be exceptionally successful and contributed largely to the effectiveness of the submarine war against Japan. The United States Strategic Bombing Survey found, when they went to Japan after the war, that the information on Japanese shipping that Washington had had during the last year of the war was far more detailed and accurate than anything that could have been put together in Tokyo at the same time. From 1943 to 1945, McCormack was a member of the Joint Army-Navy Assessment Committee, which had the responsibility of determining enemy shipping losses.

The intelligence work on the Japanese merchant marine led into many other important subjects of Japanese intelligence. Techniques established in that work became applicable to other intelligence problems affecting Japan; and the application of those techniques accounted in large measure for the gradually increasing accuracy of American intelligence on the Japanese military and economic situation.

The work led, almost necessarily, into work in the Japanese Order of Battle unit and a group was set up to do that work paralleling the work of the regular Japanese Order of Battle unit of G-2 and dividing the responsibility with it.

The Special Branch reported directly to the A. C. of S. G-2, while the other intelligence units of G-2 were one echelon lower, under the Chief of the Military Intelligence Service. With some exceptions, they were organized on a geographic basis, and the geographical sub-sections had become highly compartmentalized. The Special Branch and the Order of Battle were strictly war products and confined their attention to intelligence that was relevant to the war, and mainly to intelligence of combat significance. The Geographical Branches, on the other hand, had taken their form and acquired their habits in peacetime. They attempted to cover the whole world of intelligence; and their contact with combat intelligence was often rather remote.

In the upper echelons of G-2 there were some able officers, but most of the regular ones knew that their futures depended on their getting assignments in the field, and of those who were willing to remain, because they realized the importance of good intelligence work, many became discouraged and obtained overseas jobs. Their replacements were often men with no better qualifications than that their shoulder insignia fitted the job; and thus from 1942 to 1944 a law of natural

selection worked against G-2 adversely.

The discouragements that made able officers get out of G-2 were numerous. There was a lack of imaginative leadership on the "Colonel" level. There were jealousies and political fights within the organization. There was an undue emphasis on rank and an attitude of unwillingness to give responsibility and credit to subordinates. There was a certain feeling of remoteness from the war. But the greatest discouragement of all was the inability of able officers to get qualified personnel, and in a sufficient number, to do their jobs.

Difficulties in getting personnel were partly due to a lack of recognition of the personnel needs of intelligence, and even a lack of appreciation of the importance of intelligence, on the part of the War Department General Staff; partly to the politically motivated drive to keep the number of officers in Washington to a minimum; partly to the Army's heavy-hand methods of handling personnel and partly to the stupidity of the Civil Service organization.

Though intelligence work requires a higher order of ability, War Department intelligence had practically no personnel priorities until McCormack got some priorities established in 1944. Moreover, intelligence personnel were subject to sweeping orders from above, which came unannounced from above and invariably caused trouble. In one of his early efforts to get civilian personnel, McCormack and his staff had interviewed dozens of people and had selected some 15 or 20 highly qualified ones. These were put through the long process of security clearance and Civil Service approval. Then, just as the clearances and approvals began to come through, a "personnel freeze" for the War Department General Staff was announced. No more persons could be hired until further notice. By the time the freeze was lifted practically all of the candidates (their security having been cleared and their Civil Service status established) had taken jobs with other agencies, and the recruiting of personnel for the vacant jobs had to be started anew.

The civilian agencies of government were hiring personnel at somewhat inflated salary scales, and under war-time conditions highly qualified persons could not be drawn from useful jobs in private life unless they were paid enough of a salary to support their families. But the G-2 salaries were very low. They were paid with one eye on the base pay scale of officers, and officers found it difficult to understand why a competent economist had to be paid $8,000, the base pay of a Brigadier-General. When McCormack went into G-2, the highest paid civilian in the Europe-Africa Branch of G-2 got $3,600 per year as salary. He was the "expert" in German economics; and it was only to be expected that he would be—as he was—unqualified for the job.

The recruiting of officers was very difficult. They had to be of ranks that fitted into a Manning Table. They could not be taken from either combat units or specialized schools. The Army had no OCS for intelligence personnel. Much of the work in McCormack's unit was young men's work, requiring much enthusiasm, long hours, and great physical and mental energy. So he tried to find bright young offi-

cers, and did find some very good ones. Then came an order forbidding the assignment in Washington of any more officers under 28 years of age, and somewhat later an order requiring all officers under 28 to be sent to the field.

Enlisted personnel were not permitted in G-2, except for a number of men who served as guards at night and in similar jobs. To get an enlisted man it was necessary to have him commissioned; and McCormack was able to get that done in a few cases, but it was a difficult and time-consuming job.

The most maddening difficulties came from the Civil Service, which could not understand why the war should interfere with its time-worn procedures. If G-2 wanted to hire an indexer, it was necessary to prove to Civil Service, not only that the candidate was qualified, but that an indexer was really needed. Thus Civil Service examiners, many of whom were incapable of understanding what G-2 was doing or what its problems were, quite often turned down an application on the ground that the work was not necessary.

* * *

Major General George B. Strong, the Assistant Chief of Staff G-2, attempted to give G-2 a vigorous and progressive administration. He encouraged and helped the Special Branch, and he recognized Colonel Lovell's work by creating an Order of Battle Branch with Lovell as Chief and centering in it all work on enemy Order of Battle. He encouraged another Branch of G-2 which proved to be of great value in the war—the Topographic Branch, headed by Colonel S. P. Poole, a geographer from the University of Rochester.

But General Strong was in failing health and was habituated to a system in which an officer must accomplish his results with the personnel given to him—an attitude that prevented him from seeing that what was needed in G-2 was a thorough shaking up. As one junior officer put it, the quickest way to reform G-2 was to kill off all officers above the rank of Major, and to throw in half of the Majors for good measure.

The career of the Special Branch was largely shaped by the deficiencies of G-2, in that it had to take on job after job that G-2 should have been doing but was not doing. McCormack discovered, even before he went into the Army, that G-2 had no biographical files for identification of foreign individuals. He proposed to the G-2 Chief of Intelligence that the latter set up a central name file, in which there would be assembled all information about persons figuring in G-2 intelligence material and for which a group of research workers would gather additional material from biographical sources. After some months, having got no action from G-2, McCormack decided to set up such files himself.

He assigned a very competent woman. . .to do the job and, being unable at first to give her any assistants, gave her instead a call on the free time of stenographers. The unit grew steadily, as it proved the importance of foreign biographical infor-

mation. By 1944 it had become the "Who's Who" branch, with a staff of over 180 persons, headed by Lt. Col. Edward C. Lapping, now Managing Editor of the Chicago Herald-American, and it had become a primary source of information about foreign individuals, serving not only the War Department but all other governmental agencies requiring such information.

McCormack tried to keep the Special Branch a flexible organization, so that, if a job of pressing importance came along, as many of the staff as were needed could be thrown into it. The G-2 organization, on the other hand, was rigidly organized along lines of command, down to the highly compartmentalized geographical "desks", and there was no flow of personnel from one "desk" to another to meet emergencies.

Late in 1943 Colonel Moses W. Pettigrew, Chief of the Far Eastern Branch, whom McCormack considers to be the ablest American intelligence officer on Japanese matters, was working up a Japanese Order of Battle, with the assistance of an able younger officer, Lt. Col. (later Colonel) Eric H. H. Svensson and a woefuly inadequate staff. Colonel Pettigrew had to do most of his work at night, as during the day his time was consumed in the administration of a cumbersome organization, in routine assignments from his superiors, and in a largely fruitless effort to get competent personnel. In spite of the handicaps, Colonel Pettigrew laid the foundations for work on the Japanese Order of Battle and was the Army's leading expert on the Japanese Army. . . .

An experience of Colonel Pettigrew's illustrates the difficulties that the able G-2 officers had to contend with. While he was building up his Order of Battle, a priceless intelligence document was captured and was translated in Australia—a Japanese Army Officer List of comparatively recent date. Here, if the list could be carded and the cards kept up to date with all information coming in about Japanese Army officers, was an extremely useful tool for Order of Battle intelligence. Pettigrew applied for personnel to do the job—two Japanese linguists and 6 typists. The application was turned down. Out of the hundreds of persons in G-2, no one could be spared for Pettigrew's job.

Pettigrew appealed to McCormack, who saw the importance of the job and said he would get it done somehow. . . .

* * *

Early in 1944 the work of the Special Branch had grown and developed to a point where a much larger staff was required to take advantage of the intelligence opportunities that were clearly there. The personnel authorities, however, had set an overall ceiling on G-2 personnel in Washington, and it was ruled that no future additions of personnel for the Special Branch could be made except by transfer of jobs from the rest of G-2. There were so many vested interests in G-2 that the war would be over before any considerable number of persons could be obtained that

way; and so it looked as if many promising opportunities in intelligence opportunities would have to be passed up.

It was Clarke who at that point came to the rescue with a bright idea, as he often did. After all, it was Secretary Stimson who had brought McCormack to Washington and given him a job to do in intelligence. Two years had passed and the Secretary had not yet asked McCormack how he was coming along. It was high time for the Secretary to ask that question, and no doubt he would ask it if he learned that McCormack was in trouble. Clarke was right. The Secretary requested General Strong (who had requested him so to request) to have McCormack prepare a full report. McCormack did so, accompanying it with an urgent application for an increase of officers from 100 to 400 and of civilian personnel from 300 to some 800, plus certain additions to personnel abroad.

The result was appointment of a War Department Board to pass on the application. It consisted of McCloy, the Deputy Chief of Staff (General McNarney) and a number of other general officers.

The Board heard evidence and argument and found that the personnel applied for could be profitably used. It granted the requested increase in the T/O, but it limited the addition of new officers to 100 pending an investigation of the entire G-2 organization, to determine what compensating personnel reductions could be made in other units. An investigation of G-2 by an Inspector General's Board was then ordered, and Clarke and McCormack spent several weeks explaining their organization and plans to the Board members. The Inspector General's investigation resulted in recommendations which summed up to an abolition of the geographical organization of G-2 and the merger of those units and the Order of Battle Branch into the Special Branch.

A new Board was then convened for the purpose of devising a suitable plan for the reorganization of G-2. The plan was adopted on or about April 1, 1944 and a new Assistant Chief of Staff, G-2, Major General Clayton Bissell, was directed to put it into effect.

General Bissell thereupon appointed a Reorganization Committee to translate the plan into specific terms and promptly departed for a trip abroad, directing the Committee to have its recommendations ready on his return. The members of the Committee were either old-line G-2 officers or officers whom General Bissell brought in from the outside, most of them having no experience in intelligence.

The plan of reorganization divided G-2 into a Policy Staff to advise the G-2 on weighty matters and the Military Intelligence Service to do the intelligence work. The Military Intelligence Service was in turn divided into a Director of Administration (to run the service organization), a Director of Information (to take charge of procurement of information and to run a variety of units engaged in that activity) and a Director of Intelligence to do the intelligence work and to provide intelligence for the War Department and the commands abroad.

Under the Director of Intelligence there were to be a group of Area Specialists

without staffs, a Research Unit and a Reports Unit. The bulk of the organization was to be in the Research Unit, which was to be divided into the following Branches: Military, Political, Economic, Sociological, Topographic, Scientific, Who's Who and Library.

The Reorganization Committee was dominated by the old-line prejudice toward the Special Branch and made it a primary objective of their plan to ensure that the Special Branch would be broken up—"and good". The plan distributed its personnel and functions among 53 separate branches, sections and sub-sections, and the literal provisions of the plan would also have destroyed its work. The key position in the new organization was that of Director of Intelligence, and a strenuous attempt was made to find a suitable regular officer for the post.

The attempt was not successful and, largely through the efforts of Clarke, McCormack was appointed to the post. Clarke was appointed Deputy Chief of the Military Intelligence Service. Brigadier General Russ Osman, Regular Army officer, was appointed as Chief. General Osmun, who belonged to the Quartermaster Corps, was replaced some months later by Brig. General Paul E. Peabody, who had returned from service as Military Attache' in London. General Peabody gave Clarke and McCormack the fullest support and did much to help them get their jobs done.

The reorganization was gradually put into effect in June, 1944, and it attained some newspaper fame by reason of the fact that the Sections doing German intelligence were moving their offices, and were without telephone connections, on the day of the Normandy invasion. That was of a piece with the rest of the Reorganization Committee's work. It set up about as impracticable a scheme of organization as could be devised. It apportioned responsibilities among the 3 units under the Director of Intelligence in a manner calculated to render all three useless. It put into key positions a number of officers without a shadow of qualifications. All McCormack's subordinates, down to the Branch Chiefs, were chosen for him and without consultation with him, and the personnel were distributed among the Branches according to the fancies of the Committee.

McCormack tackled his new job with a determination to weed out all misfits and put every job in the hands of a person, officer or civilian, clearly qualified to do it. He started out on the day when he took office by demanding the removal of the Acting Supervisor of Reports, on the ground that he was incompetent and dangerous. With the support of Clarke, and by submitting his resignation in writing, McCormack got the officer removed before he had taken office.

Then followed 4 months of agonizing efforts to make an organization out of the formless thing which the Committee had set up.

* * *

From SRH 141-2. *This excerpt from another McCormack memorandum—again, dealing with personnel—discusses the background of the 1943 British-War Department agreement that at last let the U.S. Army in on the ULTRA secret.*

23 October 1943.

MEMORANDUM FOR MR. McCLOY (Through GENERAL STRONG):
Subject: Personnel Situation of
Special Branch, M.I.D.

* * *

30. *German "E"*. The most important development affecting the Special Branch, since April, has been the opening up of the German "E" traffic. This has been the No. 1 source of military intelligence during the present war, from early 1940 to date. The achievement of the British in this field has been without question the greatest feat in the history of cryptanalysis, and the preservation and increasingly successful exploitation of this source for three and a half years has been an amazing achievement in security.

31. From the latter part of 1942 until May 1943, a controversy existed between the War Department and the British GC & CS, as a result of the refusal of the British to make this traffic available to the War Department in any way, and their unwillingness to consent to Arlington Hall's entering the "E" field. An agreement between the War Department and the GC & CS was worked out by General Strong in May, pursuant to which this source of intelligence was to be opened up. The agreement called for (a) establishment of an American cryptanalytic unit in England, to work on "E" in cooperation with the British, (b) assignment to Arlington Hall of a research job in the "E" field and (c) opening up of the traffic itself to the War department through liaison officers in England and the Special Branch in Washington.

32. Because of the great risks involved in the dissemination of intelligence from "E" sources, and the necessity of satisfying the British that our security arrangements are adequate—and the necessity also of persuading them to agree to our wishes as to what "E" intelligence should be transmitted to Washington—it took from May to the end of August to work out details of the arrangements with the GC & CS in the "E" field. These call for 4 officers to sit on shifts in the so-called "Watch Room" at B.P., where the material comes in from the cryptanalysts and is emended, translated and disseminated (a) in original form to the Service Ministries by teletype (b) in the form of informational messages to commanders abroad and (c) in memoranda for the Ministries which gather up and present the

information that is not of sufficient importance or urgency to go through channels (a) and (b).

33. In addition, one liaison officer is to sit in the War Office, at the point where "E" intelligence comes from B.P., and is put together with other intelligence into "appreciations" for the War Office and commanders abroad. This officer (who is being taken from another liaison assignment with the War Office) is to advise our liaison officers at B.P. what additional or explanatory material should be sent to Washington.

34. Attention is called to the fact that, under this arrangement, the War Department gets, for the first time, a basis for arriving at an independent judgement on British intelligence from "E" sources, which is the major part of British intelligence about the German Army and Air Force. Heretofore we have depended largely on the inferences and conclusions drawn by the British, and have had no means of checking their basis. We have been in the same position as those organizations and individuals within the British Government who are not "in the know," i.e., the MS information has been either withheld or transmitted to us late, for security reasons; or it has been given in general terms and in round numbers; and often it has been impossible to distinguish between 100% verified information and inferences which, upon examination of the evidence, might turn out to be mere guesses.

35. Under this arrangement we need no longer speculate about how much intelligence the British are giving us from their primary source. We now sit at the source itself and can watch it; or rather, we will be able to watch it when we get the necessary component of officers at B.P.

36. The British Security channel to Washington is used for sending the "E" messages and paraphrases here, and gives us direct and speedy access to the intelligence derived from "E" and related cryptanalytic activities. The nature and importance of this intelligence can be dealt with orally, and specimens of it can be furnished. Because of the unique security problem involved, it is undesirable to deal with them in a memorandum.

37. The above arrangement also gives American officers a part in the determination of what "E" intelligence shall be sent to American field commanders. The dissemination of "E" intelligence to the field is controlled at B.P., where representatives of the 3 Service Ministries decide what their respective commanders should get, and in the past they have decided this for American commanders, without any American representative having a vote. Under the new arrangements our liaison officers at B.P. will be in a position to insist that "E" information that is sent, for example, to General Montgomery is also sent to General Clark, if it might have a bearing on his operations; and if the decision is adverse they can take the matter up through the appropriate channels.

38. We agreed with the British to keep Lt. Col. Taylor's staff for the "E" operation at B.P. to the minimum necessary to do the job; and the British have agreed with us that the minimum is 4 first-class officers at B.P. We now have one officer on duty, and Lt. Col. Taylor is temporarily spending most of his time at the same

work. One other officer has been assigned to the job, and will go as soon as orders and transportation can be obtained for him. Efforts are being made to find 2 others, properly qualified for the job. The liaison officer at the War Office has already been selected and will start working in the near future.

39. Factors bearing on the determination of what reserves of manpower should be built up for the job at B.P. are (a) the desirability of rotating the officers and (b) that, when and if the need arises for American forces on a cross-channel or other operation to have special security officers to handle "E" intelligence for the commanders, they will have to be men trained at B.P. and the Special Branch officers will be likely candidates.

* * *

From SRH 005. *Excerpts from the Military Intelligence Service's European Summary of April 11, 1945 demonstrate the quality of intelligence about German capabilities and intentions that could be derived from ULTRA.*

EUROPEAN SUMMARY OF 11 APRIL 1945

No. 45-101 Copy No._
By Auth.

NOTE: No one, without express permission from the proper authorities, may disseminate the information reported in this Summary or communicate it to any other person.

Those authorized to disseminate such information must employ only the most secure means, must take every precaution to avoid compromising the source, and must limit dissemination to the minimum number of secure and responsible persons who need the information in order to discharge their duties.

No action is to be taken on information herein reported, regardless of temporary advantage, if such action might have the effect of revealing the existence of the source to the enemy.

The enemy knows that we attempt to exploit these sources. He does not know, and must not be permitted to learn, either the degree of our success or the particular sources with which we have been successful.

1. *Western Front*:

a. *Reorganization of Armed Forces chain of command*: An order issued by Hitler late on 7 April made sweeping changes in the organization of the chain of command in the West. Operational control of the Front is now divided between C-in-C West and "C-in-C Northwest," command of the forces in the Ruhr pocket is separated under Army Group "B," and those HQs, plus Naval Chief Command West, are subordinated directly to the OKW. In addition, a new command, "C-in-C

Netherlands," has been set up in preparation for "the defense of Fortress Holland."

Hitler's order prescribed the boundary between C-in-Cs West and Northwest as a line running eastward from Paderborn to Schoenebeck (7 m. SE of Magdeburg).

Details of the reorganization directed by the order are in substance as follows:

(1) *Subordinated directly to the OKW*

(a) "C-in-C Northwest (Army Group 'H')"

(b) Army Group "B"

(c) C-in-C West

(d) Naval Chief Command West

(2) *Subordinated to C-in-C Northwest*:

(a) "The former sphere of command of Operations Staff North Coast," the staff of which is made available to C-in-C Northwest.

(b) "C-in-C Netherlands, to whom the Twenty-fifth Army, Commander Armed Forces Netherlands, Admiral Netherlands, and GAF forces in Holland are subordinated." C-in-C Netherlands "is personally responsible to Hitler for the defense of Fortress Holland; as soon as land communications to the Reich are cut, the (previously announced) comprehensive regulations regarding Fortresses will govern his relations with the Reich Commissar for Occupied Areas of the Netherlands."

(c) Armeegruppe Student

(d) First Parachute Army

(e) Wehrkreis XI

(3) Subordinated to C-in-C West:

(a) Army Group "G" (with the First and Seventh Armies)

(b) Eleventh Army

(c) Nineteenth Army

(d) Wehrkreise V, VII, IX, and XIII.

(4) Subordinated to Army Group "B":

(a) Fifth Panzer Army

(b) "Fifteenth Army (Armee Abt. von Luettwitz)"

(c) All other units and personnel of all branches of the Armed Forces in the Army Group area (Ruhr pocket).

(5) GAF tactical forces: The organization of GAF tactical forces employed in the West is to conform to the organization of the field army. A GAF command staff is to be linked with each of the ground commands (presumably Luftflotte Reich in the north and GAF Command West in the south. . .).In addition, all flying and Flak units supporting the field army are to be subordinated operationally to C-in-Cs Northwest and West respectively.

GAF support of Army Group "B" will be arranged specially. b. Location of HQs following the command reorganization:

(1) C-in-C West moves southeast: On 28 March the HQ of C-in-C West was in a tunnel at Milseburg, 10 m. E of Fulda. . . .The next day Genobst. Jodl,

Chief of the OKW Operations Staff, stated that the area west of Ohrdruf (9 m. S of Gotha) was envisaged as an HQ location for C-in-C West "in case of need". . . .On 10 April, the following message was sent by an unidentified authority:

"As of 0800 hrs on the 10th, the temporary battle HQ of C-in-C West is in Hirschau (40 m. E of Nuernberg and about 100 m. SSE of Ohrdruf). The final battle HQ (special train D) will be reported later."

* * *

c. *Possible new commanders*: Hitler's order of the 7th did not identify the incumbents of the newly created posts, but slight suggestions are afforded by the language of the order and subsequent messages. Although Blaskowitz has been C-in-C Army Group "H" since February, the move of his HQ to western Holland seems inconsistent with his assumption of the command into which that Army Group has been merged, and is rather an indication that he may be the new "C-in-C Netherlands."

Genfldm. Busch, who has been CG Operations Staff North Coast, is a likely incumbent for "C-in-C Northwest." Hitler's order specified that this high command was to have subordinated to it "the former sphere of command of Operations Staff North Coast," and on 8 April C-in-C West addressed to "C-in-C Northwest, via Operations Staff North Coast" an inquiry as to when command over Army Group "H," including Armeegruppe Student and Wehrkreis XI, "can be taken over."

It is assumed that Genfldm. Kesselring continues as C-in-C West, Genfldm. Model as C-in-C Army Group "B" and Admiral Krancke as Naval Chief Command West.

d. *Harz sector*:

(1) *Appearance of a new Army*: On 9 April C-in-C West stated:

"Hitler has ordered the Harz (Massif) as the assembly area for the Twelfth Army. The foremost division of the Twelfth Army is the 85th Inf Div. . . .(portion missing). . . .Any intervention by C-in-C West, the Eleventh Army, or other staffs, is expressly forbidden. . . ."

Note: The new Army is to assemble in the region which
Wehrkreise IX and XI have been ordered to prepare for defense. . . .

On 2 April Hitler stated that six divisions "being set up" were to assemble in the area Hannover - Northeim - Brunswick —which is just northeast of the Harz and which is now being overrun by the Allies. That order said that "the later tasks of this Army will be ordered at the proper time". . . .

On 26 March the cadre personnel of the 85th Inf Div, which is being set up anew inside Germany, were ordered to move from a troop training ground north of Wuerzburg to one just west of Berlin.

(2) *Units to be refitted on the edge of the battle zone*:

(a) Also on 9 April, C-in-C West subordinated the 394th Assault

Gun Bde, which was assembling just north of the Harz Massif, to the Eleventh Army. The order stated that the Bde was to be rested and refitted, and that guns were to be provided as quickly as possible. Until its "operational capacity" was restored, the Bde was, "within the scope of the Harz defense, to take over defensive and blocking tasks in its rest and refitting area."

(b) On the same day (the 9th) C-in-C West ordered that a battle group of the 9th Pz Div to be transferred to the area of Sangerhausen (20 m. E of Nordhausen) for "further rest and refitting." While there, the battle group was also to "prepare for defense, take part in constructing blocking positions, and operate if the Allies attack."

(3) *Kesselring order to the Eleventh Army on 7 April*:

"(i) In order to gain time, the Eleventh Army, using no more forces than are necessary, must fight a battle of bitter delaying resistance on its western front, the rear of which rests on the Harz Massif and the mountainous country to the west. This gain of time will serve to make the strong sectors behind the Army's front capable of defense and to develop the Harz Massif into a blocking Schwerpunkt of the first order.

"(ii) It is of utmost importance for the Army, with all speed, to shift to its southern wing the forces which are to be economized on its front facing west. Then, driving toward Langelsalza and Gotha (respectively 10 and 20 m. SE of Muehlhausen), those forces can fall on the Allied flank with adequate striking power.

"(iii) At the same time it is most important to take immediate countermeasures to forestall the possibility of the Army's western front being rolled up from the north and south. This means that, on the north, all roads and tracks in the area Gronau - Alfeld and to the west (i.e., an area about 20 m. S of Hannover) must be rendered impassable with adequate defense; and, on the south, the Allies, as they feel their way northward from Muehlhausen, must be attacked on the flanks. Here the Eleventh Army's conduct of operations must be adjusted to the utmost mobility and flexibility.

"(iv) The area Nordhausen - Sonderhausen- Kelbra - Schmuecke Depression ((i.e., east and northeast of Muehlhausen)) must be turned into a firm defensive block. Farther west, local strongpoints such as Uslar, Hardegsen, Northeim, Adelebsen, Harste, Goettingen, Dransfeld and Witzenhausen ((all northeast and east of Kassel)) must be so strongly developed and adequately manned that they will hold firm under efficient Officers Commanding Local Operations. Because of the Allies' well known by-passing tactics, the flanks of these places must be covered and adequately protected. Covering forces in effective strength, with patrols out to the sides to prevent surprises, must be in position at least 1 1/2 kilometers in front of blocking sectors. The Allies must be brought to a dead stop in this system of blocks."

Note: By 10 April Allied troops had overrun the Gronau - Alfeld area and the local strongpoints above Kassel, thus rolling up the western front of the Eleventh Army from both the north and the south.

* * *

For the Assistant Chief of Staff, G-2:
CARTER W. CLARKE
Brigadier General, GSC
Deputy Chief, MIS

Distribution:

Within the War Department
- Secretary of War
- Chief of Staff

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CHAPTER VII

Disseminating the Product

The twin breakthroughs achieved by the Army in the field of signals intelligence in mid-1943—making an entry into Japanese military traffic and reaching an agreement with Bletchley Park to share the British COMINT take from German sources—made it possible for the first time to provide American field commanders with immediate intelligence of operational use. This posed a major problem. How could this ultra-sensitive intelligence be disseminated in a timely fashion without risking compromise of the source which would undo the whole effort. The U.S. Army came up with the solution of adopting British security regulations and creating a Special Security Officer system under Special Branch to handle distribution of signals intelligence to the field. Specially picked and trained officers, operating under War Department control and utilizing a special communications system, would serve as the conduits for high-grade COMINT—ULTRA, as it was now called. These officers would act both as security watchdogs and as guides to properly interpreting the material.

In SRH 026, Marshall Letter to Eisenhower, the Army Chief of Staff explains the new security system to the Commander, European Theater of Operations. SRH 033, History of Operations of the Special Security Officers, provides a general overview. Excerpts from SRH 031, Trip Reports - ULTRA in the Mediterranean; SRH 022, ULTRA and the Seventh U.S. Army; and SRH 032, ULTRA in the Southwest Pacific Area, contain reports from individual Special Security Officers on conditions in the field.

From SRH 026. *As a result of the agreement between the British and the War Department to share cryptologic intelligence, "Ultra" material could be sent to American field commanders under strict security provisions. In this letter, Army Chief of Staff George C. Marshall explains the arrangements to his principal subordinate in Europe, General Dwight D. Eisenhower. The security regulations of April 1944 to which Marshall refers introduced the TOP SECRET classification to the U. S. Army for the first time.*

WAR DEPARTMENT
THE CHIEF OF STAFF
Washington, D. C.

March 15, 1944

Dear Eisenhower:

You are undoubtedly aware of the supreme importance which the War Department attaches to intelligence known as "Ultra." This intelligence is secured by the British from reading German enciphered radio communications.

The attached Tab sets forth the basis upon which German "Ultra" intelligence is made available to American field commands. Please give this matter your personal attention, and take all necessary steps to insure that the security regulations governing the dissemination of "Ultra" intelligence are meticulously observed. The arrangements described in the attached Tab are to be fully carried out.

Faithfully yours,
/s/ G.C. MARSHALL

General D.D. Eisenhower,
Supreme Headquarters,
Allied Expeditionary Force,
London, England.

1. A large volume of highly important military and air intelligence is derived by the British from reading German radio communications enciphered in high-level German cipher systems. This type of intelligence is known as "Ultra" intelligence.

2. The basis upon which German Ultra intelligence is made available by the British to the US War Department and to American Field Commands in active theaters is governed by an agreement made in June 1943 between the US War Department and the responsible British organization.

3. The British organization which produces Ultra intelligence is the Government Code and Cipher School, the Director General of which is Brigadier Sir Stewart Menzies.

4. Administration of the agreement of June 1943 is controlled by the British [text withheld] through Brigadier Menzies, and by the US War Department through the A. C. of S., G-2.

5. To carry out the agreement of June 1943, and to assist in and supervise the dissemination of Ultra intelligence to American Commands in the European Theater, a detachment of MID, the title of which is MID, War Department, London, has been detailed for service in the European Theater. This detachment is under the direct control of the A. C. of S., G-2, and the Commanding Officer of the detachment is the representative of the A. C. of S., G-2, on all matters relating to or affecting Ultra intelligence in the European Theater.

6. Security regulations governing the dissemination and handling of Ultra intelligence within the European and Mediterranean Theaters have been approved by the US War Department [text withheld] and will become effective on 1 April 1944.

7. Under the agreement of June 1943 and the security regulations of 1 April 1944, the basis of disseminating Ultra intelligence to American Commands in the European Theater is as follows:

a. Ultra intelligence produced by G.C. & C.S. (including the component of the US Signal Corps at G.C. & C.S.) is disseminated to Field Commands only by means of special communications channels established and controlled by the Director General, G.C. & C.S.

b. Communications between Field Commands which discuss or mention Ultra intelligence must be passed only over the above special communication channels.

c. American officers participate at G.C. & C.S. in the selection of Ultra intelligence for dissemination to the Field Commands and in the preparation of the messages in which the Ultra intelligence is so disseminated. These officers are attached to MID, War Department, London.

d. The receipt and distribution, at the Field Commands, of messages containing or relating to Ultra intelligence, is handled by Special Liaison Units furnished and controlled by the Director General, G.C. & C.S. The personnel of these units includes American officers attached to MID, War Department, London.

e. The Special Liaison Units distribute Ultra intelligence messages only to officers at the Field Commands who are listed as entitled to receive Ultra intelligence. The eligibility of officers for listing as authorized Ultra intelligence recipients is governed by the security regulations of 1 April 1944. The Director General, G.C. & C.S., and the Commanding Officer of MID, War Department, London, administer the provisions of the agreement relating to admission of American officers in your theater to the list.

f. One or more American officers assigned to MID, War Department, London, will be detailed to each American Field Command, which receives

Ultra intelligence. These officers will be subject to the administration and discipline of the Command to which they are detailed. They will work under the control of the G-2 or A-2 of the Command as part of his staff. They will have had a period of training at G.C. & C.S., and, if possible, with operational commands in the Mediterranean Theater, and this training will be directed toward equipping them to use Ultra intelligence effectively and securely. Their primary responsibility will be to evaluate Ultra intelligence, present it in useable form to the Commanding Officer and to such of his senior staff officers as are authorized Ultra recipients, assist in fusing Ultra intelligence with intelligence derived from other sources, and give advice in connection with making operational use of Ultra intelligence in such fashion that the security of the source is not endangered. If at any time the flow of Ultra intelligence is not sufficient to occupy fully the time of these officers, they may be used for other related intelligence assignments.

8. The Commanding Officer and the G-2's and A-2's of all American Field Commands in your theater, which receive Ultra intelligence, will take all steps necessary to insure that the requirements of this letter and of the security regulations of 1 April 1944, are fully carried out. In order to safeguard the continued availability of this enormously important source of intelligence, it is vital that these security regulations be meticulously observed, and that all personnel entitled to handle or receive Ultra intelligence take all possible precautions in connection with its handling and use. When operational action is taken on the basis of Ultra intelligence, the utmost care must be taken, by means of proper cover, to insure that the action does not reveal or in any way suggest that this source of intelligence is at our disposal.

9. It is of particular importance that:

a.Ultra intelligence be transmitted to the Field Commands only by those special channels mentioned in paragraphs 7a and b above, and that communications discussing or mentioning Ultra intelligence be transmitted only by those channels.

b.Ultra intelligence be discussed orally only with personnel of the field commands who are listed as authorized recipients of Ultra intelligence; and

c. Full facilities and opportunity be extended to the MID, War Department, London, officers detailed to Field Commands in order to enable them to perform their duties fully and effectively. The Commanding Officer, MID, War Department, London, and his principal assistants, will visit the Field Commands as occasion requires to consult with the G-2's or A-2's on methods of handling or using Ultra intelligence and on the scope and method of servicing Ultra intelligence from G.C. & C.S. to the field commands.

10. The contents of this letter will be communicated to the Commanding Officers and G-2's or A-2's of all American Field Commands in your theater which receive Ultra intelligence.

From SRH 033. *This document was prepared in 1945 as an introduction to the numerous individual activity reports prepared by Special Security Officers and Special Security Representatives assigned to the various theaters. Selected reports are reproduced later in this chapter.*

HISTORY OF THE OPERATIONS OF SPECIAL SECURITY OFFICERS ATTACHED TO FIELD COMMANDS 1943 - 1945

1. The Special Security Officer (SSO) system was organized for the purpose of providing a means of rapid and secure dissemination of Ultra intelligence to operating commands. The system was developed and put into operation by the old Special Branch, MID. At the time of the June 1944 reorganization of the Military Intelligence Service the functions of administering the SSO system were transferred to the new Special Branch, although certain of the dissemination functions were retained by the Director of Intelligence, MIS. Moreover, all policy problems were retained under the direct control of the Deputy Chief, MIS. This division of authority did not prove wholly satisfactory. In February 1945 complete responsibility for the administration of the SSO system was vested in the office of the Deputy Chief, MIS, where it still remains.

2. This history is concerned with the development of the SSO system as a whole and will cover the entire period of its operation regardless of the place in the MIS organization where the functions may have been located. Because each theater of operation presented different problems, it was necessary to place a large measure of responsibility in the senior SSO in each theater (eventually his title was changed to Special Security Representative, abbreviated as SSR) for the supply of Ultra to commands operating in his area. A history of the operations within each theater is therefore of much greater value in attempting to evaluate the merits of the system. For this reason detailed histories by theater have been prepared and are attached hereto. The purpose of this introductory statement is to describe the steps which led up to the organization of the system and the manner in which the "home office" was operated in support of the separate theater organizations.

3. The need for the field dissemination of Ultra did not become acute until 1943. Arlington Hall did not make its first entry into mainline Japanese military systems until March of that year, and it was not until the fall of 1943 that any worthwhile intelligence of an operational nature was being produced from these military systems. High level diplomatic traffic had been available since 1941 but its value was strategic in nature and very seldom did anything of immediate tactical importance develop from this source. There were in existence during the period from 1941 to 1943 certain special channels of communication by means of which Ultra intelligence could be made available to various field commands. The Navy

had a direct Ultra channel to CINCPAC at Pearl Harbor, with an extension to the Commander, Seventh Fleet in Brisbane. General MacArthur had his own cryptanalytic organization, Central Bureau Brisbane, which had special channels of communication to Signal Security Agency (Arlington Hall) [text withheld] There was no direct intelligence channel for Ultra from the Military Intelligence Service to any of these commands.

4. German military Ultra in great volume and of the highest operational significance was being produced by GCCS in London. The results were disseminated over a special Ultra intelligence channel maintained by British Special Liaison Units (known as the SLU organization). Throughout the North African campaign the SLU organization served key American officers with this intelligence in accord with British security practices. The Military Intelligence Service did not participate in this service, and as a matter of fact, was not completely aware of its existence until the summer of 1943. German military Ultra was never produced by Arlington Hall, the primary reason being that it was not possible to intercept German military traffic on the North American Continent.

5. The first steps taken to unify the method of field dissemination of Ultra and to insure that all Ultra intelligence was made available to the appropriate operational commands, was to come to an understanding with the British. In the spring of 1943 an agreement was entered into between G-2 and [text withheld] London [text withheld] providing for complete cooperation in the Ultra intelligence field. By the terms of this agreement, the British assumed primary responsibility for the production and exploitation of German military Ultra, and the United States Army agreed to devote its attention to the production and exploitation of Japanese military Ultra. Full exchange of the products of each service was provided, and the principle was established that each service, in cooperation with the other, would establish methods of dissemination to its own operational commands. [text withheld] The subject need not to be further discussed here other than to say that the British SLU organization [text withheld] was the pattern upon which the SSO system was developed for dissemination of Ultra to Pacific commands.

6. The German problem having been solved in principle, attention was then directed to providing a system for the Pacific. The peculiar nature of Ultra intelligence required a system of dissemination which, in some respects, was contrary to established principles of command responsibility. The high level Japanese military cryptographic systems were of such difficulty that only a tremendous organization equipped with expensive and bulky electrical tabulating machinery could produce any results. Consequently, detailed items of immediate tactical significance to an Army commander in the field could be read at Arlington Hall, but could not be produced by an agency located in the theater and near the Army commander interested. Therefore "combat intelligence" was being produced in Washington, some 15,000 miles away from the front lines. To forward this intelligence through normal command channels of communication and through every intermediate G-2

between the War Department General Staff and the combat commander concerned would delay its receipt and, in many cases, the particular message would lose all value by the time the commander finally received it. More important were the security considerations involved. Experience in World War I and the experience of the British in World War II had proved that wide dissemination of Ultra very often led to a compromise and complete loss of the source. The business of cracking codes is movie thriller stuff and the natural reaction of an uninitiated person is to make some comment about it to other responsible officers who would normally be supposed to be in on the secret. Careless talk by one uninformed person to another soon results in the "secret" being public information. To avoid these dangers, the British had adopted several rules of dissemination which had proved highly successful in maintaining the necessary security. They were:

a. Ultra was never to be made available to anyone, from a commanding general down to the code clerk who sent the message, without first explaining to the recipient the security questions involved, and how even the most innocent comment might lead to loss of the entire source;

b. Ultra would be disseminated only via special communication channels which would be used solely for that purpose.

This would prevent a casual knowledge of Ultra on the part of personnel employed in communication centers, and would also enable complete control of dissemination within the theater of any messages transmitted over this channel;

c. The special dissemination channels would be maintained by officers and enlisted men from a central organization and would be furnished only to commands which had actual need of Ultra intelligence. The local commander would therefore not have the authority to over-rule this personnel on any matters involving security.

d. Strict rules for the dissemination within the command, limiting the number of officers authorized to see the intelligence, and the uses which could be made of it, would be prescribed by the central organization.

7. The Pacific field dissemination system was devised in the summer of 1943 on the basis of the principles outlined above. It was decided to designate the officers who would maintain the special channels as Special Security Officers (SSO's). SSO's were to be assigned to the Military Intelligence Service and remain under the operational control of the A. C. of S., G-2, WDGS. They would be attached to the theater commander for purposes of administration and discipline and would disseminate Ultra in accord with rules announced in security regulations issued by the War Department. Authority was obtained from the Chief of Staff in the summer of 1943 to consult the theater commanders in the Pacific and to obtain their concurrence with this plan. The commanding generals of the Pacific Ocean Areas and the China-Burma-India (CBI) Theater readily concurred, but the Commander in Chief, Southwest Pacific Area, raised certain objections to the proposal on the ground that the SSO should be assigned outright to his command rather than

remain under the control of the War Department. Col. Carter W. Clarke, then Chief of Special Branch, was sent to Brisbane to confer personally with CINC, SWPA on this difference of opinion. As a result of this conference, General MacArthur concurred in the original plan.

8. The first War Department security regulations governing overseas dissemination of signal intelligence were issued in October 1943. Following the British practice, two classifications were established: ULTRA DEXTER and DEXTER. Subsequently these terms were increased to three, as follows: ULTRA [text withheld] PEARL [text withheld] THUMB [text withheld]....The regulations governing Pearl and Thumb were subsequently revised, in conjunction with the Navy, and the single code word PINUP was adopted for all low level signal intelligence.

9. The original Ultra Dexter regulations were implemented in the fall of 1943, when special security officers were sent to the following theater headquarters: Southwest Pacific Area, Brisbane (Major James Ashby, Jr.); China-Burma-India, New Delhi (Captain John F.B. Runnalls); Pacific Ocean Area, Fort Shafter, T.H. (Major Edwin E. Huddleson, Jr.). The original plan was to limit overseas dissemination of Ultra to theater headquarters and to await recommendations from the special security officers before making provision for broader dissemination. It will be recalled that the operational situation in all three theaters in late 1943 and the first half of 1944 was not such as to require dissemination to subordinate operational commands. Accordingly, all three special security officers undertook to serve the respective theater commanders and their staffs. To accomplish this each officer carried with him his own set of cryptographic equipment (SIGABA) for the enciphering and deciphering of Ultra messages. Special arrangements were set up to provide pouch service as well, and such material as the Diplomatic Summary was sent regularly by special Top Secret pouch. It should be noted that both radio and pouch communications were sent to the special security officer personally. Thus he received radio communications in enciphered form and did the actual deciphering himself. He was therefore the only person to see such messages in the clear, and showed it personally to the theater commander and other specified staff officers. At no point did the contents leave the control of the special security officer. Pouch material was delivered to him unopened, and he thereupon showed relevant material to appropriate headquarters officers, retaining actual custody of it himself. This system proved both secure and efficient. Except for certain considerations peculiar to SWPA [text withheld] the special security system won the approval and confidence of theater officers concerned.

10. Meanwhile, preparations were underway for the establishment of a special security system to serve in ETO in connection with the expected invasion of the spring of 1944. A larger number of officers were recruited and sent to the ETO for training. . . .Accordingly there arose the need of a Table of Organization which would provide vacancies for enough special security officers to fill the needs of both the European and Japanese wars. In December 1943 a staff study was pre-

pared which described the special security requirements and stated the estimated personnel needs. Approval was thereupon given by the Adjutant General for a field quota of 80 officers. In July 1944 this quota was enlarged to 172 officers and 65 enlisted men, a total which proved sufficient for the duration of the war.

11. In the spring of 1944 sufficient information had become available, based on recommendations of special security officers and upon projected operational plans insofar as they were available to MIS, to permit a decision as to the extent to which Ultra should be disseminated below the level of theater headquarters. Accordingly, the regulations were rewritten (10 July 1944) to allow dissemination to the level of Army (or equivalent Air Force Formations) and to Corps level when the Corps was operating independently. In April and May of 1944, by way of preparation for the revised Ultra program, officers were recruited for SSO duty in the Pacific and Far East. The first group, numbering about 20, began a training period on 3 July 1944 and were sent overseas about 1 September 1944. This group included a full complement for CBI and a group of officers for SWPA. The training course consisted of a week's tour of ASA, two weeks' training in the specific duties of the special security officer (study of regulations; lectures by returning officers familiar with the theater concerned; consultation with relevant sections of OPD; cryptographic security; communications, etc.) and from four to six weeks straight intelligence training, which included the Far Eastern Intelligence Course and selected reading of Ultra materials; where possible the officers spent from one to four weeks actually working on Ultra traffic as members of the various Ultra sections of MIS. The value of this latter aspect of training cannot be over emphasized. This first group which went overseas have all testified to the importance of an adequate intelligence background. By and large, this group was well trained, but as the operational situation grew more active it became necessary to send additional special security officers on very short notice. In many cases such officers had to be dispatched with very little training or background in Ultra. If there were one lesson to be learned from experience in connection with the SSO program in the Far East, it is this: a large potential pool of security officers should be recruited early—as early as possible and long before they will actually be needed overseas. They should function as working members of MIS—this is the very best type of training—and be available for overseas assignment as the need arises. The greatest single handicap in the past administration of the SSO system was the lack of adequately trained personnel to meet the suddenly increasing needs of the Pacific war. While it can be said that the program was carried out efficiently in the face of numerous obstacles, and that the sudden expansion in SSO requirements could not have been anticipated, the ultimate results could have been more satisfactory if we had had too many qualified personnel available rather than too few. Admitting that it is always difficult to obtain as many highly qualified officers as one would like, this phase of the problem should be given particular and immediate attention in the event that the need for an SSO organization should ever arise again.

12. The manner in which the SSO program was carried out in the respective theaters is fully explained in the individual histories.It remains only to discuss briefly the functioning of the home office. Before the G-2 reorganization of June 1944, the administration of the overseas dissemination was handled by two officers in Special Branch. After the reorganization, when the SSO field quota expanded from 3 to some 65 officers in the Pacific and Far East, the administration was made the responsibility of the newly constituted Special Branch. A total of three officers were actually engaged in the administrative phase of the SSO program. These officers were concerned with the following aspects of the SSO program: recruiting and training of SSO's; review and revision of Ultra, Pearl, and Thumb regulations; handling of all administrative correspondence, by radio and pouch, between MIS and SSO's overseas; liaison with interested sections of the intelligence group in connection with intelligence requests from SSO's; coordination, where necessary, with ASA, OPD, OCS, the Navy, and with various other organizations of the War Department; all personnel problems, including promotions, travel orders, security clearances for both officers and enlisted men; a myriad of miscellaneous matters which cannot be conveniently catalogued but which arise in any unit of the size and scope of the SSO organization. While it is a matter of record that there was no serious breach of security throughout the war, and while theater officers have uniformly testified to the quality of the service they received, it is submitted that a larger home office, more fully staffed both with officers and civilians, would be desirable "next time."

13. In January 1945 the functions of Special Branch were transferred to the Office of the Chief, MIS and placed under the direct supervision of the Deputy Chief. Inasmuch as the Special Branch program was under the direction of the Deputy Chief from the outset, this transfer proved more satisfactory, since it eliminated an extra step in the chain of command and simplified the matter of coordination with the Director of Intelligence, a major part of the Special Branch job. Again the duties were performed by three officers, although this number was increased to five during the summer of 1945. There were no substantial changes in procedures as a result of the above mentioned transfer.

14. Apart from personnel, the most important single factor in the efficient and secure operation of the SSO system, was the special communications channel, which worked magnificently and proved eminently satisfactory throughout the war.

From SRH 031. *In preparation for a future assignment as a Special Security Officer, an Air Corps lieutenant colonel went to the Mediterranean Theater of Operations to observe how the British had organized the distribution of Ultra material in that area. It should be remembered that Special Branch serviced air commanders as well as the ground Army. MAAF refers to Mediterranean Allied Air Forces; in today's military parlance, it was a combined service operation rather than a joint one.*

24 June 1944

SUBJECT: Report on Mediterranean Trip.
TO: Commanding Officer, MIS, WD, London.
FROM: Lt. Col. Leslie L. Rood, A.C.

1. This is a report on my visit to the Mediterranean Theater of Operations in June 1944, to observe the use of air special intelligence. Because the London office is already familiar with the general functioning of the Mediterranean organization this report is only of a supplementary nature.

2. Mediterranean Allied Air Forces, a joint British-American Command, is the supreme air headquarters of the Mediterranean Theater. It has a rear headquarters at Algiers and an advanced headquarters at Caserta. Under it are Strategic Air Force Tactical Air Force, and Coastal Command.

The Strategic Air Force is an almost wholly American Unit, the 15th Air Force, operating from Bari. They have one British group of Wellingtons for night bombing. The 15th is an operational command in that it plans and directs missions.

Tactical Air Force at Caserta, on the other hand, is a British-American Command that is not operational. It has under it (1) the 12th Tactical Air Command (American) which gives close support (fighter bombers) to the 5th Army, (2) Desert Air Force (British) which gives close support to the 8th Army, and (3) two wings, one of medium bombers and one of fighters, which operate at a greater distance behind the enemy lines.

Coastal Command, with defensive, convoy and coastal missions, is spread out over the whole Mediterranean. Tactical and Strategic are in Italy.

3. I departed from London on the evening of 26 May 1944 by sleeping car and arrived in Newquay, Cornwall, the next morning. I should have taken off from St. Mawgans that night, but due to engine trouble did not get off until the fourth night. The plane arrived at Casablanca the next morning and by evening I was in Algiers.

I spent three days with MAAF (rear) and took off for Caserta on 4 June. For the succeeding three days I was there with MAAF (adv.) and TAF. On 8 June I went to Bari by courier plane to spend three days with the 15th Air Force and 276th Wing. Returning to Caserta on the 11th I was unable to go forward to 12th

TAC at Rome until the 14th because they were disorganized by the rapid advance. When I did reach Rome I was able to stay with them for only two days because they again split into three echelons and moved on.

On the evening of the 17th I left Rome; on the morning of the 18th I left Caserta; the next morning I departed from Algiers; after a delay of one day in Casablanca I took off for the U.K. and was in London on the evening of 21 June 1944.

4. The two MAAF special intelligence sections operate like miniature Air Ministries. At each headquarters the four or five officers processing the material are segregated in an out-of-the-way room where they do their work. Each officer has a specialty such as order of battle, "Y," supplies, Balkans, or targets and as the expert on that subject, he writes part of the daily digest which is prepared for the generals. The senior officer of the group usually carries the digest around, so that he can answer any questions which arise. They write very few appreciations, nor do they have any direct connections with operations. Their prime purpose is to be completely familiar with the material so that they can interpret it to their operational people. Secondarily, they compile a weekly order of battle which is published at several levels. MAAF (rear) also sends out a weekly supply summary at the highest level.

5. The 15th Air Force at Bari impressed me as a very smoothly functioning organization and its "A-2 Liaison Officer," Major Murphy, as an able part of it. Each morning the staff meets with the A-3 (acting as the operational chief of staff) to plan the missions for the subsequent day. First the weather officer delimits the possible areas of operation by his forecast; the A-2 names the targets having priority in that area; the damage analysis officer advises the A-3 to what extent the suggested targets have already been destroyed. Attention then being officially centered on several targets (the staff had already informally decided on these and spread the proper target charts before the meeting) the flak officer is called upon for the number of minutes the ships will be in flak if approaches are made from certain angles.Major Murphy is then called upon for an estimate of where, how many, and what kind of enemy planes will be encountered. Along with the weather officer he stakes his reputation daily since both of their predictions are checked by the next evening.

After quite a succession of direct questions by the A-3 and unequivocal answers by the staff, the A-3 fluently dictates a complete operations order. Each officer copies down the part pertaining to his responsibility and during the early afternoon submits the written annex to the finished order which is placed before the Commanding General for his approval.

Because of his daily forecast, Major Murphy is known to most people as the order of battle expert but even more important is his servicing of senior officers with special intelligence. He separates from the general material that which might interest the senior officers, annotates it with brief notes when necessary, and then

shows them the annotated material. He often has to do some verbal explaining and elaborating but he writes no digest.

There was a time when special intelligence was important at Bari for its order of battle information, but now when the GAF puts up a maximum of 150 planes to protect the most important targets and none for lesser targets, raids are naturally planned with little regard for the possible opposition.

The most valuable material, therefore, is that pertaining to targets, e.g. that a bridge was destroyed, that shipping on the Danube has been stopped or that damage to refineries has caused a gasoline shortage. Operations people take a very keen interest in anything which gives a clear cut statement of the damage done by their bombers the day before. With the increase in blind bombing this is even more true.

Most of the intelligence at the 15th Air Force consists of target work, i.e. photography, collating of agents reports and economic studies of objectives, and bomb damage analysis. There is a large target section staff at MAAF (adv.) which serves the 15th Air Force almost exclusively by preparing target charts and 15th Air Force also has a large target section which selects objectives and analyzes bomb damage. Since no one in the target section at Bari has special intelligence, Murphy helps them with his superior wisdom quite frequently.

In attempting to summarize for me what special intelligence supplied to the whole intelligence organization at Bari, Murphy said that its primary contribution was a "negative influence." Most of the information Murphy gets from special intelligence is also procured from photos, PW's, pilots' reports, and "Y," but in them the good is mixed with the bad. Special intelligence tells Murphy and his superiors what not to rely on. Rarely does he get anything of pure operational value, something which causes him to rush into A-3 demanding that a mission be layed on.

6. TAF's functions are difficult to understand because of its intermediate role below the policy level of MAAF and yet above the target selection level of TAC and DAF. Its role is further complicated by its being an operational headquarters over its medium bomb wing but a non-operational headquarters over its close support commands.

It is primarily a coordinating command. Its greatest interest during my visit was in the progress of its campaign to choke off all supplies to the battle area. Special intelligence provided very good material on this subject.

The segregation of special intelligence is not very noticeable here because only the chief intelligence officer, W/C Wiseman, and his assistant, Captain Austin, have it. Their knowledge is used through attendance at all planning conferences, some of which are at the highest level. They show selected material to the senior officers and do not write a digest.

7. Discovering how Major Corning, at 12th Tactical Air Force, uses special intelligence was not easy. He keeps no records that one can analyze. He is the A-2

and the only person doing pure intelligence work so special intelligence is not neatly segregated for the visitor's examination. Corning operates out of his shirt pocket, merges all sources in his mind, and is not given to pat statements about what part of his total knowledge is supplied by special intelligence.

12th TAC, in supporting the 5th Army is meeting absolutely no enemy planes so naturally order of battle is forgotten. Likewise, the occasional damage reports on specific targets are of doubtful use because TAC attacks vast numbers of small targets each day such as motor transport, bridges, railway cuts and dumps.

What is important is that special intelligence shows TAC very clearly that its primary mission, cutting the lines of communication and supply, has been successfully accomplished. The German inability to defend has been caused to a great extent by the lack of supplies.

In the fast moving situation prevailing during my visit special intelligence indications of where the enemy might make a stand was also of great value to TAC in deciding where to establish its airfields as it advanced.

TAC's intelligence set up is very simple. The broad plans of attack are made by Army; the target section is run by the Army and all TAC gets is a set of photos and a request for missions; there is no air order of battle; almost all the special intelligence coming through during my visit concerned the Army and was only of incidental interest to the A-2. The A-2 does the pure intelligence work and his eight subordinates are primarily engaged in compiling operations summaries, an A-3 job.

8. My visit to the 276th Wing was valuable chiefly because I saw a complete "Y" organization operating under one roof. This organization functioning without the complicated refinements of Block F, was "Y for Children."

Special intelligence is used at 276 Wing solely as a guiding influence. It enables the senior officer to eliminate from the published reports many of the erroneous conclusions which would result from dependence on "Y" alone. Unfortunately there is so little traffic to be picked up in the Mediterranean that their reports are comparatively unimportant.

9. Seeing four levels of command in the field immediately following my visit to War Station and Air Ministry, the stair like decline of formality in handling special intelligence was very noticeable. At one extreme is an elaborate recording and weighing of every detail and at the other is the casual treatment at 12th TAC where the recipient skims through the pencil written pages of the day, tracing some out on the map, rereading some, ignoring others and in no case writing anything down. At MAAF (rear) quite a bit of indexing is done so that records will be available for appreciations and weekly summaries. At MAAF (advanced) only an order of battle index is maintained, and at the next lower level, TAF, the informality approaches that of TAC in that only an occasional note is made. The 15th, like its parallel command, TAF, uses practically no records.

10. It is also noticeable that each level of command endeavors to stand on its

own feet rather than rely on appreciations and digests from superior commands. MAAF (rear) sends little to MAAF (advanced), MAAF (advanced) almost nothing to TAF, TAF nothing to TAC and naturally TAC can have no recipients. What little is sent is treated with not too much respect. Each level services its own generals without attempting to also service its lower echelons.

Many of the recipients do see each other quite frequently to exchange views. Probably for this reason no great differences of opinion are evident.

11. At War Station and the Air Ministry, I got the impression that intelligence was 75% special intelligence, 10% "Y," 5% photographs, 5% PW, and 5% miscellaneous. The figures varied somewhat but were usually definite. The people in the field don't think much in terms of percentages and, if they did, the figures would vary tremendously from place to place because each headquarters looks to intelligence for a different type of information. Sometimes special intelligence can fill the need and sometimes it can't. The usefulness of other sources varies also, depending on what the headquarters is interested in.

For commands where few records are kept PW reports mean little because no report is complete within itself. Usually they are skimmed through. Agents reports are seldom read by the A-2 or the order of battle people but they are of some importance to target sections. "Y" in the Mediterranean is sketchy, but along with photo recce of airfields which is fairly good in the Med, does provide good cover for the special intelligence order of battle.

Probably the most valuable source in the theater is photography. With the decline in interest of order of battle, targets are of comparatively more importance. The photo tells the pilot where the target is and within 24 hours of the attack photos give fairly complete damage information. Special intelligence does, of course, enable one to exercise great wisdom in reading photos.

12. Covering the use of special intelligence in the field does not present the problems which I understood it did. This is primarily so because receipt of the material does not usually point the way to an operational mission. The material provides background which enables commanders to make the correct decisions: it confirms or negates information from normal sources; it provides basic facts. None of these need cover.

13. At both MAAF headquarters the groups of people processing special intelligence are wholly British. The senior intelligence officers under whom these people work, A/C Woolley and G/C Luard, each have American executive officers, but only Woolley's executive, Major Tandler, handles special intelligence. Even he does no actual work with it.

While in theory this use of British personnel alone to serve a joint British-American Command may be criticized, there is no practical solution. The British appear to be doing a good job and their long experience in work where knowledge of the past is invaluable would place any newly assigned American officer in a distinctly subordinate position. In addition they already are overstaffed.

At TAF also the chief intelligence officer is British but this provides good balance since the remainder of the staff is predominantly American.
DETAILS:

1. A helmet and gas mask are not needed in visiting Mediterranean headquarters. The only use for a helmet is as a wash basin at headquarters near the front and even there borrowing is expected.

2. Arrangements for transportation take time and should therefore be initiated for the next hop as soon as one arrives at a station.

3. Orders cut in London should authorize visits to all cities which must be reached by ATC, i.e. Algiers and Naples in June 1944. If orders mention only Algiers, more orders must be obtained to get on to Naples. Transportation beyond the ATC terminus is by courier plane or airfield hitch hiking for which no orders are necessary.

4. Cotton uniforms may be purchased in Algiers at the PX.

From SRH 022. *The report of the Special Security Officer assigned to the Seventh Army, the American force that took part in the invasion of Southern France in August 1944. The "SCU/SLU link" refers to the British-operated Special Communications Unit/Special Liaison Unit that served as the conduit for Ultra intelligence produced by the Government Code and Cypher School at Bletchley Park.*

ULTRA AND THE U.S. SEVENTH ARMY
AMERICAN EMBASSY OFFICE OF THE MILITARY ATTACHE
1, GROSVENOR SQUARE, W.I.
LONDON, ENGLAND

12 May 1945

MEMORANDUM FOR COLONEL TAYLOR
Subject: Ultra and U.S. Seventh Army

1. Introduction: The following report summarizes the experience of the Seventh U.S. Army in the use of ultra intelligence between 16 August '44 and 8 May '45. The judgments, conclusions, and recommedations are not intended as generalizations necessarily applicable to either air or other ground commands.

2. Operations: The SCU/SLU link and ultra specialist joined the Seventh Army at Naples, and the station opened on D plus 1, the 16th of August. It had been agreed with the G-2 that the job of the ultra specialist was to receive signals from

the SLU, process them, and post the information on a map. For the first few days of operations in South France, the only map available was a folding map which was shown periodically to the G-2. During this period the quality of ultra intelligence was usually high and in the rapidly moving situation was the primary source of tactical information. The G-2 decided, therefore, that an ultra war room was desirable, and henceforth the ultra specialist occupied a room in the CP adjacent to the G-2. Also during these early days the volume of ultra was so great that it was soon apparent to the G-2 that he could not personally brief his commander on the content. Accordingly, the responsibility for the briefing of all recipients devolved upon the ultra specialist.

At no time during operations by the Seventh Army was there a formal briefing for all recipients. There can be little doubt that formal briefings are desirable for they permit a more careful preparation of the material. But the recipients were not amenable to the idea because it involved an additional commitment of time in their already busy day. Also, the demands of the tactical situation dictated that important ultra intelligence be disseminated to recipients without delay, and any other information was of insufficient importance to justify formal briefings. The typical method by which ultra reached the recipients was as follows: Each morning the G-2 was briefed on the messages received during the night. If in his judgment the information was important, the Commanding General and/or the Chief of Staff were called in and the briefing repeated. Throughout the day, usually after dinner and again after supper, the G-2 was briefed on later messages. Other recipients were briefed throughout the day whenever they found it convenient. At any time during the day or night an important message was passed to the G-2 without delay. In the absence of the G-2, the ultra specialist was authorized to call any message directly to the attention of other recipients if the information therein warranted such action.

The ultra specialist was expected to be currently familiar with information from other sources, but at no time was it desired that his briefings include a merging of ultra and other information. This distinction was closely drawn by the G-2, both for reasons of security and because the merger of all sources of information was accomplished in other ways. At the Seventh Army the chief of the order of battle section was a recipient and the "opening up" of ultra was his primary responsibility. Estimates of the enemy situation were prepared by still another officer in the combat intelligence section, and ultra was injected into these estimates of enemy capabilities by informal consultation with the G-2. Target information derived from ultra provided no problem for it had been agreed between the G-2 and the A-2 of XII Tactical Air Command, supporting the Seventh Army, that all ultra targets would be handled by the Air Force. With the order of battle, estimates, and targets provided for in the above manner, the remaining ultra required little or no correlation with other information.

Attached hereto as Tab A is a statement of two instances in which ultra provided intelligence of extreme tactical importance to the Seventh Army. All recipients

were genuinely interested in ultra and aware of the tremendous advantage provided by source. On one occasion the G-2 remarked, "You know, this just isn't cricket." Generally, ultra information is of primary value in a static or defensive situation; this is indeed true of all information and intelligence derived therefrom. In the attack and pursuit, intelligence has done its job during the planning phase of the operation, and subsequent information is usually outdated by the time it reaches the command. The examples in Tab A, however, cover both situations.

3. Security: It is difficult to really know the security situation at a command, but it was evident that some recipients at Seventh Army were either not cognizant of or sufficiently impressed with the need for security in the use of ultra. There was little questioning the minimum security requirement that the nature of source must not be disclosed, but this understanding did not extend to an appreciation that information derived from source must be properly safeguarded and serve only as the basis for tactical orders when the information itself cannot be "opened up." The greatest misunderstanding here was in the idea of "cover." Recipients were inclined to believe that cover was an invention; the idea of cover as an indication from an actual but open source was alien to all but a few recipients.

The security situation at Seventh Army was complicated by the fact the G-2 of VI Corps, and at the outset the Commanding General, were former recipients at a time when the Corps was operating at Anzio as a virtually independent task force. On a few known and probably on many unknown occasions the G-2 of Army passed on "hunches" to the G-2 of Corps; the latter was certainly aware of their origin but was not bound by security regulations. In this situation it is almost impossible to expect that a Corps G-2, formerly in the picture, will not receive ultra, thinly disguised; as the Army G-2 frequently stated, "You can deny membership in the Elks to a person, but once he has been an Elk and forfeits his membership he will still remember the initiation."

Generally speaking, however, the handling of ultra from an intelligence point of view by the G-2 was consistent with security regulations. The difficulties at the command were more directly traceable to the Commanding General and in the operational use of ultra. The reasons for this are manifest. Charged with responsibility for success or failure in the battle, the temptation to knowingly or unknowingly employ ultra improperly is well-nigh irresistible at times. This, considered along with the fact that the Commanding General is relatively isolated from daily security reminders by the ultra specialist appears to be the major cause of violations.

. . .Once the violation was observed, the facts in the case were obtained from the G-2 and reported to London. The G-2 was never told by the ultra specialist, although he probably guessed, that violations were being reported.

4. Conclusions: The policy of a separate channel and the assigning of an ultra specialist to American commands is basically sound. If nothing else, the mere presence of a War Department representative has a salutary effect. For reasons of administration the SCU/SLU link might well become the responsibility of the spe-

cialist. There is often a real question whether a particular security violation is the responsibility of the SLU or the specialist. Moreover the command is frequently confused in their administrative relations with the SLU, and are never certain whether they should deal with the SLU or with the specialist. There was never any difficulty of this kind at Seventh Army, but there is a real danger in the failure to provide unified control.

There is much to recommend that all ultra matters be considered within the province of the Commanding General and his Chief of Staff, rather than as an instrumentality of the G-2. In the first place, the G-2 might then be subjected to controls which cannot be exercised under the present arrangement. Moreover, by attaching the ultra functions to the Chief of Staff's office, the ultra specialist has direct access to the Chief of Staff and the Commanding General and thus can more carefully safeguard security at the point where it is most vulnerable. Also, by removing the ultra function from the G-2, security is improved by the mere fact that it is not automatically associated with intelligence.

The reading and understanding of ultra security regulations is not sufficient to insure their inviolability. In addition to constant reminders by the ultra specialist, periodic warnings from high commanders seem desirable. The subject must be kept a live one at all times, and the interest of the War Department continuously impressed upon recipients.

Regardless of what other persons are recipients at a command, it seems particularly desirable that wherever possible the order of battle chief be included. At Seventh Army this occurred through accident; the personality involved was "in the picture" at a higher headquarters before joining Seventh Army and his status was continued. But this might well become standard practice, other considerations permitting, for the order of battle man is the key to opening up ultra and the preparation of sound strength estimates.

Finally, it is essential that well-grounded intelligence officers be assigned to commands. The proper interpretation of ultra is very often dependent upon a thorough familiarity with information derived from other sources.

TAB A

(1) Late on D plus 2, ultra information reached the Seventh Army which indicated that the enemy was withdrawing from south and southwest France. The Commander was faced with a major decision involving two factors:

a. To what extent could the enemy be pursued and outflanked, considering the difficulty of supplying advance columns over a beach, and

b. Would the enemy counter attack on the right flank, from the Maritime Alps, and so endanger rear communications.

Ultra provided the answer to the second question, at least a sufficient answer to permit a calculated risk; there was no indication that the enemy would adopt an

attitude other than defensive on the flank. Accordingly, it was decided to pursue and all unloading priorities were altered, with the whole emphasis given to fuel and vehicles. Also, Task Force Butler, which had penetrated deep in the enemy rear, was reinforced with the 36th Div. Together they established a road block at Montelimar in the Rhone Valley and cut the enemy escape route. The road block proved insufficient to destroy the 19th Army and they succeeded in fighting their way out, but all heavy equipment was lost in the process.

It is also noteworthy that ultra guided public relations all through these opening days of the campaign, for it was clear from source that the enemy was not aware of the character of the forces operating in his rear. He apparently believed that there were only guerilla forces endangering his lines of communications; and so the existence and operations of Task Force Butler were not disclosed to the press.

(2). . .Shortly after the German Eifel offensive in mid-December, it became evident that that the enemy was preparing an offensive in the Saar-Palatinate, possibly in conjunction with a coordinated attack out of the Colmar bridgehead and a crossing of the Rhine N. of Strassburg. German Air Force reconnaissance orders from ultra pin-pointed the possible crossing area but source was relatively quiet on the Colmar attack; open sources, however, clearly suggested the latter intention. But it was in the sector between Saarbrucken and the Rhine that ultra provided information necessary for a proper estimate of the situation and preparations to meet the attack when it came. During the critical days prior to the attack the Flivo with the German First Army was being read consistently, and enemy order of battle and boundaries were throughly known. It was possible, therefore, to state with relative certainty that the main effort in the attack would be made west of the Hardt Mtns., with a secondary attack between the mountains and the Rhine. If there was ever an essential element of information this was it, for the passes through the Vosges Mtns. were a serious obstacle to the rapid movement of Seventh Army reserves. Based on this appreciation, the sector west of the Hardt Mtns. was reinforced with the 2nd French Arm'd Div. and the 36th U.S. Inf. Div., both moving from the Rhine plain. It should be noted that up to the day of the attack, German intelligence failed to pick up these moves.

When the attack was launched on 1 Jan., the German main effort collapsed completely. Their only success was in the sector of the secondary effort, in and East of the Hardt Mtns. This German offensive was properly appreciated and preparations made to successfully meet the threat. Lacking ultra it seems very doubtful whether the attack would have been repulsed, or whether other sources of information would have given advance warning. Open sources provided only the most meager evidence of an attack, and there was much opposing evidence suggesting precisely the opposite — a thinning out in the sector and movement of units away from the Saar-Palatinate to reinforce the North.

* * *

From SRH 032. *This report was submitted by Major John H. Gunn, the Special Security Officer assigned to General Douglas MacArthur's Southwestern Pacific Area headquarters. As Gunn indicates, MacArthur ran his theater like a private fiefdom, and the members of his staff were not always happy to deal with people they regarded as interlopers from the War Department.*

WAR DEPARTMENT
MILITARY INTELLIGENCE SERVICE
Washington 25, D.C.

23 October 1945

MEMORANDUM FOR THE SPECIAL SECURITY OFFICER, MIS:
SUBJECT: Report of Major John H. Gunn, 0-388247

The undersigned officer departed Washington on 15 September 1944 for Brisbane, Australia. I reached Brisbane on the night of 22 September. At this time most of GHQ was in Hollandia, Dutch New Guinea, in the final stages of planning and preparation for the invasion of Leyte. The Leyte operation had been accelerated and it was necessary that those SSO's designated to serve the participating commands cut short their indoctrination course in Brisbane and proceed to Hollandia at an earlier date than planned.

My principal duties in Hollandia were to assist Lt. Colonel Ashby, then Special Security Representative for the theater, at his headquarters. I had been introduced to Lt. General Sutherland, Chief of Staff, and it was indicated that I was to accompany the Advanced Echelon into Leyte and serve General MacArthur, General Sutherland, and appropriate G-2 and G-3 personnel. The acceleration of the date for the Leyte operation necessitated Ashby's being absent several days while placing SSO's at the subordinate commands. During this period the undersigned was left at GHQ. I was impressed with the fact that the people on the working level in the theater are, despite the idiocyncracies, jealousies and animosities of their superiors, an amazingly cooperative group.

The Chief of Staff had indicated that there would be no room on the Command Ship for an SSO. As a result he referred Ashby and me to the G-3 section to make arrangement for transportation to Leyte in some other vessel in the Advance Echelon convoy. The G-2 officer in charge of the details of loading the G-2 section was to notify me of the proper time and means of departure. I am confident that this charge never again crossed this officer's mind, for Ashby and I discovered the following Saturday night that the G-2 convoy had loaded without any notice to our

office. In the improvision that was necessary I finally arranged to "hitch hike" to Leyte aboard a 6th Army convoy leaving the next day.

The trip to Leyte was uneventful. I carried no classified material other than a black handbag filled with cryptographic material. This material I kept stored in a locked closet in the ship's captain's cabin. This seemed the most secure procedure aboard a vessel whose Commanding Officer kept 18 quarts of bourbon whiskey in his ship's safe, and kept his top secret battle plans for several operations on top of the desk in his sleeping quarters.

We arrived off Dulag at the southern portion of the invaded beach area three days after the initial landings. The usual confusion prevailed on the beach and I was at a loss to find a secure place to keep my cryptographic materials until I could find transportation to GHQ, then located at Tacloban, 20 miles north. Such transportation was not immediately available. After two rather unpleasant nights ashore, when minor but apparent enemy infiltrations of the beach position occurred, the undersigned decided that the most secure place for himself and the classified material was aboard a boat in the harbor. A problem like secure storage seems minor, but it is typical of the practical problems our system often poses.

Upon arrival at GHQ I presented myself to the G-2 section and commenced operations. I was introduced to General MacArthur on the first day of my arrival and found him at all times as cordial and cooperative as possible. It is a matter of record that the same observation cannot be made of a number of his immediate subordinates.

It took only a short while to comprehend the low state of security at the headquarters. For example, no adequate safe accommodations existed, and the loose physical security of the headquarters was evidenced by the presence of innumerable Filipinos who stalked in and out of the staff section area at random. As for the handling of Ultra, complete insecurity was a recurring malignancy. The details of numerous security violations involving our material that occurred during this period have been reported to MIS. One fact was obvious—the main factor contributing to such incidents was a basic lack of appreciation of the value of our material. The principle of sacrificing tactical advantage to security was not even accorded lip service. It seems incredible that Ultra could be obtained and passed by a non-recipient to a non-authorized recipient over a radio relay telephone which was almost certainly being tapped by the Jap. This, and other occurrences as serious, if not as spectacular, are indicative of the security point of view of the persons designated to receive our material.

Without going further in detail, there are certain conclusions that I have drawn with regard to the situation as it occurred on Leyte.

First, General MacArthur has been oversold by his subordinates on the quality of the production of his theater agency, Central Bureau. For example, on one occasion General MacArthur expressed to me a desire to see more diplomatic material, as "I get all the other information anyway."

Second, tactically, the Navy material was incomparably superior to Army production. For example, no Army material was operationally comparable to the Navy material describing the pending Japanese reinforcements in the Ormoc area.

Third, there was no excuse for relaxing enforcement of our regulations to permit passage of Ultra down to Corps level. In no case can I recall seeing any Ultra appropriate for a Corps in its limited sphere of action, and I can imagine no case where a Corps, operating nonindependently, cannot be served by an operational order.

Fourth, none of us, staff officers or SSO's, dealing with Ultra, were adequately indoctrinated in the handling of this material in the field, and in the security practices necessary to ensure its safety. The G-2 men lacked any adequate security indoctrination. In the future the indoctrination of appropriate personnel should be as integral a part of their intelligence training as the preparation of maps or summaries. The security qualification should be a strict exaction for the holding of a responsible intelligence position. It was not in GHQ, SWPA. Nor were the SSO's adequately prepared for their job. Extensive training in the drafting of operational orders, as a security device, is one fundamental necessity in which no early SSO received any training whatsoever. The undersigned, without any previous experience, drafted several such orders in efforts to present an acceptable substitute for an otherwise unwarranted dissemination. It would have been an infinitely more simple task had the undersigned even seen an operational order before he tried his hand at drafting one. Further, if the SSO is to work in an Intelligence Section, he should be thoroughly schooled in the G-2 duties he will perform. Camp Ritchie should furnish the best answer to this problem.

Fifth, closer coordination between Army and Navy Ultra recipients and communications personnel is essential. Tales of the Navy "indiscretions" in SWPA are legion, but in a great measure they may be attributed to a lack of mutual understanding and agreement. For example, Navy furniture shipped from Hollandia to Leyte was addressed to "the Ultra section." and mess bills were addressed to Lt X, c/o the Ultra section. This came about in great measure because the Navy considered "Ultra" as a classification, not a code word. Similarly, Navy acceptance of SSO personnel as participating counterparts aboard ships receiving Ultra is essential to secure handling of the material - since Navy Ultra may obviously be used as the basis for Army directives to Army units. On such directives a trained SSO should be infinitely more authoritative, security wise, than a Navy communications man.

On completion of the transfer of GHQ to Leyte, I was sent to the Office of the Deputy Special Security Representative in Brisbane. There is no need to include in this report any description of the organization and work of this office. . . .

* * *

JOHN H. GUNN
Major, Inf.

CHAPTER VIII

The Politics of COMINT

The motto of the great Army cryptologist William F. Friedman was "Knowledge Is Power." The power derived from the ability to exploit high-level signals intelligence meant that access to and control of COMINT became a political football in various bureaucratic and partisan struggles for advantage. Within the Army, the Military Intelligence Service fought with the Signal Corps over control of the Signal Security Agency. Excerpts from SRH 141-1 2nd SRH 141-2 document the course of the dispute, which was finally resolved (more or less) in December 1944, when the Military Intelligence Service gained operational control over Arlington Hall. On another bureaucratic front, the Military Intelligence Service tried to take on the Navy, claiming that Navy cooperation in sharing signals intelligence was lacking. Another selection from SRH 141-2 reveals the extent of the problem and the fierceness of the rivalry. Finally, in SRH 043, Comments on the Dewey-Marshall Exchange, Colonel Carter Clarke, Chief, Special Branch, describes what happened when Army Chief of Staff General George Marshall tried to ensure that COMINT secrets would not be compromised in the course of the 1944 presidential election contest between incumbent President Franklin D. Roosevelt and Republican challenger Governor Thomas E. Dewey of New York.

From SRH 141-1. *Two months after joining Stimson's staff to recommend better measures for handling signals intelligence, Alfred McCormack had become convinced that the Military Intelligence Division should be given overall control of all intercept activity. To help make his point about the importance of secret intelligence, he makes reference to two intercepted Japanese messages dealing with this subject, one from Japanese Foreign Minister Yosuke Matsuoka, and one from from his successor, Foreign Minister Shigenori Togo.*

March 1, 1942

MEMORANDUM FOR: MR. McCLOY
Subject: Signal Intelligence Service

Here are noted down the points discussed with you, touching on the question whether it is sound organization to leave with the Signal Corps the job of collecting and selecting intelligence materiel of great importance, instead of lodging that responsibility with G-2 as a part of its over-all job of collecting and supplying intelligence:

1. It appears to me to denote a rather negative conception of intelligence to have G-2 simply taking what the Signal Corps catches and turns in, leaving with the Signal Corps the responsibility for deciding how much it will catch and turn in, and from what sources. I am sure that the Signal Corps listens seriously to all suggestions from G-2, but the power of decision remains in the Signal Corps, and there is nobody in G-2 who has an affirmative responsibility for seeing to it from day to day that the material collected and processed (a) is all that possibly can be collected and processed and (b) is derived from the sources that are at the time of greatest importance from G-2's angle. Intelligence activities should be directed affirmatively and vigorously. Compare Minister Matsuoka's direction that "our principal aim is to collect *every possible bit* of intelligence concerning the United States" (18846) and Minister Togo's reference to the "absolute necessity of securing intelligence of this sort" (i.e., the sort not obtainable from newspapers and the radio; 27500).

2. The men in G-2 who are working on the processing of intelligence are too remote from the collection of this material. Let us suppose that Col. Heard, [text withheld] decided [text withheld] or was instructed by his superiors, to gather in as much current material as possible on political conditions and diplomatic maneuvering in [text withheld]. . . .He would not get any such material from the source under suggestion, though the S.I.S. has a lot of [text withheld] material on its shelves, all in its original form, which has never been tackled because of lack of personnel. If there were one officer in G-2 whose responsibility was to keep up to date on G-2's needs *and* be ready at any moment to turn the S.I.S. to work wherever the heat was

on, and if that officer could give orders to the S.I.S., maybe in such a situation all hands not elsewhere essential would go to work on the [text withheld] material. At least, there would be an evaluation of relative needs, and a conclusion would be arrived at in the light of all the facts. Moreover, the real needs as to personnel, equipment and supervision would quickly become apparent if that sort of an evaluation had to be made once in a while.

3. This is a situation in which an infinite number of little things are important. From the dim perceptions that I have obtained to date as to how an Army works (my past military observations having been from the bottom up), I have a notion that, if a good idea about a matter of detail should originate in one of the sections of G-2, affecting what should be done somewhere down in the ranks of the S.I.S., by the time it got up the G-2 command, over to the Chief Signal Officer and down through the appropriate channel, the impulse behind it might have become so attenuated as to be insufficient to actuate a full-grown adult. This is not meant critically, since, as I have already told you, I have been impressed by the ability of all the officers that I have encountered to date.

4. Under the present system of divided responsibility there is nobody in G-2 who knows, or could know, what goes on at the various S.I.S. stations or what decisions made from day to day at those stations affect the content of intelligence coming from those sources. Do we know, for instance, that we might not have obtained a lot more Honolulu material except for some decision by the Signal Corps in routine matters, e.g., to shift an experienced operator elsewhere, to postpone repairing a broken antenna, to use particular receiving apparatus for some other purpose, to run a station less than 24 hours a day, to shut it down for repairs when X might be heard, rather than when Y might be heard? These are minor items, but they might have an important effect on the content of intelligence. Yet in the nature of things the men responsible for intelligence could never know about them.

5. As to items of major importance, it necessarily must be true that the S.I.S. is in competition with the manifold other activities of the Signal Corps for money, supervisory direction and personnel. It seems illogical to keep one intelligence unit separate from all other intelligence units, and in competition with units not concerned with intelligence. The production of intelligence from this particular source ought not to compete for money, direction or personnel with anything except the production of intelligence from other sources. Then you could shift your money and personnel into the branch of intelligence which seemed most likely to be fruitful. As it is, it might be that the Signal Corps would be spending much too much time and money on the production of intelligence material from this source, in relation to the time and money spent on the production of intelligence from other sources. On the other hand, there is some ground for thinking that the Signal Corps is not spending nearly enough time and money on the production of the type of intelligence here under discussion.

6. Under the conditions which exist, it is necessary for the Signal Corps to make many choices which affect the content of the intelligence gathered. It must decide at each station what to listen to; and doubtless there would sometimes be a wide choice. Then it must frequently decide the importance of a particular item, in determining what risks may be taken in getting it to Washington promptly. The traffic that comes in is much greater than can be handled; and at each step in the process of putting the raw material into finished form there must be a selection of a small number of items out of a relatively large number of items. The average number of items going into the mill each day is understood to be around 1,200. Of these, only 200 are read (by the junior officers in charge of the various sections) and only 60 go beyond the stage of reading. In a particular situation—such as the French situation as I have described it to you—we get out hardly more than a sample of what goes in, and a mere fraction of a sample of what might go in. Consequently, the choices here are very important, especially since the material that comes out must be examined with two questions in mind, (1) whether it is valuable in itself and (2) whether it suggests that other material from the same source should be obtained for examination in larger quantities.

7. The present division of functions appears to increase quite materially the number of persons familiar with this material or with the fact that it exists.

Without having heard such arguments as there may be to the contrary, it appears to me that the organization would be sounder, and the job more effectively done *as an intelligence job*, if the S.I.S. were made a part of the General Staff, G-2.

A. McC.

From SRH 141-2. *The issue over whether the Signal Corps or the Military Intelligence Division should control SSA came a large step nearer resolution when Assistant Secretary of War John J. McCloy accepted McCormack's arguments in favor of G-2 control. This memorandum was sent to Lieutenant General James J. McNarney, the Army's Deputy Chief of Staff. As deputy to Marshall, McNarney played a major role in Army reorganization. (To oversimplify, Marshall fought the war while McNarney ran the Army.) The Generals Ingles and Somervell mentioned in the memorandum were, respectively, Major General Harry C. Ingles, Chief Signal Officer; and Lieutenant General Brehon B. Somervell, Commanding General, Army Service Forces (ASF). During World War II, the Army Service Forces commanded all of the Army's technical services, including the Signal Corps.*

22 August 1944

MEMORANDUM FOR GENERAL McNARNEY:

I have thought a great deal about the matter of transferring the Signal Security Agency to the Military Intelligence Service under the Assistant Chief of Staff, G-2. I have given it renewed consideration after the receipt of General Ingles's memorandum and General Somervell's indorsement.

1. It was my impression that the merits of this transfer were considered by the committee which was set up to go into the reorganization of G-2 and that we came to the conclusion that if the Assistant Chief of Staff felt that he needed this agency to render the proper service it should be given to him. Subsequently he delivered a memorandum to you which as I understand it was a proposed outline of the procedure to accomplish the transfer rather than any argument in favor of it. The memoranda of General Somervell and General Ingles do not criticize the procedure outlined but object to any transfer whatever.

2. The chief stated objections in Ingles's memorandum seem to be as follows:

a. That the MIS is only a "staff" section and not an operating agency and that it is not "authorized" by Congress.

b. That for some reason not clearly stated the Signal Corps will not be able to furnish the MIS the same communications facilities and services that it provides for the SSA.

c. That personnel engaged in operating communications facilities will not be able to make proper use of codes and ciphers if such codes and ciphers are supplied by the MIS rather than by the SSA.

3. As to the first of these arguments, above, I do not agree that the MIS merely because it is under the supervision of the A.C. of S., G-2 is not an operating agency. In fact, I think it is, and should be. Its relegation to a minor role between World War I and II was a tragic mistake and certainly the Signal Corps was not

able to keep up any vigorous or broad system of communication intercept during this period.

4. In my judgement one of the chief pillars of our national security system after the war must be an extensive intercept service. If we are to be a military power or, indeed, if we are to play an active role in world affairs, we cannot afford to leave this field entirely to the British and the Continental powers. It is one of the best sources of intelligence that there is and I would take it out of any existing service agency immediately in the hope and belief that it would develop into an organization which would stand a better chance of perpetuation in peacetime.

5. I think that the establishment of such a vigorous agency would be an attraction to the Intelligence Service. The curse of our so-called Intelligence Service to date is the attachment to it of only those officers who have social acceptance and means enough to enable them to pursue a life of relative ease. If we try to put this thing now on its proper level and scope it may be possible to create a real field of activity for ambitious and capable officers. I do not think that we will ever get anywhere if we merely seek to maintain a system whereby direction comes from the MIS and operation lies in the Signal Corps. It ought all to be under one roof. The British have been more successful in this field than any other country, I think. Certainly our efforts to date have been most fragmentary as compared to theirs. They use the system that MIS would wish to follow and I think it is the most persuasive example we have to look to.

6. I do not follow the argument on codes and ciphers. Certainly they can be separated from the operation or communication facilities. In fact, such a separation now exists in the Signal Corps and I do not see how it would be more difficult for the MIS to turn over codes and ciphers to the users than it is for the SSA to do so now.

7. I do not envisage that this transfer involves MIS responsibility for all Signal Corps training. Signal Corps will continue to provide signal training as before the proposed tranfer and the MIS will obtain personnel trained by the Signal Corps to the same extent that SSA now obtains such personnel and in the same manner that other components of the Army obtain such personnel. There will be certain highly specialized training in the Signal Intelligence which will be provided by the MIS but I think this is all to the good as it will give added emphasis to the intelligence aspects, which have been neglected heretofore.

8. I do not believe that it is proposed to "tear to pieces" any existing organization but to transfer SSA to the MIS in its present form and thereby to effect a closer integration of its activities with those of the present MIS.

9. I do not believe that it is good practice to have the MIS by general directive and the establishment of general policies to attempt to create a workable intelligence organization in the low echelons of the Army Service Forces as they are now attempting to do. If it has not already occurred, I am sure that there will be occasions when the MIS will seek to direct the SSA into certain activities or lines as to which, if the SSA is inclined to disagree, they may appeal to the higher levels of

the ASF. When this occurs, there is no one short of the Chief of Staff who can adjudicate the point.

10. Finally, I think that the argument that the present arrangement is successful because SSA furnishes the bulk of the information that the MIS has available is unsound because the total Intelligence available to the MIS really covers a much wider field and actually only a relatively small part of that intelligence is made available by SSA. Much of the most valuable work that the MIS have applied to the intercepts has come in the processing which that service has done on the material furnished it. No part of the Signal Intelligence which MIS has available in relation to European military matters is furnished by the SSA; no part of Naval Signal Intelligence is furnished by the SSA; and no part of the clandestine European field is supplied by SSA. About 70% of the diplomatic is and about 80% of Japanese military is. It is true that it provides the greatest amount of information obtained from any one source.

11. In summary, I believe that the MIS should be given the opportunity of proving that it can exploit this entire field to greater advantage. The enthusiasts are in the MIS; there is some great talent there, and I believe it is a source upon which a broad and effective Intelligence communication service can be erected after the war. The Chief of the Army Communications Services and the Chief Signal Officer are primarily interested in operating a signal communication service; they are not primarily concerned with Intelligence. I believe that the possibilities of greater accomplishment lie in the system advocated by the MIS than in a continuation of the existing system. I am not sure that MIS will take full advantage of all the possibilities but on balance I do believe that they would have a far better chance if they had full control. By such control there is a greater likelihood that we will come out of this war with an organization that can be maintained through the lean years of peace. I would be quite certain that if Signal budgets were cut and SSA were in the Signal Corps, the latter's budget would go, if not first, at least before the regular communications appropriations were cut. We will need an organization to support it whose primary and sole objective is Intelligence.

Of course, there is no merit to the argument that there is no statutory authority for the MIS. First, I think there is sufficient authority to meet any need and, second, when can the ASF complain about no statutory authority?

/s/ JOHN J. McCLOY
J.J. McC.

* * *

From SRH 141-2. *In this memorandum, the Special Branch takes on the U.S. Navy.*

WAR DEPARTMENT
MILITARY INTELLIGENCE SERVICE
WASHINGTON

4 March 1944

MEMORANDUM FOR GENERAL BISSELL:
Subject: Army-Navy Agreement regarding Ultra.

A. *Background of Army-Navy Relations in Ultra field.*

1. Except for the Japanese Army material that recently has started to flow in, the Navy has had the full benefit of the work done by Arlington Hall and the Special Branch. It receives copies of the decoded diplomatic and related traffic. Through the "Magic" Summary it is furnished with all evaluations and studies made by Special Branch.When the British European sources were opened up, and the Military and Naval Supplement was established to report intelligence from those sources, arrangements were made to furnish this daily report to Cominch.

2. Little or no cooperation was received from the Navy in return. It did furnish certain information about Japanese merchant shipping, and transmitted some Order of Battle information to G-2 through other channels . In general, however, the principle was applied that cooperation in the Ultra field would be restricted to the technical and cryptanalytic level and would not extend to intelligence. Not once, during the entire period over which the Navy has been receiving the "Magic" Summary, has any agency of the Navy volunteered any information that might have been of aid on any of the subjects of study covered by the Summary, although on some of them (such as Axis blockade-running) the Navy has had considerable information at hand.

3. When the Japanese Army source was opened up, it was decided not to furnish the traffic to the Navy without some arrangement for reciprocity. For almost a year Arlington Hall had worked on Japanese Army ciphers, had gradually solved them and applied itself to the tedious job of reconstructing code books, while Op 20-G, exploiting a parallel source and being in possession of intelligence that would have been of great value to Arlington Hall, withheld this intelligence and restricted its liaison to the technical level. In the opinion of the writer, the non-cooperation of the Navy retarded the exploitation of Japanese Army sources by not less than 6-months and resulted in depriving both services of intelligence that would have been of important operational use.

4. In spite of the Navy's attitude, the writer dld not feel justified in witholding

Brig. Gen. Carter W. Clarke presents Col. Alfred W.McCormack with the Distinguished Service Medal at the end of World War II. The two men were the architects of the Special Branch, Military Intelligence Service, which evaluated and disseminated Army communications intelligence. (NARA)

German signal troops operate an Enigma cipher device in the field during World War II. The Enigma was used to encipher the communications of all three German armed services. (NARA)

Headquarters of the British Government Code and Cypher School at Bletchley Park. Here, British cryptanalysts broke the secrets of the Enigma. (NSA)

Col. Telford Tayor was appointed to head the London office of the Special Branch in 1943. A prominent lawyer in civilian 1ife, Taylor went on to become a military prosecutor. Here, Brigadier General Taylor, right front, is shown with his staff at the Nuremberg War Crimes Trials. (NARA)

America's top military commanders were able to base their plans on high-level intelligence derived from exploitation of enemy communications. Above, General Dwight D. Eisenhower addresses paratroopers. (NARA)

General Douglas MacArthur, left, used signals intelligence to bypass superior Japanese forces in his island-hopping campaign. (NARA)

To prosecute its war against the U-boat, the U.S. Navy effectively used cryptologic intelligence, but it was initially reluctant to share this source with the Army. (NARA)

Army Chief of Staff General George C. Marshall meets with New York Governor Thomas E. Dewey in 1943. To prevent any compromise of cryptologic secrets in the 1944 election campaign, Marshall sent a secret personal message to presidential candidate Dewey. (NARA)

World War II tactical signals intelligence units. Left: radio direction-finding personnel of the 21st Signal Service Company's Radio Intercept Platoon in Newfoundland. Below: analysts of Signal Security Detachment "D" in England. (NARA, INSCOM)

Intercept personnel of the 128th Signal Radio Intelligence Company work out of a commandeered villa in the Mediterranean Theater of Operations. (INSCOM)

A radio direction-finding site of the 126th Signal Radio Intelligence Company at Brisbane, Australia. (NARA)

Army Chief of Staff General of the Army Dwight D. Eisenhower at Arlington Hall Station shortly after World War II. Other persons in the picture are, from left to right, Maj. Gen. Hoyt S. Vandenberg, Army Assistant Chief of Staff G–2; Brig. Gen. Preston W. Corderman, Chief, Army Security Agency; Col. Frank B. Rowlett; and William F. Friedman. (NSA)

from the Navy information, derived from Japanese Army traffic, which might be of value to Naval operational units. Therefore,with the approval of the A. C, of S., G-2, an arrangement was made for forwarding promptly to the Navy all information on which operational action might be taken.

5. The Japanese Army traffic is exploited by British units in England and India and by an Allied unit in Australia, as well as by Arlington Hall. As the work of Special Branch on this material progressed, it became apparent that we were in a less favorable position to get intelligence out of it than were the British, because they had the benefit of the U.S. Navy traffic and intelligence, whereas we did not. Efforts were made, by personal conversations wlth representatives of the Navy, to bring an end to this disgraceful situation. Those efforts probably contributed to bringing about the Navy's proposal for an exchange on the intelligence level. However, the success of Arlington Hall in opening up the Japanese Army sources was what probably brought the matter to a head.

6. In the discussions involved in preparation of a written agreement, the Army was represented by the writer, Colonel McCormack and Major Perdue of the Special Branch. Following the first meeting, the Special Branch submitted a simple agreement for an exchange of traffic and intelligence, along the lines of the agreement which exists between the A. C. of S, G-2, and the British GC&CS. This was not acceptable to the Navy, who insisted that liaison officers be exchanged and that various restrictions be put into the agreement, pursuant to which, in effect, either party might give or withold intelligence as it might see fit.

7. The final draft of the agreement, as prepared by the Navy, was not acceptable to the officers representing the Army, without a statement by the Navy of the principles that would be applied in interpreting the agreement. Those principles were stated on several occasions by Captain Stone, and were generally to the effect that the restrictive provisions of the agreement were necessary to cover special cases, which might never arise; and that the basic principle would be cooperation to the fullest extent in furnishlng the Army with all the "Ultra" material that it might find of value. It was on the basis of such assurances that the agreement in its final form was submitted to the A. C. of S., G-2, with the recommendation that it be approved by the Chief of Staff.

8. When the Special Branch appointed its liaison officer and he started to go through the Navy daily matarial, it was at once apparent that no one officer could sit in Op 20-G and make a final determination of what traffic might be of intelligence value to the Army; and that the arrangement would work effectively only lf the liaison officer were permitted to select decoded traffic and forward it to the Special Branch without being required to demonstrate how and why it might be of value. The decodes are readily available on duplicate cards and can be handled conveniently by the various specialist groups within the Special Branch who may be working on the subjects to which they relate or might relate.

9. The experience of the Navy's liaison officer with the Special Branch was

somewhat similar. He discussed the point with the Deputy Chief of the Branch, and was informed that an extra copy of all messages would be obtained for his exclusive use and that no restrictions would be put upon him in respect to what he might select; that if he cared to do so he might take all the traffic.

10. A day or two after the Army liaison officer, Major Snow, had started to function, he was informed that there would be certain general restrictions upon what he might transmit to the Special Branch. Those restrictions were then embodied in a memorandum, a copy of which is annexed as TAB A.

B. *Proposed Restrictions.*

(i) *U.S. Navy operational dispatches and reports.*

11. It is not clear just what this covers, but it appears to mean that we cannot receive the CINPCAC Bulletin, despite the fact that it is given to various British intelligence organizations, and despite the fact that one of the purposes of the agreement was to put an end to the situation in which the British were receiving material from the Navy which the Army did not receive.

(ii) *Japanese fleet movements and locations.*

12. Major Snow was instructed to select and transmit to Special Branch only those items relating to the Japanese fleet as represented major concentrations or movements. Insofar as the fleet itself is concerned, the daily Summary received from Captain Smith-Hutton will probably be sufficient to supply all major concentrations and changes. However, the Navy classifies hospital ships, tankers and auxiliaries as part of the fleet. Our information covers these vessels also; and to deny us the correlating information is to impair the value of our own intelligence material.

13. Moreover, communications dealing with the fleet, or elements of the fleet, may be of interest and value in a great many incidental ways; and no one can determine what value they may have until he has received and studied the material over a period of time.

(iii) *Japanese Naval Air items.*

14. No one dealing with Japanese Air intelligence can work simply on Army or simply on Navy material. An accurate picture of Japanese Air strength, dispositions, production, wastage, etc., can be obtained only by keeping up with both services. We do not intend to give the Navy Air material detailed processing, but we do want to have it at hand for the purpose of familiarizing ourselves with the type of material and spotting major pieces of information.

(iv) *OPTELS.*

15. The significance of this limitation is not understood. It is assumed that the OPTELS are received from the British Admiralty. If they bear any relationship to the Ultra problem in the Pacific they should be included in the exchange.

C. *Proposed scope of material to be released by Navy.*

16. Op 20-G's memorandum (TAB A) provides that the material to be released to the Army "shall ih- clude only that which concerns the Japanese Army." Apart from the well-proved principle that intelligence of value can often

be obtained from messages bearing no apparent relation to the subject of interest, the restrictlon is believed to be unsound, because the war against Japan is not being conducted by Navy against Navy and Army against Army. Where the U.S. Navy operates it is fighting the Japanese Navy and Army, and the U.S. Army is fighting the Japanese Army and Navy. The Army traffic and the Navy traffic are interrelated parts of a sum total of Japanese military communications. They cannot be separated without losing an important part of their potential intelligence yield.

D. *Proper Interpretation of Agreement.*

17. There is only one sound basis for exchange of cryptanalytical intelligence, and that is to permit the consumer to determine what may be of value to him. This is the system under which the British operate, and it accounts in large measure for their success in this field. In the Watch Room at Bletchley Park, representatives of each of the 3 Services determine for themselves what may be of interest to the Ministry and field Commanders whom they represent. So much emphasis do the British put upon this point that, after all the operations of Bletchley Park have been completed, every piece of paper produced, in the way of transmitted messages, paraphrases or reports, is put through a so-called "Intelligence Exchange" where a representative of each Service checks the whole output, in order to make sure that his Service has not been omitted from the distribution list for any paper that it might find of interest.

18. There may be special cases in which a particular message may be of such a dangerous character, from the angle of security, that the originating Service might not want to give it any circulation at all. Such cases are provided for by the last paragraph of the Army-Navy Agreement. Such cases, however, should be very rare.

19. To be of value to the Special Branch, the liaison arrangement with the Navy must permit the liaison officer a wide discretion in the selection of material for transmission to the Special Branch. If only for the purpose of educating the personnel of the Special Branch dealing with particular subjects, it is necessary at the outset that he select everything except items which are obviously too trivial or which have to do with very specialized subjects such as promotions of minor Naval Officers, from which the Special Branch would probably not obtain anything of intelligence value. This was the understanding under which the liaison arrangements were worked out and the arrangement recommended for approval. If the Navy is unwilling to commit ltself to this principle, then it is recommended that steps be taken to abrogate the agreement and return to the status quo.

20. Restoration of the status quo would not be a desirable solution of the problem because it is certain that the adding up of Army and Navy radio intelligence would produce a sum total of intelligence greater than could be produced by the 2 organizations working separately. Such a solution at this time, however, would not hurt the Army as much as the Navy's noncooperation has hurt us in the past, because we are rapidly getting to the point where we will have an independent basis for intelligence in the Pacific and the Far East, and at the present rate of

progress we could struggle along without the Navy's cooperation.

21. If the Navy is unwilling to accept the interpretation of the Agreement which we consider reasonable, and which was our basis for recommending it, then it is believed that all cooperation with the Navy in the radio intelligence field should be suspended. Specifically, it is recommended:

a. That the Signal Security Agency no longer furnish intercepted Navy traffic to the Navy;

b. That the service performed by the Signal Security Agency for Op 20-G, in collecting and transmitting weather traffic, be discontinued on 30 days' notice;

c. That exchange of traffic in the diplomatic field be suspended; and

d. That the Special Branch discontinue furnishing the Navy with its reports and studies.

E. *European Intelligence.*

22. The Navy has never been willing to agree to any exchange of radio intelligence affecting the European Theater. It receives what is provided by the Special Branch, but it contributes nothing from its own sources or from the British Naval sources. Further than that, the Navy has refused to permit the British to furnish the War Department with any intelligence from British Naval sources.

23.When the Navy first proposed to do business on the intelligence level, it was our impression that the agreement would be general, covering all theaters of operation. It developed, however, that the Navy was unwilling to agree to any exchange except for the material relating to Japan. It was suggested by the Navy negotiators, however, that once the first step had been taken and a suitable arrangement worked out for the Japanese traffic, an agreement covering other areas might also be worked out in due course.

24. In view of the attitude now taken by the Navy, it is apparent that they will do business only when they have something to gain, and that there will be little prospect of extending the existing agreement to the European Theater. It is therefore recommended, independently of whether a modus vivendi is arrived at for Japanese material, that Special Branch be instructed to discontinue furnishing to Cominch any intelligence relating to the European Theater.

25. It is now apparent that the Navy proposes to do business at arm's length. We should accept that attitude and act accordingly, giving the Navy nothing which our agreements do not require us to give and holding strictly to the letter of the agreements. After a year and a half of dealing with the Navy in this field, it is my conviction that you cannot do business with them in any other way, and that you will get more in the long run if you take this viewpoint.

CARTER W. CLARKE
Colonel, General Staff
Chief, Special Branch, MID

From SRH 043. *In the fall of 1944, Army Chief of Staff General George C. Marshall became concerned that the fact the United States had been reading enciphered Japanese traffic prior to the Pearl Harbor attack might be disclosed in the course of political debate in the forthcoming presidential election campaign. He wrote a personal letter to Republican presidential candidate Thomas E. Dewey urging him not to make any statements that might compromise American successes in cryptanalysis. Portions of this letter are quoted in the document SRH 349, which appears earlier in this volume. The letter was hand-carried to Dewey by Colonel Carter W. Clarke, Deputy Chief of the Military Intelligence Service and former head of the Special Branch. This is Clarke's personal account of his unique mission. In the end, Dewey did not make any secrets public, but it took some persuading.*

STATEMENT FOR RECORD OF PARTICIPATION
OF BRIG. GEN. CARTER W. CLARKE, GSC
IN THE TRANSMITTAL OF LETTERS FROM
GEN. GEORGE C. MARSHALL TO GOV. THOMAS E. DEWEY
THE LATTER PART OF SEPTEMBER 1944

* * *

In the forenoon of Monday, 25 September, I was asked by Maj. Gen. Clayton Bissell, A. C. of S., G-2, if I was known personally to Gov. Thomas E. Dewey, Lt. Gen. Hugh A. Drum, or any of Gov. Dewey's entourage or close associates. I stated that I did not know and, so far as I knew, was not known to any of these people. Gen. Bissell later informed me that I would be directed to take a letter to Gov. Dewey at Tulsa, Oklahoma, Gov. Dewey's next stopping point on his trip east from the West Coast. Later in the day, in the office of Col. Frank McCarthy, Secretary of the General Staff, I was given the letter to read, to check for accuracy of technical details. Later in the day I was informed by Gen. Bissell that I should travel in civilian clothes and, if possible, make my contact with Gov. Dewey unknown to any other person, but that under no circumstances was I to disclose to anyone except Gov. Dewey my mission or the contents of the letter, nor was I to give the letter to Gov. Dewey unless we were the only two present in the room at the time.

I left the Pentagon Building early in the afternoon of Monday, 25 September, and went home in order to get my civilian clothes out of storage and have them pressed in preparation for the trip. After dinner I returned to the Pentagon Building, where I received orders from Major Earman at 1942 EWT, Monday, 25 September. Went to airport and got off ground at 2040 EWT. Landed at St. Louis for fuel at 2330 CWT. In air again 2400 CWT and landed in Tulsa at 0150 CWT. Slept in

Hotel de Gink. Up at 0700. Phoned Gen. Bissell at 0730. Went to Meyo Hotel, had breakfast and phoned Roger Randolph at 0820. Got haircut and shave and saw Roger Randolph at O905. He contacted Mr. William Skelly, President of the Skelly Oil Company. Mr. Skelly was Gov. Dewey's campaign manager and was handling all arrangements. Went to Mr. Skelly's house and made arrangements to meet him in private hotel room in Tulsa Hotel. Met Mr. Skelly as agreed at 1600. He saw Gov. Dewey's Secretary who came down twice to insist that he know who I was and what I wanted. No one knew anything about the case except that I had a letter that had to be delivered to Gov. Dewey personally and alone. Finally he said, "You must write down the name of the man who has sent you, seal it and give it to Gov. Dewey." I did this, and after being gone 16 minutes, he returned and said Gov. Dewey would see me.

I saw Gov. Dewey alone, delivered the letter and asked that I not read it aloud. Gov. Dewey opened the outer envelope and then said, "Well, Top Secret - that's really top isn't it?" He read the first two paragraphs and then stopped. He asked if I were a Regular Army officer. When I said yes he asked if I would give him my word of honor that I had been sent by Gen. Marshall. I said I would. He then said he did not want his lips sealed on things that he already knew about Pearl Harbor, about facts already in his possession or about facts which might later come into his possession from other sources but which, if they were contained in Gen. Marshall's letter, could not be used because he had given his word on this letter, thereby sealing his lips. He said he would be glad to discuss this matter with me now. I told him I was merely a courier and was not authorized to enter into any discussion about what he knew about Pearl Harbor or about the contents of this letter. He then asked if I was authorized to say to him in the name of Gen. Marshall that if he read the letter through and then stated to me that he already had in his possession the identical information that was contained in the letter, that he would then be released from all obligations to keep silent. I said I had no such authority. He then said he could not conceive of Gen. Marshall and Adm. King being the only ones who knew about this letter. Furthermore he said he could not conceive of Gen. Marshall approaching an "opposition candidate" and making a proposition such as was apparently contained in that letter. He said "Marshall does not do things like that. I am confident that Franklin Roosevelt is behind this whole thing."

All this time the letter was lying face down in his lap. He then picked it up and said "Let me read those first two paragraphs again." He started to read, then laid the letter down and said "I have not reread them because my eye caught the word "cryptograph." Now if this letter merely tells me that we were reading certain Japanese codes before Pearl Harbor and that at least two of them are still in current use, there is no point in my reading the letter because I already know that." He then said "That is the case and I know it, isn't it?" I said, "Governor, I am merely a courier in this case." He said, "Well I know it and Franklin Roosevelt knows all about it. He knew what was happening before Pearl Harbor and instead of being

reelected he ought to be impeached." He then said "Would you like for me to phone Gen. Marshall and say to him what I have just said to you?" I said "Governor, this is a subject that should not, under any consideration whatsoever, be discussed or even mentioned over the telephone." He handed me back the letter saying, "I shall be in Albany Thursday and I shall be glad to receive you or Gen. Marshall or anyone Gen. Marshall cares to send to discuss at length his cryptographic business or the whole Pearl Harbor mess." He continued, "I can arrange it so the conference can be held in absolute secrecy." I then put the letter back into the envelopes, thanked him for his courtesy in giving me so much of his time, and departed. I then left the hotel, went to the field, phoned Gen. Bissell. Took off at 1815 CWT 26 September.

I arrived at Washington airport at 2245 EWT 26 September. I phoned Gen. Bissell and asked if it was necessary for me to make my report that night. He said "No but be in the office early the next morning in order that we may report to the Chief of Staff."

About 0740 on the morning of 27 September, accompanied by Gen. Bissell, I made oral report to Gen. Marshall as indicated above, leaving with him at that time Gen. Marshall's letter which I had taken with me to Tulsa and brought back on my return trip.

Later in the day on Wednesday, 27 September, I was informed by Gen. Bissell that on the following morning I was to go to Albany to contact Gov. Dewey and to give him another letter which had been prepared by Gen. Marshall. At 1008 on 28 September I took off from Washington airport and landed at Albany at 1205. Went by taxi direct to the State House. Arrived there at 1250. Contacted Gov. Dewey's office and was put in touch with Miss Ross, his private secretary. She asked who I was and what I wanted. I told her that I was same individual who had contacted Gov. Dewey last Tuesday in Tulsa and that I was there at Gov. Dewey's invitation with another letter and message for the Governor. She left to phone and in a few minutes came back saying that Gov. Dewey desired me to come right over to the Executive Mansion. I arrived there at 1330 and was taken directly to Gov. Dewey's reception room. Present were Gov. Dewey and a man introduced as Mr. Elliott V. Bell, Superintendent of Banks, State of New York. I stated to Gov. Dewey that at Gen. Marshall's direction and in accordance with Gov. Dewey's invitation extended in Tulsa, I was there to present him a letter and message from Gen. Marshall and to answer any questions of a technical nature that the Governor might care to ask after a reading of the letter. Gov. Dewey asked if it were the same letter I had in Tulsa. I said no but that it was on the same subject and that the meat of the letter was the same. He then asked if I still had instructions to see him alone. I replied that I had. He next asked if I could leave the letter with him. I said no that I was to return the letter to Gen. Marshall. He asked if I were authorized to discuss the contents of the letter with him. I stated that I could discuss the technical features of the case freely and could answer any technical questions on the subject that he might care to ask.

Gov. Dewey then said that, in view of the circumstances, his own personal position, in view of what he already knew, to say nothing about what he might later learn, and particularly in view of his trusteeship, he had decided that he could not see me or anyone else alone, that he would not read a letter which he could not keep and which he could not show to and discuss with Mr. Bell, nor would he enter into any further discussion without Mr. Bell being present. He said he could not afford to read a letter he could not keep as he might later be charged with reading a letter different from the one he had really read. He said I might be curious to know whether or not he had a recording device in the room. I said "No, Governor, I am not curious; I merely assume that you have one." He said "Well I haven't and I did not ever have one when I was District Attorney. I had one in my witness room, of course, but never in my own private office." He next said, "Now Colonel, Mr. Bell is an American citizen and is just as patriotic as any member of the Administration. He already knows all the facts that I know in regard to Pearl Harbor and I certainly intend that he know the contents of the letter if I read it. If I keep the letter I shall put it in my vault and no one but Mr. Bell and myself shall know of its existence or of its contents and we shall discuss it only between ourselves. Furthermore I do not see what Gen. Marshall is so exercised about. There are at least 12 Senators that I can name for you right now if you desire that know all there is to be known about Pearl Harbor and about how we were reading certain Jap codes before Pearl Harbor and how it is claimed that we are still reading two of these same codes. You know, Colonel, this code business is the worst kept secret in Washington, but I for one want to say to you that I do not believe any such thing as that to be a fact."

I said, "Well, Governor, whether you believe it or not, it is a fact and I am willing to take an oath to that effect right here and now. Let me assure you that Gen. Marshall's sole interest in this matter is to protect our most vital source of intelligence and to save the lives of thousands of troops that are certain to be sacrificed if security on these ciphers is blown and the Japanese change them." I then said, "There are many other aspects of this case that I would like to tell you but I feel that you should read the letter first."

He sat silent for about three minutes then said, "Why don't you phone Gen. Marshall and tell him that I will not discuss the matter with you unless Mr. Bell is present, nor receive the letter unless I can let Mr. Bell read it and then I keep it?" I said that I did not want to phone from the Executive Mansion but would go to a pay phone and call; that if I were unable to reach Gen. Marshall I would fly back to Washington at once, deliver Gov. Dewey's message, and return to Albany tonight and be available to see him (Dewey) early tomorrow morning. He said, "Well I have a direct line in here and I have a line that goes through the switchboard and there is no tap on either of them unless O'Connor has just put one on. I have them checked several times a week so I feel that they are safe." I asked who O'Connor was and he said he was the Democratic leader here in Albany. I said, "Well I prefer not to have the phone used in this case." He said, "Oh hell, I'll

phone Marshall, I've talked to him before and this will be all right." He then picked up the phone and put in a call to Gen. Marshall. While waiting for the call, which took about seven minutes, Gov. Dewey said, "If, as you say, the Japs are still using two of their codes that they used before Pearl Harbor, why in hell haven't they changed them, especially after what happened at Midway and the Coral Sea?" I explained the difference in the types of codes and ciphers used by the various Jap agencies, their distribution problems: and gave the reason we think the Japs have not changed these codes. He then asked why Gen. Marshall was so anxious to stop him from talking when everyone else in Washington knows the story and is talking about it. Just then the call was completed and he talked to Gen. Marshall in re the letter and about Mr. Bell. He then gave the phone to me, and Gen. Marshall authorized me to give the letter to Gov. Dewey, to leave it with him and to discuss the case technically in the presence of Mr. Bell.

As I was opening the envelope Mr. Bell said, "Colonel, hundreds of people know all about the Midway affair and how most of our other successes in the Pacific have been due to our reading Jap naval codes. Everyone who has ever been out there knows about it and talks freely about it. Why not long ago at a dinner where a large number of people were present I talked to a naval commander who had been out there and had participated in nearly every engagement we have had. He said that they always knew where the Jap ships were and that our people were told by radio where to station their own ships to meet the Japs, and that all this information came from reading Jap codes."

Gov. Dewey said "Yes and I have lots more information about the pre Pearl Harbor messages you were reading." He then took the letter and started to read.

Mr. Bell said, "Tom, do you want me to read it over your shoulder?" Gov. Dewey said "No I'll hand it to you a page at a time." Gov. Dewey continued to read, then put the letter down and said, "Well I'll be damned if I believe the Japs are still using those two codes." I again assured him that they were and that one of them was our life blood in intelligence. The letter was still in his lap when I said "Governor, I would like to repeat that I know that Gen. Marshall's sole interest in this case is to preserve the only worthwhile source of intelligence that this nation has. You do not realize it but the War Department has 10,200 people working in the Signal Security Agency; the Navy Department has almost 6,000 in their Communications Annex, and both the Army and Navy each have several thousand in tactical field and fleet units engaged in signal intelligence work.

* * *

Gov. Dewey said "Yes, Gen. Marshall just said that we had over 10,000 on that work."

I then stated that Churchill considered this his secret weapon and that it had really saved England. I described how Churchill felt about security, how the Navy

prized it so highly and how difficult it had been to break down British resistance because of American lack of security consciousness. I quoted to him Churchill's reported statement about protecting this source, how that in order to protect the source the British had time and again permitted convoys to be attacked rather than divert them from their course and thus blow security.

Gov. Dewey then picked up the letter and read some more. Then he put it down and said "Is this true about the OSS?" I said it was. He said "Well I don't feel towards the OSS like most of the Army and Navy people I have talked to. I have a lot of my men in it and they are all damn good, excellent fellows in fact, and they tell me that we have no really trained intelligence personnel in either the Army or Navy. They say that in both the Army and Navy the officers are merely on temporary detail and that they then go to sea or back to a regiment or somewhere, and that most of the officers of both services are woefully ignorant of world affairs. I suppose that may be the real reason for taking no action on the Pearl Harbor warnings they had—they could not interpret the warning."

Mr. Bell then said "Well it don't account for them not doing anything about that message that gave them the warning that Japan was going to attack the United States—you know the one I mean—where they set the deadline for Kurusu for November 25 and then postponed it till November 29 saying to get done with their negotiations by that time or that things would automatically begin to happen. Anyone should have known that that meant they were going to attack the United States. That was just the time limit on sailing dates."

Gov. Dewey said "Yes that's right." Mr. Bell then said "Those messages you did not get till December 8 and after, why did it take so long for you to receive them?" I said "I do not know what you are referring to, but before Pearl Harbor all our traffic intercepted on the West Coast, Hawaii and elsewhere was sent in by air mail which of course delayed it."

Gov. Dewey then read the letter through and handed the last page to Mr. Bell. After Mr. Bell had finished reading, he handed the letter back to Gov. Dewey. After a minute or so Gov. Dewey said "Well, except for the matter of the two codes and the OSS, there is little in this letter that I did not already know. There is one point though, what in hell do Jap codes have to do with Eisenhower?" I explained the linkage with a general statement on the three types of ciphers used by G.A.F., Abwehr, Clandestine, German Navy, Oshima's visits and interviews, etc. He seemed satisfied. He then said "Colonel, I know a hell of a lot about this business. You probably know that some years ago when Stimson was Secretary of State he got very damn pure minded one day and stopped all such things as this. He afterwards denied that he had done it but said he was acting on orders from President Hoover. Well, as you know, the man who headed the cryptographic work of the Government was Yardley who was fired by Stimson. Yardley was a friend of mine in those days and I am the man who stopped Yardley from publishing his second book. I met him in a speakeasy one night and persuaded him against publishing the

book. He agreed provided that Mr. Stimson write him a letter of apology for the abusive manner in which Stimson had fired him. Stimson did, too."

I did not comment on this other than to say I was quite familiar with the Yardley case. I then asked if there were any questions the Governor or Mr. Bell would like to ask. Gov. Dewey said "Not just now but I would like to discuss this case with Mr. Bell." I got up to go out of the room into the hall but Gov. Dewey said "No you stay here, we will go across the hall." I sat down and Mr. Bell said "Well, Governor, we have pledged ourselves not to discuss this letter with anyone else but just between ourselves but what about Colonel Clarke—who is he going to discuss it with?" Gov. Dewey said, "Oh he will of course report this conversation to Gen. Marshall—is that not correct?" Before I could reply Mr. Bell said "Yes but with who else?" Gov. Dewey said "Anyone else?" I said, "I shall report to my immediate superior, Major General Clayton Bissell, A. C. of S., G-2, War Department, and through him to Gen. Marshall and to no one else."

They then got up and left the room, leaving the letter on a stand by Gov. Dewey's chair. They were gone about 22 minutes. When they returned Gov. Dewey said "Let me look over this letter again and read carefully a couple of paragraphs." When he finished he said, "Well, Colonel, I do not believe that there are any questions I want to ask you nor do I care to have any discussion about the contents of the letter. Will you give me your full name, serial number, office location and phone number, and your residence address and phone number?" I did this and he thanked me and asked where I was staying. I told him I was flying back to Washington tonight and was going direct to the airport. I then asked him if he had any message that he wanted me to take to Gen. Marshall. He said "No, no message." I thanked him for giving me so much of his time. He shook hands and said "Well I hope we meet again under more auspicious circumstances." I said goodbye to him and to Mr. Bell and left for the airport at 1610. Next I phoned Gen. Bissell and to plane. In air at 1645.

I arrived at Washington Airport 1855 and phoned Gen. Bissell advising him of my return and asking if it was desired that I make report that night. He answered in the contrary but directed me to be in the office early the following morning in order that we might make report to the Chief of Staff. Again about 0740 on Friday, 29 September, accompanied by Gen. Bissell I made my second report to Gen. Marshall as indicated above.

CHAPTER IX

Tactical COMINT

The Army signals intelligence effort was a divided one in World War II. At the national level, the Signal Security Agency provided high-level cryptanalysis. The intercept arm of the agency was the 2d Signal Service Battalion, which maintained large fixed intercept stations in a number of locations in the Continental United States and around the globe. However, in the field, theater commanders directed a separate tactical effort through theater-level signal intelligence services, which controlled a multitude of signal radio intelligence companies and (in Europe) smaller signal service companies. By the end of the war, numbered Army Air Forces also had their own signal intelligence elements in the form of Army Air Forces radio squadrons, mobile. The diversity and scope of the tactical effort is shown by the following excerpted documents: SRH 124, Operational History of the 849th Signal Intelligence Service; SRH 048, Summation of Operational Activity, Signal Service Detachment "D"; SRH 042, Third Army Radio Intelligence History; and SRH 227, History of the 126th Signal Radio Intelligence Company. The excerpt from SRH 049, Technical Intelligence Transmitted Directly to G-2 12th Army Group, ETO From 14 August 1944 to May 1945, contains one day's intelligence "take" from tactical COMINT efforts in Europe. It demonstrates what could be gleaned from radio direction-finding and the exploitation of low- and medium-level German ciphers.

From SRH *124. Excerpts from the official history of the Army's signal intelligence service in the Mediterranean Theater of Operations. The account shows the slow evolution of Army signals intelligence organization in the field as the result of lessons learned in actual combat operations. As a matter of interest, the 849th Signal Intelligence Service was the only World War II theater signal intelligence service to be assigned a numerical designation.*

OPERATIONAL HISTORY
of the
849TH SIGNAL INTELLIGENCE SERVICE

Mediterranean Theater of Operations
United States Army

* * *

PART I: BEGINNINGS

GENERAL

1. It was originally planned that all U.S. signal intelligence activities at AFHQ would be handled by a unit entitled Signal Intelligence Service, AFHQ, the commanding officer of which would be a member of the Chief Signal Officer's Staff. A T/O and an SLOE were submitted to the War Department on this basis. These were approved, but the unit was redesignated as the 849th Signal Intelligence Service, and it was decided that the unit would not constitute the Signal Intelligence Division of the Signal Section, but would work under that division in a separate location of its own at some distance from headquarters. Since there was no basis of experience in contemporary warfare on which to build, the original T/O merely represented a careful guess as to what the function of such an organization in an active theater of operations should be, and what personnel would be necessary to perform them. The organization, being unique, was not referred to in any T/BA: and the Special List of Equipment, which was its only basis for drawing supplies, would have been markedly inadequate in any case. The fact that it was not modified in any way to conform to the change from a staff section to a field unit multiplied this inadequacy. As a result, the unit set up in an isolated ravine in North Africa, without a telephone, a foot of field wire, a radio set, or a power unit, to mention only a few of the more obvious necessities. Many of these items would have been provided automatically for a staff section, but to procure (and keep) them for a field unit, entitled only to T/E and T/BA allowances has involved a com-

plicated and continual struggle.

2. In order to take advantage of greater British experience in intelligence operations, the 17 officers, and 90 EM called for in the Cryptanalytic and Radio Intelligence Sections of the Intelligence Branch were activated at Fort Dix on 8 November 1942 as Signal Intelligence Detachment 9251-A, under the command of Capt. [text withheld]....The Detachment left for England on 24 November. It was only upon their arrival in Africa, three months later, that the members of this group learned that they were earmarked for the 849th SIS, of which they had never heard. On 2 December 1942 the 849th SIS was formally activated at Fort Devens, with Capt. [text withheld] in command. Assigned to it at this time were 16 officers and 102 EM, which, with the personnel of Detachment 9251-A made up the exact number called for on the T/O. Captain [text withheld] was under the impression that the personnel of Detachment 9251-A had also been assigned, and no evidence was available by which this impression could be corrected. The unit was therefore apparently up to full strength; but the C.O. was junior to Capt. [text withheld] who had originally been intended merely as a section head. In general, technical qualifications and relative rank were so poorly adjusted that it was clear that one or the other would have to be disregarded unless additional officers were brought in at the top. The fact that the organization, including the detachment in England, contained only six officers above the grade of second lieutenant and none above the grade of captain, while the T/O called for a colonel, two lieutenant colonels, and seven majors suggested that this was very likely to happen.

a. It did happen on 14 January 1943, when five officers from SIS, Western Task Force and three from SIS, AFHQ were assigned by NATOUSA orders to the 849th SIS, which embarked from NYPE the same day. This group included Major [text withheld] Commanding, and Capt. [text withheld] selected as OIC, Intelligence Branch. Twenty seven enlisted men from the same sources were also assigned to the 849th SIS, a site was found at Hammam Melouane, and operations were begun on such a limited scale as was possible. On 1 February the main body of the 849th personnel arrived, and Capt. [text withheld] was designated OIC, Security Branch. On 20 February, Signal Intelligence Detachment 9251-A, less three officers and twelve men left in England for further training, arrived and was assigned to the 849th. The organization was now considerably above its authorized strength, particularly in officers; but in the midst of the general confusion this fact escaped unfavorable comment. The key position had been filled, the general shakedown process was well under way, and the organization was ready to begin full scale operation under the supervision of Colonel Harold G. Hayes, SIS officer, AFHQ. It must be confessed that the question of what these operations were to be still needed a good deal of clarification.

b. Three major policy problems had to be faced:

(1) Coordination with the [text withheld] whose intelligence and security organization does not parallel our own.

(2) Determination of the levels at which various SIS activities were to be carried on and the inter-echelon coordination of these activities.

(3) Adaptation of radio intelligence organizations to the intelligence and security needs of the theater. In addition there were the continually developing problems of procuring and training personnel, procuring, modifying, and improvising equipment, selecting specific commitments and devising techniques to meet them, etc.

3. After these three problems and those of supply had been solved to a degree which permitted operations to begin, another and more difficult problem became apparent as soon as the 849th SIS began to serve other headquarters. This was the non-acceptance by many commanding and staff officers of the benefits, intangible tho many were, resulting from an adequate signal intelligence program.

a. The Intelligence Branch met this problem in the reluctance with which American tactical staffs first allowed Detachments of the Branch to operate in combat areas, where tactical information available to intercept and cryptanalysis was most abundant. It was believed that such an apprehension for the safety and security of signal intelligence operations was founded on a general ignorance within the then new American tactical staffs of the role which signal intelligence could play in combat operations and an unfortunate misconception in the same quarters of how the exploitation of German Army low-security radio traffic could best be accomplished. American tactical commands, unfamiliar with signal intelligence services, were not anxious for the information which signal intelligence could supply, and were at first skeptical of the validity of some of the information produced by the Detachments. Furthermore numerous serious security violations were at first made by tactical commands in handling signal intelligence information, illustrating the general lack of appreciation for signal intelligence methods in tactical commands.

b. Unlike the [text withheld] in North Africa, whose staffs had become thoroughly familiar with tactical signal intelligence operations as a result of the desert campaigns, the new American staffs in Algeria and Tunisia had to be indoctrinated with the manner and value of signal intelligence work. The critical period of "selling" signal intelligence to American staffs as an integral intelligence function in forward areas occurred during the invasion of Sicily. Detachments "A" and "E" of the Intelligence Branch were originally scheduled to go ashore in Sicily with the Headquarters Seventh Army and the reinforced 3rd Division (VI Corps), Detachment "A" to land as soon as a beachhead of 10 square miles had been secured, Detachment "E" to land within a few days after D-Day. Concern for the security of signal intelligence personnel and operations resulted in Seventh Army Headquarters holding the Detachments in North Africa until 7 August (D + 30), and the units did not land in Sicily until 10 August, one week before the end of the Sicilian campaign. With such a short period remaining for operations before the

conclusion of the campaign the achievements of American signal intelligence units in Sicily were obviously not impressive. The Detachments furnished valuable tactical information throughout the short period; but their greatest contribution, which would have been possible in the early days of the campaign, when enemy strengths and dispositions were largely undetermined, was lost to the Allied effort.

c. Gradually, however, American tactical commands developed greater appreciation for intercept intelligence and the problems involved inproducing such intelligence; and in time signal intelligence was considered at all times to be a dependable source of intelligence and under some conditions to be the best source of information concerning enemy tactical forces available to American Army and Air force tactical commands. That Detachments were in time allowed to operate in forward combat areas where tactical information was best intercepted is demonstrated by the fact that two Intelligence Branch Detachments landed at Anzio on D-Day and were scheduled to land in Southern France on D-Day but were held up until approximately D + 5 because of confusion in shipping schedules.

d. Early, effective operations by the Security Branch were hindered through a failure of staff and unit officers to appreciate or even realize that all signal security efforts were directed at protecting them and their units from enemy action. It was this factor which made it impossible to correct quickly the uniformly low state of signal security training with which American troops entered North Africa. The general attitude towards signal security was that it consisted of a set of cumbersome regulations, and the reaction varied according to temperament. Many officers were frankly hostile, considering all SIS personnel as parasitical non-combatants conspiring to complicate the jobs of honest fighting men. Others, having developed a philosophical resignation toward all regulations, were almost pathetically eager to comply with whatever was published;....In operations, the first reaction resulted in so many messages passed in clear and others so carelessly enciphered that it looked like a conspiracy to ignore as many security provisions as possible and in the second, resulted in an attitude which said in effect "put it in some sort of code, that is what the book says". The idea that the enemy might use intercepted information with unfortunate results to themselves was almost entirely absent. It was only after the loss of much valuable time and intense missionary work that an understanding of the purpose of signal security was achieved.

e. Time and further contact with the enemy brought changes in these attitudes. By the close of hostilities in the MTO the importance of signal intelligence was well accepted as an essential part of a complete military effort and the 849th was being called upon to perform many functions in addition to its primary mission. That all aspects of signal intelligence activities were eventually appreciated in Mediterranean Theater of Operations can best be illustrated by the 70 letters of commendation and 42 awards received by approximately 400 individuals of the 849th SIS. . . .

4. Attached. . .is a table of personnel originally allotted to the 849th SIS. It is shown here with the caution that it proved inadequate for signal intelligence activities in MTO and that at best can only be used as a guide in planning similar units since SIS functions appear to vary greatly from theater to theater. The scope of the 849th early increased beyond the bounds of the T/O. The personnel problem however was alleviated to a large extent by the assignment of an AFHQ Signal Intelligence pool of 27 officers and 284 enlisted men and an AFHQ Cryptographic pool of 29 officers and 323 enlisted men. While this appears to be a tremendous increase over the T/O, the 849th also took over the mission of those two pools. The additional personnel permitted the headquarters section to be augmented where needed and permitted a shifting of officers and men to meet the ever changing operational demands, all of which greatly increased the effectiveness of the 849th SIS.

PART II: INTELLIGENCE BRANCH

GENERAL FUNCTIONS

1. Introduction.

a. The basic duties of the Intelligence Branch were clear in principle from the date of activation of the 849th SIS: to derive intelligence from enemy radio transmissions. At that date, however, the multiple forms which Intelligence Branch functions would later assume and the many problems which were to be encountered in fulfilling those duties could not be foreseen.

b. Before the end of hostilities in Europe the Intelligence Branch would develop from a handful of personnel to a complex organization whose activities included: three Detachments fulfilling signal intelligence commitments at U.S. Corps (II, IV, VI) Headquarters, involving the interception and analysis of German Army low-security radio traffic; two similar Detachments fulfilling similar commitments at U.S. Army (Fifth, Seventh) Headquarters; one Detachment analyzing German Army medium-security traffic; two Detachments providing the Mediterranean Allied Air Forces with information derived from the analysis of German Air Force low-security and plain-language (voice) radio transmissions; one Detachment analyzing enciphered European weather broadcasts emanating from within enemy-held territories for the 12th and 15th U.S. Air Forces; one Detachment analyzing [text withheld] radio traffic and later providing the Office of Strategic Services with information from a study of clandestine radio traffic of enemy agents in Allied controlled territory; one Detachment providing the Civil Censorship Group of the Allied Control Commission with information from the analysis of secret inks and other types of unauthorized correspondence; and a Headquarters whose operations included, in addition to routine administrative functions, a continuous supply of technical intelligence and information to the Detachments in the field, research into the German communications systems, solu-

tion of German Army medium-security traffic, a Communication Section to provide all communications between the Headquarters 849th SIS and its Detachments and other Headquarters, and a Laboratory Section for reproducing important captured documents and photographing materials of all kinds.

c. When the Intelligence Branch began operations in North Africa during the winter of 1942-43 radio intercept and the cryptanalysis of enemy low- and medium-security radio traffic within an active theater of operations constituted an unexplored field for the new United States Army. Consequently, the growth of the Intelligence Branch was attended by many restrictive elements. [text withheld] It had been arranged to have several Signal Radio Intelligence Companies provide all American radio intercept facilities required within the theater, operating in conjunction with, but independent of, Intelligence Branch cryptanalytic Detachments; and it was not long before such an arrangement presented a number of shortcomings. Inadequacies in the 849th SIS T/O presented additional difficulties to the development of the Intelligence Branch; and the invariable insufficiency of training of all newly-arrived personnel from the United States and London was another stumbling block to the proper expansion of the Intelligence Branch. Finally, the problem of equipping each newly organized detachment was complicated by grave inadequacies of the T/E of the 849th SIS.

2. Cryptanalysis.

a. In order to limit to a reasonable extent the scope of work to be performed by the Intelligence Branch, consideration being given to the number of personnel available and to their state of training, it was planned originally that the work of the Branch would involve at first only the study of German Air Force low-security radio traffic. Such traffic consisted of radio activity of the German Air Forces operating throughout the western and central Mediterranean area, involving transmissions of both enemy aircraft and ground radio stations. [text withheld] With this type of traffic in mind the first operational unit created within the Intelligence Branch, eventually called Detachment "F", was formed in February 1943. Personnel of this Detachment underwent preliminary training [text withheld] near Algiers, and by the summer of 1943 were ready and able to assume an independent signal intelligence operational commitment.

b. After the personnel of Detachment "F" had commenced their training and additional personnel were available to the Intelligence Branch consideration was given to another type of enemy radio traffic, German Army low-security traffic, most of which emanated at regimental level and below. This traffic consisted of [text withheld] jargon codes, simple substitution ciphers and transposition systems, and was fairly easily broken also by elementary cryptanalysis when sufficient depth was encountered. At the end of February a small group of personnel was attached to [text withheld] United States II Corps in Tunisia to learn the techniques of analyzing such German Army low-security traffic. These people formed the basis of what later became Detachment "A". As time went on additional

detachments were formed to perform the same type of cryptanalytic functions as Detachment "A", and eventually there were five detachments exploiting such German Army low-security traffic: Detachment "A" at Headquarters Fifth Army, Detachment "B" at Headquarters Seventh Army, Detachment "E" at Headquarters U.S. VI Corps, Detachment "H" at Headquarters U.S. II Corps, and the 3916th Signal Service Company at Headquarters U.S. IV Corps.

c. During the summer of 1943 it became apparent that an additional cryptanalytic task could be undertaken by the Intelligence Branch. The Army Air Forces were in need of the information which could be derived from enciphered European meteorological radio transmissions giving vauable weather data over enemy-held territories. Work on this material was begun in July 1943 with the formation of Detachment "G". International Business Machine equipment was obtained; techniques for breaking the traffic were evolved; and the latest meteorological observations for enemy held territory were made available to tactical and strategic air forces in the Mediterranean area.

d. In July 1943 a further development occurred when it was found possible to attempt the solution of German Army medium-security doubly-enciphered Playfair traffic. Personnel for this task, who had been trained in the solution of German Air Force medium-security traffic in London, arrived in the Mediterranean Theater in early July. These people, who became the nucleus of Detachment "B" and later of the Solution Section at the Headquarters, Intelligence Branch, enjoyed considerable success in their solution operations whenever traffic in sufficient depth was available. The greatest difficulty encountered in dealing with such traffic, emanating usually from enemy Divisional networks, was in finding suitable sites for its interception.

e. The value of German Air Force voice traffic on Very High Frequencies (38-42 mcs), mostly plain language, had long been recognized, and in August 1943 a detachment of German linguists was formed to exploit this source of intelligence, eventually becoming Detachment "D". Personnel were assigned aboard the USS Ancon, and the group provided important intelligence of German Air Force activity during the landings at Salerno. Later the Detachment operated in the vicinity of Naples, on the Anzio beachhead, during the invasion of Southern France, and northward with the Allied forces throughout France and into Germany, working with Allied Tactical Air Commands and Fighter Wings. The same type of traffic was also exploited during more than a year's period by two groups of three enlisted men of Detachment "D" aboard United States destroyers escorting Allied convoys throughout the Mediterranean area. After January 1944 German linguists were used regularly in all Intelligence Branch Detachments serving Corps Headquarters to intercept German Army voice traffic on such Very High Frequencies (32-38 mcs).

* * *

4. Laboratory Facilities.

a. Communications Intelligence. A small section had originally been provided at the Headquarters, Intelligence Branch for the collection and study of captured enemy communications equipment. It was soon felt, however, that the section was unable to carry on its prescribed duties successfully as a subordinate part of the Intelligence Branch, and in June, 1944 the section was activated as the Enemy Equipment Intelligence Service. Having its own T/O and E, the new unit was assigned to the 849th SIS and removed from the control of the Intelligence Branch. . . .

b. Laboratory Section—Photographic and Chemical. Photographic facilities provided by the original 849th SIS T/O and E proved inadequate to the tasks which later developed, and constant additions in personnel and equipment were necessary to meet constantly greater requirements. In addition to providing photographic facilities for the 849th SIS the Laboratory Section was responsible for maintaining a laboratory to make chemical analysis of civilian and prisoner-of-war mail for secret ink and other unauthorized means of communication. Original estimates of personnel, equipment, and supplies necessary for the Chemical Subsection were similarly disproportionate to actual requirements, and a process of continuous growth was characteristic of that subsection also.

c. Communications Section—From a small group of personnel who installed telephone and lighting facilities at Hammam Melougne in February 1943 was gradually evolved a Communications Section. Although part of the Intelligence Branch the section provided communications facilities for the entire Headquarters, Intelligence Branch. In time the section expanded in size and operations until it maintained radio and teletype links with most field units.

MAJOR PROBLEMS ENCOUNTERED

* * *

a. At the opening of operations in the Mediterranean Theater [text withheld] already had a number of signal intelligence units in the field properly trained for the interception and solution of German Army and Air Force low-security radio traffic. Plans for utilizing U.S. signal intelligence personnel had not been properly integrated with the British before the invasion of North Africa; but shortly after the formation of the 849th SIS and its arrival in North Africa [text withheld] it was recognized that American units would in time be able to contribute to the North African signal intelligence effort.

* * *

2. U.S. Signal Radio Intelligence Companies.

a. Four U.S. Signal Radio Intelligence Companies—the 117th, 122nd, 123rd, and 128th- together with a number of intercept operators later assigned to

the 849th SIS itself provided intercept facilities for the several detachments of the Intelligence Branch. In a number of cases the SRI Companies were themselves split into detachments to provide facilities for new Intelligence Branch detachments formed to meet new commitments. All four SRI Companies were originally assigned to Allied Force Headquarters (AFHQ), and their operational activities were then directed by the American Signal Intelligence Officer of AFHQ.

b. Of these four SRI Companies the 122nd and 128th arrived in North Africa with the invasion forces. The operators were inexperienced with the new types of traffic they were to intercept; and until late 1944 there was an insufficient number of trained operators to meet the minimum requirements of the individual Intelligence Branch detachments and monitoring tasks which were assigned by the Monitoring Section of the Security Branch, 849th SIS.

c. Early in 1943 steps were taken to remedy the shortage of intercept operators by securing the 117th and 123rd SRI companies to supplement the first two. Before these units arrived in North Africa several important months had passed, and more months of training were required to bring the operational efficiency of all units to a point where specific commitments were possible.

d. A directive from the American Signal Intelligence Officer, AFHQ, made clear the fact that the Intelligence Branch Detachments working in conjunction with the SRI Companies were to direct the employment of sets and assign specific intercept missions. Experience proved, however, that although relations between the SRI Companies and the Detachments of the Intelligence Branch were on the whole satisfactory the degree of cooperation and efficiency obtained often depended on purely personal relationships between the officers and men of the units in question and not on any clearly defined policy of command. The separation of intelligence and intercept sections, although possible in theory, in some cases produced situations in which questions of policy and operational control were in open conflict. The fact that the Intelligence Branch Detachments had to be attached to the SRI Companies for rations, quarters, and administration produced other unsatisfactory situations that hindered proper cooperation between the two types of units.

e. A step toward remedying the situation was taken by the Army Air Forces after the assignment of the 122nd and 123rd SRI Companies to the 12th Air Force in November 1943. A plan was studied and later approved to provide a self-contained signal intelligence unit comprising both intelligence and intercept personnel. On the basis of such reorganization the 123rd SRI Company was renamed the 9th AAF Radio Squadron Mobile (G) in March 1944; after a long delay intelligence personnel were obtained for this new Squadron from the U.S., and the Squadron began to function as a complete unit in December 1944. The 122nd SRI Company was never reorganized, and continued to operate in conjunction with the Intelligence Branch Detachment "G" until June 1945.

f. A similar step in the right direction within the Army Ground Forces occurred when T/O's and T/E's were approved by the War Department in January

1945 for Corps Signal Service Companies, providing for self-sufficient organizations which contained both intercept and intelligence personnel. Detachment "H" and a detachment of the 128th SRI Company which had been operating in conjunction with Detachment "H" were combined to form the nucleus of one such Signal Service Company (3915th SS Co) in February 1945. . . .

g. Another critical handicap encountered as long as the SRI Companies and Intelligence Branch Detachments operated independently involved a theater policy concerning dissemination of signal intelligence information. According to theater regulations personnel of SRI Companies were not allowed access to technical signal intelligence information and procedures that formed the basis for intercept set assignment. Consequently SRI personnel were given only specific frequency and callsign missions daily, and were not entitled to know the basis for such missions. Such an arrangement required additional signal intelligence personnel on duty in intercept rooms supervising intercept activities to guarantee proper coverage. And in spite of such efforts many valuable minutes of intercept operators' time were often wasted by copying worthless traffic before being noticed by signal intelligence personnel on duty in the intercept rooms. Both intelligence and intercept personnel resented the restriction; but as long as they existed under separate units nothing could be done. Intercept personnel were especially resentful of the fact that they were denied access to information which would increase the efficiency of their work. The situation was corrected only when the two types of personnel were placed under one command, as in the case of the 3915th Signal Service Company; for then both intercept and intelligence personnel were allowed complete access to all pertinent signal intelligence data.

3. Procurement and Training of Personnel.

a. When the 849th SIS was activated it was expected that the Intelligence Branch would consist only of Signal Intelligence Detachment 9251-A; but, in fact, it was subsequently composed of several heterogeneous groups, each trained for different tasks. SID 9251-A, after preliminary training in cryptanalytic methods for a short period at Vint Hill Station, USA, embarked for SIS ETOUSA in November 1942 for practical experience in processing traffic from both German Army and Air Force units. Of this group 14 officers and 77 enlisted men were sent to the 849th SIS in February 1943, leaving 3 officers and 13 enlisted men in London (eventually to become nucleus of Solution Section, Headquarters Intelligence Branch) to deal operationally with German Air Force medium-security traffic.

b. During January 1943 the intelligence members of the Western Task Force SIS Section consisting of 2 officers and 6 enlisted men having completed their duties in Morocco, had set up their headquarters at Hammam Melouane, near Algiers. One officer and one enlisted man from AFHQ joined them there, and with the arrival of the London group in February plans for training and operations in the theater were put into effect.

c. The largest single increment of personnel became available when the

T/O for the Signal Intelligence Detachment, NATOUSA, was assigned to the 849th SIS in June 1943. Thanks to this pool additional personnel were subsequently available to fulfill the demands of new commitments as they arose.

d. Constant additions to the Intelligence Branch were, however, required since that time. Throughout the history of the Branch it was a never-ending struggle to get adequately trained officers and enlisted men to perform the tasks required of the Branch. The process of obtaining personnel from the USA was almost always a slow and unsatisfactory one. Frequently men arriving in the theater proved to be totally unfit for the duties for which they were requested and hence could not be used. For example, a request was sent to Washington in February 1943 for immediate shipment of 10 officers trained in elementary cryptanalysis and, more important, with fluent knowledge of spoken and written German.The 10 officers arrived at the 849th SIS at the end of May 1943, after the close of the Tunisian Campaign; and of the ten officers only two had any knowledge of the German language. Another example of the inadequate training experienced by many people who were assigned to the 849th SIS was the case of personnel of the Western Task Force, who had received only 10 days' instruction in the problems of radio intelligence prior to the invasion of North Africa and who had been given no idea of the code and cipher material they might be called on to deal with. Consequently training of personnel was the most important single problem that faced the Intelligence Branch. No single increment arriving at the 849th SIS had had a sufficiently long training period under anything approaching operational conditions before entering the Mediterranean Theater. Personnel trained at SIS ETOUSA for a month or two benefitted greatly from instructions given there [text withheld] but the burden of forming detachments into units capable of assuming actual commitments rested entirely on the 849th SIS. Experience proved that most detachments required from three to five months' experience under field conditions to be able to undertake successfully any operational commitment.

e. It should be noted that too few senior officers with adequate training were available to the Intelligence Branch during the early days of the 849th SIS. The majority of officers competent to handle the technical problems of the various detachments were in the grade of Lieutenant and were consequently placed in a difficult position as regards efficient liaison with the operational staffs to which they were furnishing intelligence. Over a period of two years the situation gradually adjusted itself; but it is felt that had the initial handicap not existed existed there would have been considerably smaller loss of valuable time and, perhaps, lives.

4. Organization and Equipment of Field Detachments.

a. As has been stated above, the original T/O and T/E of the 849th SIS were manifestly inadequate to meet the great expansion of the organization in the past two and one half years. This problem was especially evident when Detachments were formed for service in the field. The only possible way for detachments to start operations was by attaching them to other self-contained orga-

nizations, such as the SRI Companies, for rations, quarters, and administration. Because of the steady development of the Branch; grades and ratings were not allotted to the Detachments on any fixed basis; and equipment for the Detachments consisted of such supplies as were available to the 849th SIS as a whole and could be spared from other duties. Such supplies and equipment as were available were issued on memorandum receipts to the Detachments. Allocation of grades, ratings, supplies, and equipment to the Detachments was made by the Officer in Charge of the Intelligence Branch on the basis of what was hoped to be a fair distribution among the Intelligence Branch, Security Branch, and the 849th overhead.

b. Such conditions were obviously unsatisfactory and unconducive to a proper spirit of morale among the Detachments. No definite grades and ratings could be counted upon with certainty within the Detachments, and Officers in Charge of the Detachments experienced difficulties from being in a subordinate administrative position to the Commanding Officers of the SRI Companies.

c. Basic T/O's for Signal Intelligence Service Detachments types A, B, C, D, and E were in existence since December 1943, but Theater regulations did not permit activation of any such detachments until June 1944, when an "A" type and a "B" type unit were activated as the 3200th and 3201st SIS Detachments assigned to the 849h SIS....The personnel for these new Detachments were obtained from the Intelligence Branch Detachments "A" and "E" respectively, and some gains in operational efficiency were noted from the reorganization. Great improvement was particularly noted with respect to grades and ratings, for with their own T/O's at their disposal the officers commanding the new detachments were assured definite grades and ratings and could handle their own promotional problems. On the other hand such reorganization did not solve the basic problem of the relationship between the Detachments and the SRI Companies, for there was no provision within these new Detachments for intercept personnel; and consequently operations with independent SRI Companies were still necessary.

d. The most satisfactory solution was reached when the T/O for Corps Signal Service Companies, approved by the War Department in January 1945, became available in the Mediterranean Theater. Two such units were activated as the 3915th and 3916th Signal Service Companies, and were assigned to the 849th SIS....The new companies, calling for both intelligence and intercept personnel under a single command, eliminated entirely the problems of grades and ratings, supplies and equipment, and operational control.

e. In spite of the advances made by the activation of such units three Detachments of the Intelligence Branch- Detachments "D", "F", and "G"—could not be reorganized, and operated throughout their existence without benefit of special T/O's, T/E's, or administrative independence of the SRI Companies with whom they worked.

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From SRH 048. *Once American forces had established themselves in France, Signal Security Detachment "D" served as the central command-and-control element for all signals intelligence operations conducted by General Omar Bradley's 12th Army Group.*

SUMMARY OF OPERATIONAL ACTIVITY OF SIGNAL SECURITY DETACHMENT "D", COVERING THE PERIOD 1 SEPTEMBER 1944 TO 1 APRIL 1945

1. PURPOSE

a. This report is intended to summarize briefly the signal intelligence mission assigned to Signal Security Detachment "D" and actions taken by that Detachment in the accomplishment of that mission. Although the Detachment began field operations as a unit in the middle of August 1944, 1 September was chosen as the starting point of this report since effective contacts with G-2 Section, 12th Army Group Tactical Headquarters, and with the signal radio intelligence units in the field were firmly established by that date.

2. MISSION OF THE DETACHMENT

a. The mission assigned to the Detachment was the procurement of Signal Intelligence from the solution of enemy (German) medium and low grade tactical codes and ciphers for the AC of S, G-2, 12th Army Group, the coordination and technical supervision of the Signal Radio Intelligence Companies and Signal Service Companies operating under units assigned to 12th Army Group, technical liaison with adjacent Army Group Signal Intelligence units and with those of higher headquarters, and the coverage of clandestine radio traffic for study by the Radio Security Service (British) and as required by the AC of S, G-2, 12th Army Group. The latter mission, being somewhat separate and distinct from the provision of signal intelligence, will not be covered in this report.

b. The mission of the Detachment may be conveniently divided into four distinct responsibilities:

(1) To Signal Intelligence Division, Hq ETOUSA.

(2) To G-2 Section, Tactical Headquarters, 12th Army Group.

(3) To Signal Radio Intelligence and Signal Service Companies, 12th Army Group.

(4) To flanking Army Groups (6th and 21).

c. The manner in which the mission was carried out, will be described in the sections of the report which follow.

3. SIGNAL INTELLIGENCE DIVISION, HEADQUARTERS ETOUSA

a. Signal Security Detachment "D" was charged with the responsibility of enforcing the general signal intelligence policies of the War Department, Hq ETOUSA, and the 12th Army Group, among the Signal Radio Intelligence units of 12th Army Group.

b. In addition, the detachment provided the higher headquarters with the raw

material and finished productions of all signal radio intelligence organizations of 12th Army Group.

(1) All signal intelligence and technical data were forwarded to the Signal Intelligence Division, OCSigO, Hq ETOUSA. This commitment included transmission to that office of all technical reports published by the Intelligence Branch of the Detachment. . . .These reports were also disseminated to the Mediterranean Theater of Operations, to British signal intelligence agencies in the United Kingdom and to the War Department, Washington, D.C., through the Signal Intelligence Division, Hq ETOUSA.

(2) Radiograms and teletype messages containing current information were prepared and transmitted at least twice daily. These messages reported all data collected by the Detachment in the course of its daily operations.

(3) Captured documents, received from signal intelligence units of 12th Army Group were processed, studies published, and copies forwarded to Signal Intelligence Division, Hq ETOUSA, for permanent files.

4. G-2 SECTION, TACTICAL HEADQUARTERS, 12TH ARMY GROUP

a. Detachment "D" was charged with the responsibility of passing to the Assistant Chief of Staff, G-2, 12th Army Group, signal intelligence procured from the analysis of enemy low grade and medium grade (THUMB, PEARL and CIRO PEARL) tactical traffic. This was accomplished in two ways.

(1) Direct telephone communication was available until 4 March 1945 when, due to the tactical situation, the Detachment operated too far in advance of Tactical Headquarters to allow utilization of metallic telephone lines. However, radio or teletype (or both) links maintained constant communication from that date onwards. The appointment on 3 February 1945 of a liaison officer from the Detachment to G-2 Section also aided in the smooth flow and interpretation of signal intelligence.

(2) All pertinent technical reports published by the Detachment were transmitted daily to G-2 Section. These reports supplemented and enlarged upon the information already passed to G-2 Section by communications means described in paragraph a(1) above.

b. A complete record of all signal intelligence, of immediate value only, transmitted to G-2 Section by telephone, radio or teletype has been maintained by the Intelligence Branch of Detachment "D", but this record is too bulky for reproduction and inclusion in this report. However, for the sake of completeness, an estimate of the quantity of timely information reported during the period under review may be derived from the following figures:

	No. of Items
CIRO PEARL	1422
PEARL	632
THUMB	162

c. It is not possible to evaluate the signal intelligence made available to G-2 Section, either in the form of immediately applicable information (i.e., location of Division or Army ammunition, supply and fuel dumps, command posts, etc.), or in the form of confirmation of prisoner-of-war reports, large scale movements or intentions of major enemy formations and the appearance of new battle units in a given sector. As an approximation of the use made of the data received from Detachment "D", the CIRO PEARL, PEARL and THUMB included in the daily G-2 ISUM. . . .The G-2 ISUM was sent by teletype, operational priority, to the following headquarters:

SHAEF Main
6th Army Group
21 Army Group (Main)
8th Air Force
First U S Army Command Headquarters
Third U S Army Main
Ninth U S Army Main
Fifteenth U S Army Forward
12th Army Group Main
12th Army Group Tac
Headquarters First Allied Airborne Army
Com Z
ASCZ
9th Air Force Advance

d. It is of interest to note that an estimated 6,000 CIRO-PEARL messages were read during the seven-month period under discussion. Of these, 3238 messages from twenty-four different formations were published in CIRO-PEARL/SSDD reports, which were transmitted to G-2, 12th Army Group. It is of further interest that on the average either CIRO-PEARL, PEARL or THUMB material, or all three, were included in one out of every three G-2 ISUMS.

5. SIGNAL RADIO INTELLIGENCE AND SIGNAL SECURITY COMPANIES 12TH ARMY GROUP

a. The mission of Detachment "D" in connection with the signal radio intelligence units of 12th Army Group was subdivided into three categories:

(1) Reporting of Signal Intelligence of Immediate Value to Army and Corps G-2's

(a) All technical signal intelligence of tactical value, particularly CIRO-PEARL, was transmitted daily by the most expeditious means to the Army Signal Radio Intelligence Companies. . . .contains intelligence extracted from technical messages sent to the field units during a typical month. This intelligence was used in two different ways:

(1) It was reported to Army and Corps G-2's.

(2) It was employed as a basis for allocating intercept and direction-finding coverage priorities.

(b) The most convenient means of transmission of technical signal intelligence to the field units was radio, teletype and courier. Two radio broadcasts were made daily, one in the morning and one in the early evening to establish coverage priorities and to assist in the preparation of technical reports for the respective G-2 Sections. Technical signal intelligence was also transmitted by the same means at any hour of the day or night when the urgency of the information so warranted.

(2) Consolidation of Technical Material of all Field Units

(a) All technical data from the signal radio intelligence units of 12th Army Group were consolidated daily with those obtained by the two intercept units directly responsible to Detachment "D" and with data received from intercept units of the two flanking Army Groups (6th and 21). Items of immediate value were transmitted along with intelligence described in paragraph a preceding. In addition, all such data were published in greater detail in reports of the Intelligence Branch. . .and dispatched to the field units.

(b) The daily publications of the Branch not only aided the field units in the normal execution of their missions, but provided the only means of maintaining technical continuity on enemy formations during the frequent moves of the field units. This was particularly true when Army and Corps fronts were radically altered, resulting in an entirely new, and frequently unfamiliar, group of enemy units facing them.

(3) Supervisory Control Over Operations of Signal Radio Intelligence Field Units

(a) Policies concerning operations emanating from higher headquarters, or those arising from within Detachment "D" from time to time, were distributed and enforced. Aid in complying with the policies was provided in the form of directives, special technical reports, and by conferences at the Detachment headquarters. Also frequent liaison visits to the field units were made by technical experts from the Intelligence Branch.

6. FLANKING ARMY GROUPS

Continuous liaison was maintained with 21 and 6th Army Group signal radio intelligence agencies both by personal visits and by radio teletype and telephone communications on a twenty-four hour basis. All technical reports published were exchanged with those two organizations.

From SRH 042. *This account of signals intelligence operations in General George S. Patton's Third Army gives the reader a good feel for the "nuts and bolts" of World War II collection activities in the field.*

THIRD ARMY RADIO INTELLIGENCE HISTORY IN CAMPAIGN OF WESTERN EUROPE

I. OPERATIONAL ORGANIZATION AND PROCEDURE OF RADIO INTELLIGENCE AGENCIES.

A. Organization of Signal Service Companies.

(1) All signal service companies (corps signal radio intelligence companies) were organized and equipped as prescribed by T/O & E 11-500, 1 July 1943, with an authorized strength of eight officers and one hundred twenty-one enlisted men. Several weeks after activation, the 3253rd, 3254th, 3255th, and the 3256th Signal Service Companies were moved to Wincham Hall, England (K-19), in order that these companies might collaborate on common problems of training and supply. At a later date each signal service company was attached to a corps with whom it would work in the field, and as the various corps were committed in combat operations, the respective corps companies would accompany them remaining within a few miles of corps headquarters in order that close liaison could be effected between the companies and the corps G-2.

(a) After the usual training program in Burton Bradstock, England, the 3253rd Signal Service Company left for Omaha Beach in France, arriving on 12 July 1944. The company was attached to XV Corps and remained with Third Army until 21 September 1944 when it moved under the command of Seventh Army.

(b) The 3254th Signal Service Company was activated at Marbury Hall, Cheshire, England (K-19) on 19 April 1944. The operations of the company were begun immediately after activation; however, it was not on an entire company basis until operations against the enemy on 2 July 1944. Prior to that time operations consisted of a general training program as well as individual team operations. A few intercept positions were established in June at Lyme Regis, England, with the traffic analysis unit controlling the intercept of nets and preparing the intelligence reports. On June 29 the company arrived in France with the primary mission of supplying tactical intelligence to VIII Corps.

(c) Effective 6 May 1944 the 3255th Signal Service Company was activated at Marbury Hall, Cheshire, England. The unit has been with XII Corps since its activation except for brief periods in its early days when it was assigned to Army so that activities of the company as well as the remainder of the service companies could be controlled and correlated by Army headquarters. After completion of the training program the company was concentrated at Lymington, England (U-

71), and departed to Omaha Beach on 12 August 1944. Thus, the unit arrived in the combat zone ready to become operational on the ninty-eighth day after its activation in the Communications Zone.

(d) Activated on 5 May 1944 at Wingham Hall, Cheshire, Northwich, England, the 3250th Signal Service Company was engaged in a signal intelligence training and field program for the next three months until 7 August when the company was committed at Courville-Sur-Huisine, France (T-08). Excepting for temporary attachment to III Corps during the Battle of the Bulge, the company has always serviced XX Corps.

(e) The 3259th Signal Service Company came into existence on 16 September 1944 under XIII Corps. Training in Ringwood and Lymington, Hants, and Dartford, Kent (Q-99) in England equipped the unit for its first action under III Corps on the First U.S. Army front on 14 February 1945, and after the liquidation of the Ruhr Pocket, it was transferred with the III Corps to Third Army, where it remainded until the termination of the campaign.

(f) At the cessation of hostilities on 8 May 1945, the following corps companies were with the Third Army: 3250th Signal Service Company under V Corps which was attached to Third Army for the last three weeks of the war; the 3255th and 3256th Signal Service Companies which served under Third Army during practically the entire campaign with XII and XX Corps respectively; and the 3259th Signal Service Company under III Corps. The 3254th Signal Service Company attached to VIII Corps also spent much time under this command, although during the last weeks of the war it was First Army.

(2) 118th Signal Radio Intelligence Company.

The 118th Signal Radio Intelligence Company was activated on 20 April 1942 at Fort Sam Houston, Texas based on T/O 11/77 which was later superseded by T/O & E 11-500, 1 July 1943, as amended by Change No. 1, dated 13 November 1943. After extensive training on maneuvers the company arrived in England in January 1944. At the direction of the Signal Officer, Headquarters European Theater of Operations United States Army, the intelligence company, later assigned to the Third Army, began intercepting German military traffic on 26 April at Dartford, Kent, between London and the Channel. During the next six weeks the practice traffic of the enemy indicated certain troop movements to and along the Atlantic wall, and also revealed radio characteristics later used in identifying and locating German units in the field. On 1 June, the company, then serving 21st Army Group, moved to a point on the English coast just across the Channel from the Cherbourg Peninsula where it covered enemy radio activity during the invasion and part of the build-up period gaining slight intelligence of operational value. On 15 July the unit arrived in France and proceeded to the vicinity of the Third Army headquarters to whom it supplied intelligence through the end of the campaign.

B. Radio Intelligence Procedures.

(1) Operational Procedures.

(a) Corps Level

Although the signal service companies were originally organized along identical lines, each, after being committed, adopted new methods of procedure, and changed the basic organization to fit specific operational needs. This report is designed not only to show the original composition of these units, but also to point out their major differences. The companies included in this report are the 3253rd, 3254th, 3255th, and 3256th Signal Service Companies; although the 3255th and 3256th Companies were the only ones to be assigned to Third Army throughout the entire campaign, the others were on separate occasions under this command.

Radio Intercept: The normal radio intercept section consisted of an intercept officer and from forty two to forty six operators who were divided into tricks composed of a trick chief (control chief) and a number of men determined by the traffic level of the current situation. The operators worked in HO 17's and HO 27's mounted on 2 l/2 ton trucks; the deployment of the trick chiefs varied with the company involved: The 3256th employed a trick chief for each truck but both the 3253rd and 3254th Companies used one man to control an entire intercept shift. In the 3255th the use of an inter-communication system by which the IA section could contact the individual operators entirely eliminated the need for trick chiefs. The average working day for the intercept sections was divided into three shifts with their times and set allocations as follows: 0001-0800, eight sets; 0800-1600, 15 sets; 1600-2400, fifteen sets.

The functions of the trick chief, whether he was in charge of the entire shift or of a single truck, were to control the interception of nets, check frequencies, and in general to act as an intermediary between the radio operators and the IA section. The process of searching for nets was one which especially demanded control by a single source; the 3254th control was achieved by means of a home constructed monitoring board channeled to each operating position whereas the 3256th simply submitted a search list of known priorities to the individual operators; these were compiled by all radio intelligence sources by the IA Section on the second day of the German three day frequency cycle. This latter method greatly minimized the time spent in recording nets of no immediate value, and thus insured that the majority of enemy units actively engaged on the front in question would be covered. As a further aid, lists of fixed call signs and peculiarities of procedure were also kept available at each set.

In regard to the technical aspects of radio intelligence work, it was found that the super-pro receiver tended to supplant the SCR 342 and 344, having been adjudged as more adaptable to intercept requirements. Each truck was usually equipped with one high frequency set connected to an appropriate antenna. For both high and low frequency work, antennae of varying characteristics were experimented with by the individual companies: The horizontal directional type proved to be the most popular with the 3255th, but the 3253rd Company on the other hand

preferred the "L" shape antenna.

Speaking in terms of general operating procedure it should be mentioned here that the interception of enemy traffic by those companies employing the leap frog method of moving was rarely interrupted. When the tactical situation warranted, advance parties to division and forward headquarters were sent out and the proximity to the enemy lines proved reasonably profitable as demonstrated by the extremely tactical low grade traffic intercepted by the 3255th and 3256th forward echelons.

Since continuous wave interception was not the sole function of an intelligence agency, it was necessary to have on hand operators capable of copying German voice traffic; these radio telephony operators were part of the intercept personnel in the 3255th Company, but in the 3256th they were furnished by the IA Section. The type of traffic obtained by this source was comparatively low in volume, and that which was intercepted ordinarily proved to be of local tactical value. Radio telephony personnel were also employed in the VHF (very high frequency) experiments when small teams were sent up close to the front equipped with high frequency intercept sets. The results obtained in these cases, as well as in the attempts to intercept German voice traffic on the medium frequencies from similarly advanced positions, were fairly good in so far as the mechanics of interception were concerned, but the intelligence gained therefrom was not of far reaching value.

Direction Finding: Operations of the direction finding teams in the signal service companies were for a long time hampered by technical difficulties involving equipment. The SCR 503 Receivers proved to be inadequate as long as the front remained fluid and even on a comparative static front the direction finding sites had to be relatively close to the enemy in order to obtain satisfactory results. Later in the campaign the equipment was supplemented and modified by individual companies, and as a result marked improvements were apparent. The final set used by the 3254th Company was an SCR 555 with an improved antenna loop and an SCR 244 as a receiver, the latter giving a wider null but better reception. The 3256th Company utilized German equipment found at a signal depot in St. Menehould, France, but this too was effective only at short range.

Generally, each company had two and some times three teams depending on the tactical situation; one was always located at the company site and the other or others at some forward position. The conditions of the roads, the availability of water and rations, the maintenance of radio and power equipment at the advanced locations, and the necessity of wire communication being installed for the most part by corps signal battalions—all these factors had a direct bearing on the efficiency of the direction finding platoon.

Control of direction finding stations was accomplished by various methods. The 3253rd Company placed a direction finding man directly in the radio trucks and acted as a liaison between the intercept and the direction finding sections. The

3254th Company on the other hand set aside one operator whose duty it was to pipe signals to the local direction finding station for re-piping to the advanced sites.

In spite of all the difficulties encountered direction finding results from the standpoint of signal service companies were uniformly good during the Battle of the Bulge, the cleaning out of the Saar-Moselle Triangle, and the Battle of the Rhine. Evidence derived from this source as a confirmation of the intelligence gained through other means consistently proved valuable.

Traffic Analysis: The Traffic Analysis Section (IA Platoon) was commonly divided into two main groups, Traffic Analysis and Cryptanalysis Departments; originally the section had a complement of twelve men, but this number was later augmented by personnel from other platoons of the individual companies according to specific needs. Perhaps more appropriately referred to as the Intelligence and Coordination Team, the section had four principal functions: The analysis and processing of intercepted traffic and the identification of enemy radio nets; the cryptanalysis of enemy low grade codes and ciphers; the determining of German order of battle and the maintenance of the necessary files on enemy units, personalities, code names, and other necessary data to achieve this end; lastly, the compiling of statistics on the technical aspects of the work to aid in the identification and analysis of the traffic.

The Traffic Analysis Department usually consisted of four traffic analysts whose duties were reading logs and searching the files in order to identify the current enemy units. There was a man designated to keep order of battle information including personality files, breakdown of enemy units, situation maps, and all such pertinent information derived from G-2 reports, captured documents, and other reliable sources. One of the analysts coordinated the information obtained from analysis and direction finding for submission to the traffic analysis officer for final approval; that which was of immediate tactical importance was relayed to corps G-2 and subsequently the finished product was dispatched to all other interested agencies.

Two translators and two cryptanalysts comprised the Cryptanalysis Department whose province was the breaking of all types of low grade traffic and the examination of all medium grade for possible compromises. When teletype communication was available, raw traffic (low grade) was exchanged with the other intelligence units of Third Army. In some cases the men of this department were called on to interrogate prisoners thought to be of importance to radio intelligence work, to serve as radio telephony operators, and to process captured documents destined for higher headquarters. In this department as well as in traffic analysis it soon came about that each man, although trained for a specific position, became capable of handling a variety of duties.

The plotting of direction finding bearings was usually done by some member of the Traffic Analysis Section, although it should be mentioned that much better results were obtained from assigning a certain man to that duty. Most of the com-

panies were restricted in their use of situation maps and overlays by the lack of space in the housing units. When the Traffic Analysis Section of the 3256th Company moved indoors, it was possible to exploit further the results of direction finding in connection with the order of battle picture. In this company the direction finding man, in addition to his primary duties, maintained an overlay on a 1:25000 map showing the breakdown to battalion level of all enemy units on the corps front; this map also included the direction finding bearings of the preceding day as well as any additional information of the same kind extracted from reports of other radio intelligence units. When it was possible to obtain a large number of bearings from various sources on any specific unit, a special overlay of that formation's area was made, thus affording a closer check on its movements.

As a final comment all of the work done in evaluating intelligence gained from intercepted traffic was channeled to one principal destination, the daily activity report which served as a complete record of the day by day radio intelligence results. The form of the report was as follows: (I) Intelligence Summary; (II) Decodes and Translations; (III) Technical Summary of Nets Heard; (IV) Message Count and Set Allocation; (V) Direction Finding Bearings; (VI) Code Idents and Cipher Values.

(b) Army Level

The Radio Intelligence Company at Army level naturally differed in several respects from the corps' agencies; approximately twice the size of the Signal Service Company, the Army unit had several additional functions, chief among which was the coordination of the work done at lower levels and the dissemination of information thereto.

Radio Intercept: Aside from the disparity in numbers between the intercept section of the Army company and that of the corps (the former maintaining some twenty two men on each shift) there were major differences in operational procedures. Certain minor points not mentioned before were common to intercept work at all echelons.

During times of heavy radio activity it was found best to have at least two intercept operators on random search, who would scan the dial until an enemy net was heard. The frequency and call signs were then given to one of the other operators and the search was continued for other nets.

When an enemy net went off the air, or when the operator, for various reasons, could no longer hear the transmissions, the spot checking practice was used. This meant that the operator would go on search, returning to the frequency every fifteen minutes.

In order to ensure good copy of messages, important for the cryptanalytic work, nets were frequently double banked; since this meant the assigning of two or more operators to cover the same traffic, it was naturally more easily done at Army level, where more men were available. In any given case, the necessity of double banking was determined by the traffic analysis control man with the one exception,

that it was a standing rule to double bank all three letter traffic and plain text.

In the case of voice transmission the handling of plain text in the Army company occasionally involved use of the dictaphone, the recording being sent to the Traffic Analysis Section. In certain urgent cases, the voice signal was piped by telephone directly to a translator in that section.

When the Army agency initially went into operations, the intercept and direction finding control man occupied different housing units and were linked by telephone. It was later decided that the work of these two sections could be better coordinated if their control chiefs operated in the same unit and simultaneously received directions from the Traffic Analysis Section.

Direction Finding: The size of this section and the existence in the Army company of a wire section to establish communications made it possible to operate as many as three outstations; later, radio control was used and proved more practicable than in the corps companies. As a general rule, the length of the base line between the outside stations was forty miles with land line communications, and sixty miles with radio. As already mentioned, it was found best to have the direction finding control man work closely with the intercept trick chief, but aside from these points, the operational procedure involved in taking any given bearing did not differ greatly from the methods used by the signal service companies.

Traffic Analysis: The traffic analysis section of the Army company also differed in only a few respects from that at the lower level; of course, since this section was larger, being comprised of twenty nine men and three officers, it was possible to extend the work of the various sub-sections to a finer point of detail and to act as a coordinator of the results obtained on the corps' front.

As this latter function became more and more important, it became necessary to create a special section in the Army radio intelligence company to act in liaison with corps, flanking armies, and Army group; information was thus routed more efficiently and expeditiously up and down the line.

Security considerations, in many cases, made it impossible to send certain data down to corps level directly and one of the functions of the Army company was to see that the signal service units receiver whatever extracts and conclusions from this information it was possible to disseminate. To further this end and to accommodate the large influx of the many different reports and documents, it was necessary at Army level to create another sub-section within the traffic analysis platoon known as the incoming documents section; the purpose of this miniature message center was to regulate the distribution of all incoming and outgoing material and to keep the necessary extensive files and records.

In the matter of intercept and direction finding control, the techniques were the same as those used by the signal service companies, except that the Army company was naturally expected to concern itself with all corps' fronts and even with some units close to the Army Zone of Advance in view of the possibility of sudden movement. The particular method of establishing control generally followed one of

those already outlined, that of distributing each day a list of the desirable frequencies and call signs to the control chiefs of the other sections.

Since the cryptanalytic section at Army was larger than that at corps, it was soon found that in many cases rapid transmission of traffic intercepted at the lower level to this section accelerated the eventual breaking of it. A teletype net involving Third Army radio intelligence agencies provided the necessary means of communication and proved fairly practical.

In this, as in almost every case, the greater manpower in the Army traffic analysis section made possible much more detailed files and records of all kinds; as a result, intelligence could be interpreted on a wider basis. When the data at Army level itself was insufficient, the Army company was able to have recourse to Army group, or, in certain instances, to Signal Intelligence Division, European Theater of Operations United States Army. This was especially important when a signal service company suddenly found itself concerned with new German units because of a re-allocation of corps zones; in all probability, the Army company had already been intercepting traffic from these units, but if not, the above mentioned channels for obtaining information were open. It can be readily seen, therefore, that the Army Radio Intelligence Company was, in almost every respect, essentially a larger scale signal service company with far more extensive functions because of its size and position in the organization of a Field Army.

(2) Communication Set-Up of Radio Intelligence Agencies. . . .

Signal intelligence agencies employed most of the known means of communication. Each company Mobile Radio Team operated a sub-station of a net with the Army Radio Intelligence Company as control. The Army company itself had a lateral radio link with its corresponding unit in flanking armies, and of course was part of the Twelfth Army Group Radio Intelligence Net.

In the signal service units radio contact with direction finding outstations did not prove to be quite as satisfactory (in comparison with wire lines) as at Army level. For communication within the companies themselves telephone naturally was used, but there were some variations in the details of its use; the 3255th Company and the 118th Signal Radio Intelligence Company had their systems so arranged that each individual operator and trick chief could communicate separately with the traffic analysis section, but in the 3256th Company direct communication existed only between the trick chiefs in each truck and the IA inter-communication operator.

A teletype net was operated for a long time involving the signal service companies, the Army company, and Third Army Signal Intelligence Service. The chief purpose here was the exchange of raw traffic, and, on several occasions, this means was employed to send traffic back to the company proper from advance teams. When the teletype lines were in good order, this was by far the quickest, easiest, and most secure manner of exchanging information. During certain periods there was a teletype line between Army group and the 118th Signal Radio Intelligence

Company over which raw traffic and items of technical information were transmitted.

Telephone was naturally widely used. Both army and corps agencies communicated with their respective G-2 sections by this means and in addition the former always had a direct line to the Signal Intelligence Service Office at Army headquarters. This latter circuit was supplemented by a direct teletype line to provide printed confirmation of any information relayed to G-2 by telephone. Telephone communications further existed between the Army company and Army group, flanking armies, and the signal service companies in Third Army. Whenever a telephone or teletype line passed through one or more switchboards, a jargon code was used, except in the teletype transmission of raw traffic.

C. Captured Documents.

From the beginning of the campaign in Normandy the importance of captured documents to increase the value of radio intelligence information was ascertained. During the first few weeks after the initial landing, little was done in this direction because the static line prevented the capture of documents in any quantity. After the St. Lo breakthrough advantage was taken of an increased number of captured documents which necessitated a system of distribution, so that this information could be expeditiously disseminated. Corps' G-2 first analyzed any documents in search of facts peculiar to its own work, then passed all signal documents on to the corps' signal service companies for analysis. Any information of value was immediately extracted and the original document was sent to Army Signal Intelligence Service where it was photographically reproduced and distributed to service companies under Third Army Command, First, Seventh, and Ninth American Armies and Twelfth Army Group. Code names, code and cipher keys, frequency and call sign allocations, maps with encoded terrain features and place names, map coordinate codes and grid systems, and the German methods of signal intelligence operations constituted information of particular importance. Over three hundred signal intelligence documents requiring some eight hundred pages were reproduced and disseminated during the course of the campaign. To supplement this information signal intelligence notes were published and distributed when documents received were particularly current or when only extracts from lengthy documents were of value. Enemy units were often identified through code names continued in documents, and encoded traffic was frequently easily read due to the capture and dissemination of documents, diagrams, and German signal intelligence publications. During August in the early days of the campaign, intelligence companies were able to follow the movement of the 9 Panzer Division from non-indicator cipher keys captured from this unit. Numerous examples could be cited to justify the work required in maintaining a small Documents Evaluation, Reproduction and Dissemination Section.

D. Prisoner of War Interrogations.

In order to obtain all available radio intelligence information PW interrogations were made frequently. During the campaign the various PW cages were

visited at least once a week under ordinary circumstances. Arrangements were made with PW authorities that Signal Intelligence Service should be notified when routine screening indicated that a PW might possess information of signal intelligence value. In most instances the information obtained from PW's had already been secured through other sources, however, any additional facts always served as a confirmation. Frequently PW's were interrogated soon enough after capture to obtain detailed information on effective frequencies and call signs which otherwise was a difficult matter in view of the fact that they, excepting in most cases of reconnaissance traffic, were customarily changed every third day in the German army. Although valuable radio intelligence information was obtained from PW interrogation, its principal virtue lay in the security angle. German signal intelligence men, especially those from corps headquarters and higher, could always give information as to which of our code or cipher systems were being broken, what difficulties arose in the process, how long a system could be depended on for security, and what disposition was made of the intelligence gained. . . .

* * *

From SRH 227. *This is part of the official unit history of a signal radio intelligence company assigned to the Southwest Pacific Area, General Douglas MacArthur's theater of operations. It should be noted that unlike the situation in Europe, where tactical COMINT units concentrated their efforts on low-level traffic, the 126th Signal Radio Intelligence Company reported directly to Central Bureau, a high-level theater processing center. The information in the first sentence is actually incorrect: the unit's predecessor, the 1st Radio Intelligence Company, was activated in 1938 and was not a provisional unit.*

OPERATIONAL HISTORY
126TH SIGNAL RADIO INTELLIGENCE COMPANY

February 1944

The 1st Signal Radio Intelligence Company was activated at Fort Monmouth, New Jersey, in February 1941, having previously been known as the 1st Provisional Radio Intelligence Company. The operational set-up of the new company included three operating platoons, each of which was to be capable of operating independently on a combined intercept, direction finding, wire-laying mission. Operational training was begun with regular classes in International code, direction finding, plotting, and wire-laying. 206-C Direction Finders were set up under simulated

field conditions and bearings were taken on local stations, to familiarize the operating teams with the methods of operation.

In March 1941 the company moved to Fort Meade, Maryland, where training was continued. In June of the same year, the unit designation was changed to the 121st Signal Radio Intelligence Company. The company participated in the North and South Carolina maneuvers during the period extending from September through the 6th December 1941. Intercept positions were set up in a 2-1/2 ton truck which also included a typewriter at each of the eight intercept positions. Back to back with the intercept truck was another 2-1/2 ton truck containing the plotting equipment. Goniometric wire lines were laid out to the four 206-C direction finders, which were the only DF's in the company with the exception of the 504 equipment items, which were not used. The direction finders were generally spread over a base line of approximately 20 miles. Thus, at this stage, with limited equipment, the company was not using the three-operating-platoon set-up. The company worked at one time with the Red army, at another with the Blue army, intercepting "enemy" traffic, and locating "enemy" transmitters, for GHQ, in each case. The company also worked with the referees, monitoring all radio traffic for violations of signal security.

Following maneuvers, the company returned to Fort Meade, Maryland. Shortly thereafter it moved again to Ft Bragg, North Carolina where it participated in day-to-day maneuvers with the field artillery, locating "enemy" transmitters, which were than "neutralized" by the artillery.

Following the company's return to Ft Meade, on the 25th of February 1942, one operating platoon of the 121st Signal Radio Intelligence Company was designated as the First Operating Platoon. 1st Lt Menear was placed in command of the platoon over 45 enlisted men. The platoon left Ft Meade for Ft Dix, New Jersey, to await movement orders for an overseas destination. Its equipment included intercept receivers, the four 206-C direction finders, plotting equipment, wire and wire-laying equipment, and field range equipment for independent operations.

On the 1st of March 1942 the First Operating Platoon sailed from the Brooklyn Port of Embarkation on the USATS URUGUAY. On board ship the platoon radio operators were placed in charge of the radio room and the signal bridge, and operated the ship's radio, blinkers, and signal flags. The ship arrived at Melbourne, Australia, on the 10th of April 1942.

At Camp Pell, Melbourne, training in intercept and direction finding operations was continued until the 6th of June.

Meanwhile, on the 19th of May 1942, the platoon was redesignated, and became the First Operating Platoon, 126th Signal Radio Intelligence Company.

On the 6th of June the platoon left Camp Pell and proceeded by motor convoy to Mt. Massadon, Victoria, the contemplated site for a permanent camp. The platoon set itself up for independent operation, performing its own house-keeping and cooking chores. Intercept facilities, consisting of three positions, were operated in

the van of a 1-1/2 ton truck. One direction finder, 206-C, was placed in operation atop Mt. Massadon, about 3/4 miles from the camp. On 1 July 1942, while still at this location, T/Sgt Messer of the 823rd Signal Service Company was attached to the platoon for temporary duty to instruct the platoon's intercept operators in ROMAJI and Japanese KANA telegraph code.

On 10 July 1942, the platoon moved again by motor convoy to Townsville, Queensland, arriving there on 2 August 1942. Lt Menear was reported to Capt Brown, GHQ radio intelligence officer, who in turn assigned two GHQ officers, Lt Phelan and W/O Card, to establish a Japanese code school for the instruction of the platoon's intercept operators. In addition, the platoon was assigned the mission of monitoring Allied Air Reconnaissance frequencies copying Allied clear and coded messages during the attacks on Guadalcanal and reporting by TTY to GHQ. The platoon's 206-C direction finders were set up to work with the No 1 Wireless Unit, RAAF, which was operating in Townsville. The DF's were located respectively at Townsville, Cairns, Charters Towers, and Cloncurry, and communicated with Townsville by wire. . . .Their mission was to work with the RAAF unit in securing bearings on enemy aircraft. However, the work was not wholly successful because of the long lines of communication and because the DF's were not suited to long range work, nor to the rapid action required to obtain bearings on short aircraft transmissions. In addition, the DF operators were not trained to read Japanese code, and therefore could not distinguish readily between the various transmissions they were to pick up.

On 15 November, the platoon travelled again, this time by rail to Brisbane, Queensland. M/Sgt Nurss, working under Capt Brown and GHQ, had preceded the platoon to arrange for the establishment of a radio station and antenna equipment. The platoon arrived in Brisbane on 18 November 1942 and immediately began work on a new operational site at Northgate. With the completion of a radio "shack" constructed by Australian workmen, and an antenna installation, using 6 rhombic antennas, work was begun in intercept, covering Japanese Army and Diplomatic radio traffic. All traffic was turned over to Central Bureau, GHQ, for analysis. Capt Brown, and his officers, Lt Phelan and W/O Card directed the operations of the platoon from this point on, using experience gained in and since the invasion of the Philippines to further the instruction and efforts of the platoon's intercept operators. It was necessary to train more men as intercept operators. Consequently, all men, regardless of their previous assignments in the platoon were given training, and of these the best became intercept operators. No direction finding work was done during this period.

The rainy season which followed shortly thereafter caused the site of the radio station to become inundated. On 10 January 1943 the platoon moved to Stafford, Brisbane, where it established an independent camp and a temporary radio station, the latter housed in two tents, and using simple antenna equipment. Work on a new GHQ radio station was begun at once, a short distance from campsite. Australian

workmen constructed the building. Grounded V-antennas were installed to cover directionally the arc from northwest through northeast of Brisbane. Fifteen antennas were set up for this purpose, arranged in groups of three, each group covering the same direction with spacing for diversity use if necessary. By the beginning of March the new radio station was in operation, continuing the work begun at Northgate. The amount of enemy traffic being copies by the First Operating Platoon, 126 Signal Radio Intelligence Company, was almost being doubled each month.

In April 1943, the First Operating Platoon, all its personnel except Lt Menear, and all its equipment, were combined with the 126th Signal Radio Intelligence Company which had arrived in Brisbane on the 25th of March 1943.

The 126th Signal Radio Intelligence Company had its origin at Camp Crowder, Missouri, where it was activated on the 14th of August 1942. Five officers, all second lieutenants, were present for duty with the company on the date of its activation. By virtue of seniority, Lt Joe L. Thurston assumed command. . . .The strength of the organization on the date of its activation, was 5 officers, 0 warrant officers, and 85 enlisted men.

The Table of Organization of the company included a group known only as the First Operating Platoon, which had already been activated. The whereabouts of the First Operating Platoon was not known or not revealed. However, its strength of 1 officer and 45 enlisted men was to be included as part of the strength of the 126th Signal Radio Intelligence Company, and it was believed that the two units would eventually be joined.

The new company was placed under the Signal Corps Unit Training Center at Camp Crowder, for administration and preparation for active duty overseas. It was the function of the Unit Training Center to coordinate administration, training, and securing of personnel and equipment for newly activated SOS units at Camp Crowder.

On the 19th August 1942, following movement of the company to its own area at Camp Crowder, operational training began. Full advantage was taken of specialists' schools available at the MidWestern Signal Corps School and the MidWestern Signal Corps Replacement Training Center at Camp Crowder. Chauffeurs and field linemen were sent to school for further training. All radio operators were enrolled for advanced training in International code, Joint Army and Navy Procedures, and net operations.

Among the radio operators assigned to the company were twenty specialists, with knowledge of the Japanese Romaji characters and their code equivalents. These men had received their special training at Fort Monmouth, New Jersey, and had been assigned from there to join the company on the 19th August 1942. At that time there was no course of training at Camp Crowder suitable for specialists of this type. For the time being, therefore, they were entered with the other operators in the International code classes.

* * *

Four SCR-255 Direction Finders had been received by the company. These were set up in the field near camp and connected by goniometric wire lines for several days operation and practice. Tentative operating teams for the DF's had been assigned for this work to learn as much as possbile about the equipment, and to use that knowledge in teaching others. All officers familiarized themselves with the equipment. Lt Dibos took charge of assembly and disassembly, and instruction in DF operation. The direction finders were then dismantled and prepared for crating.

Additional supplies and operational equipment were received by the company during the remainder of the month of September. Lt Kuch was tentatively placed in charge of intercept training. A schedule was arranged whereby the twenty Japanese specialist operators were to work several hours each day on company receivers installed in one of the barracks, picking up and copying Japanese radio code transmissions. This procedure was not too satisfactory due to weakness and unreliability of the signals. Therefore, training was later amplified to include copying of Japanese code from disc and tape recordings, made for the purpose by one of the operators.

During all this period, activities of the company were centered around crating and preparing for overseas movement. In early October 1942, news was received of a short delay, due to supply shortages and changes in War Department plans. The company, however, remained alerted.

One direction finder SCR-255 was uncrated and assembled near the camp. DF crews were assigned to work under the instruction of non-commissioned officers who had previous training, in assembling and disassembling the direction finder, as well as in operating. SCR-284 transmitters were installed, both as fixed and as mobile stations, and operators were trained to tune and operate these sets; 342-type receivers were used to intercept the transmission of the SCR-284's for the practice of copying and guarding friendly transmissions.

Lt Skinner was transferred from the company on the 21st of October 1942 due to a physical ailment; and Lt Hadd replaced him as Supply and Motor Transport officer. By oral assignment, Lt Dibos became Operations Officer, Lt Wilson was made Liaison and special services officer, Lt Swomley became Wire and Personnel Officer, and Lt Kuch was assigned as Intercept Officer.

During November 1942 word was received of a further delay in overseas movement. Training continued through the use of Signal Corps specialists' schools available on the Post. New intercept operators were being assigned to the company from time to time, and these were entered in new code and traffic classes, which were especially arranged for through the radio schools of the Replacement Training Center. Men who were not operators, but who were believed to have potentialities as such, were entered in beginners' classes. Many of the men assigned to the company as specialists in certain types of work, were found to be inadequately trained. Consequently, eight men were selected to attend night classes in teletype operation; five men who had been assigned to the company as radio

repair men were sent to the repair section of the Signal Corps Replacement Training Center, to learn and work on maintenance of Signal Corps receivers and transmitters; and the wire platoon was assigned to practice pole-climbing, use of the compass and maps in nearby fields and woods, and use of hand and engine-driven reels.

* * *

During early December crating was again speeded in anticipation of overseas movement. Training was continued spasmodically, due to the need for men to assist in packing and crating. The Unit Training Center began a new training project, in which it created an "army" headquarters, and two "corps" headquarters, with emphasis on message center work. All available intercept, telegraph, teletype, and switchboard operators of the 126th Signal Radio Intelligence Company were assigned to operate with other groups in the three headquarters' message centers. Radio operators handled radio traffic between the headquarters, using International code. Several company receivers, operated by company personnel, were set up and used as army and corps intercept units, guarding the radio nets and copying all traffic. After the first week, however, orders were received to ship all company equipment to arrive at the San Francisco Port of Embarkation by 1 January 1943. On the 23rd of December, the equipment was shipped in three box cars from Camp Crowder.

At this time, twenty enlisted men were enrolled in a six weeks course of training which included operation of the 206-D and SCR-255 direction finders, elementary map reading, elementary maintenance of radio equipment, elementary trigonometry, elementary wave-propogation, and the technique of recording on cylinders and tapes. The men selected for this course were NCO's of the operations section, nco's in charge of direction finding teams, as well as direction finder operators who showed potentialities for possible leadership of teams.

During January 1943, the company remained alerted, although movement was again delayed. Toward the end of the month the company was given a final inspection by a staff of officers and men from the Inspector General's Department. During the last week in January, orders were received for personnel of the company to move to the port of embarkation. All men in school were withdrawn. Lts Wilson and Hadd were sent immediately to the port to act as liaison officers for personnel and supplies respectively, and to prepare for arrival of the main body of the company. . . .

On the 3rd of February 1943, the company departed by railroad for the San Francisco Port of Embarkation, arriving there on the 6th. The company was assigned for a period of staging and physical "hardening" to quarters at Camp Stoneman. Then, on the 25th of February, with a strength of 6 officers, 1 warrant officer, and 203 enlisted men, the company boarded the USATS "President

Johnson" for shipment overseas.

The company disembarked at Brisbane on the 23rd of March 1943, and marched to Camp Doomben, where casual quarters were assigned. During the third day at Camp Doomben, the company was visited by GHQ officer, Capt Howard M Brown, and by 1st Lt Menear. The latter was introduced as the commanding officer of the First Operating Platoon for which allowances had been made on the Table of Organization, and the location of which had until then been unknown to the company. . . .

From SRH 049. *This document was produced by the 12th Army Group's Signal Security Division "D". The excerpt shows the results of one day's intercept of low-level German communications by Army tactical COMINT units. On November 11, 1944, intelligence was produced on three German divisions: the 15th Panzergrenadier Division; 17th SS Panzer Division; and 116th Panzer Division. Intelligence came from exploitation of German messages enciphered in medium-level cryptosystems (CIRO PEARL); low-level systems (PEARL); and radio direction-finding (THUMB). As can be seen from the text, CIRO PEARL messages were intercepted on November 6, but could not be decrypted and translated until November 11. The "cut" referred to in the final paragraph describes simultaneous bearings on an enemy radio station obtained by two separate radio direction finders.*

TECHNICAL SIGNAL INTELLIGENCE
TRANSMITTED DIRECTLY TO G-2,
12th ARMY GROUP, ETO
FROM 14 AUGUST 1944 TO MAY 1945

* * *

11 NOV 44

CIRO PEARL

15PG DIV 6/11 1159

To IIa

Query whether tank specialists, who were recently sent here from 5 (PZ) Co are to be retrained to become Panzer Grenadiers.

15 PG DIV 6/11 1219

To 2 Co

Send Rasterschluessel for course of instruction at FEB to FEB via registry.

HORN

15 PG DIV 6/11 1417

From actual strength status of 1 Nov 44 (with exception of the sick and wounded within the past 8 weeks, as well as designated Fahnenjunker (OCS candidates), 10 percent NCO's and OR's of the age groups 1906 and younger fit for general service are to be sent enroute to FELD ERS BN by 7 Nov 44 at 1200 hrs in accordance with OKW order. Numbers of NCO's and OR's released to Feb is to be reported to IIb by 7 Nov at 2000 hrs. Written orders enroute.

IIa

15 PG DIV 6/11 1531

SECRET - Report is to be made on Nov 10 as to whether there are experiences concerning rocket bombs having been shot down by pursuit planes.

PEARL

17 SS PZ DIV

Msgs today were mainly concerned with the difficulties of an art grp NAGLER (17 SS PZ ART RGT) which was in position the morning of 9 Nov in ALEMONT (U 9040). At 101410 the art group urgently informed its control station that Allied forces were advancing on BEAUX (U 9645), its present position, and requested immediate orders. At 101455 the group was told in answer to an inquiry that there were no munitions. At 101455 the group was still in BEAUX impatiently awaiting orders. At 101506 it was told that SCHMIDT (poss CO 10/38 SS PGR) was cut off and was requested to hold its present position. Shortly afterwards, however, the group indicated it was moving NW near PONTOY (U 9447).

116 PZ DIV 10/11

Rgt Bn of Art Rgt 146 still at RATH (F 107531)

116 PZ DIV 10/11 0345

Barrels already dismounted. Ammo packed. Phone comms dismantled. Prime movers are in the btry position. Equipment loaded. Query - are we to prepare to fire again and is the OP to be reestablished. SCHWEIGER

116 PZ DIV 10/11

ENGELS (PZ AR 146) arrived with 4400 liters.

THUMB

116 PZ DIV

D/F on supply elts of 116 PZ DIV confirm northward movement with cut on Art net at K 893742.

* * * *

CHAPTER X

Reshaping the Tools

By 1945, there were growing pressures to rationalize the Army's signals intelligence structure. A major step towards achieving this had already been taken in December 1944, when, as we have seen, the Military Intelligence Service assumed operational (but not administrative) control of the Signal Security Agency. Another initiative came about as the result of a belated Navy proposal to finally create an Army-Navy Communications Intelligence Board to coordinate the activities of the two service signals intelligence arms. Major General Clayton Bissell, the Army Assistant Chief of Staff for Intelligence, initially demurred, on grounds that the Army's structure was too decentralized to allow for meaningful interservice collaboration. However, he then used the Navy approach as a wedge to establish centralized Army control over all its COMINT assets. His arguments in favor of this are set forth in the excerpt from SRH 169, Centralized Control of U.S. Army Signal Intelligence Activities. With the war in Japan coming to a close, all the theater commanders in the Pacific—even Douglas MacArthur—accepted implementation of the proposition once the fighting was over. On 15 September 1945, just thirteen days after the war in the Pacific had ended, the Army created the Army Security Agency, which would control all Army signals intelligence elements through a vertical command structure for the next 32 years.

From SRH 169. *The head of the War Department's Military Intelligence Division argues that all signals intelligence assets should be under his control. His appeal was ultimately successful.*

CENTRALIZED CONTROL OF U.S. ARMY SIGNAL INTELLIGENCE ACTIVITIES

* * *

1 June 1945

MEMORANDUM FOR THE CHIEF OF STAFF

SUBJECT: Centralized Control of Signal Intelligence Activities for War Against the Japanese

1. On 8 May the War Department requested comments of the U.S. Army Theater Commanders in the Pacific and Far East on a proposal to place under the control of a single War Department agency all Army units and personnel engaged in signal intelligence activities for the war against the Japanese. . . .

2. General Wedemeyer has advised of his "wholehearted approval" of this proposal. . . .General Sultan advises that he "concurs in the need for a central agency to coordinate" all U.S. signal intelligence activities but believes this can be accomplished "without removing units and personnel from theater commanders' control". . . .General MacArthur advises that he does not concur in the proposal because it would place such activities under the "absentee control" of an agency "many thousands of miles away"; would interfere with the "close association" which his headquarters has had with such activities; would "disrupt an Allied agency which is now functioning most effectively" in his theater and would prevent signal intelligence results from being made available to the theater commander with the required speed. . . .

3. Attached hereto is a memorandum which explains the facts and circumstances pertinent to the proposed centralized War Department control. It is believed that such control is essential:

a. To coordinate U.S. Army signal intelligence activities in the various theaters and in the United States, eliminate duplication of effort and insure full exploitation of signal intelligence sources.

b. To coordinate U.S. Army signal intelligence activities with those of the U.S. Navy and the British.

c. To utilize most economically the limited Japanese linguistic and other specialized personnel available for this work.

d. To provide full technical support for all advanced signal intelligence units.

e. To ensure maximum distribution and utilization of signal intelligence technical data and results regardless of place of production.

4. The objections raised by General MacArthur are not considered valid. The world-wide nature of enemy radio interception and the total absence of any relationship between Theater boundaries and the location of interception or solution of Japanese messages, makes it essential that the principal cryptanalytic center be at a geographic point where the machinery, facilities and skilled research personnel are located if the signal intelligence system is to produce the maximum intelligence of which it is capable. Control should be centralized at this same point which is the only location that has or can have access to all of the enemy radio traffic without prohibitive duplication of personnel and facilities. The principal cryptanalytic center is near Washington and must remain here because it would be totally impracticable to move the machinery and facilities to another site and secure effective results during the probable period of the Japanese war. Adequate communications exist to ensure not only fullest exploitation, but to guarantee almost instantaneous delivery of results to any Theater Headquarters.

RECOMMENDATIONS

5. It is recommended that:

a. The proposed centralized control of the signal intelligence system be approved.

b. The attached draft of cable to theater commanders concerned be dispatched.

CLAYTON BISSELL
Major General, GSC
Assistant Chief of Staff, G-2

* * *

I. Circumstances leading to proposal

1. The present recommendation for centralizing control of all U.S. Army signal intelligence activities for the war against Japan is a direct outgrowth of a proposal made by Admiral King on 14 February 1945 to establish an Army-Navy Communication Intelligence Board charged with coordinating the plans and operations of the communications intelligence organizations of the Army and Navy. . . .

2. All signal intelligence activities of the Navy, including those conducted within theaters of operations, are under the direct operational control of the Navy Department in Washington. . . .In the Army, on the other hand, responsibility for signal intelligence activities is divided among the War Department and theaters of operations in the same manner as responsibility for the conduct of strictly combat operations against the enemy. Although this basic difference in the signal intelli-

gence organizations of the two Services made it unlikely that the proposed Army-Navy Board could function as effectively on the Army side as it could on the Navy side. . . , that fact was not considered an adequate ground for rejecting Admiral King's proposal. . . .The proposal was therefore accepted by the Chief of Staff. . . .

3. However, Admiral King's proposal gave impetus to consideration by the Deputy Chief of Staff, the Military Intelligence Division and the Operations Division of the need for centralizing control of the Army's signal intelligence activities for the war against the Japanese. This consideration led to the conclusion that the basic principles of command applicable to combat operations are entirely inapplicable to the highly technical and specialized activities involved in deriving intelligence from Japanese military radio communications, and that all such activities should be placed under the control of a single War Department agency. . . .

II. Proposal to theaters and replies thereto

4. Accordingly, after receipt of an independent suggestion from General Sultan as to the need for centralizing control of signal intelligence activities...and after obtaining the views of the Chief Signal Officer..., the proposal now under consideration was presented for comment to the theater commanders concerned. . . .

5. The comments received from the theater commanders have raised no considerations not previously taken into account by the War Department. General Wedemeyer's approval of the proposal is based upon considerations similar to those which constituted the basis for the proposal. . . .General Sultan's reply approves the basic idea of centralized control and suggests only a different procedure for putting it into effect. . . .General MacArthur's reply. . .raises objections of the same nature as those which had previously been considered and rejected as invalid. . . .Those objections are discussed below.

III Basic reasons for proposal

6. The basic reason for the present proposal is that Japanese radio communications, their availability for interception, the cryptographic systems used, and the usefulness of the results derived therefrom, all have no relation to the considerations which are determinative in assigning command responsibility for combat operations against enemy forces.

Availability of traffic for interception.

7. There is no relation between the availability of Japanese military traffic for interception and the geographic organization of our Army for combat operations. Traffic of great intelligence value to one theater may be intercepted at a point thousands of miles from the theater. For example, more of the Japanese military traffic received by Signal Security Agency is now intercepted in California than at any other place. The most advantageous locations for intercepting Japanese military traffic originating in Manchuria, Korea and North China are in the vicinity of Manila, Guam and Adak; the intelligence derived from this traffic may be of operational interest to any of the Far Eastern theaters, the Twentieth Air Force and the War Department.

Cryptanalysis

8. The main Japanese cryptographic systems are used throughout the Japanese Army. [text withheld] High level Japanese systems can be solved with the use of large numbers of personnel and elaborate tabulating machinery. The degree of success depends directly upon the volume of traffic obtained; no one theater intercepts sufficient volume for continuous high level cryptanalaysis. Effective exploitation requires the pooling at one place of all available traffic from all available U.S. and Allied intercept facilities, regardless of their location. This place might be at almost any location in the world where adequate personnel and machinery could be assembled and to which adequate communication facilities exist for forwarding traffic. At present, the principal such cryptanalytic agency is Arlington Hall Station, Arlington, Virginia, operated by Signal Security Agency under the operational command and control of G-2.

9. Forward exploitation of traffic at or near the point of intercept is desirable only where (1) the current period of the cryptanalytic system has been solved at the central cryptanalytic center having all traffic available to it, and (2) communication facilities are not adequate to permit particular messages in the solved system to be transmitted as quickly to the central agency as they can be to a local exploitation center. Because of the almost instantaneous speed of electrical transmission, mere distance in itself has no bearing upon the adequacy of communications; they may be and often are better to a point thousands of miles from the point of intercept than they are to a point much nearer.

10. The above basic considerations make it imperative that this work be under central direction and control. Any division of responsibility for this work among the War Department and theaters can have little if any relation to the practical problems involved, and necessarily results in duplication and inefficiency, without compensating advantages.

Usefulness of results obtained.

11. If it were attempted to divide interception and cryptanalysis of Japanese military traffic according to U.S. Army theater boundaries, the results obtained within each theater would have little if any relation to the combat operations conducted in that theater. From the cryptanalytic point of view each theater commander would be forced to exploit all traffic which he could get, regardless of its place of intercept or its value to his own operations, in order to read any traffic of primary concern to him.This would necessitate each theater commander duplicating the entire effort of other theaters and the War Department, in order to produce results most of which would be of no greater value to his theater than to other theaters. For example, the Alaskan Defense Command and the China Theater might produce results which would be of greatest value to the Southwest Pacific if that theater were to undertake operations on the coast of China or in the main Japanese islands. On the other hand, the Southwest Pacific might produce results most useful to U.S. Commanders in China for directing operations of Chinese forces from

the interior of China. Either theater might produce results of primary interest to the Twentieth Air Force or to the War Department.

"Low level" signal intelligence.

12. The foregoing comments are applicable chiefly to "high-level" signal intelligence activities, i.e., intercepting and reading Japanese messages transmitted in codes and ciphers having a high degree of security classification. Similar considerations are applicable to the important field of "low-level" signal intelligence, i.e., reading communications transmitted in low-grade codes and ciphers, or obtaining intelligence from the observation of radio traffic without reading the texts of the messages (traffic analysis).

13. There are very few Japanese cryptographic systems which are "low level" and those low level systems which it has been found possible to exploit are used in widely separated areas. For example, the most productive low level Japanese system now being exploited is an air-ground system used by the Japanese throughout the Pacific and Far East. Most effective exploitation of that and similar low level systems is impossible without immediate and full exchange of current technical data and results among the various signal intelligence units throughout the Pacific and Far East.

14. An additional important factor peculiarly applicable to the Japanese problem is the need for close integration of the results of this low level work with the results obtained from the high level work done primarily by Signal Security Agency. Only by a close tie-in of results from all sources can complete and reliable intelligence be produced.

15. For these reasons, a central agency is required in order to afford each unit working on this low level material the fullest technical support and to integrate the results of its work with the results obtained from other sources.

IV. Objections raised by SWPA

16. The principal objection raised by SWPA is to "absentee control" by an agency "many thousands of miles away," with "such delays as to seriously reduce the value of the derived intelligence and in many cases render it completely useless." These objections ignore the basic nature of signal intelligence activities and reflect a desire for theater complete self-sufficiency which does not and cannot ever exist due to such limiting factors as critical machinery, trained cryptanalysts, linguists and skilled research personnel.

17. The objection that the War Department agency is "many thousands of miles away" disregards the speed of modern electrical communications. This is strikingly illustrated by the fact that the Director of the British Government Code and Cipher School has recently advised the War Department that the British are greatly expanding their intercept facilities in India and Burma, but that they desire all of the traffic intercepted in those areas (which are as far from Washington as SWPA) to be exploited cryptanalytically only in London and Washington (with basic research on certain systems done in London and primary reading of current

messages done in Washington). The Director recommends against exploitation by the British personnel of the joint agency in SWPA. [text withheld] It recognizes that the important question is not at what location the exploitation is done so long as it is all done at one place.

18. The degree to which all exploitation should be concentrated at a single center depends not on the location of that center but upon the availability of communications between that agency and (1) all places of intercept and (2) all headquarters needing the derived intelligence. Experience has demonstrated that most Japanese military traffic now intercepted in the Pacific and Far East can be forwarded to Arlington Hall Station, decoded, translated, evaluated and disseminated to operational headquarters more quickly than the same processes can be performed within any theater.

19. It is not contemplated that all exploitation will be transferred to Arlington Hall. Before any exploitation now done in any theater is transferred either to another theater or to Arlington Hall Station, it will be determined exactly where such exploitation can be most effectively conducted. For example, such consideration might show that it would be desirable to forward recovered keys in certain systems to an exploitation center within a theater in order that traffic on specific circuits, known to carry material relating particularly to that theater's operation, might be read more expeditiously. Only by centralized control, based on knowledge of all pertinent facts, plus the capabilities of respective theaters, can intercept and solution problems be most intelligently integrated or can the most effective results be produced.

20. Centralized control of signal intelligence activities cannot properly be characterized as "absentee control." The reason for placing the control in the War Department is to assure unified control which can be provided only by a War Department agency. Even under the existing organization, actual control of signal intelligence activities in SWPA is exercised from distances of 3,500 miles and the Navy controls Guam signal intelligence from Washington, 8,000 miles away. It is immaterial whether the distance is 100 miles or 10,000 miles, provided the control of all activities is exercised by a single agency having authority to coordinate.

21. The comment from SWPA further states that the proposal would "serve to disrupt an Allied agency that is now functioning most effectively." The Allied agency referred to is the Central Bureau Brisbane, a joint U.S.-British organization under the control of the Chief Signal Officer, SWPA. Considered alone, this organization is operated with a relatively high degree of efficiency. However, from the overall viewpoint its operations are wasteful, since they are uncoordinated with other much more extensive signal intelligence operations of both the U.S. Army and the British. The British have proposed that the principal cryptanalytic work of the SWPA agency, which is absorbing large numbers of skilled linguistic and technical personnel, be transferred to Washington where the British believe the work can be done more effectively. There is no basis in the past or present relations of

either the War Department or SWPA with the British for the suggestion that the proposed centralized control will have anything other than a highly salutory effect upon cooperation with the British in the field of signal intelligence. The proposed creation of a British Theater in rear of the American zone of operations in the Pacific will further complicate the present unsatisfactory situation.

22. Probably the most unfortunate single consequence of our present decentralized signal intelligence organization is the strong tendency, most marked in SWPA, for each theater to strive for self-sufficiency and to undertake tasks far beyond its capacity to perform. This has at times been carried to ridiculous lengths, and has resulted in (a) useless duplication of effort and waste of highly technical and specialized personnel and machinery available only in limited numbers, and (b) neglect of opportunities on the part of theater signal intelligence organizations to derive intelligence of great and immediate tactical value from low level cryptanalysis and local traffic analysis.

23. It is certain that centralization of control of signal intelligence activities, rather than reducing the amount of useful signal intelligence work done within theaters of operations, will free personnel and units—now wasted on high level work beyond their capabilities—for greater concentration upon low level sources which can be best exploited locally and the possibilities of which have been grossly neglected. This will require the full backing and technical support of a central agency having authority (1) to coordinate the missions of all signal intelligence units including those engaged in low level work, (2) to ensure prompt interchange of technical data and results, and (3) to consolidate results from all sources for both technical and intelligence uses.

V. Procedure for placing centralized control into effect

24. Pursuant to a directive from the Deputy Chief of Staff dated December 10, 1944..., operational command and control of the signal intelligence activities of the Signal Security Agency are vested in the A. C. of S., G-2, WDGS, who exercises such control through the Chief, Military Intelligence Service. This permits close working relations between the production of signal intelligence and its evaluation, research and dissemination through MIS Special Security Officers attached to the operational headquarters and all units requiring information from this source.

25. The Signal Intelligence Units and personnel now under the command of theater commanders should be placed under the command of the Chief, Military Intelligence Service who will be in a position to integrate the activities of such units and personnel with activities of the Signal Security Agency and to direct all such activities in the light of intelligence requirements. The transfer of such units to be command of the Chief, Military Intelligence Service, will require no interruption in the existing working arrangements. The only immediate operational effect of the transfer will be that the present Theater Signal Intelligence officers will report *directly to the Chief, MIS thorugh the Signal Security Agency*, with which they all now communicate directly on technical matters.

26. The Signal Intelligence Units and personnel transferred will, as in the case of the Navy's Advanced Signal Intelligence Units and the Signal Security Agency's fixed intercept stations, remain under theater commanders for administration and discipline.

* * *

Appendixes

CHRONOLOGY

1917 - Formation of Code and Cipher Bureau within Military Inteiligence Section, War Department General Staff.

1918 - Code and Cipher Bureau redesignated as MI-8.

1919 - Herbert O. Yardley secretly employed by State and War Departments to operate clandestine cryptanalytic bureau.

1920 - William F. Friedman hired by Signal Corps to compile codes.

1921 - Yardley's success in reading Japanese diplomatic code paves the way to major U.S. diplomatic victory at Washington Peace Conference.

1929 - Yardley's bureau discontinued; all Army cryptologic activity transferred to Signal Corps where William F. Friedman becomes first head of the Signal Intelligence Service (SIS).

1931 - Yardley published *The American Black Chamber,* revealing secrets of U.S. cryptanalysis.

1934 - Provisional Radio Intelligence Detachment organized at Fort Monmouth, N.J.

1935 - Maj. Haskell Allison becomes first Army officer to head SIS.

1938 - 2d Signal Service Company activated to serve as consolidated intercept arm for SIS.

1940 - SIS team led by Friedman succeeds in breaking the Japanese PURPLE machine cipher by purely cryptanalytic methods. Decrypts, given the codename MAGIC, are given restricted dissemination to a few top policymakers.

1941 - Pearl Harbor attack; U.S. enters World War II.

1942 - Special Branch of MIS organized.

- SIS moves to Arlington Hall, is given mission of intercepting all diplomatic traffic, and is repeatedly redesignated.
- major intercept stations established at Vint Hill Farms Station, Virginia, and Two Rock Ranch Station, California.

1943 - SIS successor organization succeeds in solving first Japanese military (vice diplomatic) system and achieves final World War II designation as Signal Security Agency.

- BRUSA agreement gives Army access to British ULTRA; agreement is made that Arlington Hall will serve as principle center for exploitation of Japanese military communications, and that SSA will participate in exploiting German problem.

- Military Intelligence Service (MIS) sets up Special Security Officer system to disseminate product to the theater commanders.

1944 - Special Security Officer (SSO) system expanded to service field commands down to armies and numbered air forces.

- Special Branch is dissolved to eliminate excessive compartmentation within MIS. American forces invade Normandy.

- MIS is given operational control of SSA.

1945 - Army-Navy Communications Intelligence Board created to direct all U.S. COMINT operations.

- Army Security Agency created to centralize all Army COMINT assets.

GLOSSARY

The documents included in this collection necessarily contain a number of abbreviations and acronyms (some now obsolete) as well as foreign terms that may be unfamiliar to the general reader. This is a brief guide.

A-2	Air Force intelligence staff
A-3	Air Force operations staff
AAF	Army Air Forces (U.S., World War II)
Abt.	*Abteilung* (German word for troops)
A/C	Air commodore (British and British Commonwealth Air Force rank equivalent to brigadier general)
A.C. of S.	Assistant chief of staff
AEF	American Expeditionary Forces (World War I)
AFHQ	Allied Forces Headquarters (World War II Mediterranean theater)
AGCT	Army General Classification Test
AGO	Adjutant General's Office
AIF	Australian Imperial Forces
AIS	American Intelligence Service (a semi-autonomous branch of the Military Intelligence Service in World War II that dealt with Western Hemispheric affairs)
Armeegruppe	Army group
AR	Army regulation
AS	Air Staff
ASA	Army Security Agency
ASCZ	Advanced Sector, Communications Zone
ASF	Army Service Forces
ASTP	Army Special Training Program (World War II program in which selected draftees were allowed to attend college under military auspices)
ATC	Air Transport Command
AUS	Army of the United States
Bde.	Brigade
BEW	Board of Economic Warfare
B.P.	Bletchley Park (World War II British COMINT headquarters)
Btry.	Battery

C/A	Cryptanalysis
CBB	Central Bureau, Brisbane
CBI	China-Burma-India (theater)
CG	Commanding general
C-in-C; CINC	Commander in Chief
CINCPAC	Commander-in-Chief, Pacific
CIRO PEARL	World War II code word assigned to product derived from analysis of medium-level codes and ciphers
CO	Commanding officer
COMINT	Communications intelligence
COM-Z	Communications zone
CP	Command post
CWT	Central War Time
DAF	Desert Air Force
DDMI, BAS	Deputy Director of Military Intelligence, British Army Staff (Washington, D.C.)
DEXTER	British term for lower-grade signals intelligence
DF	Direction finding (radio)
"E"	Enigma
EM	Enlisted men
ETO	European Theater of Operations
ETOUSA	European Theater of Operations, U.S. Army
EWT	Eastern War Time
FBI	Federal Bureau of Investigation
FEB	*Feld Ersatz Battalion* (German field replacement battalion)
Flivo	German Air Force liaison officer attached to ground units
FY	Fiscal year
FYI	For your information
G–1	Military personnel staff section
G–2	Military intelligence
G–3	Military operations staff section
G–4	Military supply staff section
GAF	German Air Force
GC & CS	Government Code and Cypher School (the World War II British COMINT organization headquartered at Bletchley Park)
Genfldm.	*Generalfeldmarschal* (German rank of Field Marshal, equivalent to General of the Army in U.S. rank)
Genobst.	*Generaloberst* (German rank of colonel general, equivalent to general in the U.S. Army)
GHQ	General Headquarters
GI	Government issue
GSC; G.S.C.	General Staff Corps

HF	High frequency (radio communication)
HF/DF	High frequency/direction-finding
HO	Designation of various types of truck-mounted shelters used to house mobile signals intelligence operations in World War II
IA	Intelligence and Analysis (section)
IB	Intelligence Bulletin
IBM	International Business Machines
Inf.	Infantry
ISUM	Intelligence Summary
JA	Japanese Army
JIC	Joint Intelligence Committee
Kana	Japanese syllabary used for foreign terms
KP	Kitchen police
Luftflotte	German air fleet (equivalent to a U.S. numbered Air Force)
M-134A	Electromechanical cipher device invented by the Signal Intelligence Service in the 1930s
M-134C	Improved version of the M-134A used in World War II, familiarly known as the SIGABA
M-138	Strip cipher device introduced by the Signal Intelligence Service
M-209	Mechanical cipher device invented by the Swedish cryptologist Boris Hagelin and used to encipher U.S. Army tactical communications in World War II
MAAF	Mediterranean Allied Air Forces
MAGIC	Code word assigned to decrypts of Japanese diplomatic communications
MF	Medium frequency (radio transmission)
MI-8	World War I cryptanalytic unit of Military Intelligence Division
MID	Military Intelligence Division, War Department General Staff
MIS	World War II Military Intelligence Service
MOS	Military occupational specialty
MS; MS/CXX	British category of high-grade signals intelligence
MTO	Mediterranean Theater of Operations
NATOUSA	North African Theater of Operations, U.S. Army
NCO	Noncommissioned officer
NYPE	New York Port of Embarkation
O/B	Order of Battle
OCS	Officers Candidate School; Office of the Chief of Staff
OCSigO	Office of the Chief Signal Officer (U.S. Army)
OD	Olive drab
OIC	Officer in charge
OKW	*Oberkommando der Wehrmacht* (the World War II German Armed Forces High Command)

ONI	Office of Naval Intelligence
OP	Observation post
OP-20-G	U.S. Navy cryptanalytic organization
OPD	Operations Division (the U.S. Army's central command organization in World War II)
OSCRP	Officers Signal Corps Replacement Pool
OSS	Office of Strategic Services
OWI	Office of War Information
PEARL	World War II code word assigned to product derived from analysis of low-level codes and ciphers
PURPLE	Code name assigned by U.S. to advanced Japanese diplomatic machine cipher
PW	Prisoner of war
PX	Post exchange
RAAF	Royal Australian Air Force
RAM	Rapid Analytical Machinery
Rasterschuessel	German transposition cipher device
ROMAJI	Use of English letters to transcribe Japanese words
R/T	Radio/telephone
Schwerpunkt	German military term used to denote "vital point" for attack or defense
SCR	Signal Corps radio
SCU	Special Communications Unit (British units used as communications channels for ULTRA)
SHAEF	Supreme Headquarters, Allied Expeditionary Forces
SID	Signal Intelligence Division
SIGINT	World War II British term for signals intelligence
SIS	Signal Intelligence Service
SLU	Special Liaison Unit (British equivalent of Special Security Officer)
SNAFU	"Situation normal—all fouled up"
SLOE	Special List of Equipment
S.O.	Special order
SRH	Special Research History
SS	Signal Service
SSA	Signal Security Agency
SSB	Signal Security Branch
SSD	Signal Security Division
SSO	Special Security Officer
SSR	Special Security Representative
SSS	Signal Security Service
SWPA	Southwest Pacific Area (MacArthur's World War II command)
T/4	Technical sergeant, fourth class

T/5	Technical sergeant, fifth class
TAC	Tactical Air Command
TAF	Tactical Air Force
T/BA	Table of basic allowances
T/E	Table of equipment
THQ	Headquarters hut at Vint Hill Farms School
THUMB	Code word assigned to product derived from radio direction finding
T/O	Table of organization
TOE	Table of organization and equipment
ULTRA	World War II code word assigned to high-level signals intelligence product (originally ULTRA DEXTER)
USAAF	U.S. Army Air Forces
USAFFE	U.S. Army Forces, Far East
USATS	U.S. Army Transport Service
VHF	Very high frequency (radio transmission)
V-J	Victory over Japan
WAC	Women's Army Corps
W/C	Wing commander (Royal Air Force - British Commonwealth rank, equivalent to a colonel)
WD	War Department
WDGS	War Department General Staff
WEC	Wireless Experimental Centre (India-based British COMINT element)
Wehrkreis	Territorial division of World War II German Home Army
W/O	Warrant officer
W/T	Wireless telegraphy (radio)
WT/I	Wireless telegraphy intelligence (early term for traffic intelligence)
"Y"	British term for low-level signals intelligence

A DICTIONARY OF PEOPLE, PLACES, AND TERMS

This is a list—by no means exhaustive—of some of the key people, places, and military and cryptologic terms that the reader may encounter in the documents.

Arlington Hall - a converted girls' school in Arlington, Virginia, which was taken over by the U.S. government in World War II to serve as the headquarters for the Signal Intelligence Service and its various successor organizations.

base line - extent of area over which radio direction sets are dispersed. The longer the base line, the more accurate the bearings.

Bissell, Clayton W. - Major General Bissell, an Army Air Forces officer, served as Army Assistant Chief of Staff for Intelligence from 1944 to 1945.

Bletchley Park - British estate that served as the wartime home of the Government Code & Cypher School - the British cryptologic organization.

bookbreaking - recovering the underlying "values"—i.e., meanings—of the various code groups within a single code.

"buck slip" - referral form.

Camp Ritchie - This National Guard installation located in the hills of Maryland was the site of the Army's Military Intelligence Training Center in World War II.

cipher - method of secret writing involving the transposition or substitution of individual letters or syllables in a message.

Clark, Mark - General Mark Clark served as commander of the Fifth Army in the Mediterranean Theater of Operations.

Clarke, Carter W. - Colonel (later Brigadier General) Carter Clarke served as Chief, Special Branch, Military Intelligence Service from 1942 to 1944. He later

became Deputy Chief of the Military Intelligence Service, and went on to command the Army Security Agency.

Class IV Installation - in World War II, a base or camp controlled by a technical service, as opposed to Army Ground Forces.

code - a method of secret writing involving the substitution of words and phrases in a message.

code values - the meanings assigned to different words in a given code.

collateral - intelligence derived from sources other than signals intelligence.

colored warplans - U.S. Army warplans devised prior to World War II. Plans were aimed against individual enemy countries, each of which was assigned a different color code. The plan to defend against Japanese aggression was Plan Orange.

compromise - a security breakdown uncovering a secret to the enemy.

converter - pre-World War II Army term for a machine cipher device.

cover - deceptive information put out to hide the real source of signals intelligence.

cryptanalysis - the science of breaking codes and ciphers.

cryptographer - someone who composes codes and ciphers.

cryptology - this term, invented by Friedman, embraces the wholefield of secret communications, to include cryptanalysis, cryptography, and intercept.

depth - a cryptologic term referring to the existence of a sufficient number of messages in the same code or cipher key.

Fabyan, George - Eccentric philanthropist who founded Riverbank Laboratories and was responsible for the initiation of cryptologic studies in the United States.

Fort Monmouth - A major Army Signal Corps installation in New Jersey.

Friedman, William - Originally trained as a geneticist, Friedman became America's foremost cryptologist after George Fabyan hired him to solve the alleged hidden cipher in Shakespeare's plays that would prove the works to have been written by Sir Francis Bacon. He served as code compilation clerk for the

Signal Corps from 1920 to 1930, and was the first head of the Signal Intelligence Service. His major accomplishment was in leading the team that broke the Japanese machine cipher that the United States assigned the codename PURPLE. During World War II, he served as Director of Communications Research for the Signal Security Agency.

"gig" - U.S. Army term for a demerit in an inspection.

goniometric - having to do with radio direction-finding.

grades - enlisted ranks. Before World War II, these went from Grade 7 (buck private) to Grade 1 (master sergeant).

Halmahera - Island in the Moluccas.

indoctrination - in intelligence, the procedure whereby selected individuals are instructed on the importance of the secret they will have access to and the need to avoid taking any actions that might result in compromise.

intercept - in signals intelligence, the act of listening to broadcast communications.

key; keying elements - elements applied to plaintext to produce a ciphered message.

King, Ernest J. - Admiral (later Fleet Admiral) King served as Commander in Chief, United States Fleet and Chief of Naval Operations throughout World War II.

Marshall, George Catlett - General (later General of the Army) Marshall served as Army Chief of Staff throughout World War II.

McCloy, John J. - a prominent lawyer who served as Assistant Secretary of War during World War II.

McCormack, Alfred - Colonel Alfred McCormack, a Wall Street lawyer in civilian life, was called into government service to analyze intelligence problems at the beginning of World War II. He served as deputy chief of the Special Branch until 1944, and then became Director of Intelligence in a reorganized Military Intelligence Service. After World War II, McCormack served briefly as the first head of the State Department's Bureau of Intelligence and Research.

McNarney, James J. - Lieutenant General McNarney served as Army Deputy Chief of Staff in World War II and was deeply involved in organizational issues.

Miles, Sherman - Major General Sherman Miles was the Army's Assistant Chief of Staff for Intelligence at the time of the disastrous surprise at Pearl Harbor.

Montgomery, Bernard - Field Marshal Montgomery commanded the British Eighth Army against Rommel in World War II and later went on to command the 21 Army Group under Eisenhower.

non-indicator traffic - messages sent without any obvious indication of what particular code or cipher key they have been enciphered in.

null - radio direction-finding term. A "null" occurs when a radio station can no longer be heard, indicating that the antenna of the receiving set is directly aligned on a bearing pointing towards the emission source.

overhead - personnel not assigned to an organized Army unit.

period - time-frame in which a given code or cryptosystem was allowed to remain in use. Codes and ciphers were changed regularly to protect security.

ratings - lower-ranking soldiers before World War II could acquire additional pay within their basic grade by demonstrating professional proficiency in technical specialties.

reserve editions (codes) - new codes would be held in reserve to be issued in case existing codes had become compromised.

Riverbank Laboratories - This "think tank" was founded by George Fabyan at Geneva, Illinois, to conduct research in a number of scientific fields, ultimately including cryptology.

Scharnhorst - World War II German battle cruiser sunk by British Navy as a result of successful exploitation of COMINT.

system indicators - information at the beginning of a message telling the receiving operator what code or cipher the message has been transcribed in.

Stimson, Henry L. - prominent statesman who served as Hoover's Secretary of State, where he abolished codebreaking activity, and later as President Franklin Roosevelt's Secretary of War, where he sponsored it.

Strong, George V. - Major General Strong served as the Army's Assistant Chief of Staff for Intelligence from 1942 to 1944.

superencipherment - enciphering a message already rendered into code.

Taylor, Telford - Colonel (later Brigadier General) Telford Taylor, a lawyer in civilian life, was commissioned as an intelligence officer in World War II and became the Military Intelligence Service's chief liaison officer in Britain. After World War II, he became a military prosecutor in the war crimes trials at Nuremberg, Germany.

transposition - a method of encipherment in which the order of letters is systematically altered.

Two Rocks - Two Rock Ranch near Petaluma, California, was the site of the Signal Security Agency's main West Coast monitoring station in World War II.

Vint Hill Farms - This large estate near Warrenton, Virginia, became the World War II site of the Army's cryptologic training school and Monitoring Station Number 1.

Yardley, Herbert O. - Major Yardley headed up MI-8, the Army's cryptologic unit in World War I. He later headed up the so-called "Black Chamber" element that broke codes for the State Department and War Department in the 1920s. After being dismissed by Henry L. Stimson, he went on to write a sensational and damaging exposé of his activities.