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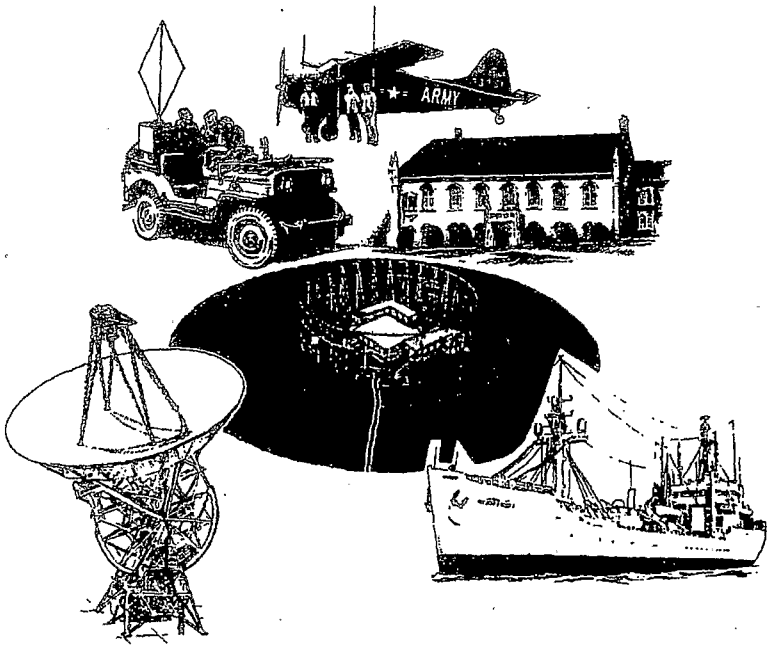

American Cryptology during the Cold War, 1945–1989

Book I: The Struggle for Centralization 1945–1960

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UNITED STATES CRYPTOLOGIC HISTORY

Series VI
The NSA Period
1952 – Present
Volume 5

American Cryptology during the Cold War, 1945–1989

Book I: The Struggle for Centralization, 1945–1960

Thomas R. Johnson

CENTER FOR CRYPTOLOGIC HISTORY

NATIONAL SECURITY AGENCY

1995

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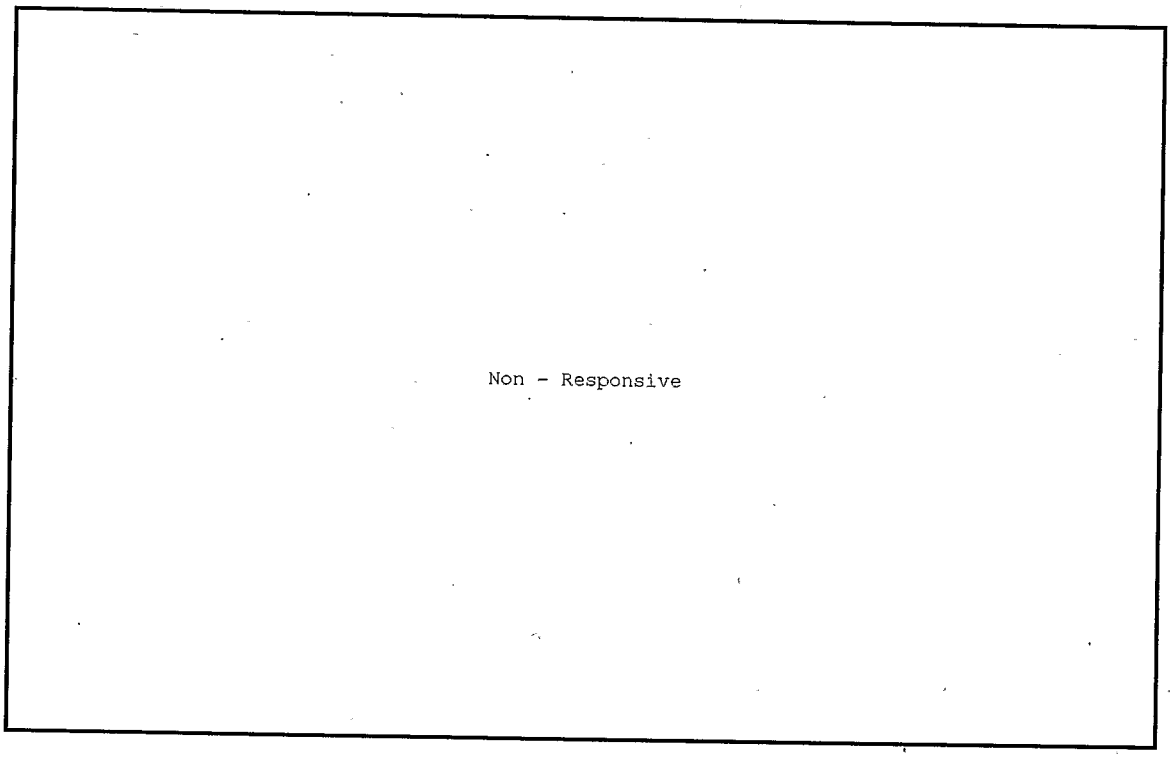

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Foreword

(U) The Center for Cryptologic History (CCH) and its predecessors have published thirty-seven volumes – monographs, crisis studies, source documents, bibliographies – concerning the history of signals intelligence and information systems security, the *yin* and *yang* of modern cryptology. These publications have treated specific events, organizational issues, and technical developments in peace and war; most have been pioneering efforts, based on original documentation, and, in many cases, are the first history of their particular topic in any venue.

(U) There has been a strong need, however, for a single work to undertake the full sweep of cryptologic history, providing a context into which the more specialized studies may be placed. Such a cryptologic Cook's tour should incorporate the military-political events of our time and the history of interaction between cryptologic organizations and other components of the intelligence community – access to SIGINT and INFOSEC is limited to "insiders," but it is clear that cryptologic operations do not occur in a vacuum.

(U) Thomas R. Johnson's *American Cryptology during the Cold War, 1945–1989* meets these requirements admirably. Drawing on over a decade of study and reflection on cryptologic history, Dr. Johnson deals with three facets of cryptologic history: first he explains how cryptology responded to the landmark events and challenges of the post-World War II era. He next provides profound analysis of how events and personalities affected the development of cryptology institutionally and professionally. Finally, and even better, Dr. Johnson spins a fascinating tale of the success or failure of cryptologic operations in the various crises that have challenged the SIGINT system.

(U) With Books One and Two of this projected four-book work now available, *American Cryptology during the Cold War* is "must reading" for the cryptologic professional. The narrative and analysis in these first two books are essential background for understanding how the cryptologic community progressed to its present configuration. This is the definitive work on American cryptology after World War II.

(U) For readers who may wish to explore American cryptology prior to the modern period, I recommend as a companion piece to the present book, Dr. Ralph E. Weber's *Masked Dispatches: Cryptograms and Cryptology in*

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American History, 1775–1900 (CCH, 1993). Two more useful books with background on pre-World War and World War II cryptology are Frederick D. Parker's *Pearl Harbor Revisited: United States Navy Communications Intelligence, 1924–1941* (CCH, 1994) and Thomas L. Burns's *The Origins of the National Security Agency, 1940–1952* (CCH, 1990).

David A. Hatch
Director,
Center for Cryptologic History

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Preface

What It Is and What It Is Not

This book is intended to be a general overview of U.S. government cryptology since the end of World War II. It is projected to be a four-book study carrying the story to the end of the Cold War, symbolized by the fall of the Berlin Wall.

I have attempted to include the entire effort, which includes the Service Cryptologic Agencies (as they were once called), as well as certain CIA programs. These organizations comprised almost the totality of the cryptologic efforts of the federal government, although other organizations (FBI is a good example) have occasionally dabbled in the discipline. Because it is comprehensive rather than strictly organizational, it contains information about the field sites, intermediate headquarters and the SCA headquarters themselves. It does not cover in detail the organizational aspects of the creation of the National Security Agency. That is covered in good detail in Thomas L. Burns's book, *The Origins of the National Security Agency: 1940-1952*, published in 1990. Thus the coverage of events between 1945 and 1952 is sketchy and simply tries to fill in blanks in the record that the Burns book did not cover.

This is not a history of private or nongovernmental cryptology. Although it covers relationships with our Second and Third Party partners, it does not focus on that aspect either, except as it contributed to the development of our own effort. Our long-standing debt to the British cryptologic effort at GCHQ should not go unnoticed, however. It deserves a separate book.

If you are looking for a history of your specific organization, you will not find it. This is a history of events, not organizations. The importance of the cryptologic contribution to American security is so broad as to obscure individual organizations and, often, the specific people involved. In certain cases, however, I have identified major individual contributors to cryptologic history or those who were, by chance, thrown into momentous events.

Two overarching themes characterized American cryptology from the end of World War II to the end of the first Nixon administration: centralization and expansion. The SIGINT system underwent a period of almost unbroken expansion from 1945 to the American retreat from Southeast Asia. These themes dominate the first two books in the set.

The end of the Vietnam War and the era of the Watergate scandals that followed marked a watershed, and new themes of retrenchment and decentralization marked the period that followed. These will be the themes that open Book III.

THOMAS R. JOHNSON

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Acknowledgements

My debt to others begins with the staff of the NSA Archives, who dropped whatever they were doing whenever I needed material. [redacted] in the Archives helped with photographs, and the staff in L32 produced hundreds of black and white prints to go into the publication. [redacted] in E31 (Geographics) did most of the map work. My debt also includes the CIA staff historians, especially [redacted] and [redacted] who guided my work and opened doors to CIA material.

My thanks also go to the editorial staff of Barry Carleen [redacted] and [redacted] who, for days on end, did nothing but edit this history. It was the longest work that the Center for Cryptologic History has attempted, and I am sure it taxed their patience, although they never said so. Also owing to the unusual length and complexity of the book, the NSA photo laboratory (E23) and NSA's printing services (Y19), which did the photo reproduction and printing of this book, should be recognized for their major efforts to get out the publication. [redacted] deserves praise for the cover graphics.

In the Service Cryptologic Agencies, James Gilbert and Jack Finnegan, the INSCOM historians, were very responsive to my need for Army cryptologic materials. A special debt is also owed the historical staff at the Air Intelligence Agency. Everyone on the staff, from James Pierson (now retired) to Jo Ann Himes to Joyce Homs to Juan Jimenez, responded almost instantly to my many requests for information. Their help resulted in a rather more thorough treatment of Air Force cryptology than would have been possible otherwise.

The history itself has had a large number of "readers" who plowed through the various drafts and revisions offering helpful comments and additional information. Everyone in the Center for Cryptologic History (CCH) had a hand in its improvement, as well as a list of other readers who critiqued various portions. Among them, David Gaddy and [redacted] [redacted] deserve special note for their help with the chapter on Vietnam.

The history also had a group of "general readers," senior Agency officials who agreed to read the entire work in draft state. Milton Zaslow, Cecil Phillips, Donald Parsons, Eugene Becker, and David Boak spent long hours poring over various drafts, offering comments and encouragement and correcting information.

Finally, I wish to thank all those who, over the years, volunteered their time to sit for oral history interviews. NSA owes them all a debt of gratitude for their contributions to retrieving otherwise vanished information.

THOMAS R. JOHNSON

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Footnotes

The text is footnoted throughout with short, abbreviated citations. More complete information can be obtained in the Bibliography. However, a few comments on certain footnote abbreviations are in order.

The largest number of citations is from the Cryptologic History Collection, which is the working file of the Center for Cryptologic History. This collection is organized into sixteen series, and citations to that collection begin with the series number and a series of numbers, e.g., CCH Series V.A.29.

Citations from the NSA Archives vary depending on whether the document was part of an archived collection or was still in the Retired Records collection when researched. The former begins with the accession number, followed by a location, e.g., ACC 16824,CBTB 26. The latter begins with a box number, followed by a shelf location, e.g., 28791-2, 80-079.

A general bibliography and an index are included at the end of Book II.

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Chapter 1
Cryptologic Triumph and Reorganization, 1941–1949

The combined U.S.-U.K. COMINT operation of World War II was perhaps the most successful large-scale intelligence operation in history.

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WORLD WAR II AND THE INTELLIGENCE REVOLUTION

The Second World War began a true "revolution" in intelligence. The impact of intelligence on the strategy and tactics of the Allies (and to a somewhat lesser extent on the Germans and Japanese) was truly revolutionary, and it is just now coming to be recognized for what it was. Through the publication of books like Frederick Winterbotham's *The Ultra Secret* and John Masterman's *The Double Cross System* and by the massive declassification of war records begun by the British and Americans in 1977, the true extent of this influence is now emerging.

No other intelligence source had the revolutionary impact of SIGINT. World War II was, in the words of historian Walter Laqueur, "a SIGINT war." The influence of SIGINT was so pervasive that it is now hard to imagine how we might have fought the war without it. Even prior to the direct engagement of American and British forces against the Germans and Japanese, two of their most complex ciphers were broken. The British effort at Bletchley Park first produced plaintext reports from the German ENIGMA system in September 1940, the same month that a small Army team under William F. Friedman broke the Japanese diplomatic cipher machine called PURPLE. By February of 1942 the Navy had broken the Japanese Fleet Operational Code, called JN25. In 1943 the Army broke the Water Transport Code, while in 1944 a lucky battlefield retrieval of cipher material allowed the Army to read the Japanese Army codes. When combined with successes in direction finding, traffic analysis, and the exploitation of plaintext communications, SIGINT yielded a torrent of useful information.

British achievements have come in for the most scrutiny (and praise). We know that Churchill "revelled" in his ability to read Hitler's mail and spent hours pondering on Nazi strategy as revealed in the decrypted messages. The British set up a very efficient and secure system for disseminating SIGINT, the precursor of our SSO (Special Security Officer) system. Always wary of the "blabbermouth" Americans, they insisted that we adopt their system before they would share everything in the SIGINT larder with us. As the Combined Chiefs prepared for Overlord, they knew precisely how the Germans were reacting to the invasion plans and where they were positioning their units for the expected blow.

Moreover, once the invasion was launched, they knew what the Germans were doing and were able to adjust accordingly. As Allied troops moved across France, they moved in sync with the gold mine of intelligence which detailed most of the important German military movements. Their intelligence officers must have looked like geniuses – they were able to predict German moves before they happened and could advise commanders how to react. If every dog has its day, this was the day of the G-2, the military intelligence officer. The product of breaking high-grade ciphers was called ULTRA, and it was so good that when it was not available, as it was not at the Battle of the Bulge, the G2 corps scarcely knew what to do. A few predicted the German offensive, but most did not. They were wedded to the SSO and the bonanza of information that he could provide.

The Pacific was the American theater, and the U.S. was as successful there as the British were in Europe. Navy cryptanalysts broke JN25 in time for Admiral Nimitz to use it in the Battle of Coral Sea in May of 1942. The success of strategic SIGINT was so important that Nimitz had become a permanent convert. When the cryptologists at Pearl Harbor came to Nimitz with information outlining a much bigger battle shaping up in the central Pacific, the admiral was quick to believe and quick to act. To his dying day he credited SIGINT with the key to the victory at Midway. This turned the war in the Pacific completely around and launched Nimitz on his Central Pacific campaign which took him to Okinawa. He considered SIGINT as an absolutely critical component, and he learned to use information from both the high-grade cipher traffic and the plaintext messages and operator chatter. Some of his subordinates were as successful as Nimitz in the use of this intelligence, some were not. But it is hard to argue with results.

SIGINT and MacArthur had a turbulent marriage. The commander in the Southwest Pacific had outstanding success in using SIGINT on some occasions, the most conspicuous success coming in his 1944 New Guinea campaign. There were also some failures resulting from several causes. His staff never came to trust SIGINT as did that of Nimitz. When they did use it, it was sometimes hard to get it melded into the battle plan, as MacArthur was a classical intuitive decision maker. Jurisdictional disputes between MacArthur and the War Department in Washington caused him to come to distrust this strange SSO lash-up which he could not control because it did not work for him.

In the battle for the sea lanes, SIGINT again played a decisive role. The Japanese merchant marine was devastated largely because its movements were being given away in the Water Transport Code. Sinking the defenseless and slow-moving merchant vessels was relatively easy when their movements were known beforehand. In the Atlantic, the U.S. and the British used decrypted ENIGMA messages to track German U-boats and to drive their wolf packs from the sea lanes. This was not quite as easy as going after merchantmen, and the marriage between SIGINT information and operational procedures to effect a kill represented a very high level of military and technological expertise. It may have been the most difficult and delicate use of SIGINT during the war.

One other wartime accomplishment would become significant in later years. In 1944 the British and Americans established a Target Intelligence Committee (TICOM) to interrogate captured German COMINT personnel. The major objective was COMSEC – to determine how well the German cryptologists had exploited Allied communications. The flip side of that effort was COMINT – to see how well the Germans were doing against other, and particularly Soviet, communications. TICOM was at Bletchley Park, headquarters for the British cryptologic service, Government Code and Cipher School (GC&CS). Six teams of American and British COMINTers were dispatched to the battlefields of the Continent. They sent their "take" to the Document Center at GC&CS. The original documents remained there while the microfilm copies were sent on to Washington. TICOM teams also captured equipment. One-of-a-kind equipment remained at GC&CS, while duplicates were sent to the United States.

The new system was so successful that teams were established in the Pacific, with the British taking the lead in Southeast Asia, the United States in the Central Pacific and Japan, and joint American and Australian teams in Rabaul and Borneo. Although TICOM was formally dissolved in November of 1945, American and British experts continued to exploit the material for years afterward, and TICOM was later re-created in the United States as TAREX (Target Exploitation), minus British participation.

If the strength of American SIGINT was in providing militarily useful information, its weakness was in its organization. The Army and Navy were at constant loggerheads over the control of cryptology, and at times the factional disputes were little short of catastrophic. British historian Ronald Lewin, a great admirer of American technical ingenuity which yielded the SIGINT bonanza, was frankly contemptuous of our inability to get along:

> The old antagonism and suspicion between Army and Navy persisted in a manner that may at times seem infantile, until it be remembered that tribal loyalty, narrowness of vision, and sheer egocentricity can make even the most senior and hardened officers occasionally enter a second childhood.[1]

Army and Navy cryptologic organizations had a long and inglorious history of failing to coordinate their efforts, dating back to the 1920s. In 1940, when the Army's success in breaking Japanese diplomatic cipher systems became known to the Navy, there ensued lengthy and difficult negotiations to determine how the effort was to be divided. They finally arrived at a Solomonic solution by which the Army processed Japanese diplomatic traffic originating (i.e., cipher date) on even days of the month while the Navy would process traffic from odd days. This resulted in a fair division politically, but from the standpoint of cryptanalytic continuity it was a horror. To make matters even worse, there was in those days no thought, no concept, of centralized and coordinated intelligence analysis. What little analysis and interpretation was done (and there was very little indeed) was accomplished by each service on the traffic which it had decrypted, leaving for each a checkerboard pattern of information in which every other day was left out. This

almost inconceivable situation persisted until 1942, when diplomatic traffic was, by mutual agreement, left to the Army, while the Navy concentrated on Japanese naval material.[2]

Alfred McCormack

The disaster at Pearl Harbor resulted in a thoroughgoing Army internal investigation. Secretary of War Henry Stimson picked Yale lawyer Alfred McCormack to lead the way. McCormack discovered a scandalously incompetent Army G2 and a nonexistent SIGINT analysis and dissemination system. He set up a separate system called Special Branch, Military Intelligence Division, and was picked as the first deputy. (Colonel Carter W. Clarke became the first commander.) At the same time, the Army and Navy arrived at a joint modus operandi regarding the division of overall SIGINT responsibilities. Each service was to work what we now call "counterpart" targets. Since there was little in the way of Japanese Army traffic to work, the Army took on the task of diplomatic intercept. The third partner was the FBI, which shared with the Navy the task of working Western Hemisphere agent and clandestine traffic. These three were tobe the only participants in SIGINT for the duration of the war. Roosevelt's directive of July 1942 specifically excluded the FCC (Federal Communications Commission), Office of Censorship, and the OSS (Office of Strategic Services) from SIGINT production.[3]

At the same time a standing committee of Army, Navy, and FBI COMINT officials was established. It met only a few times and had little lasting impact on organizational matters. Meetings were frequently marred by vituperative arguments, especially between Navy and FBI, which were supposed to be sharing Western Hemisphere clandestine traffic. It was not cryptology's finest hour. Meanwhile, the COMINT activities of the FCC and Censorship Bureau continued virtually unabated.[4] Only the OSS seems to have been temporarily frozen out of the COMINT community. Resurrected after the war as the CIA, it

exacted revenge over a period of many years for having been excluded from wartime cryptology.

Carter Clarke, head of Special Branch of Military Intelligence Service

The Army and Navy cryptologic organizations, Signal Security Agency (SSA) and OP-20-G, respectively, found cooperation difficult. The Army was willing to share everything it had with the Navy, but OP-20-G would not reciprocate. What finally brought matters to a head was the breaking of the Japanese Army code in early 1944. This produced information vital to the Navy in the Southwest Pacific. SSA decided to withhold information from it until the Navy agreed to expand cooperation. The Navy quickly came around, and the result was a wartime agreement signed by Army Chief of Staff General George Catlett Marshall and Chief of Naval Operations Admiral Earnest J. King. Called the Marshall-King Agreement, it provided for the total exchange of COMINT materials (but at the Washington level only).[5]

It quickly fell apart, and for a time this informal agreement seemed a dead letter. But the need to cooperate was by then so vital that the two services were driven to a more permanent solution. Thus was formed the Army-Navy Communications Intelligence Coordinating Committee (ANCICC) in April of 1944. The committee was to coordinate

and settle "such controversial matters as can be resolved without reference to higher authority," a plain attempt to keep disagreements out of the offices of Marshall and King. Although the Navy was consistently the more parochial of the two services in COMINT matters, the "godfather" of this cooperation was almost certainly Joseph Wenger, a naval commander and career cryptologist within OP-20-G. Meanwhile, coordination under the terms of the Marshall-King Agreement continued its bumpy course, now underpinned by this policy committee.[6]

Joseph Wenger

In late 1944 the Navy (probably Wenger) once again suggested improving cooperation. This time they proposed creating a new board called the Army-Navy Communications Intelligence Board (ANCIB). Representation would be of a higher level – instead of the heads of the cryptologic organizations, the members were to be the heads of intelligence and communications for the two services. The board would be formally established (ANCICC was informal) and would be approved by Marshall and King. Although the Army initially answered "No," it later changed its mind, and ANCIB became official in March 1945. ANCICC became a working committee of ANCIB, insuring that the heads of COMINT organizations would continue to meet. To keep COMINT out of the JCS arena (in

order to tighten security), ANCIB reported directly to the Chairman of the Joint Chiefs of Staff, rather than through the Joint Staff.

FBI was not invited to be a member of the board, a deliberate move which was occasioned by Navy-FBI friction over the control of clandestine intelligence. But in December 1945, the State Department was invited, and ANCIB became STANCIB. This recognized the existence of a small COMINT exploitation unit at State and implicitly acknowledged that State would have to be invited if ANCIB were to represent the United States in postwar COMINT negotiations with the British. In 1946 the board changed name once again, to USCIB (the United States Communications Intelligence Board), a lineal predecessor of today's National Foreign Intelligence Board. At virtually the same time, the newly created Central Intelligence Group, soon to change its name to CIA, accepted an invitation to join. Through all this, ANCICC changed to STANCICC and then to USCICC.[7]

No matter what the name of the board, cooperation remained purely voluntary, and all decisions required unanimity. There was no higher authority imposing central control of COMINT. The British, who had a unified COMINT service under the Government Code and Cipher School (GCCS), were scandalized. During the war they were forced to deal separately with the three organizations with COMINT interests – the Army, Navy, and FBI. British officials regarded negotiations with the Americans as a little like dealing with the former colonies after the American Revolution – disorganized and frustrating at times, but they could still play one off against another to achieve their objectives.

THE WAY COMINT WAS ORGANIZED AT THE END OF THE WAR

The cryptologic system that emerged from World War II was profoundly and tenaciously decentralized. Instead of a central control (like NSA) and Service Cryptologic Elements (SCEs) as we know them, there were only the separate COMINT organizations of the Army, Navy, and FBI. Naval COMINT was under an organization called the Supplemental Radio Branch and designated OP-20-G, part of Naval Communications. There was a headquarters in Washington called CSAW (Communications Supplementary Activity, Washington) where centralized processing functions were performed, chiefly against the German naval ENIGMA problem. For the Pacific theater there were virtually independent processing centers: one in Hawaii, called FRUPAC (Fleet Radio Unit, Pacific); one at Melbourne, Australia, called FRUMEL (Fleet Radio Unit, Melbourne) and, late in the war, one on Guam, designated RAGFOR (Radio Analysis Group, Forward).

Naval COMINT had grown through the years. From its beginnings in 1924 with one officer, Laurance Safford, and a single civilian, Agnes Driscoll, OP-20-G had by 1941 increased to 730 bodies. During the war the number of intercept sites in the Pacific increased from four to eight, and the receivers allocated to Japanese intercept increased

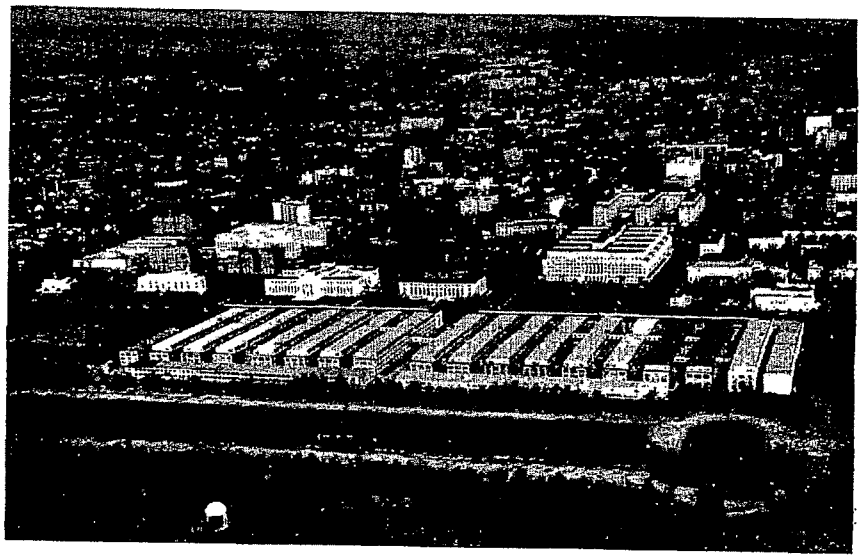
from 68 to 775. Shipborne collection began with one operator and one receiver in the Pacific in 1941, but by 1945 there were eight shipborne operator teams with 120 receivers. Yet in 1945 the entire system quickly collapsed. OP-20-G closed ten of its sixteen intercept and DF stations. When the war ended, the German cipher exploitation section went from over 2,000 to only 200.

Since its creation, OP-20-G headquarters had been in the Navy Building on Constitution Avenue in Washington. COMINT success required more people and more space to work the traffic, and the Navy began looking for a separate facility for its most secret activity. They found it in the fall of 1942, at a girl's school on Nebraska Avenue called the Mount Vernon Seminary for Women. The Navy bought it for about $1 million and began converting the ivy-covered red brick structure into a military facility. One of the first things they did was to build new barracks for the 4,000 WAVES (Women Accepted for Volunteer Emergency Service) who were brought in primarily to operate the "bombes" that deciphered ENIGMA messages from German submarines.[8]

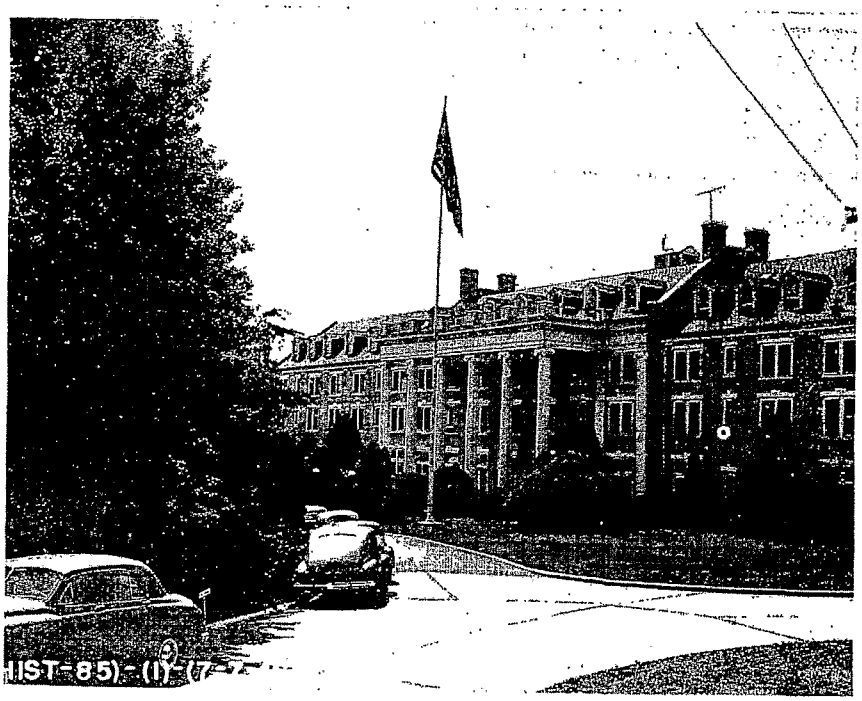
The Army, too, took over a girls' school. In 1942 Signal Intelligence Service (SIS) was, like OP-20-G, looking for a new and larger home. Then it found Arlington Hall, a junior college located in the rolling hills of suburban Arlington. The school was big on horses and equestrian pursuits but had always been short on cash. Its founder, a Dr. Martin, went bankrupt in 1929, and the school limped along on a hand-to-mouth existence until it was mercifully extinguished by the Army. Paying $650,000 for the property, SIS acquired it in June of 1942 and moved from the Munitions Building, which stood beside the Navy Building on Constitution Avenue.[9]

Organizationally, SIS was similar to OP-20-G. Although it changed its name to Signal Security Agency (SSA) in 1943, it remained part of the Signal Corps. In September 1945 it was finally severed from Army communications, attaining status as an independent command called Army Security Agency (ASA), an implicit recognition of its contributions to winning the war. Elevated status gave it a two-star command billet and an independent position in the Army hierarchy, but it now took its operational direction from Army intelligence. This placed it back in roughly the same position that it had been when, in the 1920s, it had been named MI-8 and had been under G2.[10]

For SIS, intercept work was more difficult than for OP-20-G because the Army lacked geographic access. During the early 1930s, SIS relied on the telegraph cable companies to provide it with message traffic. The earliest SIS efforts to develop intercept sites resulted in stations in Hawaii and Panama later in the decade, and by 1938 SIS had additional sites at the Presidio in San Francisco, Fort Sam Houston in Texas, and Fort Hughes in Manila. In 1942 SIS attempted to hear German transmissions from a new site (USM-1) at Vint Hill Farms in northern Virginia. By the end of the war, SSA had eleven intercept stations. The force at Arlington Hall numbered 7,848, of whom 5,661 were civilians.[11]



Government offices on the Mall
Both SIS and OP-20-G began World War II in these temporary buildings on the Mall in Washington.



Arlington Hall Station in the 1940s

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To Army cryptology, as to the Navy, peace was devastating. Most of the work force at Arlington Hall left civilian government service, and within days the halls were almost empty. Intercept sites overseas were suddenly confronted with no Japanese or German intercept mission. One former soldier described the experience as being left stranded on Okinawa with no Japanese mission to copy and no instructions on a follow-on assignment. His unit eventually moved to Seoul, relocated to a former Japanese communications station, and there got a new mission – Soviet and Chinese Communist communications. European units tackled French and Greek missions, and by mid-1946 nearly half the Army's end product was based on the intercept of French communications.[12]

The late 1940s were a period of damaging retrenchment. The Army and Navy cryptologic organizations that began the Soviet mission had little experience, less money, and no expertise. Yet ASA was able to survive better than OP-20-G. The Army had relied historically on civilians, and many of the best, including William Friedman, Frank Rowlett, Abraham Sinkov, and Solomon Kullback, stayed on. Missing the excitement of wartime cryptology, others drifted back to Arlington Hall after brief, humdrum civilian careers. The Navy, which had relied on uniformed cryptologists, lost a far higher number to civilian life and found the transition to peacetime a difficult one.

In 1947 ASA and OP-20-G were joined by yet a third cryptologic service, that of the newly created Air Force. The Army Air Corps had actually established its SIGINT service in the Pacific in 1944. The Air Force acquired an early reputation for parochialism and interservice rivalry. The feuding led Carter Clarke, then head of Special Branch of Military Intelligence Service, to write in June 1944 that "the Air Force insists that these [redacted] operate only for the Air Force and insists further that no personnel can be attached or detached therefrom; neither should the theaters give them any operational directives in the sense that we think of it." The first Air Force unit in the Pacific was the [redacted] which began operations in 1944 in New Guinea.[13]

When the independent Air Force was created in 1947, there was no direct reference to cryptologic activities, and for a time ASA continued to provide these to the nascent Air Force. Yet the Air Force was determined to establish its own capability. Certain Air Force generals were aware of the contributions of COMINT during the war. One in particular, Hoyt S. Vandenberg, who was later to become Air Force chief of staff, was convinced that the Air Force had to have its own cryptologic service. He saw how the British controlled cryptology in Europe and felt that it was essential to get this under American, and particularly Air Force, control.[14]

In early 1948 the Air Force fashioned a transition agreement with ASA. The latter established an Air Force Security Group within its headquarters at Arlington Hall to oversee the transfer. Three [redacted] and eight COMSEC units were turned over to the Air Force. The Air Force role was defined as mobile and tactical, and ASA continued to operate all fixed sites. A set number of ASA officers (thirty-two) became blue-suiters, and this group became the "founding fathers" of Air Force cryptology. Air Force cryptologists

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were to continue to train at ASA schools and were to contribute instructors and financial support as soon as the Air Force had a budget of its own. Significantly, the Air Force assumed all responsibility for "the investigation for intelligence purposes of all types of electronic emissions relating to radar, radio control of guided missiles and pilotless aircraft, proximity fuses, electronic navigation systems, infrared equipment and related subjects." In other words, the Air Force was to take the ELINT and electronic warfare missions, which were at the time too new to even have a name. Needing equipment but not yet having a budget, the Air Force arranged for the transfer of equipment from the Army, which turned out to be cast-off receivers and antennas that ASA no longer wanted.[15]

On 20 October 1948, the new Air Force cryptologic organization was officially established as the U.S. Air Force Security Service (USAFSS), still located at Arlington Hall. It was a major air command, responsible to neither intelligence nor communications. Thus from its earliest existence the Air Force accorded a loftier organizational position to its cryptologic service than did the other, more senior, services. And the Air Force did something else that was unprecedented. In May of 1949 it moved completely out of Washington. Security Service set up shop at Brooks Air Force Base outside of San Antonio, Texas. The move was calculated to remove USAFSS from geographical proximity to the central control authority for COMINT – at the time the Coordinator for Joint Operations, shortly to become the Armed Forces Security Agency. Thus USAFSS hoped to be insulated from any sort of outside control, which it regarded as bald interference in its affairs.[16]

THE CJO

The lack of central control for COMINT was the most pressing problem of the postwar years. Cooler heads recognized that the uncoordinated and fractionalized efforts that had existed since the 1920s simply had to be better controlled. They had already agreed on a committee system, at that time called STANCIB and STANCICC. The committees could and did arrive at policy decisions which, in the case of unanimity of the board, were binding on the services. What was still lacking, though, was an executive organization to carry out the routine business of central coordination.

In early 1946 the Navy proposed such an executive body. They called it the Coordinator for Joint Operations, and it was to work out routine intercept coverage and processing responsibilities between the services. The Navy got Army concurrence, and on 15 February STANCIB approved the proposal. The Coordinator for Joint Operations, or CJO, was born.[17]

The CJO was to implement general policies on allocation of joint tasks as approved by STANCIB. It was to be assisted by three groups: the Joint Intercept Control Group (JICG), the Joint Processing Allocation Group (JPAG) and the Joint Liaison Group (JLG).

The CJO agreement owed its existence to the two most influential sponsors, Joseph Wenger (who commanded OP-20-G) and Preston Corderman (chief, ASA) for the Army, and it was in those days referred to as the "Corderman-Wenger Agreement." But when the first CJO was appointed, it turned out to be Colonel Harold G. Hayes, a long-time Army COMINTer and the new chief of ASA.

The first task of the CJO was to allocate intercept tasks. This was not as easy as it appeared. Agreement was reached that counterpart targets were to be copied by the respective U.S. service cryptologic organization. All other targets, even those being intercepted entirely by a single service, were to be considered "joint." The CJO then reallocated the intercept responsibilities. This had the largest potential impact on the resources of the Navy, which during World War II, as previously discussed, completely gave up "joint" targets (with a few exceptions) to the Army.

Intercept allocations really got down to priorities. With limited resources (and in 1946 resources were constrained), the key to obtaining copy was in the priority system. In September of that year USCICC decided to hold monthly meetings to consider priority problems. By this process a standing priority list, in rather general terms, was established. The CJO then made intercept assignments to positions in the field. When the CJO assigned a joint case to a position it controlled (i.e., one which had been turned over by one of the Service Cryptologic Agencies, as they were then called) there was no problem. But occasionally the CJO assigned a joint target to a service-protected position. This invariably met with resistance, and the CJO had no enforcement authority. The Service Cryptologic Agencies (SCAs), for their part, insured that counterpart positions were manned with the best operators, that they were never left uncovered, and that technical data were always up to date. In short, if a target had to be slighted, it was likely to be the joint target. The servicemen never forgot whom they worked for.

CJO also allocated processing tasks through the JPAG. Since people and equipment for processing were in very short supply, processing on each major target was to be done in only one place – either Arlington Hall or Nebraska Avenue – no matter which service collected the traffic. In those days communications systems were mutually exclusive rather than common and interlocking, and once traffic was intercepted by one service, it had to pass vertically through those communications channels all the way to Washington. This meant that there had to be communications between Nebraska Avenue and Arlington Hall so that the traffic could be exchanged, and under CJO a teleprinter link was set up. The services had a great deal of difficulty talking to each other (electrically, not to mention in person), and it was a real effort to establish common cryptographic gear for interoperability. In the late 1940s this process was just getting started.

Communications security policy was, if possible, even more difficult to meld into a cohesive system than was COMINT. Through the war each service handled its own COMSEC matters with little reference to joint policy. In the Army, ASA was responsible for both COMINT and COMSEC, a development substantially influenced by such technicians as Frank

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Rowlett and William Friedman. In the Navy, COMSEC had begun within Captain Laurance Safford's embrace, but it had eventually become part of a separate organization under Naval Communications, called OP-20-K.

After the war, COMSEC policy was allocated by an unregistered executive order to a Cryptographic Security Board consisting of the secretaries of state, war, and navy. This very high-level board quickly became moribund, and the real actor in COMSEC policy was the Joint Communications-Electronics Committee (JCEC) and its subordinate, the Joint Security and Cryptographic Panel. When COMINT was unified in 1949 under the Armed Forces Security Agency (AFSA), COMSEC was still decentralized.

The CJO was a compromise between those who wanted tight central control and those who wanted to continue a loose arrangement. It was voluntary, as had been all of its predecessors. It never resolved the conflict over joint targets, much to the dismay of the State Department, which was the principal customer for most of those targets. But the establishment of an executive organization was the first step in creating an organization to control COMINT. It didn't work, but it pointed the way toward the future.

THE CRYPTOLOGIC ALLIES

America's SIGINT relationship with Great Britain also dates to World War II. In July 1940, the British ambassador to Washington, Lord Lothian, proposed that the two nations exchange information on, among other things, technological secrets related to "submarine detection and radio traffic." This appears to have pertained generally to SIGINT, but the wording of the now famous Lothian Letter did not really say precisely what he (or Churchill) meant. It also appears that day-to-day intelligence cooperation predated the Lothian Letter, for in April of the same year President Roosevelt met Churchill's special envoy William Stephenson to discuss a plan for secret cooperation between the FBI and British secret intelligence. According to a fascinating account in the somewhat unreliable book by William Stevenson (unrelated to the wartime William Stephenson), it was at that meeting that Stephenson informed Roosevelt of British progress in breaking the German ENIGMA system. (This might have happened but was quite out of character for the security-conscious British.) This meeting did, in fact, lead to the establishment of the British Security Coordination (BSC) in Washington, with Stephenson in charge. During its early days this organization dealt primarily in HUMINT and counterintelligence.[18]

The Lothian Letter was followed in August by a visit by Sir Henry Tizard, scientific advisor to the Royal Air Force (RAF). This inaugurated a series of technical discussions on a wide variety of subjects. Tizard, not a SIGINTer, was mainly interested in discussing radar and other such technical developments. At the same time, the United States sent to Britain a delegation consisting of Brigadier General George V. Strong (Chief of War Plans), Brigadier General Delos Emmons (United States Army Air Forces –

USAAF), and Rear Admiral Robert Ghormley (Assistant Chief of Naval Operations). Though the discussions were to be general, it appears that Strong had, or thought he had, considerable latitude to discuss cryptologic intelligence. On 5 September he cabled Washington to propose a total exchange of information on SIGINT product and technical matters (i.e., cryptanalysis). Back in Washington there was a good bit of concern. The Navy said "No," while the Army vacillated. Their top cryptanalyst, William F. Friedman, was consulted. Friedman favored the exchange.

So initial hesitance was eventually converted to approval, and on the day after Christmas 1940, the Army decided once and for all to initiate a complete cryptologic exchange with the British. In February 1941, Captain Abraham Sinkov and Lieutenant Leo Rosen of the Army's SIGINT organization, along with Lieutenant Robert Weeks and Ensign Prescott Currier of the Navy, sailed to London. They brought with them a PURPLE Analog, a machine the Army was using to break the keys for the Japanese diplomatic cipher system. They had instructions to initiate a complete exchange of cryptanalytic and SIGINT information.[19]

The British appear to have been flabbergasted. Never had they anticipated that the United States would simply walk in and plunk down their most secret cryptanalytic machine. This was, indeed, an intelligence exchange worth the money. But they were cautious. They did not tell the Army and Navy emissaries everything they were doing, and they did not show them the ENIGMA operation at first. Agreed upon in principal in 1940, the complete exchange of cryptologic information and techniques progressed slowly through the war. Once again the Navy, reluctant in the beginning, produced the more beneficial exchange. This was due largely to historical circumstances. The Army was still mobilizing and clearly would not see action in Europe until at least late 1942, if not later. But the Navy was already engaging German U-boats in the North Atlantic. They and the British had worked out a convoy system, and daily cooperation in intelligence was essential to avoiding wolf packs. Thus it was that Commander Roger Winn, who headed the Operational Intelligence Center in the Admiralty, convinced the U.S. Navy that it must have something similar. Prompted by Winn, the U.S. Navy established the mysterious organization called F-21 (Atlantic Section, Combat Intelligence Division, U.S. Fleet) and its still more mysterious submarine tracking room. The latter used all sources of intelligence, including U-boat positions obtained by ENIGMA decrypts, passed to them by the British.

The arrangement worked well at first, but in February 1942 the Germans introduced the four-rotor ENIGMA, and the British at Bletchley were unable to read it. The Americans were already suspicious because the British kept the cryptanalytic techniques so closely held. So in 1942 the Navy embarked on a project to break the ENIGMA themselves, in defiance of British protests. Colonel John Tiltman, a temporary GC&CS resident in Washington, finally convinced the British that the Navy would proceed with or without British help. In June 1942, after Tiltman's intervention, the Navy sent two expert

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cryptanalysts, Lieutenant R. B. Ely and Lieutenant Junior Grade Joseph Eachus, to Bletchley to learn all they could about ENIGMA processing. In September the Navy began a project to build a four-rotor ENIGMA processor (called a "bombe" by the British). When, in the summer of 1943, the Navy moved to its new headquarters on Nebraska Avenue, a major portion of the space was reserved for the bombes, which were being employed to break the keys on German submarine ENIGMA traffic. In the end, the two nations drove the U-boats from the North Atlantic, based in part on information provided by the bombe project.

Meanwhile, the Army was having its own problems on the SIGINT front. Increasingly suspicious of British reluctance to share cryptanalytic techniques, they retaliated by refusing to share information on voice ciphony equipment with Alan Turing. Since Turing was one of the top Bletchley scientists (and has been given credit for developing the first British bombe), this was a very serious breakdown in cooperation. It became the subject of a long series of exchanges between General George Marshall and Sir John Dill (chairman of the British Joint Chiefs of Staff), and at one point it seemed possible that the two sides might break COMINT relations. The dispute was resolved in 1943 when the British agreed to allow a total technical exchange. The agreement was hammered out during a series of sessions between Military Intelligence Service and Commander Sir Edward Travis, who headed GC&CS, during Travis's trip to Washington in May. The paper specified that the United States would be responsible for the COMINT problem in the Far East, while the British would worry about Europe. To implement this, it was agreed that the Americans would send a team of cryptologists to Bletchley to work side by side with the British in all aspects of COMINT, including cryptanalysis of the ENIGMA. That way the Americans would gain technical expertise on the system without mounting a competing cryptanalytic effort on the American side of the Atlantic.

To begin the new relationship, the Army sent a three-man team consisting of Colonel Alfred McCormack, William Friedman, and Lieutenant Colonel Telford Taylor to Bletchley. By mutual agreement, Taylor was left behind in London to serve as a liaison officer and to act as a funnel for British COMINT being sent to the War Department in Washington. Taylor's job was not easy, as there was a good deal of second-guessing the British forthrightness in the exchange. But as the war progressed it became smoother and eventually became a very open exchange of highly sensitive information.

With the Axis almost defeated, the thoughts of cryptologists in 1945 turned with increasing frequency to the Soviet Union. Both nations had maintained rudimentary efforts against the "Communist menace" since the 1920s, and they both kept small efforts even during the war. In June of 1945 ANCIB proposed to the British that they extend their wartime cooperation to the intercept and exploitation of their erstwhile but distrusted ally. They called the project BOURBON, and it was kept compartmented for the obvious reason that the Soviets were still officially on our side. The arrangement was largely informal and involved the exchange of liaison units on both sides of the Atlantic.

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But in September, with the war officially over, the U.S. had a legal problem. Could it now continue to collaborate with its British allies? Clearly, the American cryptologists, good as they had become, still regarded GC&CS with a certain awe. In many cryptanalytic areas the British were still ahead of us, and their organization of the COMINT system was superb. And of course there was the problem of the Soviet Union. Already the wartime alliance had disintegrated. In September of 1945 both the Army and Navy suggested to President Truman that collaboration with the British continue for the present "in view of the disturbed conditions of the world and the necessity of keeping informed of the technical developments and possible hostile intentions of foreign nations. . . ." In reply, Truman signed a brief, single-sentence note sent to him by the Joint Chiefs of Staff:

> The Secretary of War and the Secretary of the Navy are hereby authorized to direct the Chief of Staff, U.S. Army, Commander-in-Chief, U.S. Fleet, and Chief of Naval Operations to continue collaboration in the field of communication intelligence between the United States Army and Navy and the British, and to extend, modify, or discontinue this collaboration, as determined to be in the best interests of the United States.[20]

Now that the American side was officially unleashed to collaborate with the British, it seemed necessary to write a bilateral agreement for the postwar years. After months of meetings and conferences, the two sides sat down in March 1946 to sign the British-U.S., or BRUSA, Agreement. The paper which charted the future course of both countries was only four pages long. (The policy conference at which it was signed was followed by a technical conference which wrote all the fine print appearing later as annexes and appendices.)

With the signing of the BRUSA Agreement, the BOURBON liaison offices on both sides of the Atlantic became representatives of STANCIB and LSIB,

The BOURBON officer, Commander Grant Manson, was invested with the rather cumbersome title of U.S. Liaison Officer, London SIGINT Centre (LSIC, as GC&CS was then known) – or USLO LSIC. He reported to STANCIB through the deputy coordinator for Liaison, part of the new CJO structure. In early 1946 the British moved LSIC from its wartime location at Bletchley to Eastcote, outside London, and began using a new title, Government Communications Headquarters, or GCHQ. Space for Manson was provided at Eastcote. The BOURBON

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liaison office had maintained an office in London, and Manson had to cover two locations, in Eastcote and London. (This situation continues to this day, with NSA holding offices in both London and Cheltenham.) USLO never controlled the TICOM group, which also found quarters at Eastcote.[21]

The British, meanwhile, had a more difficult problem. While the U.S. dealt with only one COMINT organization, GCHQ, the British had two – the Army at Arlington Hall Station and the Navy at Nebraska Avenue. Not wishing to choose, the British diplomatically located their liaison officer in the State Department building in downtown Washington. (They did, however, maintain a technical staff at Arlington Hall.) Their first liaison officer was Colonel Patrick Marr-Johnson, who had signed the BRUSA Agreement for the British side. When he retired in 1949, he was succeeded by Tiltman, who was already well known to the Americans and had served for a time as Travis's deputy at GC&CS. This began a practice, continued to this day, of assigning very senior cryptologic officials to the respective liaison offices, and the USLO eventually became SUSLO – Senior U.S. Liaison Officer.[22]

And where were the British Dominions in all this? They were mentioned in the BRUSA Agreement, and it was agreed that they would not be termed Third Parties, but they were not direct and immediate partners in 1946. Arrangements that Great Britain might make with them would be communicated to STANCIB. STANCIB, in turn, would make no arrangement with a Dominion without coordination with LSIB. Thus the now-famous UKUSA Agreement was not that at all, at least to begin with. It was a BRUSA Agreement. How it became the UKUSA Agreement was a development that spanned another eight years.

Of the three dominions with which the Americans eventually associated, the relationship with Canada began first. Canadian-American SIGINT cooperation appears to have begun in 1940, in the form of service-to-service collaboration between the respective armies and navies. These decentralized arrangements were eventually overtaken by a centralized relationship centering on the Examination Unit of the National Research Council, established in 1941 as one of those clever cover terms denoting a Canadian SIGINT organization. Its purpose was to decode traffic to and from the Vichy delegation in Ottawa. This unit's control was gradually broadened until it was the dominant force in Canadian cryptology. (It was the linear predecessor of the postwar organization Communications Branch, National Research Council [CBNRC] and its successor, Communications Security Establishment [CSE].) By 1943 it had its own submarine tracking room and was receiving plots from the British based on ENIGMA decrypts. When the British began cooperating with the U.S. in 1941, they requested that the U.S. bring the Examination Unit into the scope of the cooperation. But the Americans were leery. They knew that the Examination Unit had been established by Herbert O. Yardley, the renegade American cryptologist who had published cryptologic secrets in 1931 in *The American Black Chamber*. The Signal Intelligence Service, which had been victimized by Yardley's revelations, informed the

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British that they were willing to cooperate only if Yardley were let go. The British, holding no brief for Yardley, had the Canadians get rid of him, and collaboration with the Americans flowered. By April of 1942 details of the Canadian-American cooperation were hammered out. Collaboration was particularly close in direction finding (DF) of German naval vessels.

[redacted] But the United States was suspicious; Canada had just been through a major spy scandal, the Gouzenko affair (chapter 4), and USCIB wanted to go slow. Making matters worse was the head of the Canadian policy committee on COMINT, a rather prickly character [redacted] refused for several years to adopt some of the security procedures which the United States and Great Britain had agreed upon at the BRUSA Conference. Moreover, while the United States wanted a formal document on COMINT cooperation, [redacted] did not. After several years of very difficult negotiations, the two countries finally agreed to exchange letters between [redacted] and USCIB chairman Major General C. P. Cabell. Thus [redacted] won the battle of the legal documentation while the United States got its way on security procedures.[23]

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Furthest from the mainstream were the Australians. British-Australian COMINT collaboration appears to have begun in the late 1930s when a small Australian cryptographic organization under the Director of Naval Intelligence began working with the British Far Eastern Combined Bureau (FECB) in Singapore. In early 1940 an Australian naval commander named T.E. Nave set up the nucleus of an Australian SIGINT group in Melbourne, which was the origin of the modern Australian SIGINT organization. Its most important organization was the Central Bureau, set up in April 1942 as a combined Australian-American COMINT group. When the Americans departed in 1945, the Australian remnant of Central Bureau became Defence Signals Bureau (DSB).

The British were determined that DSB should enjoy the same status on BOURBON as the Canadian, and, immediately after the war, began including the Australians in their technical exchanges. But in 1947 this procedure became embroiled in a lengthy dispute over Australian security practices. The procedures in dispute were arcane, and the origins were almost as difficult to fathom, but both apparently originated with a spy scandal.

In 1947 SIS succeeded in decrypting some KGB messages which had been sent more than a year earlier and which contained certain classified British military estimates. The messages came from the Soviet embassy in Canberra, and it was immediately assumed that an Australian was passing classified information. The British, alerted by the Americans, sent Sir Percy Sillitoe, chief of British Secret Service, to Australia to discuss this with the prime minister. Sir Percy was under instructions to conceal the origins of the information, and when the prime minister, a Laborite named Chifley, demanded proof, Sillitoe mumbled something rather lame about a possible mole. After considerable

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discussion, Chifley agreed to establish a new Australian security organization, called the Australian Security Intelligence Organization.

With the Australian security house supposedly in order, the British prime minister, Clement Attlee, intervened with President Truman to get a new hearing of the Australian matter. Attlee complained in a letter to Truman that:

> The intermingling of American and British knowledge in all these fields is so great that to be certain of denying American classified information to the Australians, we should have to deny them the greater part of our own reports. We should thus be placed in a disagreeable dilemma of having to choose between cutting off relations with the United States in defence questions or cutting off relations with Australia.[24]

With matters at the crisis level, Attlee proposed to Truman that Sir Francis Shedden, the powerful and respected Australian defense minister, visit the United States to plead the case. Truman accepted, and Shedden visited Washington in April. But he was unable to sway USCIB, and the British were back to their dilemma – whether to choose the United States or the Commonwealth as allies. In 1949 the outcome was anything but certain.

Then one of those unexpected quirks of fate intervened which was to save the day: the Labor government under Chifley went down to defeat at the polls, and Robert Menzies formed a new Liberal-Country Party coalition in December. The conservative Menzies was able to successfully disassociate his government from the leftist elements of the Labor government. This was critical since the actual source of the leaks was known (through the VENONA project; see chapter 4) to be two leftists within the Australian diplomatic corps. With a Conservative government in power, USCIB authorized a limited resumption of cryptologic exchange with Australia. Full resumption of ties did not occur until 1953. The incident tarnished American-Australian intelligence cooperation for years and caused a serious rift with Britain which was made worse just a few years later with the Klaus Fuchs case and the Burgess and McClean defections. It also had a deleterious affect on early U.S. SIGINT efforts against the People's Republic of China (PRC).[25]

By 1953 relations had warmed to the point where Australia was reincorporated as a full COMINT partner. The foundations of the Australian participation in the UKUSA Agreement (the name BRUSA was changed at British request a year later) came at the Melbourne Tripartite Conference of September 1953.

New Zealand came in as a fifth partner, New Zealand had contributed mainly DF to the Allied cryptologic effort in World War II and had sent people to Australia to serve with the Commonwealth effort in Brisbane.

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19. "A Chronology of the Cooperation Between the SSA and the London Offices of GCCS," 2 June 1945, CCH Series VI.V.7.2. In addition, the entire Army-British and Navy-British relationships during the war are covered in detail in Benson, "History."

20. CCH Series V.A.29. The early collaboration with the British on the Soviet problem is covered in George F. Howe and [redacted] "Historical Study of COMINT Production Under the Joint Operating Plan, 1946–1949," in CCH Series V.E.1.1., and in Michael Peterson, "Early BOURBON – 1945. The First Year of Allied Collaborative COMINT Effort against the Soviet Union," *Cryptologic Quarterly* (Spring 1994).

21. See Howe, "Narrative"; Burns, *Origins*; Benson, "History"; Peterson, "Early BOURBON"; and CCH Series VI.J.1.2.

22. "Origins of the SUSLOs," in CCH Series X.H.8.

23. "Historical Summary of U.S.-Canadian COMINT Relations," 12 April 1949, in CCH Series V.J.3.; NSA/CSS Archives, ACC 16824, CBTB 26; Richelson, *Ties*; oral history interview with Frank B. Rowlett, various dates, by Henry F. Schorreck and [redacted] NSA OH 14-81. See also Howe, *Narrative*, and Benson, "History."

24. Copies of papers from the Harry S. Truman Presidential Library in Independence, Missouri, in CCH Series XVI.

25. The early problems between the U.S. and Australia in COMINT cooperation is covered in Richelson, *Ties*; Howe, "Narrative"; Benson, "History"; copies of papers from the Dwight David Eisenhower Presidential Library in Abilene, Kansas, contained in CCH Series XVI. Specific information about the Australian spy scandal and its impact on COMINT collaboration is covered in Christopher Andrew, "The Growth of the Australian Intelligence Community and the Anglo-American Connection," *Intelligence and National Security* (April 1989), V. 4, # 2: 213-256; Robert Manne, *The Petrov Affair: Politics and Espionage* (Sydney: Pergamon, 1987); and Desmond Ball and David Horner, "To Catch a Spy: Signals Intelligence and Counter-espionage in Australia, 1944–1949" (Canberra: Strategic and Defence Studies Centre, Australian National University, 1993), pending publication.

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Chapter 2
AFSA and the Creation of NSA

The formation of AFSA resulted from both technical and budgetary causes. The technical concerns were first surfaced within the Army Security Agency (ASA) over the conclusions of a study on World War II German SIGINT done by the Target Intelligence Committee (TICOM – see chapter 1). TICOM had studied the German failure to crack high-grade Allied codes and ciphers and concluded that it resulted from a badly fragmented effort. The Germans mounted at least five different cryptanalytic efforts. Each competed for resources and attention, and each jealously guarded its resources and techniques from outside encroachment.[1]

The result was failure. As Frank Rowlett, perhaps the leading ASA cryptanalyst in 1948, said, "they all skimmed the cream off and they did the easy ones and nobody, none of them, were [*sic*] ever able to concentrate on the more important and more secure systems and bring them under control."

THE STONE BOARD

The disastrous results of German cryptologic competition spurred Rowlett and his associates to press for unification of the American effort. In 1948, under the direction of Brigadier General Carter Clarke, Rowlett chaired a committee to write a paper proposing cryptologic unification. The committee included some of the leading names in subsequent American cryptology, including Herbert Conley, Benson Buffham and Gordon Sommers. Rowlett's concerns were mainly technical. With so many good cryptanalysts leaving the services, there was a greater need than ever to concentrate resources. Fragmentation would guarantee the same fate that had met the Germans. This technical argument had been supported in 1946 by the results of the Congressional Pearl Harbor Committee, which, as part of its final report, recommended cryptologic unification.[2]

Army secretary Kenneth Royall was persuaded to support unification, but at his level the concerns were mainly financial. Royall was concerned that the formation of the new U.S. Air Force Security Service (USAFSS or simply AFSS) would mean a smaller slice of the monetary pie for ASA. His report convinced Secretary of Defense James Forrestal, who in August of 1948 established a DoD-level committee to look into the matter of cryptologic unification. Although the committee contained members of the intelligence establishments of all three services, it became known as the Stone Board, after its chairman, Rear Admiral Earl E. Stone, the director of Naval Communications.

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~~TOP SECRET UMBRA~~

Agency, but which retained the separate cryptologic organizations of the three services. The report was then discussed at a JCS meeting on 18 May 1949. At this meeting the Air Force chief of staff, General Hoyt S. Vandenberg, changed the Air Force vote to pro-unification. The minority had suddenly become the majority, and it was clear that unification was to be forced through. The Navy quickly reversed its vote, too, and the decision to create AFSA was unanimous.

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Why did Vandenberg change the Air Force vote? He may have seen the creation of AFSA as an essential ingredient in better intelligence, but he may also have felt that he could keep the fledgling USAF Security Service effectively independent. Vandenberg's central concern in those days was to establish a strategic strike force (Strategic Air Command, or SAC) which would be supported by an all-Air Force intelligence center. He regarded SIGINT as the key ingredient in such a creation and wanted to place a SIGINT analysis center within USAFSS which would be beyond the control of AFSA. It is possible that he changed the Air Force vote after assurances that USAFSS would be permitted to establish such a center. (This center, called the Air Force Special Communications Center, was actually created, and it resided at Kelly Air Force Base, home of USAFSS, for many years.) The later creation of the [redacted] a device to keep intercept facilities independent of AFSA, might also have been part of such a plan. Vandenberg's thinking was probably also influenced by log-rolling in other areas, and may have represented an attempt to obtain Army support for other Air Force programs by yielding on the cryptologic issue.[5]

Hoyt S. Vandenberg
Provided the "swing vote"
that created AFSA

AFSA

And so the Armed Forces Security Agency was created on 20 May 1949. It was promulgated by JCS directive 2010. AFSA was thoroughly military, and, because it answered to the JCS, its central concerns were all military. Organizations outside the JCS got short shrift in the collection of intelligence. State Department and CIA were intensely

unhappy with this development, but they lacked the power to wrench AFSA out of the military chain of command.

AFSA began life in borrowed quarters. Its people, just over 5,000 in the beginning, occupied spaces in Arlington Hall and the Naval Security Station on Nebraska Avenue, sharing space with the Army Security Agency and Naval Security Group from which the space was obtained. Admiral Stone decided that the Naval Security Station would be used by AFSA for COMSEC, while the COMINT mission would be done at Arlington Hall. This decision began a historic physical separation between SIGINT and COMSEC which has never been completely bridged, despite the later move to Fort Meade. It was logical, though. Naval Security Group (NSG; formerly OP-20-G) was strong in the COMSEC discipline. Moreover, the Naval Security Station (NSS) at Nebraska Avenue had only about one-fourth the space available that Arlington Hall did, and this disparity in size meant that NSS was about the right size for COMSEC, while the larger spaces at Arlington Hall would be ideal for COMINT. There was a certain amount of shuffling back and forth as COMINTers from NSS moved their desks to Arlington Hall and COMSEC people from Arlington Hall transferred to NSS. But when it was finished, all the COMSEC people were housed in almost 214,000 square feet of office space at NSS, while the COMINT operations were lodged in 360,000 square feet at Arlington Hall. Including administrative, storage and machine space, there were only 79 square feet per worker at the Hall, but about 98 square feet at NSS.

Workers often sat at tables rather than desks, in large warehouse-like rooms, cheek-by-jowl, as they worked complex code or callsign systems. Floors were tiled and the noise level was high. There was practically no air conditioning, and in the summertime it was common to close down for the day when the ratio of temperature to humidity got too high.

AFSA owned two other facilities. The cryptologic school, a rudimentary training ground used originally to keep newly hired workers busy before their clearances came through (see p. 71), reposed in a structure on U Street Northwest in the District of Columbia. The Agency also maintained a courier facility at National Airport, then called Congressional Airport.[6]

The impact of AFSA on the services was immediate and severe. Besides turning over more than 600,000 square feet of space to the new organization, the Army and Navy had to donate about 80 percent of their existing Washington-area billets – 79 percent for ASA and 86 percent for NSG. Although ASA kept many of its uniformed service people, its corps of over 2,500 civilian experts was turned over to AFSA virtually intact. This made the Service Cryptologic Agencies little more than collection organizations, with practically no central processing – all arms and legs, but no body. This revolution was accomplished virtually overnight with only minimal dissension and was AFSA's most noteworthy success.

Analytic section,
Arlington Hall Station

The sole exception to this trend was USAFSS. The Air Force cryptologic agency practically seceded, opening its first headquarters at Brooks AFB, Texas, 1,600 miles away from the menace of centralization. Even more startling, it was required to donate only thirty officers, twenty civilians, and eighty enlisted billets to AFSA. So when USAFSS opened its processing center, it had plenty of billets to do it with. If this was what Vandenberg had in mind, it was working.[7]

AFSA organization reflected service competition. The director was to be chosen from among the three services on a rotating basis, and its first director was its most ardent opponent, Earl Stone. Assisting him were three deputy directors, one for each service. Below them were four major divisions, which have survived to this day – Operations,

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Research and Development, COMSEC, and Administration. The office designator system was numerical, so that Operations was AFSA 02, R&D was 03, COMSEC was 04, and Administration was 05. Each of the military deputy directors also had a sphere of influence. The Navy deputy director, Captain Joseph Wenger, controlled COMINT, while the Army deputy, Colonel Samuel P. Collins, supervised COMSEC, and the Air Force deputy, Colonel Roy Lynn, handled administrative matters.[8]

The field collection effort consisted of the intercept sites which had survived the budget cuts after World War II. Army Security Agency had seven sites: Vint Hill, Virginia; Petaluma, California; [redacted] Helemano, Hawaii; [redacted] Fairbanks, Alaska; and Clark AFB in the Philippines. The Navy had twelve: [redacted] Adak, Alaska; [redacted] Dupont, South Carolina; [redacted] Skaggs Island, California; Cheltenham, Maryland; [redacted] The Air Force had ten mobile units, whose status and location were somewhat vague. Finally, ASA had six SHAMROCK units, whose task was to screen commercial cable messages turned over to ASA by the cable companies under an arrangement which had existed since World War II.[9]

Field intercept was the rock that sank AFSA. In theory all the intercept positions were to be under AFSA control. In fact, some were not. Of the 763 intercept positions existing at the time AFSA was dissolved, 671, including all the Army positions, were under some form of AFSA control. Just over 100 were reserved by the Navy for fleet support and were thus completely beyond AFSA tasking authority. But even the positions under AFSA control could be tasked only by treading a complex paper mill by which tasking was routed through the SCAs, rather than being levied directly. This was true especially in the Navy and Air Force – the Army was more accommodating and permitted some form of direct tasking.

Completely beyond AFSA purview, however, were the mobile intercept stations. In theory, these were small mobile efforts for direct tactical support. But AFSS flouted AFSA control by simply designating all their stations as "mobile." Thus even the most permanent and sedentary station was designated as a "radio group mobile" or a [redacted] beyond AFSA control. The Army and Navy quickly caught on, and by 1952 ASA had seven mobile units, while the Navy had three.

AFSA's lack of tasking authority over Air Force positions was intolerable, and late in 1950 Major General C. P. Cabell, Air Force director of intelligence, and Rear Admiral Stone signed an agreement granting AFSA the authority to task automatic Morse and radioprinter positions, while USAFSS retained control over voice. The Morse positions

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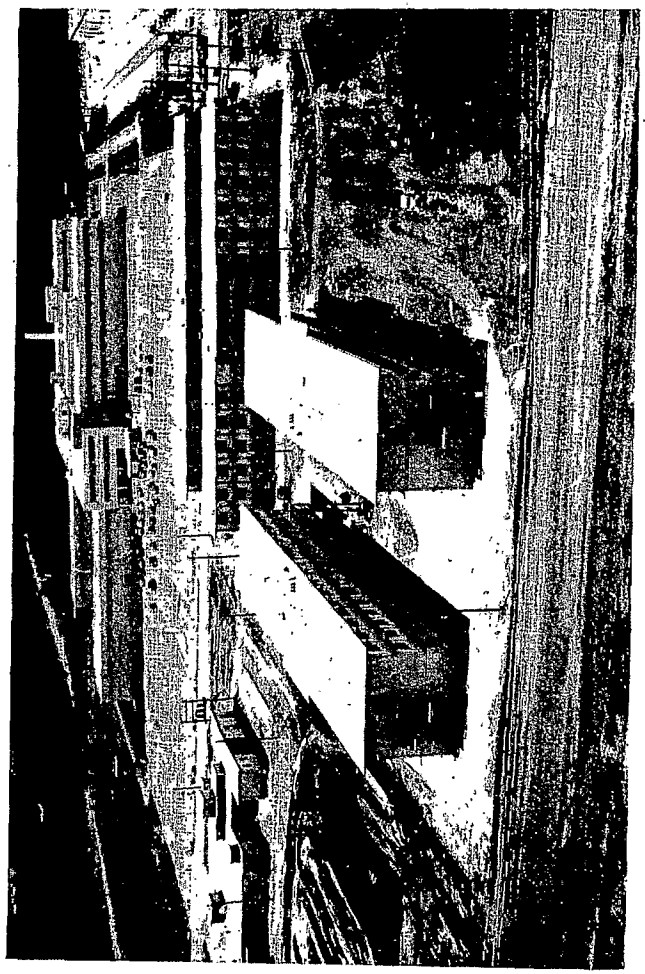
were split 50/50. Still later, in 1951, this arrangement was changed when the new director of AFSA, Lieutenant General Canine, and Colonel Lynn of USAFSS signed an agreement dividing the Air Force positions down the middle, regardless of mode of intercept.

Meanwhile, USAFSS established its headquarters in San Antonio – first at Brooks AFB and later at nearby Kelly AFB, on a low rise west of the runway which is now known as Security Hill. Within its headquarters it proceeded to establish a Stateside COMINT processing center, Air Force Special Communications Center (AFSCC). This was done despite direct orders by Canine that it not be established. AFSA also directed that USAFSS not establish third-echelon processing on the [redacted] target, but USAFSS did it anyway. Air Force defiance fragmented the processing effort and had much to do with the demise of AFSA. Despite this, AFSCC continued to process on the [redacted] target until the late 1960s, when it was finally turned into an electronic warfare center.[10]

Service rivalry led to duplication. During the early days of the Korean War, for instance, both ASA and USAFSS covered the Soviet and Chinese air problems in the Korean area, and ASA did not discontinue its coverage until March of 1952, after many months of AFSA mediation. Likewise in the DF area, AFSA was unable to force a common DF net control for the Korean problem for more than a year. Ultimately the Navy kept its DF system separate. All three SCAs established second-echelon processing centers in the Pacific with or without AFSA blessing. Without firm control of SIGINT, there was simply no way to organize effectively. This lack of control attracted unfavorable reviews from the generals trying to fight the Korean War and played a part in the COMINT reorganization of 1952.[11]

The final blow to AFSA was the development of a policy mechanism outside of AFSA itself. It was called the Armed Forces Security Advisory Committee (AFSAC), and it was created by the same JCS directive that established AFSA. The original plan was for an advisory committee composed of nine members – three from each service – chaired by the director of AFSA. But the JCS gradually changed AFSAC's charter from advisory to directive. Had AFSAC possessed a proper decision-making mechanism, the conversion of its role to that of direction might have worked after a fashion. But the rules required unanimity on all substantive matters.[12] AFSAC was immediately immobilized by interservice disputes and was ineffective from the start. AFSA had become a body with no head.



USAFSS Headquarters, Kelly AFB, as it appeared in July 1953

~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY NOT RELEASABLE TO FOREIGN NATIONALS~~

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One small success during these early years was the development of customer liaison organizations. By 1949 both the Army G2 and the Office of Naval Intelligence had established informal liaison offices with their cryptologic counterparts at Arlington Hall and NSS. When AFSA was established, these arrangements continued undisturbed. Both the Army and Navy groups developed a very close relationship with AFSA, and their people often worked in an intelligence production role. By the end of the Korean War, the Army organization, which called itself SRB (Special Research Branch), had some fifty people. Air Force Intelligence had a similar group, which was gradually subsumed by AFSS into a large organization of over sixty people performing both a customer (for Air Force Intelligence) and producer (for AFSS) role. Thus the Air Force group performed both as a producer and consumer, while the Army and Navy acted only as producers.

Both CIA and State maintained small offices within AFSA, under a USCIB edict of 1948. Although AFSA regulations permitted them to see semiprocessed intelligence, they never participated in the production process, maintaining their offices for liaison purposes only. FBI's refusal to establish any office at all reflected J. Edgar Hoover's adamant opposition to COMINT centralization.[13]

While COMINT was fractious, COMSEC was relatively serene. During World War II there had been a single authority for joint service communications matters, the U.S. Joint Communications Board, established in July of 1942. Its principal members were the chiefs of communications for the Army, Navy, and Air Force. In 1948 it gave way to a new organization, the Joint Communications-Electronics Committee (JCEC), which reigned supreme in this area for many years thereafter. The JCEC was concerned with communications planning, standards, and interoperability, but its charter by implication gave it a determining voice in COMSEC policy as well.

When AFSA was created, JCEC effectively transferred central COMSEC functions to it. The charter did not extend to non-JCS organizations, but the State Department and other civilian agencies with communications security concerns had for years relied on the Army and Navy for COMSEC support, and this reliance was transferred to AFSA. AFSA began producing codes and ciphers for all the armed services and many of the non-DoD agencies. In addition, it undertook centralized COMSEC R&D functions, planning and programming, setting of security standards, and technical supervision of the communications security activities of the armed services. The SCAs retained many residual functions, such as distribution of AFSA-produced codes, security monitoring of transmissions, and the like.[14]

While AFSA successfully controlled the highly technical function of COMSEC, it was never able to control COMINT. This lack of control made powerful enemies. The State Department was upset because, under AFSA, the number of positions allocated to [redacted] actually declined in the three years of AFSA existence, from 64 to 51, and from almost 17 percent of the total to only 6.5 percent.

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THE BROWNELL COMMITTEE

The entire intelligence community was concerned over performance of the COMINT system in Korea. AFSA had not predicted the outbreak of war. A watch committee established under the wing of CIA in early 1950 listed Korea fifth on the list of world trouble spots, but this was not translated into action, and when the war began AFSA still had no positions allocated to Korean military.

15

Walter Bedell Smith
Director of Central Intelligence

AFSA had no more dangerous opponent than Walter Bedell Smith, director of Central Intelligence. In 1950 the wartime feud between the COMINT empire and Smith's HUMINT organization boiled over. On 10 December of that year Smith wrote a memorandum recommending that a committee be established to "survey" COMINT. Smith was "gravely concerned as to the security and effectiveness with which Communications Intelligence activities . . . are being conducted." He pointed to "the system of divided authorities and multiple responsibilities" which was endangering national security. The National Security Council in turn forwarded the recommendation to President Truman, who directed that a committee be formed.

The JCS could not take heart from the composition of the comittee. Its chairman was George A. Brownell, a New York lawyer and layman in intelligence matters. The members were Charles Bohlen, a prominent State Department official; William H. Jackson, special assistant to the DCI; and Brigadier General John Magruder, special assistant to the secretary of defense. Thus the Joint Chiefs, who owned the COMINT organizations, had no one on the committee. It was composed of "enemies," representatives from State and CIA – the two most vocal opponents of the existing system.

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George A. Brownell

The Brownell Committee held fourteen days of formal sessions, which were backed up by many days of research and data-gathering. Its report was a scathing indictment of the old ways of doing business. Its bottom line stated bluntly that

[redacted] The added difficulty of the problem under attack places a greater premium than ever on the quantity and quality of the physical and intellectual resources available, and on the efficiency and clarity of the organization charged with the task. While much has recently been done to provide adequate physical resources for the job, the Committee is convinced that the present organization of our COMINT activities seriously impedes the efficiency of the operation, and prevents us from attracting and retaining as much top quality scientific management manpower as this country ought to be investing in so important a field. It is highly significant to the Committee that the return of many of the best wartime COMINT brains to more attractive [redacted]

The committee concluded that the creation of AFSA, coinciding as it had with the creation of USAFSS, had resulted in four COMINT agencies where there had formerly been two. It criticized AFSAC for obstructionism and requested that it be abolished. It attacked USAFSS as a virtually autonomous organization not operating under joint control at all.

The positive recommendations of the Brownell Committee are worth studying, because they encompass the present-day structure of SIGINT in the United States. AFSA should be greatly strengthened, especially in its ability to control tasking at SCA collection sites. AFSA or its successor should be removed from JCS control and should be placed under USCIB, whose membership should be revised, and whose procedures should be governed by a vote of four, rather than unanimity, as had been the case with AFSAC. AFSA should centralize and consolidate processing operations wherever possible to increase the resources brought to bear on intractable cryptanalytic problems. The director should be upgraded to three-star rank, and should be appointed by the president to a four-year term. He should have a civilian deputy. Civilian career development should be encouraged to a much greater extent than formerly.

The next several months were spent putting the Brownell report into directive language. The result was the Truman Memorandum, issued on 24 October 1952. This memo directed a complete restructuring of COMINT along the lines that Brownell recommended. It resolved an on-going dispute about how to change AFSA by abolishing it and creating in its place a new organization called NSA. Its director would work for the secretary of defense, who would become the "executive agent" for COMINT for the entire government. On the same date the National Security Council issued a revised NSCID 9, almost a verbatim quote of the Truman Memorandum. Both documents were classified Top Secret, thus hiding the official creation of NSA from the American public for many years.

All that remained was for the secretary of defense to issue a memorandum establishing the new agency. He did so on 4 November the day that Dwight Eisenhower defeated Adlai Stevenson for the presidency. The creation of NSA was one of the last historical legacies of twenty years of Democratic governance.

The Truman Memorandum, on the advice of Lieutenant General Canine, had excluded COMSEC. Despite his belief that NSA should have both a COMINT and a COMSEC role, Canine recommended against mixing both in the same document. Lovett's memorandum on 4 November did mention that NSA would inherit the COMSEC functions formerly performed by AFSA. A memo in December spelled out those functions in more detail, and this marked NSA's first formal COMSEC charter.[17]

KOREA

> It has become apparent . . . that during the between-wars interim we have lost, through neglect, disinterest and possibly jealousy, much of the effectiveness in intelligence work that we acquired so painfully in World War II. Today, our intelligence operations in Korea have not yet approached the standards that we reached in the final year of the last war.
>
> General A. James Van Fleet, Commanding General 8th Army, June 1952

The Country

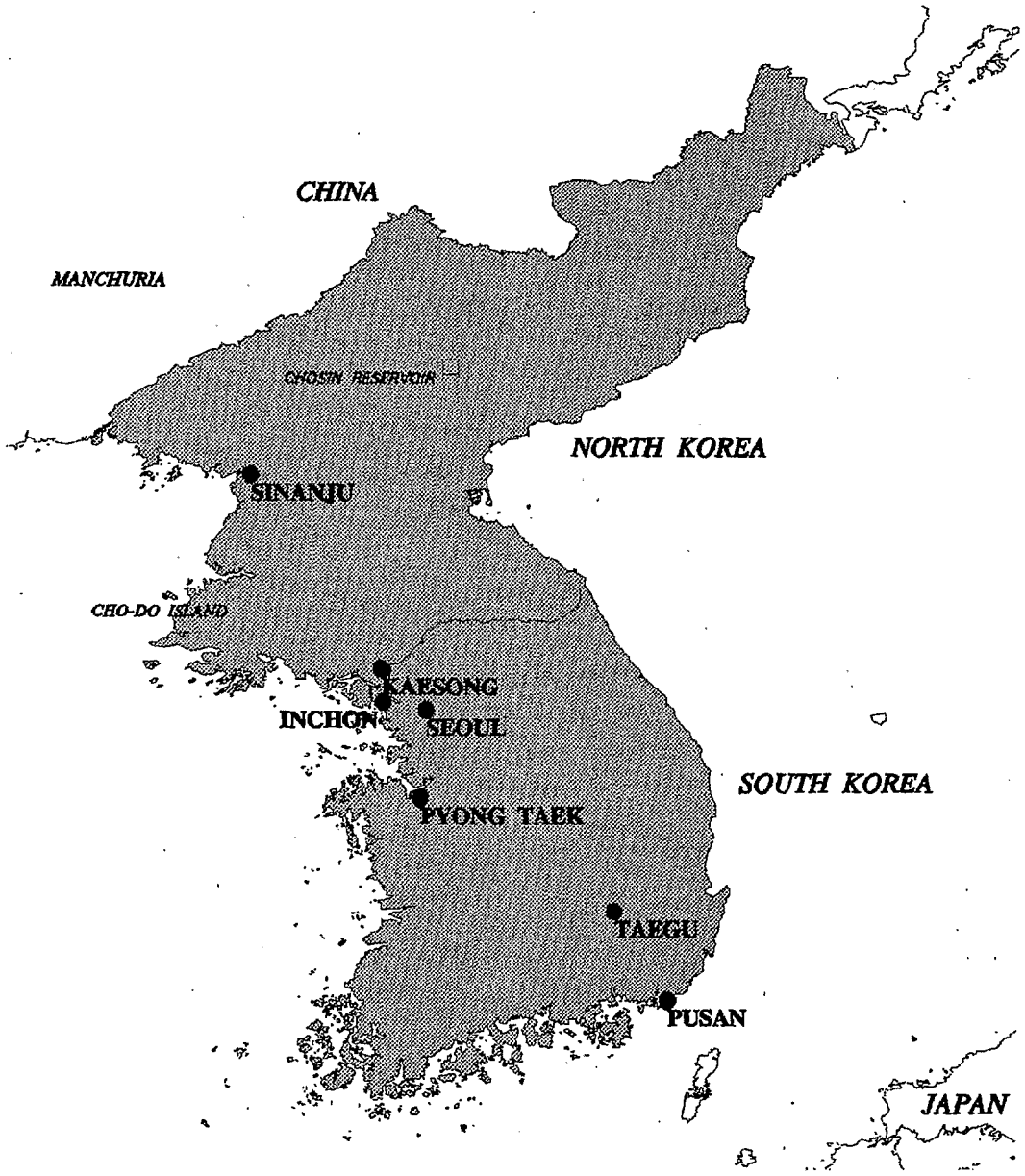
American intelligence interest and attention, so painfully refocused on the Soviet threat after World War II, were not to be rewarded. The next war occurred not in Europe, where allies and commitments were, but in Korea, a remote Asian peninsula whose name many Americans had never heard in 1950.

Korea had, throughout its recorded history, been a battleground between China, Japan, and Russia. Frequently invaded and occupied, its primary purpose seemed to be as a strategic buffer among three conflicting imperial ambitions. The most recent change of ownership had come after the Russo-Japanese War of 1904–05. Russia, the loser, was forced to cede its influence. Korea became forcibly Japanese.

The Allied powers recognized during World War II that Korea was one of those geopolitical oddities whose status had to be resolved. It obviously could not remain Japanese, and so at the Cairo Conference of 1943 Roosevelt endorsed a policy that would ensure a "free and independent Korea." At Yalta in April of 1945, the Big Three (the United States, the USSR, and Britain) agreed to an Allied trusteeship, to be administered by the three plus China.

Nothing further happened until the USSR declared war on Japan on 8 August 1945, simultaneously invading Manchuria and Korea. The sudden movement of Soviet troops onto the peninsula appeared to portend Soviet occupation, and MacArthur was directed to rush troops to the southern end of Korea. The United States proposed a division of military occupation on the 38th Parallel, splitting the peninsula roughly in half. Moscow unexpectedly agreed, and still more unexpectedly, complied.

American forces dwindled down to about 30,000 by 1948. In March of that year President Harry Truman, following the country's mood of dedicated military budget-cutting, decided that America would simply have to abandon Korea to the United Nations,


CHINA
MANCHURIA
CHOSIN RESERVOIR
NORTH KOREA
SINANJU
CHO-DO ISLAND
KAESONG
INCHON
SEOUL
SOUTH KOREA
PYONG TAEK
TAEGU
PUSAN
JAPAN

Korea, 1950

to sink or swim on its own. He decided to end the American trusteeship and sponsor free elections. So in the spring of 1948 American forces marched out of Korea. The South boycotted the elections, which led to a new National Assembly and a government headed by Syngman Rhee, a seventy-three-year-old militant anti-Communist who had spent forty years in exile in the United States waiting for the liberation of his homeland. The North formed its own government, the Democratic People's Republic of Korea (DPRK), headed by a young thirty-six-year-old Communist named Kim Il-sung. The peninsula was divided at the waist.

Syngman Rhee

Kim Il-sung

The Asia Dilemma

In 1949 catastrophe struck in the Far East. The corrupt and despotic Chiang Kai-shek and his Nationalists were ousted by the Communist forces of Mao Tse-tung. As the Communists marched into Beijing, Chiang fled to the island of Formosa (Taiwan), some 100 miles off the coast, followed by as much of his army as could flee with him. By the end of the year, Mao was making confident proclamations about his intent to invade Formosa and drive Chiang and his army into the sea.

In Washington, the administration was convulsed over whether the United States should support Chiang and the Nationalists. In the end the anti-Chiang faction won, and Truman, on 5 January 1950, issued a public statement that the United States had adopted a "hands off Formosa" policy. Ambiguity about which side of the line Korea stood on was

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resolved a week later when Secretary of State Dean Acheson, at a press conference, described an American sphere of interest in the Pacific that implicitly excluded Korea.

By June 1950 the United States had boxed itself into a very weak position in Korea. From a full army corps, it was reduced to a 500-man Korean Military Aid Group (KMAG). The U.S. had left behind plans and equipment for a 50,000-man ROK (Republic of Korea) "constabulary" (rather than a real army) but devoid of heavy equipment, as the U.S. was afraid that the militant Rhee would use it to invade the North. Rhee drew up plans for a real army of 100,000, and he succeeded in extracting additional American commitments of weapons (but still no heavy, mobile offensive weapons). On the other side of the 38th Parallel stood a DPRK army and air force of about 135,000 men, equipped by the Soviets with much of the heavy equipment that the Americans had denied to Rhee.

American military forces, overall, in 1950 were in a weakened state. Defense budgets had continued to decline from their World War II peak, and the defense budget for 1950 was only $12.3 billion, with an authorized Army strength of 630,000 (but an actual strength of only 591,000). Of these, only 108,500 were in the Far East, almost all of them in Japan. In line with administration policy, the Pentagon had no plans to defend Korea and no one there to do it. The American contingency plan for the peninsula was basically to evacuate all dependents to Japan.[18]

Parallel to the national lack of interest in Korea was AFSA's neglect of the problem. There were no documented high-priority national intelligence requirements on Korea, and the only requirement that related at all was couched in terms of keeping track of Soviet interest in the peninsula. At the time AFSA had "no person or group of persons working on a North Korean problem." During the previous year, SCA intercept sites had stumbled onto some [redacted] North Korean messages which were originally collected as suspected [redacted] When in May 1949 these messages were identified as North Korean, two intercept positions at [redacted] and a tactical unit not under AFSA control, were tasked with follow-up copy. AFSA had no Korean linguists, no Korean dictionaries, no traffic analytic aids, and no Korean typewriters.[19]

No one really expected an invasion in Korea. There was fragmentary HUMINT reporting, generally disbelieved by all, that there could be an invasion by North Korea in 1950. In March an Army organization called the Intelligence Indications Steering Committee cited the possibility of military activity in Korea sometime in 1950. But this was set against a general disbelief in the intelligence community that Korea presented a real problem.

After the war broke out, there was the usual scramble by intelligence agencies to find the indicators that had been missed. AFSA, for instance, discovered traffic indicating that there had been large shipments of medical supplies going from the USSR to Korea beginning in February. A Soviet naval DF net in the Vladivostok area had undergone a

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dramatic switch to South Korean DF tasks beginning in February.[20] This did not quiet the critics.

The Invasion

About 0330 on Sunday morning, 25 June 1950, Captain Joseph Darrigo, a KMAG military advisor to the ROK posted near Kaesong, was jarred awake by the roar of artillery. Darrigo, the only American on the 38th Parallel, was in the middle of an invasion of North Korean ground forces into South Korea. He managed to make it to the ROK 1st Division headquarters at Munsan just ahead of the advancing North Korean forces, and he spread the alarm.

There appears to have been no tactical intelligence warning. A reporter in Seoul got word of an invasion and rushed to the American embassy for confirmation. At the same time that he got off a wire to New York, the American ambassador was cabling Washington. His cable had to be encrypted and decrypted, and it got there late. The Americans learned of the invasion from the reporter in Seoul.[21]

ASA decided to support the fighting with a communications reconnaisance battalion at Army level and three battalions to serve each of the three corps. The 60th Signal Service Company at Fort Lewis, Washington, appeared to be closest to being ready for deployment of any ASA tactical asset, so that organization was selected. But it took time to get ready, and in the meantime ASA Pacific (ASAPAC) in Hawaii rushed a signal collection unit to the Korean peninsula, arriving there on 18 September. The Fort Lewis unit did not arrive until 9 October.[22]

Meanwhile, the Truman administration had decided to help the fledgling ROK army and got UN backing for the deployment of a multinational defensive force to Korea. Truman directed MacArthur to rush the 8th Army from Japan to Korea, and the first American troops reentered Korea by air on 1 July. But it took time to get enough troops into the country, and the DPRK army charged ahead, pushing ROK defensive units ahead of it pell-mell. By mid-August, ROK defenders had been shoved into a perimeter around the port city of Pusan, the last remaining large city still under the control of the Rhee government. When the first ASA unit arrived in September, the ROK army, bolstered by newly arrived American divisions (the 24th Infantry, 25th Infantry and 1st Cavalry), was desperately hanging onto this slice of the Korean landmass, and the American and Korean defenders were in the middle of a fierce struggle to retain the town of Taegu.[23]

ASA's primary concern was to get linguists. Perhaps the only two first-rate Army Korean linguists were Y.P. Kim and Richard Chun, who were both instructors at the Army Language School in Monterey in 1950. Chun had been cleared in World War II, but Kim had never been in the COMINT business. ASA needed linguists at Monterey to train what was expected to be a sudden flood of Korean language students, but they also needed someone in Korea who could translate Korean. ASA hesitated just a brief moment, and

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then Kim and Chun, neither as yet actually cleared for COMINT, were on their way to Korea to assist the newly arrived ASA tactical COMINT unit. Until their clearances came through, they worked in a locked and guarded room every day. Intercepted messages were brought in periodically. They would translate the traffic and then pass it through a slot in the wall to the communications center.[24]

The Air Force Security Service likewise had one unit in the Korean area in 1950 – the 1st Radio Squadron Mobile (RSM) at Johnson Air Force Base outside Tokyo. This unit had been created in 1942, and it had supported 5th Air Force through MacArthur's Pacific campaign from New Guinea to Japan. In 1950 it was still engaged in support to 5th Air Force, but by then had changed its mission to [redacted] In late June it scrambled to change over to Korean targets. It had no cryptanalytic capability, and so began with a traffic analytic attack against North Korean air targets. It likewise had no cleared Korean linguists, so it could do little against readable voice communications.[25]

The Murray Mission

The Air Force Security Service actually beat ASA to Korea – their first representative, First Lieutenant Edward Murray, arrived in Taegu on 19 July. But Murray's mission quickly became entangled in one of the most bizzare incidents in the history of American cryptology.

When Murray arrived, 5th Air Force already had a COMINT service. The origins of that organization are very murky but appear to go back to the days after the end of World War II. At the time a civilian named Nichols, who also had a reserve commission as an Air Force major, headed the local Air Force Office of Special Investigations. Nichols, whose background and training in COMINT are completely unknown, decided that Korea needed a COMINT service. The South Korean government under Syngman Rhee did not appear interested, so Nichols proceeded on his own, seeking out the assistance of some Koreans with COMINT experience.

Among his recruits was one Cho Yong Il, who had come from North Korea, where he had been a radio operator and cryptanalyst with the North Korean Army. Joining Cho was Kim Se Won, a captain in the ROK navy. Kim had served as a COMINTer with the Japanese army in World War II and, owing to having been interned by the U.S. Army in Hawaii, spoke excellent English. Cho, Kim, and those who worked for them did intercept and translation work for Nichols; the source of funding has never been discovered. In 1949 Cho, with Nichols's assistance, obtained a commission in the Korean air force (ROKAF), and his group dual-hatted as a private group working for Nichols and as the ROKAF COMINT service. At about the same time the ROK navy set up Kim and some colleagues from the Nichols group as their COMINT service, so they, too, were dual-hatted.

When the ROK army retreated south in July of 1950, Nichols and his COMINT group retreated with them. As they fled south, fissures developed between Cho and Kim, and in late July or early August the Kim group seceded. Cho stayed with Nichols to supply COMINT to the Air Force, while Kim eventually hooked up with ASA units entering Korea. Nichols was reporting directly to 5th Air Force, which was releasing his reports into USAF intelligence channels at the noncodeword level.

Meanwhile, AFSS had sent Murray to Johnson Air Force Base to put together a direct support package. Murray assembled some vans and other equipment from 1st RSM, and on 15 July he flew to Korea to set up a mobile COMINT effort. AFSS was operating under a misty-eyed concept of COMINT as covert operations, and 1st RSM was directed to expunge its identifications from the equipment, and to insure that Murray could not be indentified as a COMINTer. The direct support went under the codename Project WILLY.

Murray's first concern on arriving in Korea was linguists. Fifth Air Force offered him eight of them, straight from the Nichols pool. The only problem was that Nichols still controlled them, and the upshot was that Nichols wound up with 1st RSM's equipment for use by his own operators. As for 5th Air Force, they were quite happy with the support they were getting from Nichols and informed Murray that he was no longer needed. First Lieutenant Murray returned to Japan on 1 August, having utterly failed to set up a Security Service unit in Korea and having lost his equipment to boot.

The breathless nature of Nichols's coup left USAFSS spinning. A severe jurisdictional battle ensued, encompassing command organizations in the United States, Japan, and Korea. Security Service appeared to carry the day, and Murray was ordered back to Korea on 12 August, armed with a letter of authority from General Banfill (Deputy for Intelligence, Far East Air Force). But the struggle was far from over. Nichols was still unwilling to relinquish control of his COMINT organization, and he had the backing of 5th Air Force. Nichols was a local asset under their complete control, was publishing COMINT without the restrictive codewords that limited dissemination, and already had the expertise that Murray lacked. On 17 August, 5th Air Force ordered Murray to catch the next plane out of Korea. AFSS was again out of the picture.

The Nichols effort was limited by its lack of national-level technical support from AFSA and USAFSS, and 5th Air Force eventually realized this. On 20 November, 5th Air Force reversed its earlier position and asked for the deployment of a radio squadron mobile to Korea to provide support. Cho's group became Detachment 3 of the 1st RSM, and Nichols disappeared from the scene.

Meanwhile, back in Tokyo 1st RSM was trying to mobilize an effort against the North Korean air force. When Murray returned to Japan the first time he carried with him some captured North Korean code books turned over to him by Nichols. Lacking Korean translators, the unit came upon a Catholic priest named Father Harold Henry, who had spent a number of years in Korea as an Army chaplain. AFSS agreed to give him access to

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intercepted materials but did not agree to give him an SI clearance. He began applying the code books to the traffic, and he turned out to be a pretty good cryptanalyst, even though he was doing the work without benefit of formal clearance. Father Henry produced the first decrypts of enciphered North Korean air traffic.[26]

Counterattack

While ASA and AFSS were having trouble getting organized tactically, AFSA pushed rapidly ahead. Despite an almost total lack of expertise and resources to work the unfamiliar Korean target, codebreakers in Washington succeeded in penetrating North Korean communications by late July. At the time, DPRK troops were being readied for their all-out assault on Taegu, which, if successful, might have caused the collapse of the Pusan perimeter and American defeat. Three divisions of Lieutenant General Walton Walker's 8th Army were on line with the remnants of five ROK divisions; opposing them were fourteen battle-tested DPRK infantry divisions. On 26 July AFSA decrypted a North Korean message which contained much of the battle plan for the assault on the 30th. The information reached Walker on the 29th, and he shifted his forces to meet the attack, thus saving Taegu and the Pusan perimeter.[27] It was one of AFSA's most conspicuous successes.

On 15 September MacArthur launched the spectacular Inchon invasion, the second largest amphibious landing in history, near Seoul. North Korean troops suddenly had a large American force in the rear of their operations. On 19 September 8th Army began its breakout from the Pusan perimeter, and in a brief month they had pushed DPRK forces back north of Seoul. Syngman Rhee's government formally returned to the capital on 29 September. But the dynamic and committed Rhee wanted to push the fighting into North Korea, and on 30 September, ROK troops crossed the 38th Parallel. Washington viewed this development with anxiety. But MacArthur was confident that Chinese and Soviet forces would not intervene and, like Rhee, lobbied for authority to go all the way to the Yalu River. The CIA issued an assessment that MacArthur was right. The risks of invading North Korea appeared minimal, and in the end the Truman administration backed MacArthur. American forces crossed the 38th Parallel on 9 October, heading north.

China

The Chinese problem which MacArthur was so blithely underestimating had been building for years. The postwar COMINT effort against Chinese communications began officially in 1945 during the mission of General George Marshall to try to get Chiang Kai-shek and Mao Tse-tung to the bargaining table. Marshall, familiar with what COMINT had

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done during World War II, requested COMINT information from both Communist and Nationalist communications.

ASA mounted a small effort against both the Nationalists and Communists. [redacted] ASA could still report that the two sides were far apart, and it was obvious from the COMINT traffic that they were determined to settle their differences on the battlefield. The Marshall mission was withdrawn in 1946, and in October of 1949 Mao triumphed.

Following the withdrawal of the Marshall mission, the COMINT mission against China suffered, as ASA employed all available resources against the Soviet target. [redacted] ASA kept only a small section against Chinese civil communications, [redacted] Collection resources were concentrated at [redacted] security problems.[28]

When American and South Korean troops crossed the 38th Parallel, the Chinese had already decided to intervene in North Korea. The decision was taken at a meeting in Beijing from 3 to 7 October 1950. On the first day of the conference, Chinese foreign minister Chou En-Lai called Indian ambassador Panikkar to tell him of the decision, and Panikkar relayed this news to the West. But Indians were regarded as pathologically left-leaning, and Panikkar's communique was disbelieved. Chou's warning was followed up by Chinese radio broadcasts, but these, too, were disregarded.[29]

Historian Clay Blair asserts that "when MacArthur returned to Tokyo from Wake Island [in mid-October] he had no inkling of the CCF armies gathering in North Korea."[30] This was wrong. AFSA had clear and convincing evidence of the massing of Chinese troops north of the Yalu and had published it in product reports available to the JCS, the White House, and to MacArthur. As early as July, AFSA began noting references in Chinese civil communications to army units moving north. Rail hubs in central China were jammed with soldiers on their way to Manchuria. By September AFSA had identified six of the nine field armies that were later involved in the fighting in North Korea and had located them in Manchuria, near the Korean border. Ferries at Anshan (on the Yalu River) were being reserved for military use. Maps of Korea were being ordered in large quantities. On 7 November, in voice communications intercepted and published by the COMINT community, [redacted] stated, "We are already at war here."[31]

Douglas MacArthur with President Truman on Wake Island, 1951

That was not news to the ROK army. On 25 October a ROK division had been badly mauled by elements of the Chinese 40th Army, already reported by AFSA to be close to Korea. Five days later MacArthur's chief of staff, Lieutenant General Ned Almond, reported that he had seen Chinese POWs being held by a ROK unit. On the first of November, a Chinese force attacked a U.S. unit for the first time. But Charles Willoughby, MacArthur's G2, preferred to believe that these encounters represented isolated PRC volunteers rather than division-strength regular army units confronting UN troops.[32]

AFSA reports continued to document the presence of major Chinese forces on the Yalu, but the reporting was subtle. AFSA was regarded as a collection and processing agency, not as a producer of intelligence. There were no dramatic wrap-ups, no peppery conclusions – just the facts, strung through a flood of intelligence reports. The COMINT community had almost the only hard information about the status of Chinese forces.[33]

Intelligence agencies were beginning to pay attention. The Watch Committee of the JIIC, which began noting Chinese troop movements as early as June, concluded by September (probably on the basis of AFSA reporting) that these troops were moving north rather than to the coastal provinces near Formosa. By mid-October, influenced perhaps by MacArthur's opinions, the Watch Committee had concluded that, though there was convincing evidence that startling numbers of Chinese forces were in Manchuria, the time for intervention had passed – they assessed that the Chinese would not intervene.

However, encounters with Chinese ground and air forces in late October and early November caused the committee to take another look. Admiral Arleigh Burke, who commanded naval forces in the region, was convinced that Chinese intervention was imminent and brought up the subject twice to Willoughby, who summoned his very large staff to try to dissuade Burke.[34]

MacArthur continued to press ahead with offensive operations to reach the Yalu and get the boys home by Christmas. But on the snapping cold night of 25 November with trumpets braying, thousands of Chinese soldiers fell on unsuspecting units of the 8th Army. The American offensive turned quickly into a defensive, and a defense into a rout. The American and ROK armies were overwhelmed, and some units were virtually wiped out. Weeks later the front stabilized near Seoul, and the war settled down to grim trench warfare for almost three more years.

AFSS and ASA Operations

AFSS operations in Korea continued their harrowing path. The decision in November to send regular AFSS units occurred just prior to the Chinese invasion. Two locations were envisioned: one in Sinanju to intercept North Korean targets in the battle zone and a rear detachment in Pyongyang to intercept related Soviet and Chinese communications. But even as the two detachments were in the air on their way to Korea on 28 November, the Chinese had attacked, and Sinanju was not safe. The unit destined for Sinanju was diverted to Pyongyang, much further south, while the detachment commander was flown to Sinanju to assume command of the troops on the ground (the Cho detachment) and to get them to safety farther south. AFSS in Korea operated as Detachment Charlie of 1st RSM until 1951, when the 15th RSM was activated to control all AFSS Korean operations.[35] The Cho group made it safely back to Allied lines, and by February of 1951 the front had stabilized just south of Seoul.

ASA tactical units dug in for the winter. ASA manual Morse intercept efforts in Korea were having very modest success. Most intercepted material was [redacted] providing little of tactical value. But sometime in February reports began to filter to ASA that UN front-line troops were hearing Chinese voice communications. ASAPAC (Advance) sent an investigating officer to IX Corps, and he reported that there was a good volume of spoken Chinese interceptable.

ASA already had some Chinese linguists, but what they needed to exploit this type of nonstereotyped communications was native linguists. An arrangement was made with a former Nationalist Chinese general working for the U.S. in Tokyo to begin hiring former Nationalist officers from Formosa. They were enticed to Korea by the promise of earning GS-6 pay as Department of the Army civilians, and they were to enjoy officer status while in Korea. Competition was keen, and by the summer of 1951, Chinese linguists were flocking to ASA units in Korea.

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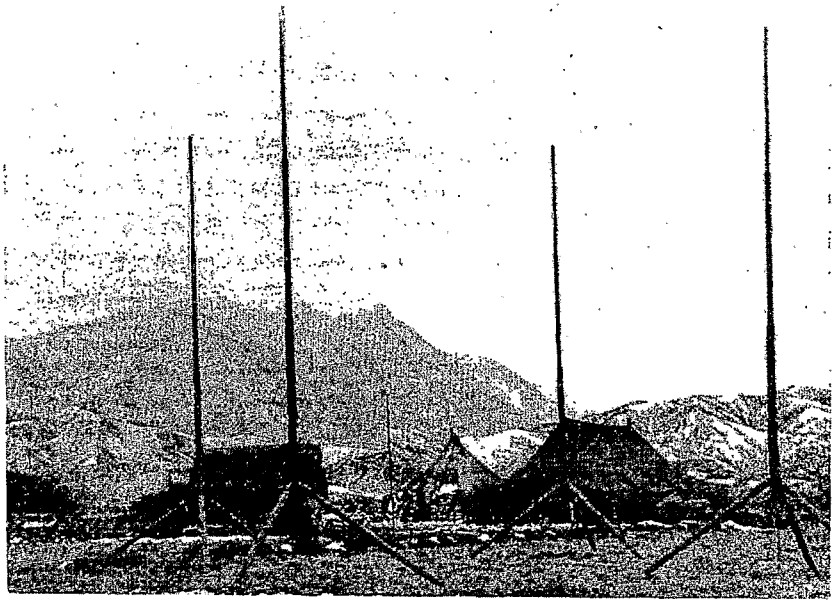

DF operations – an ASA DF unit in the mountains of Korea

The linguists were formed into Low-Level Voice Intercept (LLVI) teams and were positioned as close to the front lines as possible. The effort was expanded to include Korean LLVI, although that part of the program got off to a slower start because of the difficulty of getting good linguists in a cleared status. Low-level voice quickly became the prime producer of COMINT in Korea, and the demand for LLVI teams overwhelmed ASA's ability to provide enough good linguists. The program expanded from one unit, to seven, to ten, and by the end of the war there were twenty-two LLVI teams, including two teams dedicated to tactical voice intercept.[36]

In September of 1952 the 25th Infantry Division began picking up Chinese telephone communications from their tactical landline telephones. This was accidental, of course, and apparently originated from a sound detecting device normally used to indicate the approach of enemy troops. When the unit moved off line, they passed on the technique to the relieving 40th Infantry Division. The 40th improved the equipment but did no analysis. In November, an ASA liaision officer at division headquarters was notified, and ASA proceeded to develop the technique on other sectors, supporting it with LLVI teams

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consisting of either Korean or Chinese linguists, depending on which type of unit was on the other side of the line. The Americans had accidentally rediscovered a technique for gathering intelligence which had originally been developed during World War I and which had been a prime producer of tactical information. [redacted]

These LLVI teams were quite small, consisting only of an ASA officer, a couple of enlisted men for analysis, and two or three native linguists. Their value to front-line commanders, however, far outran their cost, and LLVI was hailed as one of the most important producers of tactical intelligence during the war.

White Horse Mountain

As the conflict settled down to unremitting trench warfare, highlights were few, and peace talks gradually replaced warfare in American newspapers. But the front lines continued to shift imperceptibly as the two sides bludgeoned each other in a series of bloody encounters to take high ground. One of those, the battle for White Horse Mountain, illustrated the use of COMINT in a tactical situation.

The action was originally tipped off by [redacted] a Chinese Communist military message that was in the hands of the tactical commander before the battle took place. ASA set up a special [redacted] effort and tactical communications to report information that might bear on the battle. [redacted]

True to the intelligence prediction, the Chinese launched a massive infantry assault on American and ROK troops at White Horse on 6 October and persisted until 15 October. Throughout the battle, LLVI teams kept the American commander informed of the position and activities of Chinese units. In a precursor to Vietnam, the American units were able to call artillery fire on Chinese positions on the basis of the LLVI-provided information.[38] The Chinese suffered nearly 10,000 casualties out of some 23,000 committed to the battle.[39]

AFSS Introduces Tactical Warning

Like ASA units, AFSS operations in Korea depended increasingly on intercept of low-level voice communications, using this for tactical warning. The concept relied on the Joint Training Directive for Air-Ground Operations published in 1949, which stated that the primary purpose of radio squadrons mobile for tactical support was to collocate with the Tactical Air Control Center (TACC) so that direct tactical warning could be supplied. (This followed World War II COMINT doctrine used effectively by Lieutenant General Kenney at 5th Air Force.)

Because of the lack of linguists, AFSS was slow to set up this service in Korea. However, in the early spring of 1951 AFSS units began intercepting Soviet ground-controlled intercept (GCI) communications, and this spurred Far East Air Force (FEAF) into requesting AFSS tactical support. Fortunately, AFSS did have some Russian linguists, and eight of them were on their way to Korea in April to form the first linguist team. They originally set up a mobile intercept and processing hut at Pyongtaek in central Korea, and communicated with the TACC by landline. No one in the tactical air operation was cleared for COMINT, so it was disguised using a simple substitution code to identify enemy aircraft and ground checkpoints. Arrangements were made for the TACC controller to pass relevant COMINT, intermixed with radar plots, to fighter pilots. The operation was nicknamed "YOKE," and became highly successful because it significantly expanded the range of control of the TACC and improved the air controllers' ability to warn pilots of impending threats.

As the front advanced north of Seoul, so did the air control operations. In June of 1951, the entire air control operation moved forward to a hill four miles northeast of Kimpo Airport near Seoul. But in August hearability deteriorated, and the operation, including the TACC and Security Serice operations, migrated by LST to Pyong-Yong-Do island. Only six miles from enemy lines, "P-Y-Do" (as it was called) was in an ideal location. The site at Kimpo was kept open, and linguists were split between the two sites.

Soon AFSS was finding tactical voice communications in Chinese and Korean as well as Russian. Two more voice teams were established for the additional languages. The Korean voice team consisted of the Cho contingent of the Nichols group. The Chinese team set up shop on the campus of Chosen Christian College in Seoul (today, Yansei University). AFSS acquired its Chinese linguists in Korea basically the same way that ASA did – they hired foreign-born linguists. In this case, they did business with one General Hirota, a former chief of the Japanese army COMINT agency during World War II. Hirota hired twelve Japanese linguists who were fluent in Chinese.

With so many languages involved, the tactical support operation was unusually complex. The AFSS facility at Kimpo correlated Chinese early warning voice, Chinese GCI voice, Soviet GCI voice, Chinese air defense Morse and Korean GCI voice. Each input was produced by a separate team, and each team was in a different location for security purposes.[40]

In September of 1951 the P-Y-Do operation was closed down and moved back to Kimpo, and that fall all AFSS operations were consolidated at Chosen Christian. This was the first time that all components of the operation were collocated, which made correlation of activity easier. According to one officer involved in the operation, "the present top-heavy success of the F-86s against MIG-15s dates almost from the day of the inception of the new integrated voice-CW-YOKE service."[41]

In early 1952 much of the GCI traffic that AFSS had been intercepting began to dry up, and AFSS became convinced that it had gone to VHF. Moreover, about that time the Chinese stopped tracking Communist aircraft, and they tracked only "hostiles." These twin changes spelled potential disaster for AFSS tactical operations. From a practical standpoint, the lack of tracking would force AFSS to rely almost entirely on intercepting GCI communications. But since these communications were disappearing, probably to VHF, that source of information was also drying up. The changes also generated a security problem, since the positions of Communist aircraft had been disguised as radar plots when being passed to the TACC. If there were no more radar position reports, disguise of the origin of the information would be much more difficult.

Delmar Lang on Cho-Do Island in 1952

These developments roughly coincided with the arrival of the first batch of school-trained American Chinese linguists, headed by Lieutenant Delmar "Del" Lang, in mid-1952. At the time the unit was located in Seoul, where VHF intercept was hardly possible, while the TACC had moved to Cho-Do Island, near the North Korean harbor of Wonsan. Information had to be relayed from the AFSS unit to Kimpo and from Kimpo to Cho-Do. Lang moved the operation to Cho-Do Island and collocated it with the TACC. Tests on Cho-Do in August of 1952 confirmed that both the Soviets and Chinese were now using VHF for their GCI control activities.

To solve the security problems and to make sure that the TACC controller got the best possible support, Lang positioned an AFSS linguist in the TACC in March of 1953, sitting next to the controller. The linguist had a field phone on his desk, the other end of which was attached to the output of a receiver at the Security Service intercept unit three-fourths of a mile away. In an era when no one knew much about TEMPEST (see chapter 5), such a wireline was regarded as secure simply because it was a landline.[42]

Combined with improved hearability, the new lash-up at Cho-Do Island provided the best support that AFSS mustered during the entire war. In one day, which Lang described as the "great Korean turkey shoot," American F-86s downed fifteen MIGs without a loss, even though none of the MIGs was ever seen on radar. The information came, of course, from the COMINT operation at Cho-Do. A visiting ASA colonel commented that "it was just like shooting ducks in a rain barrel." It was a model for tactical COMINT operations and was resurrected by the same Del Lang years later in Vietnam. (See chapter 12.)[43]

The Navy

Naval cryptology was a bit player in Korea. The DPRK had no blue-water navy, and it was so weak that the Inchon invasion went unopposed from the naval standpoint. The naval COMINT unit in the region was [redacted] But [redacted] was not concerned with the small collection of DPRK coastal patrol craft. The organization concentrated instead almost entirely on the Soviet navy in the Pacific, to determine what moves, if any, the Soviets would make toward the U.S. presence on the Korean peninsula.

The unit was housed in cramped quarters in a former Japanese artillery training school, entirely too small and inadequate for the purpose. NSG found an old Japanese ammunition storage building about ten miles from [redacted] Rehabilitation began in 1951, and in November 1952 [redacted] moved to [redacted] where it remained for many years.

Most of the NSG support to the war effort came from its afloat detachments. Originating out of Hawaii, detachments were placed aboard 7th Fleet vessels beginning in August 1951, and at the end of the war, 7th Fleet had three such units.[44]

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The AFSA Factor

On the home front, AFSA provided significant help to battlefield commanders. AFSA's quick work [redacted] in time to turn the tide at Taegu appeared to portend the same kind of COMINT effectiveness that the U.S. had enjoyed during World War II. But it was not to be. [redacted]

In November 1950, with Chinese Communist troops flooding into North Korea, AFSA turned its attention to Chinese communications. [redacted]

In 1952 the painfully slow progress on traffic analysis of Chinese army nets finally began to bear fruit. There were indications through traffic analysis that the 46th Army was moving northward. The army eventually arrived in Manchuria and crossed the border into Korea. As it did so, AFSA began exploiting People's Volunteer Army (PVA) nets from a traffic analytic standpoint, and it achieved a level of competence on PVA nets that allowed extremely accurate order of battle determinations, unavailable through any other intelligence source. Through traffic analysis AFSA noted the build-up of PVA units on the eastern front, and this allowed 8th Army to reinforce its right side prior to a major PVA assault on 15 July 1953.[48]

Relations with ROK COMSEC and COMINT

COMSEC assistance to ROK forces began almost as early as COMINT collaboration. In September 1950 ASA was asked to furnish low-level cryptographic assistance for use by the ROK army. After conferring with AFSA, ASA shipped some strip ciphers and Playfair squares. It was soon found, however, that these very time-intensive systems would not be fast enough, and in 1953 ASA provided the first electromechanical cipher equipment, the BACCHUS system. Later in the year ASA also released the DIANA one-time-pad system.[49]

Cryptologic cooperation with the ROK COMINT organizations continued throughout the war. USAFSS continued its relationship with the Cho group, while ASA continued to do business with the Kim group. In November 1951 ASAPAC proposed the consolidation

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of the two efforts, but AFSS firmly rejected the overture. This was probably based on Air Force fear that ASA would dominate the relationship and get back into the business of copying North Korean air targets, but this may also have been based on the very realistic appraisal that the animosity between Kim and Cho was unbridgeable.[50]

The situation continued unchanged, and late the next year an official for the newly created NSA

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By charter (NSCID 5), CIA had control of all foreign intelligence relationships. But the "battlefield marriage" between the American and South Korean COMINT organizations represented a significant exception to the general rule. Korea was JCS turf, and military commanders were cool to CIA participation in their arena.

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Korea – An Assessment

The Korean War occurred during a period of struggle in the cryptologic community. It began a year after the formation of AFSA and concluded after the AFSA ship had been finally scuttled in favor of a new vessel, the National Security Agency. The demands of war highlighted the fissures in the structure, and those fissures in turn made prosecution of the war more difficult. AFSA wrestled with the SCAs over control of intercept positions and targets throughout its existence, and many of those battles were related to the war effort. The Brownell Committee was convened in part because of complaints by organizations outside the Department of Defense over degraded cryptologic support resulting from the war. The committee stressed in its final report that the cryptologic community had been shown deficient in its effort during the war. NSA replaced AFSA partly because of what was happening (or not happening) in Korea.

But after forty years the picture does not look quite so bleak. Actually, AFSA and the SCAs provided good support to the war effort. Although AFSA (along with everyone else) was looking the other way when the war started, it did a remarkable about-face, and within a month it was producing large volumes of decrypted information from North Korean communications. Its accomplishments during the battle for the Pusan perimeter, [redacted] and using the information to support tactical commanders, were considerable and important. The reporting program, although hampered by restrictions on AFSA's production of "intelligence" as opposed to "intelligence information," was farsighted and effective. AFSA, almost alone among intelligence agencies, foresaw the Chinese intervention. The development of Chinese and Korean order of battle owed much to AFSA's high-powered traffic analytic effort.

After a slow start occasioned by lack of mobility, tactical resources, linguists, and working aids, ASA and USAFSS put together highly credible battlefield COMINT organizations. ASA's LLVI program produced more valuable information for ground commanders than any other source. AFSS put together a system for warning fighter pilots which was partly responsible for the much-ballyhooed kill ratio in that war. [redacted]

[redacted]

AFSA's quick start was not sustained. Beginning in July of 1951, the North Koreans began a total changeover of their communications procedures [redacted]

In the first month of the war, AFSA read more than one third of all North Korean cipher messages received, and by December AFSA was reading more than 90 percent. [redacted] The new North Korean security measures were evidently inspired by the Soviet Union, whose communications had in 1948 undergone a similar transformation in the face of possible American and British exploitation efforts. (See chapter 4.) It was accompanied by a decline in North Korean radio messages incident to the beginnings of static trench warfare roughly at the 38th Parallel, which gave the enemy a chance to divert radio communications to landline.

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[redacted]

Security was a problem in Korea, as it has been during all wars. Occasional press releases exposed COMINT support to battlefield commanders. The release of information about AFSS exploitation of GCI communications became so serious that in October 1951 Detachment 3 of 1st RSM took the extraordinary step of suspending operations for a few days until they got the attention of key officers in 5th Air Force.[56] The employment of tactical GCI voice and tracking information in the air war caused AFSS to devise new measures to cover the information, and it set a precedent for use of similar information during the war in Vietnam.

When NSA was created in November 1952, immediate steps were taken to sort out the effort in Korea. NSA's recommendations amounted to a classic "lessons learned" about war. Most pressing was a program which would allow the use of indigenous personnel with native language capability. Almost as urgent was the need to sort out the tangled relationships with the various ROK COMINT efforts. It would also be necessary to increase NSA representation in the field and to expand existing field offices with technical experts assisting the SCAs. Finally there was a call to develop new special identification techniques that would allow NSA and the SCAs to track target transmitters [redacted] NSA sponsored these themes for years, until they became tantamount to COMINT doctrine on warfighting.

One beneficial effect of the Korean conflict was to begin a rapid rise in cryptologic resources. In July 1950 USCIB recommended to the National Security Council that COMINT receive a hiring jolt. The NSC approved this on 27 July in a meeting attended by the president himself.[58]

Korea was America's first stalemated war, and recriminations resounded for years later. But even an acerbic CIA critic of the cryptologic community had to admit that "COMINT remained the principal source of intelligence for threat until 27 July 1953, when the armistice was signed at Panmunjom."[59]

Notes

1. Rowlett interview, OH 14-81.

2. Sinkov interview, OH 2-79; oral history interview with Herbert L. Conley, 5 March 1984, by Robert D. Farley, NSA OH 1-84.

3. See both Burns, *Origins*, and Howe, "Narrative."

4. William L. O'Neill, *American High: The Years of Confidence, 1945–1960* (New York: Free Press, 1988.)

5. See Burns. *Origins*, 65.

6. CCH Series V.F.5.1.

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7. Howe, "Narrative."

8. Burns, *Origins*, 70–71.

9. Howe, "Narrative."

10. Burns, *Origins*, 75–77; "Report to the Secretary of State and the Secretary of Defense by a Special Committee Appointed Pursuant to Letter of 28 December 1951 [Brownell Report]," in CCH Series V.F.7.13; NSA Archives, ACC 26350, CBSK 32; "Analysis of AFSS Effort in the Korean Action," unpublished draft, USAFSS, n.d., in CCH Series V.M.4.1.; A Reference Guide to Selected Historical Documents Relating to the National Security Agency/Central Secruity Service, 1931–1985, Source Documents in Cryptologic History, V. I (Ft. Meade: NSA, 1986), 36, 38.

11. Wenger comments on Howe draft history in CCH Series V.A.13.

12. Burns, *Origins*, 59–96.

13. Burns, *Origins*, 89; [redacted] "Consumer Liaison Units, 1949–1957," in NSA/CSS Archives ACC 10684, CBRI 52.

14. Howe, "Narrative"; "JCEC Memo for Information No. 1, Charters," in CCH Series V.G.2.; Brownell Report.

15. Brownell Report.

16. Ibid.

17. Ibid. See also Howe "Narrative"; Burns, 107–108.

18. An excellent account of the diplomatic background to the invasion of Korea can be found in Clay Blair, *The Forgotten War: America in Korea, 1950–1953* (New York: Times Books, 1987); and Joseph Goulden, *Korea: The Untold Story of the War* (New York: Times Books, 1982).

19. See [redacted] "The U.S. COMINT Effort during the Korean Conflict – June 1950–August 1953," pub. on 6 Jan. 1954, an unpublished manuscript in CCH collection, series V.M.1.1. See also Howe, "COMINT Production . . ." and The 'Brownell Committee Report', 13 June 1952, in CCH series VI.C.1.3.

20. [AFSA 235] no title [report on significant activity connected with the entry of Chinese Communists into the Korean conflict], 25 March 1952, in CCH Series V.M.7.1.; and [redacted] The U.S. COMINT Effort. . . ."

21. William L. O'Neill, *American High: The Years of Confidence, 1945–1960.*

22. Howe, "COMINT Production . . ."; Dick Scobey (NSA), draft study of ROK SIGINT Effort, no date, in CCH series V.M.6.1.; Assistant Chief of Staff, G2, "COMINT Operations of the Army Security Agency during the Korean Conflict, June 1950–December 1953," in CCH Series V.M.2.1.

23. Blair, *Forgotten War*, Ch. 2–4.

24. Interview Youn P. Kim, 22 February 1982, by Robert D. Farley, OH 2-82, NSA.

25. Hq USAFSS, "Analysis of AFSS Effort in the Korean Action," unpublished draft manuscript in CCH series V.M.4.1.

26. Summaries of Project WILLY can be found in the following sources: Hqs USAFSS, "Analysis of AFSS Effort . . .," Dick Scobey, "Draft Study of ROK SIGINT Effort"; ["Hop" Harriger], "A Historical Study of the Air Force Security Service and Korea, June 1950–October 1952," on file at Hqs AIA in San Antonio.

27. Manuscript entitled "SIGINT in the Defense of the Pusan Perimeter: Korea, 1950," (SC) in CCH series V.M.1.10. See also Clay Blair, *The Forgotten War*, 240.

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28. Guy Vanderpool, "COMINT and the PRC Intervention in the Korean War," paper available in CCH.

29. Roy E. Appleman, *Disaster in Korea: The Chinese Confront MacArthur* (College Station, Texas: Texas A and M Press, 1989).

30. Blair, *Forgotten War*, 350.

31. [Drake, Robert, and others] "The COMINT Role in the Korean War," unpublished manuscript in CCH series V.M.1.9. See also Howe, "COMINT Production in the Korean War . . ."; oral history interview Milton Zaslow, 14 May 1993 by Charles Baker and Guy Vanderpool, NSA OH 17-93; oral history interview Robert Drake, 5 December 1985 by Robert D. Farley and Tom Johnson, NSA OH 18-85; oral history interview Samuel S. K. Hong, 9 December 1986 by Robert D. Farley, NSA OH 40-86.

32. Blair, *Forgotten War*, 375–78.

33. Zaslow interview; Drake interview.

34. Department of the Army G2, "Indications of Chinese Communist Intentions to Intervene in Korea," 7 May 1954, in CCH series V.M.7.4.; oral history interview Admiral Arleigh Burke, 9 December 1981, by Robert D. Farley and Henry F. Schorreck, NSA OH 13-81.

35. "Analysis of AFSS Effort . . ."; George Howe, "COMINT Production in the Korean War. . . ."

36. Assistant Chief of Staff, G-2, "COMINT Operations . . .," contains the best summary of LLVI operations.

37. See Assistant Chief of Staff, "COMINT Operations . . .," 56–57.

38. Assistant Chief of Staff, G-2, "COMINT Operations . . ." See also oral history interview [redacted] 24 April 1982 by Robert Farley, NSA Oral History 9-82, 122.

39. For a description of the action, see Walter G. Hermes, *Truce Tent and Fighting Front*, United States Army in the Korean War (Washington, D.C.: Office of the Chief of Military History, United States Army, 1966), 303–08.

40. Summaries of AFSS tactical operations can be found in the following: USAFSS, "Analysis of AFSS Effort in the Korean Action," unpublished draft in CCH Series V.M.2.1.; NSA, "Review of U.S. Cryptologic Effort, 1952–54," in CCH series VI EE.1.3.; and [Hop Harriger] "A Historical Study. . . ." The latter document contains the fullest explanation of the Yoke operation.

41. [Hop Harriger] "A Historical Study. . .," 72.

42. The new operation is described in USAFSS, "Analysis of AFSS Effort . . ."; "Historical Data Report for the 6920 SG, 1 January 1953,"; interview with Delmar Lang [undated], in CCH Series VI, AFSS section; and Major Chancel T. French, "Deadly Advantage: Signals Intelligence in Combat, V. II," Air University Research Report # AU-ARI-84-1, 1984.

43. French, "Deadly Advantage . . ."; oral history interview Col (USA, Ret.) Russell H. Horton, 14 March 1982 by Robert D. Farley, NSA Oral History 6-82.

44. U.S. Naval Security Group, "U.S. Naval Communications Supplementary Activities in the Korean Conflict, June 1950–August 1953," in CCH Series V.H.3.1.

45. Richard Chun, unpublished manuscript in CCH Series V.M.1.11.

46. Drake and others, "The COMINT Role in the Korean War."

47. Assistant Chief of Staff, G-2, "COMINT Operations. . . ."

48. [Drake and others] "The COMINT Role in the Korean War."

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49. "U.S. Cryptographic Assistance and COMINT Collaboration with the ROK," 24 February 1955, in CCH Series V.M.6.5.

50. File of memos related to the history of AFSA/NSA communications center, in CCH Series VI.H.1.2.

51. NSA, "Study of the COMINT Situation in Korea," undated memo (probably December 1952) in CCH Series V.M.1.14.

52, "Agreement on COMINT activities between the U.S. and the Republic of Korea, 1956," in CCH Series V.M.6.3.

53. Brownell Committee Report, G-1–G-2; see also Mary E. Holub, Joyce M. Homs and SSgt Kay B. Grice, "A Chronology of Significant Events in the History of Electronic Security Command, 1948–1988," 1 March 1990, in CCH Series X.J.6.

54. CCH Series VI.A.1.3.

55. "Study of the COMINT Situation in Korea."

56. "Analysis of AFSS Effort in the Korean Action."

57. "Study of the COMINT Situation in Korea."

58. USCIB memorandum, 20 July 1950, and NSC memorandum dated 27 July, in Harry S. Truman Library, Independence, Missouri (contained in CCH Series XVI).

59. [redacted] "The History of SIGINT in the Central Intelligence Agency, 1947–1970," October 1971, V. I., 86 in CIA history collection, Ames Building, Rosslyn, Virginia.

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Chapter 3
Cryptology under New Management

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There is something about cryptologic work that gets into the hide....

Ralph Canine, 1968

NSA began life under a pall. The Brownell Committee had declared its predecessor to have been a failure. Outside the cryptologic community there was a common feeling that COMINT was broken and in serious need of repair. According to [redacted] who was appointed by Allen Dulles to ride herd on the cryptologic effort,

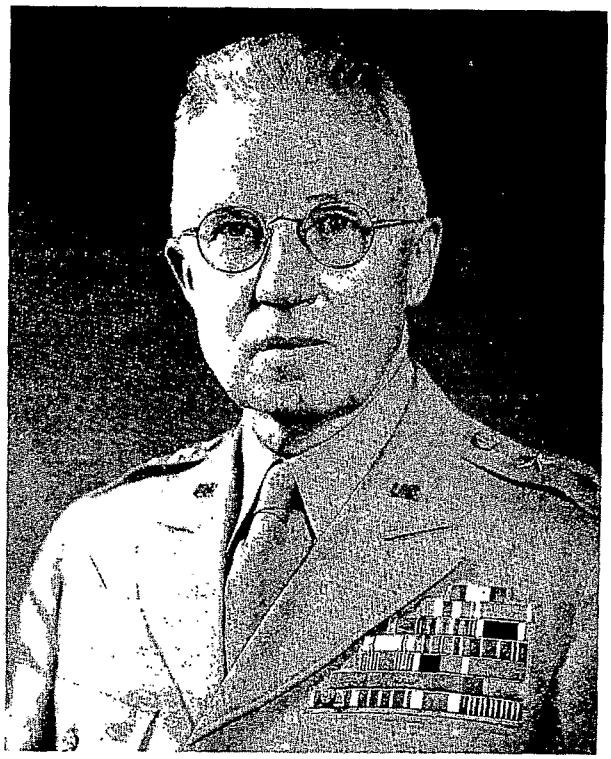
> The early 1950s were the dark ages for communications intelligence. Intelligence officers who had been accustomed to providing information not only on the capabilities but also on the intentions of the enemy during World War II were reduced to providing the government with estimates based on frail fragments of information rather than factual foreknowledge.[1]

The creation of NSA was an attempt to address the problems of cryptology as the Brownell Committee saw them. (As we saw in the section on Korea, that perception was not 100 percent accurate.) That is, it attempted to institute a firm control mechanism that would unify the system and create an organization which was, in and of itself, responsible for getting the job done. No longer would consumers have to go to four different organizations to get answers or to fix blame for the lack of answers. It did not give the organization resources, improve its personnel situation, or give it adequate working space.

When NSA began life, it simply inherited its resources from its predecessor. It got the AFSA billets and the people in them, the AFSA spaces at Arlington Hall, and the AFSA rooms at the Naval Security Station. And it inherited an idea, that unification worked better than division. The difficulty was in trying to implement the solutions that the Truman Memorandum imposed. AFSA, despite its failings, had been a step in the right direction. NSA now had to take the next step.

To the AFSA population, the name change must have seemed more for appearance than for any practical value. There was no immediate change in their condition. They stayed where they were – if they were COMINTers, they remained at Arlington Hall, and if they were COMSECers, they stayed at Nebraska Avenue. Lieutenant General Canine, who had replaced Admiral Stone as AFSA director, stayed on as director of NSA. When Canine first gathered the NSA work force together on 25 November 1952, he alluded to the conflicts which had preceded the establishment of NSA, but they must have seemed remote to those who listened. It looked like business as usual.

HANDLE VIA TALENT KEYHOLE ~~COMINT CONTROL~~ SYSTEMS JOINTLY
~~NOT~~ RELEASABLE TO FOREIGN NATIONALS



Lieutenant General Ralph J. Canine went to bat for the new organization at a time when its existence was challenged and its longevity was far from certain.

Canine and the New Organization

But it was not to be business as usual, largely because of the personality of the first director. Lieutenant General Ralph Canine, who dominated early NSA policies and stamped his character on the Agency, had been a line Army officer with no intelligence experience until he became deputy assistant chief of staff for army intelligence in 1949. Prior to that he had been an artillery officer, with wide experience in combat (both world wars, serving under Patton in World War II) as well as logistics. Although he brought no technical education to cryptology, he exerted his influence through a hands-on management style. He was forceful and determined and tenaciously enforced the Brownell recommendations on the reluctant SCAs. His whimsical personality produced legions of "Canine stories," which simply embellished his reputation as a maverick. Collins proclaimed him a "fortunate choice," and said that "he . . . raised the National Security Agency from a second-rate to a first-rate organization."[2] Canine was no diplomat,

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and he might have failed had he come along ten years later. In 1952, however, he was the right man for the job.

One of the first things Canine did was to get rid of the triumvirate of service deputies who, under AFSA, had represented their own service interests rather than the interests of the central organization. He replaced them with a single vice-director, and named Joseph Wenger to fill the position. But Wenger was probably not very happy as the vice-director. By all contemporary accounts, Canine served as his own vice-director. He tended to make all key decisions himself. He had no patience with long vertical lines of control, and when he wanted an answer, he went directly to the person involved. He relied on his staff to keep others in the chain of command informed of his comings and goings but did not feel bound, himself, to use the chain. The system smacked of paternalism, and one of Canine's subordinates once said, "Whenever I see him nowadays, I expect him to pat me on the head."[3]

Canine organized NSA rather like AFSA had been structured, with Production, COMSEC, and R&D being the major divisions. But he broke Administration into its component pieces (security, personnel, training, logistics, and plans and policy) and placed them on his "special staff," a classically army way of doing things. The office designation system was a trigraph, NSA followed by a dinome: for instance, NSA-02 was the Office of Operations.

In February 1953 Canine changed Operations to Production, or NSA-06. Production was structured much like a factory, in which the parts of the cryptologic process were organized functionally rather than geographically. The major divisions within Production were Collection (NSA-60), Analysis (NSA-70), Machine Processing (NSA-80), and Exploitation (NSA-90). Although NSA has since changed over to a more geographical approach, the original organization more closely corresponded to how cryptologists viewed their profession at the time – as part of a complex process suitable primarily for highly skilled factory technicians. What made cryptology different from other intelligence disciplines was both the intricate technical challenge and the assembly-line processing system. It also represented NSA's way of conceptualizing the process of intelligence – as underlying data revealed through mathematical attack rather than as cognitive insight arrived at through inspiration.[4]

The Early Work Force

The Korean War had ushered in a period of explosive growth in the cryptologic population. This was followed by a long period of fairly steady personnel growth, as Table 1 shows.

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Table 1

Cryptologic Population, 1949-1960[5]

Year	AFSA	NSA	Totals (includes SCAs)
Dec 1949	4,139		10,745
Dec 1952		8,760	33,010
Nov 1956		10,380	50,550
Nov 1960		12,120	72,560

The work force in 1952 was double what it had been under AFSA, but it was still smaller than either ASA or USAFSS and larger only than NSG.

[redacted][6]

The Hoover Commission, which was probably the most extensive investigation of the federal bureaucracy ever, estimated that cryptologic costs amounted to about half a billion dollars.[7]

In the early days, the work force was about one-third military and two-thirds civilian. A snapshot of NSA's work force in 1956 (Table 2) showed most of the population working in Production.

Pay tables were not quite as generous in those days, as Table 3 clearly shows. A grade 5 employee (the most numerous group of NSA employees) started out making $3,410, which smacks of impoverishment. But with houses costing below $10,000, and frequently below $5,000, employees may have been just as well off in real terms then.

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Table 2
NSA's Work Force by Organization, 1956

Element	
Production	
R&D	
COMSEC	
Communications	
Training	
Directorate, admin, overseas	
Totals	

Table 3
Pay grade allocations and salary (basic level) 1952 and 1993[8]

Grade	Salary 1952	1993	Grade Alloc 1952	1993
1	$2,500	$11,903	(0.2%)	(0%)
2	2,750	13,382	(0.7)	(0.07)
3	2,950	14,603	(6.5)	(0.5)
4	3,175	16,393	(13)	(0.7)
5	3,410	18,340	(26)	(1.9)
6	3,795	20,443	(7)	(1.6)
7	4,205	22,717	(18)	(4.9)
8	4,620	25,259	(1.5)	(1)
9	5,060	27,789	(12)	(6.8)
10	5,500	30,603	(0.5)	(0.2)
11	5,940	33,623	(7)	(12.1)
12	7,040	40,298	(4)	(22.1)
13	8,360	47,920	(2)	(26)
14	9,600	56,627	(0.8)	(11.5)
15	10,800	66,609	(0.6)	(6)
16	12,000	–	(.02)	
17	13,000	–	(.02)	(2)
18	14,800	–	(.02)	

~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY NOT RELEASABLE TO FOREIGN NATIONALS~~

Included in Table 3 are the grade allocations in 1952 compared with those in 1993. This is a striking illustration of grade creep – more of a gallop than a creep. In 1952 the average grade was 6.7, while in 1993 it was 11.7, a grade inflation averaging fully five General Schedule grades over a period of forty-one years. This followed the trends in the general federal work force: in 1952, the average grade was GS-5.5, while in 1993 it was GS-9.

The conditions under which NSA employees labored were not much different from the AFSA days. Offices were badly overcrowded, especially at Arlington Hall. In 1954 approximately 30 percent of the work force worked the evening shift to relieve overcrowding on days. Air conditioning in the Washington area was still virtually unknown, and the NSA hot weather policy permitted relief from work only when conditions became fairly unbearable, as the temperature versus humidity chart (Table 4) shows. On really hot days the man whirling the hygrometer was the most popular person at the station.

Table 4
NSA Employees Could be Released When

Temperature reached	And humidity reached
95	55
96	52
97	49
98	45
99	42
100	38

There was a view, widely held in 1952, that the expertise of the civilian work force had declined since 1945. This was to some extent true. Not only had ASA and NSG lost some of their best minds at the end of the war, but the structure of the central organization created built-in problems for the civilian promotion system. The Navy had always run its cryptologic service with military officers, while the Army, believing that military officers rotated too frequently, had let its civilian work force run the cryptologic effort. By 1949, when AFSA was formed, NSG had a number of very senior officers involved in the business, and many of those people transferred into AFSA. Admiral Stone placed them in the key leadership positions, and the Army civilians were often shunted aside. Moreover, Stone took no steps to create a senior civilian work force, and when he departed in favor of Canine, there were no civilians above grade 15.

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In 1953 a committee chaired by H. P. Robertson of California Institute of Technology (more commonly referred to simply as Cal Tech; see p. 227) looked at NSA's future and concluded that there was no future if the Agency was unable to obtain and retain outstanding civilians in various technical fields. This, according to Robertson, would require the establishment of a cryptologic career management program within NSA, with regular progression through the grade ranks and supergrade promotions to the top performers. The Robertson Committee also concluded that the services would have to improve their own cryptologic career advancement programs to attract and retain good uniformed people to COMINT. Robertson noted the lack of such a program in the Army and the lack of a stateside rotational base. (At the time, fully 66 percent of all ASAers were overseas.)[9]

Canine met this problem head-on. Soon after the Robertson Report was released, he directed the personnel office to begin working on a cryptologic career system, with technical specialties and a system of regular advancement. This work was well under way by early 1954 and eventually led to the structuring of the current cryptologic career program for civilians. Canine was credited personally with getting NSA's first three supergrades: William Friedman, Abraham Sinkov, and Solomon Kullback. (Frank Rowlett, hired in 1930 with Sinkov and Kullback, had joined CIA and so was not on the list.) Even more significant, in 1953 he obtained for NSA the authority to hire under the so-called Civil Service Rule Schedule A, which permitted NSA to hire without obtaining permission from the Civil Service Commission. Rather than having NSA applicants take the standard Civil Service test and then having a board interview the top three scorers NSA devised its own peculiar aptitude tests, and hired without outside interference.[10]

Under Canine, NSA moved in many directions at once to strengthen its civilian work force. The director got NSA a slot at the National War College in 1953, and Louis Tordella was the first appointment, Abraham Sinkov the second.[11] The Training Division initiated a presupervisory training program, which was curtailed in 1955 in favor of an intern training program oriented more toward technical education.[12] NSA began local recruiting in the Baltimore and Washington areas by 1954.[13]

Fielding the Field Offices

Canine moved very aggressively to establish field offices. Under Stone, AFSA had had no field organization, and the censorial AFSAC appeared to guarantee continuation of the situation. But as soon as he became AFSA director, Canine made an end-run around AFSAC. On a trip to the Far East in September of 1951, he got the concurrence of the theater commander for an AFSA field office and returned to Washington with a fait accompli. Early objections by NSG were muffled when Canine named Captain Wesley A. ("Ham") Wright, one of the most senior naval cryptologists, to head the newly formed AFSA Far East office in Tokyo. By the time AFSAC got around to considering this

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surreptitious move in January of 1952, the office already existed (official date: 1 January 1952) with Wright and a staff of six. When AFSAC approved a formal charter, it stripped Wright of any direct control over SCA field operations, but Canine had the nucleus of a field organization and awaited only the creation of NSA to augment the authorities of the chief.

In Europe, Canine began by sending a top civilian, Hugh Erskine, on a survey trip, the result of which, as in the Far East, was theater command concurrence with an AFSA branch office. This time Canine submitted his plan to AFSAC before officially establishing the office. AFSAC approved, and Erskine began work formally on 1 September 1952 in offices in the I.G. Farben building in Frankfurt.[14] NSAEUR competed for a time with an office titled NSAUK (NSA United Kingdom), located in London, and the two shared responsibility for some of the continental COMINT functions – for instance, [redacted] This lasted until 1956, when NSAUK was abruptly disestablished.

When CINCEUR shifted to Paris in 1954, NSAEUR stayed in Frankfurt but finally shifted to Camp des Loges, outside Paris, in 1963. While the policy and liaison functions resided there, [redacted][15]

Once NSA was officially established, Canine moved swiftly to create more field offices. NSA Alaska (NSAAL) was created in July 1953, NSAUK on 26 August 1953, and NSAPAC, established to advise CINCPAC, on 16 August 1954. He also created at home an office to monitor field operations.[16]

Backed by the authority of NSCID 9 (the predecessor of the present-day NSCID 6), Canine imposed on the reluctant SCAs a group of field offices that had basically the same power as he himself within their geographic spheres. They had two functions – liaison with theater commanders and technical control of the theater COMINT system. Their main reason for existence was to impose order on the chaotic growth of the field sites, and they established large and active technical staffs which worked directly with the sites. NSA field offices could task SCA field sites directly (although they customarily did not do so). NSA's theater chiefs strove to create a cooperative atmosphere with the SCAs, but everyone involved recognized the implied threat that they represented as personal emissaries of the feared Canine. The SCA field chiefs fought this "encroachment" into their territory with every resource at their disposal.[17]

During and after World War II, American military organization in the Atlantic and Pacific theaters contained inherent turf conflicts. In Europe, for instance, the main power resided with CINCEUR (originally in Frankfurt), but there was also a military organization in Great Britain that competed with it for power. In the Pacific the competition between CINC Far East (MacArthur) and CINCPAC (Nimitz) was even more stark. And so it was with NSA organizations. In Europe, the latent competition between

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the NSA offices in Great Britain and Germany was resolved in 1956, but in the Far East the competition between the offices in Tokyo and Hawaii continued for many years.

[redacted]

Civilians in the Trenches – the Civop Program

In the early 1950s NSA turned to the problem of field site collection. Military operator turnover was high, some years as high as 85 percent. The long-range expansion of intercept positions set by JCS during the Korean War appeared to be a dead letter unless a stable manpower pool could be established. NSA liked what it had seen of the GCHQ program of hiring civilian operators because of the exceptionally long retention rates and [redacted] NSA was also aware that CIA was hiring civilian operators for [redacted] Negotiations were begun with ASA, and in 1954 an agreement was hammered out which would start with a pool of one hundred civilian operators at four ASA field sites: [redacted] NSA would recruit and train the operators, who would be under the control of the field site commander. For the initial group, rotation at all four bases was set at two years, and the grade ranges for the program were 5 through 11. The NSA planning group waxed a little poetic, formulating long-range plans for thousands of operators and an eventual NSA field site of its own.

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The trial group was duly recruited, trained, and deployed. But even as things were moving ahead, the services' attitudes were beginning to cool. NSA promised to recruit only operators who had retired from service, but ASA and USAFSS foresaw keen competition for their first-term operators contemplating better salaries doing the same job for NSA. By 1957 the services had turned against the program, and it was quietly discontinued. It had long-lasting beneficial results, however. It yielded, in later years, a cadre of experienced civilian operators who performed well in crisis after crisis.[18]

COMINT Reporting in Transition

The reporting legacy of World War II was translations. ASA and NSG issued thousands of translations per month, a reflection of the huge volume of readable traffic. Once the cryptanalyst had finished his or her job, and the translator had put the message into readable English, the verbatim transcript was released to either G2 or the theater commander (in the case of the Army) or Office of Naval Intelligence or the appropriate naval commander (in the case of the Navy). The mechanism for this was to hand the information in raw form to an intelligence analyst collocated with the cryptologic organization. Traffic analytic information was also passed in bulk to the appropriate

intelligence organization, which would put it into readable intelligence. In other words, the COMINT factory simply passed raw information to the organization, which would itself put it in context.

The postwar cryptologic community continued to produce primarily translations, accompanied by all the COMINT technical information [redacted] necessary for the service intelligence analyst to analyze it. NSA was not supposed to analyze. The information (it could not be dignified with the term "report") lacked a serialization resembling the modern system. [redacted][19]

AFSA began to evolve a similar system. Releases tended more and more toward reporting rather than translations, [redacted] Reports were more formal and had wider distribution. AFSA devised its own primitive serialization system: an example would be [redacted] followed by a date. [redacted] was the subject matter [redacted] and 13-50 indicated this was the thirteenth report produced in 1950 by that section. But reports still contained [redacted] and other sorts of technical data later prohibited in COMINT reporting, and narrative portions were often very heavy on discussion of details of [redacted] rather than on higher-level information like unit movements. The distribution was still very limited by modern standards. Collocated organizations (ASA, USAFSS, and NSG representatives, for example) decided who in their services should see the information and made further distribution from there.[20]

Early NSA reporting was more formal still. [redacted] Distribution was broader as NSA ceased to rely on the SCA and service intelligence collocated liaison offices to distribute further. Reports in 1953 still contained [redacted] had finally been expunged. There was still much information [redacted] but analytical conclusions were now separated into a "Comments" section at the end of the report.[21] Later in 1953 NSA excluded "COMINT technical data" from product reports completely and formed an Operational Management Control Group to enforce discipline. Collateral information could be used when necessary.[22]

The COMINT reporter was often bedeviled by the same problems then as today. Periodically NSA organizations would chastise reporters for overusing qualifiers like "possibly" and "probably." A 1953 memo found NSA reporting "generally so cluttered with qualifying expressions as to virtually preclude their use by a consumer."[23]

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[redacted] The National Security Agency was a term shop.[24]

In 1955 the Hoover Commission declared that NSA, while producing some very valuable information, was not an official member of the intelligence community. But the commission undercut this general statement by noting that the volume of COMINT was so huge that it could never all be turned over to consumers, and by the very act of selecting individual pieces for dissemination, NSA made analytic judgments about value and applicability.[25]

This trend was to continue and intensify. Key NSA executives knew that the organization had to move away from translations and into true intelligence reporting. Various sources of COMINT had to be synthesized, and the results must be packaged into a meaningful explanation of the situation. If possible, the reporter should make comments as to meaning and, on occasion, should make conclusions based on COMINT. This was a higher level of analysis than the rest of the intelligence community foresaw for NSA, and it would get the organization into trouble with consumers who resented what they regarded as turf encroachment. But it was the wave of the future.

NSA Training – The Early Years

Training had been the "bastard child" of AFSA. Originally the training school had been a section of the personnel office, a way station for new and uncleared personnel. New recruits were given unclassified Army traffic analysis and communications manuals to read until their clearances came through. The training was good – many of the manuals were written by Friedman himself – but the way AFSA treated the problem was all wrong. The staff was miniscule, facilities practically nonexistent, and the function was almost totally ignored. The real training concept was on-the-job training in the duty section. Almost all operations training was conducted in Production, with little centralized control and practically no classroom instruction. There was a training staff that tried to coordinate all this, but it did not work in the same organization as the cryptologic school, which was still part of personnel.[26]

When the Korean War began, the training school was still in languid decay, with one hundred uncleared recruits reading musty traffic analysis manuals in the training spaces at Nebraska Avenue, supervised by a staff of six people. By the end of the year all was

chaos. There were 1,100 trainees jammed into the same spaces, still with a staff of 6. Canine was aware of the problem, and AFSA went to work to improve the situation. In April of 1951 the school was moved to larger quarters at 1436 U Street, N.W., designated Tempo R. In June 1954 the school moved to another World War II building – Tempo X – located on the north side of East Capitol Street, in the area that is now part of the RFK Stadium parking lot. When, in the mid-1950s, NSA moved to Fort Meade, the training school moved to a former hospital a couple of miles from the main NSA complex.

Canine later separated training from the Office of Personnel and elevated it to the level of Office of Training. Its chief was named commandant of the NSA School. Canine was also a proponent of management training, which was begun in 1952, and he placed the first NSA students in service war colleges in 1953.

AFSA also began paying more attention to formal classroom instruction. Instead of the "sit in the corner and read a book" approach, it began offering a selection of classroom traffic analysis, cryptanalysis, mathematics, language, and technical training. By 1952 the school was offering training (at some level, at least) in eighteen different languages. Secretaries got instruction in clerical and stenographic skills, and there was a four-week teletype operators course for those assigned to communications. There was also a one-week indoctrination course for all new hires, with follow-on instruction for certain specialties.[27] By mid-1952 AFSA was also offering three levels of management training – junior (presupervisory), supervisor, and executive. Classes were very small, but at least a rudimentary program existed.

NSA also began using education as inducement. Begun under AFSA, the College Contract Program began with a contract with George Washington University and amounted to NSA payment of tuition to qualifiers. Classes were held at Arlington Hall, Nebraska Avenue in the District, and at Thomas Jefferson Junior High School in Virginia. There was also a program for graduate students and, for a select few, a fellowship program which offered full-time study away from NSA.

NSA's role in broader cryptologic training within the services was less certain. Both AFSA and NSA enjoyed a theoretical technical control of cryptologic standards, which included training, but AFSA never exercised its review function. An early AFSA proposal to create a consolidated cryptologic training school was scuttled by Brigadier General Roy Lynn, an AFSA deputy director, who was concerned about retaining USAF Security Service independence.

After 1952, things began to change as NSA became active in reviewing SCA cryptologic courses. The Agency was especially active in providing technical assistance for language training and at one time took responsibility for all language training beyond the basic level. It did not, however, try to take on COMSEC training, preferring to leave that to the SCAs.

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Canine continued to strengthen the organizational position of the training function. As it migrated up from branch to division level, it took on added responsibilities and acquired more resources. The people who were involved in training in those early days were first rate – Lambros D. Callimahos (a close protégé of Friedman) and Navy captain Thomas "Tommy" Dyer (one of the Navy's great pioneers in codebreaking) were especially notable examples. William Friedman, who had personally built the Army's cryptanalytic system, spent much of his career as a teacher and authored many textbooks on cryptanalysis. With such talent and influence, it was only a matter of time before NSA's training system became a model.

Setting Up Security

Security was one area with which Canine had experience, and he tackled it very early. Under AFSA, perimeter guards at Arlington Hall and Nebraska Avenue had been uncleared. Interior guard duty was pulled on a rotating basis by reluctant uniformed cryptologists, each division taking its turn for a month at a time. Canine eliminated the interior guard duty in early 1952 by bringing in cleared, uniformed security police. Later he decided to add some prestige to the NSA guard force and convinced the Navy to give up a detachment of Marine guards to begin guarding the new temporary NSA facilities at Fort Meade in 1955. Normally reserved for embassy duty, the Marine guard detachment became a fixture and source of pride at NSA for many years.[28]

Given the size of the cryptologic complex in Washington, some sort of universal personnel identification system became necessary. The Army appears to have begun using personnel badges during World War II. Their badges in those days were round metal tabs with a picture overlayed with plastic – fully cleared people had red badges, opposite the system of today. After a costly experiment with glass badges, AFSA settled on a plastic badge. Color coding identified organization, with seven colors total. In 1956 the organizational affiliation began to fade as NSA reduced the number of colors for cleared people to four and began using green badges for fully cleared employees. Metal badges returned in 1959 and were standard until the late 1970s. NSA employees found them ideal for scraping ice off windshields.[29]

Along with a badge system, NSA began restricting area access. By 1953 the security division had devised three work area designations: restricted, secure, and exclusion. The "red seal" and "blue seal" tabs used for so many years to designate compartmented areas did not, however, come into use until NSA moved to its new quarters at Fort Meade in 1957.[30]

NSA's controversial experiment in polygraph screening was rooted in the Korean War. As new employees flooded into the training school at Nebraska Avenue, the security system was overwhelmed with clearance requirements. Then, as now, employees were cleared through a combination of the National Agency Check and background

investigations, conducted by the services. By December 1950 the system was so inundated that 39 percent of AFSA employees were uncleared. NSA security people began casting about for a quick way to process clearances and fastened their attention on the polygraph, long used by law enforcement agencies in criminal investigations. Although polygraphs were not admissable in court, AFSA discovered that CIA had begun using them for people being indoctrinated for COMINT as early as 1948 and only two months earlier, had broadened testing to include the entire CIA work force.[31] Studies showed it to be a more reliable indicator of loyalty than the background investigation, and it was proposed that the polygraph be tried as a way to get an "interim" clearance. Canine approved a trial program in January 1951, but implementation was tricky. AFSA had to buy the equipment, recruit polygraph examiners from the police departments and private detective agencies around the country, build soundproof rooms for the interviews, and become experienced in interpreting results in this new and experimental area of loyalty verification.

The new polygraph procedures began on a trial basis at the U Street location in May of 1951. Soon examiners were working from seven in the morning to eleven at night. By the end of September, they had cleared the backlog and went back to regular hours. AFSA had suddenly acquired hundreds of employees with something called a "temporary" clearance, who still required completion of the background investigation to become "permanent." But in the helter-skelter time of war, no one paid the slightest attention to the difference, and on the day NSA was created a large portion of the work force worked with a temporary clearance. This situation would come back to haunt NSA in 1960 when Martin and Mitchell fled to Moscow and NSA's clearance practices were called into question. (See p. 280.)

In the rush to clear people, there was considerable breakage. Examiners were used to dealing with criminal investigations, and some of them had trouble making the transition. Hostile questions elicited emotional responses, and the rate of unresolved interviews approached 25 percent. The incredibly long hours added to the stress, and by the end of the first summer it was hard to tell who was more stressed, the examiners or the examinees. But after a very bumpy start, things smoothed out, and the security organization claimed to have cleared up lingering administrative problems by 1953.

When first begun, the polygraph was "voluntary," but Canine declared that if an applicant did not volunteer, the application went no further. The fiction of optional polygraphs continued until 6 December 1953, after that historic date all applicants were polygraphed. But there were always exceptions to the general rule that all employees were polygraphed. No requirement was established to include existing employees in the system, and the military, amid much controversy, refused to allow its people to be polygraphed.[32]

The modern (and usually functional, if somewhat cranky) classified waste disposal system of the 1990s was a good deal less high-tech in 1952. Early destruction at both

Arlington Hall and Nebraska Avenue was by incineration. Burnbags were stapled shut, as they are today, were marked with the originators' organization, and were placed in central collection locations. Once picked up, they were pitched into the fire by a military detail, and destruction was certified by a commissioned officer.

In late 1951 AFSA, determined to modernize the procedure, ordered two Somat machines, which AFSA officials had seen in operation at CIA. The machines operated much like the present destruction facility but on a much smaller scale. There was a whirling tub resembling a cement mixer, into which the burnbags were thrown. The door was then closed, water was injected, and the tub churned. But the early models did not work very well, and the whole process was as dirty as a paper mill. NSA later returned to the old standby incinerator until something better could be devised.[33]

NSA AND THE U.S. INTELLIGENCE SYSTEM

NSA and its director were coping with the problems – technical, organizational, and fiscal – in establishing a truly global SIGINT system, which at one and the same time would serve national and parochial interests. This required a strong central institution and considerable adjustment of the old ways of doing business. When Canine tried to make the adjustments, he ran into opposition from every direction. His attempts to impose uniformity were opposed by the SCAs, while his SIGINT turf was simultaneously being invaded by the CIA.

Consumer Groups Come to NSA

The modern method of marketing SIGINT is primarily through Cryptologic Support Groups (CSGs) accredited to consumer organizations. Many NSAers are surprised that it was not always such. But in fact, the system began exactly opposite. In the beginning, consumers established liaison detachments (sometimes referred to as "beachheads") within NSA. Indeed, NSCID 9 codified what already existed in AFSA when it stated that "the Director shall make provision for participation by representatives of each of the departments and agencies eligible to receive COMINT products in those offices of NSA where priorities of intercept and processing are finally planned." The motivating force appears to have been to give customers a voice in setting COMINT collection and reporting priorities. But the customers did not limit themselves to expressing requirements. All of them sifted COMINT information and interpreted the meaning back to their parent organizations. Some of them actually produced their own report series and distributed them to their home offices.

In the beginning, many of these organizations were quite large and robust: in 1954 both Army and Office of Naval Intelligence had fifty-two analysts at NSA, CIA had

and State had four. Air Force Security Service, however, had by far the largest, a total of eighty-one analysts working in an outfit called AFSSOP (Air Force Security Service Office of Production), which produced COMINT summaries digested from the mass of technical information available only at NSA headquarters.

NSA did not like the system, and over the years it made moves to cut off the flow of technical information that kept the consumer groups alive. These attempts were initially unsuccessful, but the beachheads gradually became smaller and finally faded out of existence, victims of an aggressive NSA external reporting program that made them unnecessary. By the end of the 1950s they were gone, except for liaison detachments that had no production or interpretive responsibilities.[34]

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The Struggle for Technical Control

NSCID 9 gave NSA "operational and technical control" of all U.S. COMINT operations. This revolutionary authority proved to be the glue that knit the COMINT community together.

Those who have lived within a unified system all their working lives cannot appreciate the technical problems that confronted NSA in November 1952. For instance, among the British, Army, and Navy, there were in the 1940s seven different naming conventions for Soviet codes and ciphers.

- The Navy began the Second World War using
- The British began with
- The Army began with
- The Navy copied Soviet intercept while the Army used an
- The British were copying things

Each organization had its own traffic formats. When the traffic came into NSA, it all had to be hand-massaged to make it suitable for any sort of processing. A coordinated attack on high-grade systems would be too time-intensive without standardization.[35] Someone had to dictate formats.

The impetus behind standardization was processing. Raw traffic and digested extracts (called TECSUMs, or technical summaries) cascaded into NSA headquarters in unmanageable volumes. An NSA Technical Management Board created soon after NSA

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itself was established concluded that collection, and thus collection equipment, would have to be homogenized to permit NSA to process the traffic.

The original vehicle for securing compliance was a program of NSA circulars. They covered procedures for intercept, traffic forwarding, end product reporting, and services and facilities. In addition, NSA published Unit Operations Orders describing in general terms the mission of each unit authorized to produce COMINT. These publications, when taken together, constituted the NSA Field Operating Manual, a device borrowed directly from Army usage. Canine regarded them as directive, and he tenaciously enforced compliance, but the SCAs resisted. They initially regarded NSA directives as voluntary suggestions.[36]

By 1956 the SCA units were having trouble distinguishing operating policy from technical guidance, which had over the preceding four years become hopelessly scrambled between the two categories of documents. So NSA created a new system that looked a lot less like an Army directive, called MUSCO (Manual of U.S. COMINT Operations). Within two years ELINT had been added to the national cryptologic mission, and MUSCO was changed again, to MUSSO (Manual of U.S. SIGINT operations). On those occasions when a consumer needed to know how SIGINT was produced or what NSA's operating policy was, a special series of MUSSO documents called INFOCONS was issued.[37]

In April 1954, Canine unceremoniously yanked control of field site placement away from the SCAs. Henceforth, the establishment of field sites would be done only with the permission of the director. Even site surveys had to be coordinated with NSA first. Canine relented to the extent of allowing SCAs to place small (less than ten-position) sites during peacetime without his direct "chop." The important message, however, was that DIRNSA had now delegated this authority, implying rather directly that what he delegated he could rescind.[38]

And while he was at it, the director pushed the concept, completely foreign to the SCAs, of cross-servicing, whereby targets would be collected by the most technically capable intercept site regardless of service affiliation. During the Korean War, for instance, ASA sites collected a good deal of North Korean air force communications under the cross-servicing concept (and to the loudly voiced complaints of USAFSS).[39]

NSCID 9 gave the director untrammeled authority over COMINT direct support resources. A theater commander could request such support, but it was entirely up to DIRNSA whether the request was honored or not. Canine's directive on control of direct support assets narrowly defined the conditions under which the director would delegate control. When and if he did, it would normally be to the SCA chief, not an "unlettered" field commander. There were no provisions for appeal should DIRNSA deny the request. This provision of DIRNSA's authority stood basically unchallenged through the 1950s, a time when there was very little direct tactical support to be done, anyway. It did not become an issue until the advent of the war in Vietnam.

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Having destroyed the prerogatives of the armed services, Canine, barely a month later, released control of two ASA tactical units, [redacted] to the commanding general of ASA. He made it plain, however, that these units were being released solely at his sufferance and pointedly reserved the right to task them temporarily or withdraw them completely for national tasking, at any time.[40]

In 1955, Canine decreed that new types of field site equipment would henceforth require NSA coordination. In a letter to the three SCA chiefs, he stated that NSA would establish standards for facilities and equipment, manning and staffing factors, site surveys, and operational procedures. NSA set up a large and aggressive R&D program to work out equipment and facility standards. The people and equipment for this effort had been inherited from ASA and NSG, though in San Antonio AFSS clung to its own R&D organization and was more independent in this respect than the other two services.[41]

The Decentralization Plan

While Canine moved to secure unchallenged authority over COMINT, he began, almost simultaneously, a parallel and apparently opposite program called "decentralization." The objective of the program was to improve the speed of delivery of COMINT information to consumers. [redacted][42] [redacted][43] [redacted] The issue had been pushed hard by General Hoyt Vandenberg when he had been Chief of Staff of the Air Force. Vandenberg had wanted to make COMINT the basis for an independent Air Force intelligence component to back up the strategic force. Security Service and Air Force intelligence officials insisted on direct support and, in a series of conferences with NSA in the summer and fall of 1953,

hammered out an agreement which resulted in NSA turning on a flow of high-precedence reports to both commands. This first included reporting from NSA but soon devolved on both field units and AFSCC. By 1954 NSA had reluctantly delegated analysis and reporting on the [redacted] problem to AFSCC, and it became the key player in COMINT warning to Air Force commands, a virtual third echelon competitor to NSA.[44]

When the decentralization plan was officially launched in August 1954, it looked like planned engine thrust reversal. Under it, NSA assigned specific COMINT problems to specified field sites. The criteria for assignment were perishabilty, collectability, and

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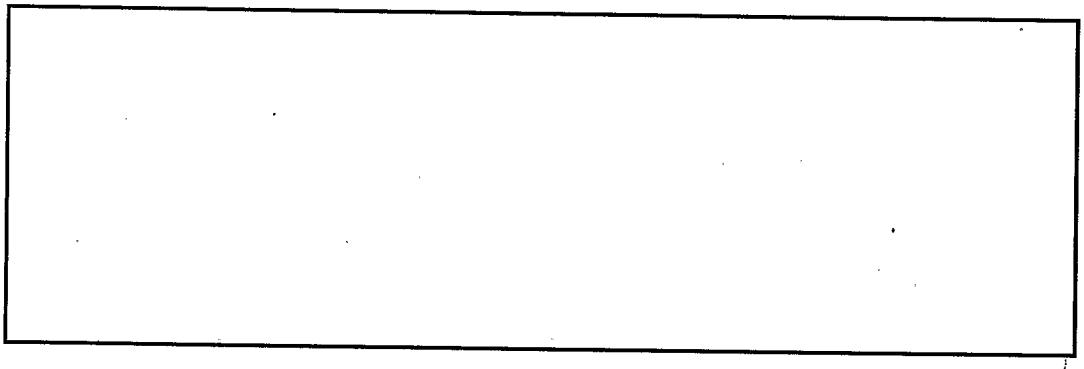
AFSCC, Brooks, AFB, 1950

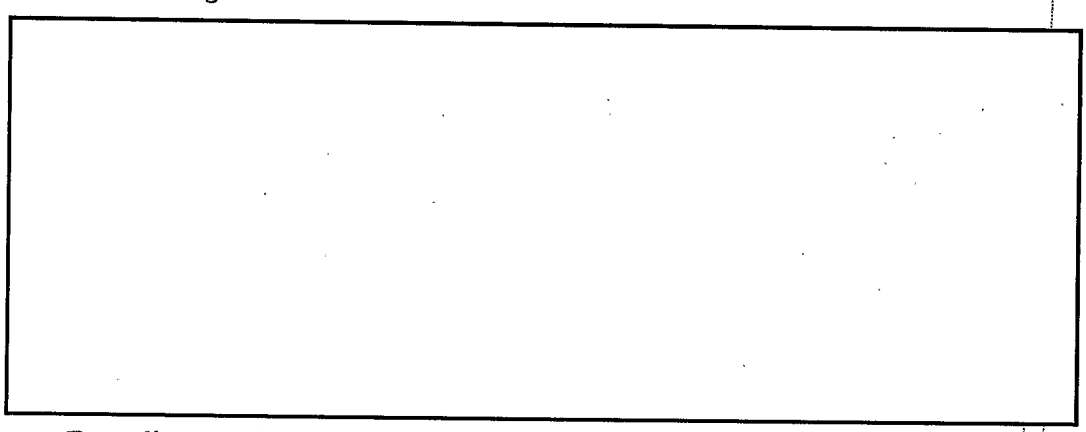
AFSCC began 3rd echelon [redacted] using IBM punched card equipment



Relations with the SCAs

By the mid-1950s, Canine basically had what he wanted – unrestrained authority over the entire Defense COMINT system (with a single exception which will be discussed below). But it had not been a cost-free victory. Relations with all three SCAs were strained to a greater or lesser degree.

The relationship with ASA was probably the best. ASA and NSA came to agreement on key issues such as decentralization and release of operational control to direct support resources somewhat earlier than the other two services. ASA was of a mind to play the centralization game with NSA "straight up" and gained considerable good will as a result, occasional complaints from ASA field offices about "meddling" by NSA field offices notwithstanding.



Regarding naval COMINT, Canine and the Navy were speaking a different language. That they did not get into as many battles as NSA and the Air Force one can probably ascribe to the fact that most of the time they were simply speaking past each other.

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Canine thought that Navy COMINT was organized like Army and Air Force COMINT, but this was not the case. The Navy had no integral cryptologic command akin to ASA or AFSS. Navy COMINT came under naval communications (OP-20), and fixed field sites were generally assigned to naval communications organizations for administrative and organizational matters. Naval afloat detachments were instruments of the fleet commander, not NSG. Certain central functions were performed at Nebraska Avenue by Naval Security Group, but it did not have the same authorities as its counterparts at Arlington Hall and Kelly AFB. In 1955, a frustrated Captain Jack Holtwick penned a lengthy memo bemoaning the difficulty that Canine was having with naval COMINT.

Captain Jack Holtwick
A highly influential naval cryptanalyst, Holtwick occupied key positions in the early NSA organization.

For more than ten years, people . . . have been talking about something which has never really existed as an entity, namely the Navy Cryptologic Agency. . . . These organizations [speaking of all Navy COMINT organizations] were an entity only insofar as they were engaged in the same trade and mutually complemented one another in it. They have never had a legal cryptologic organizational head, let alone a functional commander. Their lowest common superior was and is the Chief of Naval Operations. . . .[48]

[redacted][49]

By 1956, however, Canine apparently understood enough of Navy COMINT organization to object to its entire philosophy. He took aim at the subordination of NSG detachment commanders to naval communications: "This is an unsatisfactory arrangement; there is always a conflict of basic interests in the direction of the units. The superior officers in the chain of command . . . are primarily concerned with general service communications; they are generally inexperienced in COMINT functions. . . ." He related the submersion of Navy COMINT to Navy communications with SCA position totals, in that from 1953 to 1956 NSG grew by only 7 percent, while ASA expanded by 380 percent and AFSS by 410 percent. This, he contended, resulted from deficient naval COMINT organization.[50]

In contrast to NSG, AFSS growth was breathtaking. From a tiny cadre of 156 people in 1948, AFSS grew to 23,128 people by the end of 1960. The command had over 1,000 positions, a budget of more than $26 million, and it had surged ahead of both ASA and NSG on all counts in only twelve years.[51]

NSA's relations with AFSS, however, were the worst of the three. Although COMSEC relations were smooth, COMINT was not. Under the hollow gaze of AFSA, AFSS had virtually seceded from the COMINT community, carrying its entire field site list with it. It had called the field sites [redacted] so as to exempt them from AFSA tasking. (Major General John Morrison [USAF], a former NSA assistant director for production, once said that [redacted] with very isolated exceptions, were about as [redacted] as the Eifel Tower.")[52] Canine's dicta on operational and technical control were intended largely to corral the errant AFSS resources. This was effective but did not make AFSS very happy.

The biggest row of the decade was over the Air Force Special Communications Center (AFSCC). Officially created in July 1953 as the 6901st Special Communications Center, AFSCC was intended as a third echelon processing center to satisfy Air Force desires for an indigenous Air Force COMINT center. The organization picked up such miscellaneous functions as the SSO system and the USAFSS training school but was intended all along as an analytical center and began functioning as one from its very first day of existence. Canine had said "No" to the Air Force plan but lost the battle. In January 1954 he gave up and, under the aegis of the decentralization plan, AFSCC acquired the mission of processing and reporting on the [redacted] To this nucleus was added, over the years, virtually the entire [redacted] as well as, beginning in 1961, the [redacted][53] Relationships continued to deteriorate, and by the end

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of his term as DIRNSA, it was rumored that Canine was barely on speaking terms with the AFSS commander, Major General Hunt Bassett.[54]

[redacted]

The SCAs Create Second Echelons

The decentralization plan spawned a second concept, [redacted] frequently wound up controlling related intercept positions at smaller units. The arrangement amounted to a de facto layering system in which large units controlled operations at smaller units, and in some cases the smaller units were officially subordinated to the larger ones. The intermediate tier came to be known as "second-echelon," while NSA (and in the Air Force, AFSCC) operations were called "third echelon."

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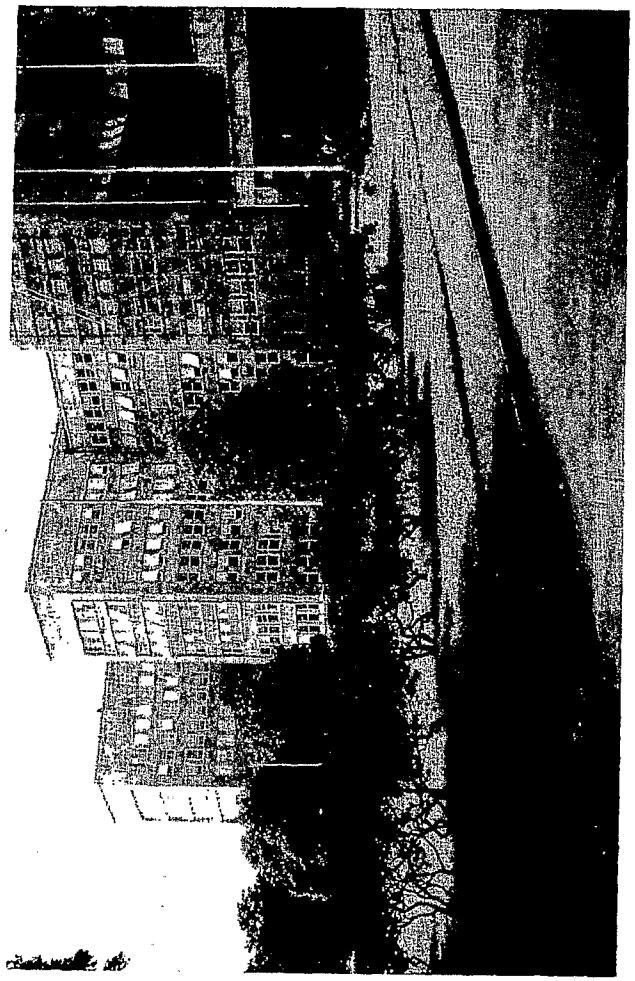

I.G. Farben Building

~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY~~
~~NOT RELEASABLE TO FOREIGN NATIONALS~~

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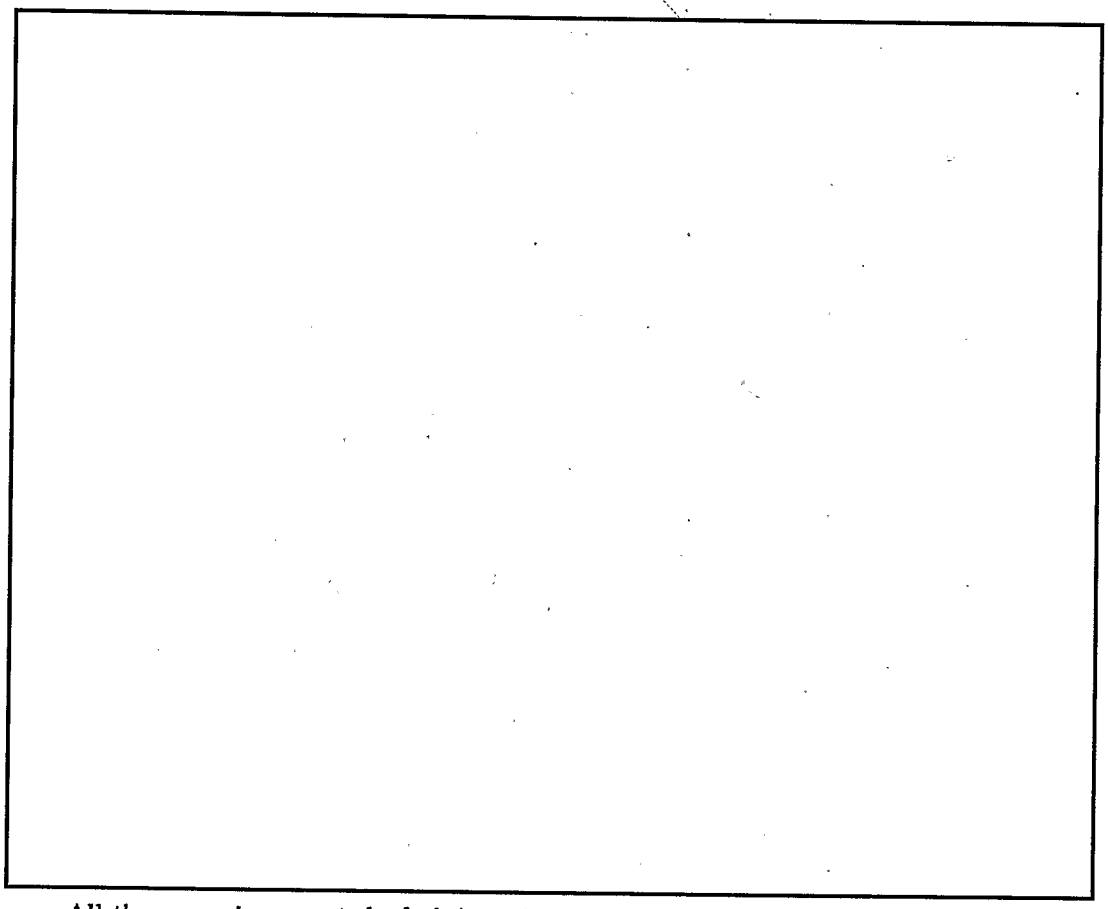

All three services created administrative units to supervise theater intercept sites, and to serve a liaison function with the supported commander(s). However, they all showed a disinclination to combine operational and administrative functions in the same organization, believing those to be separate tasks.[58]

Watching the Watchers

DIRNSA's supervisor was not really the secretary of defense, despite what the Truman Memorandum said. In 1953 the secretary of defense assigned that job to General Graves B. Erskine, a Marine Corps four-star who was already assigned to his staff as head of the Office of Special Operations. Erskine monitored the CIA budget, which was hidden in the DoD budget, and after July 1953 he also monitored NSA. His deputy, Air Force colonel Edward Lansdale, later became famous as the author of covert actions projects in both the Philippines and Vietnam.

The monitoring that Erskine did was rather loose. He always retained professional cryptologists on his staff to work the details of cryptologic money, and under such a

system, oversight was not detailed. Occasionally a big-ticket item would come up, like LIGHTNING (see p. 204), and Erskine's office would become involved. But Congress had not yet instituted an effective review of the intelligence agencies (and did not until the mid-1970s), and CIA did not yet have the authority to ride herd on the finances of the DoD intelligence organizations. So by the standards of later days, no one was really paying much attention to the intricacies of NSA's money.[59]

NSA AND CIA – THE EARLY YEARS

> Will you please have the proper instructions issued discontinuing the cryptanalytical units in the offices of the Director of Censorship, the Federal Communications Commission and the Strategic Services. If you are aware of any other agencies having services of this character, will you please have them discontinued also.
>
> Franklin D. Roosevelt, Memorandum for Director of Budget, 8 July 1942

The origins of CIA were rooted in World War II. Roosevelt, under the pressure of wartime exigency, created an espionage agency in 1942, called the Office of Strategic Services (OSSI), under New York lawyer and World War I battlefield hero (winner of the Medal of Honor in France) William Donovan. Donovan's agency both collected and produced intelligence and mounted covert operations around the world. It was a mission that CIA was to inherit several years later.

NSA's difficulties with CIA stemmed from decisions made in the 1940s, almost all of them bad. JCS, which owned most of America's intelligence assets, opposed OSS from the beginning and did everything in its power to deny to OSS the resources to do its job. The Joint Chiefs failed to keep OSS out of the HUMINT business, but in one area they succeeded almost totally: COMINT was denied.

Roosevelt's order (above) resulted in the closure of a small OSS COMINT organization. Even worse, it was used by the JCS to deny to OSS access to ULTRA. Thus OSS reporting was crippled from the beginning. It had access to agent reports, photoreconaissance, POW and defector reports – everything, in short, but the most useful and reliable information. If World War II was, as has been claimed, a COMINT war, OSS remained on the intelligence sidelines.[60]

And it rankled. OSS seniors who later served in the higher ranks of CIA never accepted the JCS policy. The British intelligence services, which dealt closely with OSS, were appalled. Their own intelligence community was unified, and HUMINT was routinely integrated with COMINT in highly specialized offices, in order to reap full value from both. (For instance, Ian Fleming, a British naval officer and later author of some note, was responsible for the integration of Bletchley-produced ULTRA with the Navy's HUMINT and

special operations.) JCS had used security as justification for the denial of ULTRA to OSS, but the British were at least as security conscious as the Americans, and they seemed able to get COMINT of the highest sensitivity to those in the HUMINT business who needed it. The outright denial of ULTRA to OSS just did not make sense.[61]

Truman discontinued OSS immediately after the end of the war, partly to rid himself of Donovan, who was not in favor with the president. But within six months Truman once again had himself an intelligence organization, called the Central Intelligence Group. CIG was bedeviled by the same problems that submerged AFSA – lack of its own budget and personnel resources (people were loaned in from other intelligence organizations), absence of a congressional mandate, and lack of firm direction from the top. But the idea was the same as that of AFSA – to establish central control of U.S. intelligence operations. When CIA was created in 1947, succeeding CIG, it got its congressional mandate, its budget, and its own personnel. It still lacked firm leadership, but that was remedied in 1950 with the appointment of General Walter Bedell Smith as DCI. Smith had been Eisenhower's chief of staff in Europe, and he knew how to run a tight ship. Tussling with "Beetle" Smith was like landing in a cactus patch.

In the early days the only high-level COMINT available to CIG was a copy of the MAGIC Summary put out by the Army, which was available in the Pentagon. In the very early days, only fifty people in CIG had a COMINT clearance. But in June of 1946 Hoyt Vandenberg became DCI. Vandenberg was fresh from a tour as chairman of USCIB and knew the value of COMINT. In December he created an organization within CIG, called the Advisory Council, to deal with what he hoped would be a flood of COMINT reports.

For a while there were few reports to disseminate. Requests for access to COMINT reports were generally denied. But in early 1947, two CIG organizations began to get involved with COMINT operations. The first was OSO (Office of Special Operations, the clandestine organization), which in March proposed to the Army and the Navy that they begin a Joint Counterintelligence Center (JCIC), using COMINT as the basic source of information. The services received this enthusiastically, and JCIC was established at Nebraska Avenue, with the understanding that it would eventually move to CIG. (It moved to CIA in 1949.)

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At about the same time, Colonel Robert Schukraft, chief of the Communications Division at CIG, was establishing a relationship with ASA. Schukraft had been a key figure in wartime Army COMINT and knew many of the people involved in the COMINT business. He began a relationship with Frank Rowlett at ASA

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The operational aspects of these budding relationships eventually came under the aegis of OSO, and specifically one William ("Bill") Harvey, a former FBI agent who became legendary for his clandestine operations. Under Harvey, who took over in 1950, COMINT operational matters became centralized

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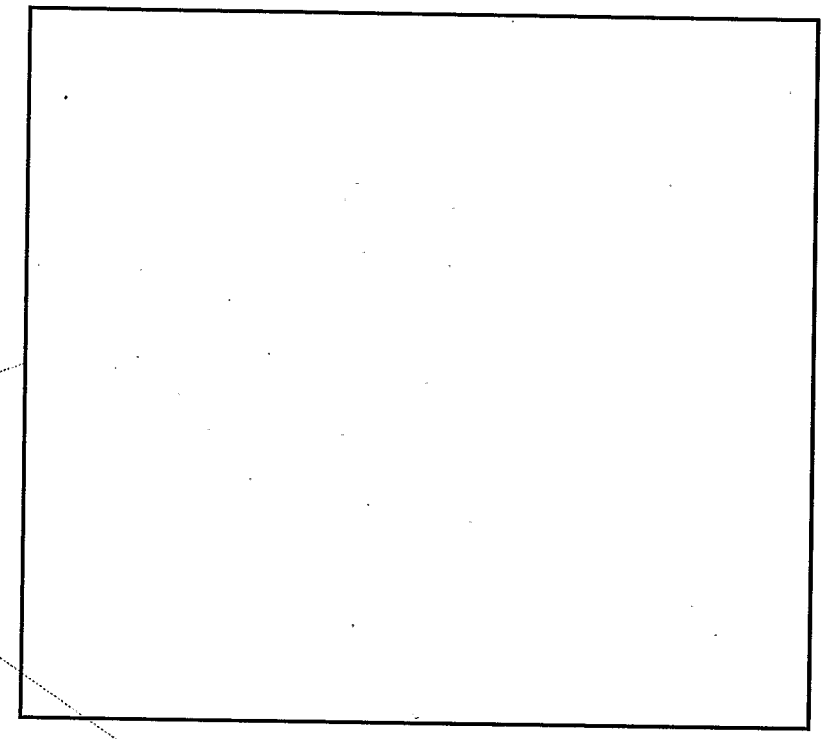
Meanwhile, CIA requests for COMINT reports were still being routinely turned down. But the [redacted] contributed to breaking the logjam, and ever larger volumes of COMINT report series were forwarded to CIA. Once at CIA, the material was subdivided according to subject matter and farmed out to analysts through the auspices of the Advisory Council. CIA was determined to base reporting on all-source information, rather than to strictly segregate COMINT from all other sources. Of necessity, then, the number of CIA COMINT clearances rose rapidly, until by 1970 most intelligence analysts were cleared for the source. (See Table 5.) CIA policy stood in contrast to that of the Pentagon, which generally chose to compartment COMINT and to deal with two separate handling systems - COMINT and all other sources.



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When AFSA was created, CIA made a pitch for a more active role in COMINT. Then-DCI Roscoe Hillenkoetter proposed that he should be given the chairmanship of USCIB, but this was quickly overruled. CIA [redacted] but was being told in unmistakable fashion that they would remain on the sidelines when it came to the policy aspects of COMINT. That was still the domain of the JCS.

CIA remained a major critic of COMINT throughout the AFSA period, and Hillenkoetter's successor, Walter Bedell Smith, played an important role in getting the president to appoint the Brownell Committee. CIA was determined to get a bigger stake in the game.

Smith got much of what he wanted from Brownell. He was made chairman of USCIB and, as such, could play a large role in COMINT policy. The results of the Brownell Report also gave CIA the chance to lean on the new NSA to get its own requirements satisfied. No longer would the civilians have to take a perpetual backseat to military requirements.[63]

CIA Enters the COMINT Business

In the beginning, CIA probably did not intend to build its own cryptologic organization. Two very senior NSA officials, Louis Tordella and [redacted] both

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closely involved in the NSA-CIA relationship, categorically deny that this was the intent. [redacted] himself described his first interview with Allen Dulles when he transferred from NSA to CIA: "I mean Dulles put it flatly, we were not going into competition with NSA. We've got enough to do in CIA and we're not going to fragmentize [*sic*] our efforts by going over there and starting a . . . COMINT organization. . . ."[64] But CIA needed certain information, and as long as cryptology remained the province of the Department of Defense, he felt it could not get its requirements satisfied. Smith decided to change things.

The CIA Act of 1949 gave the espionage agency the authority to expend what were called "discretionary funds." [redacted] for which the director would not have to answer to Congress in any detail. According to Tordella, the DCI first used these moneys [redacted][65]

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To a great extent this developed out of on-going CIA operations. [redacted]

[redacted]

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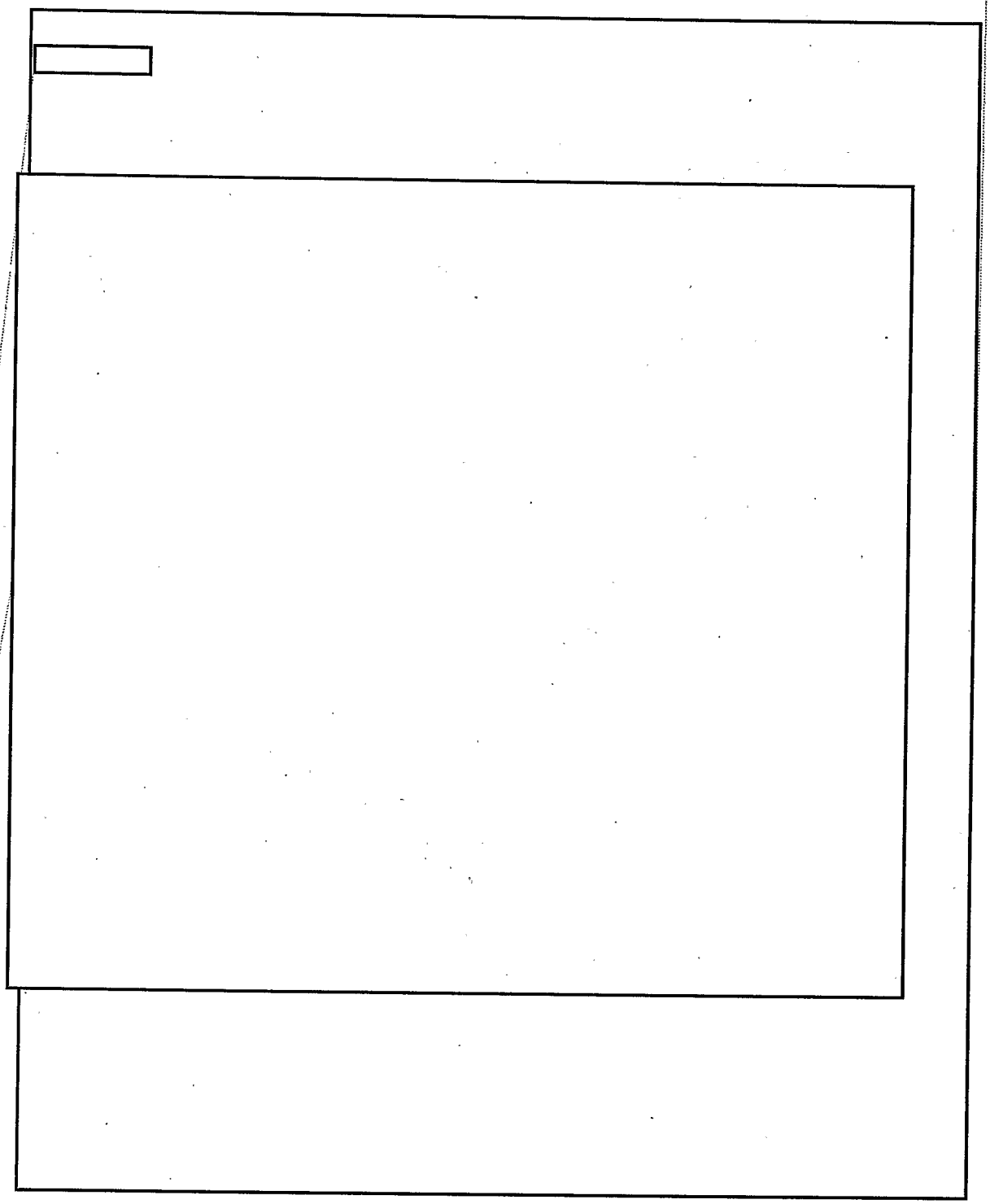

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HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY
NOT RELEASABLE TO FOREIGN NATIONALS

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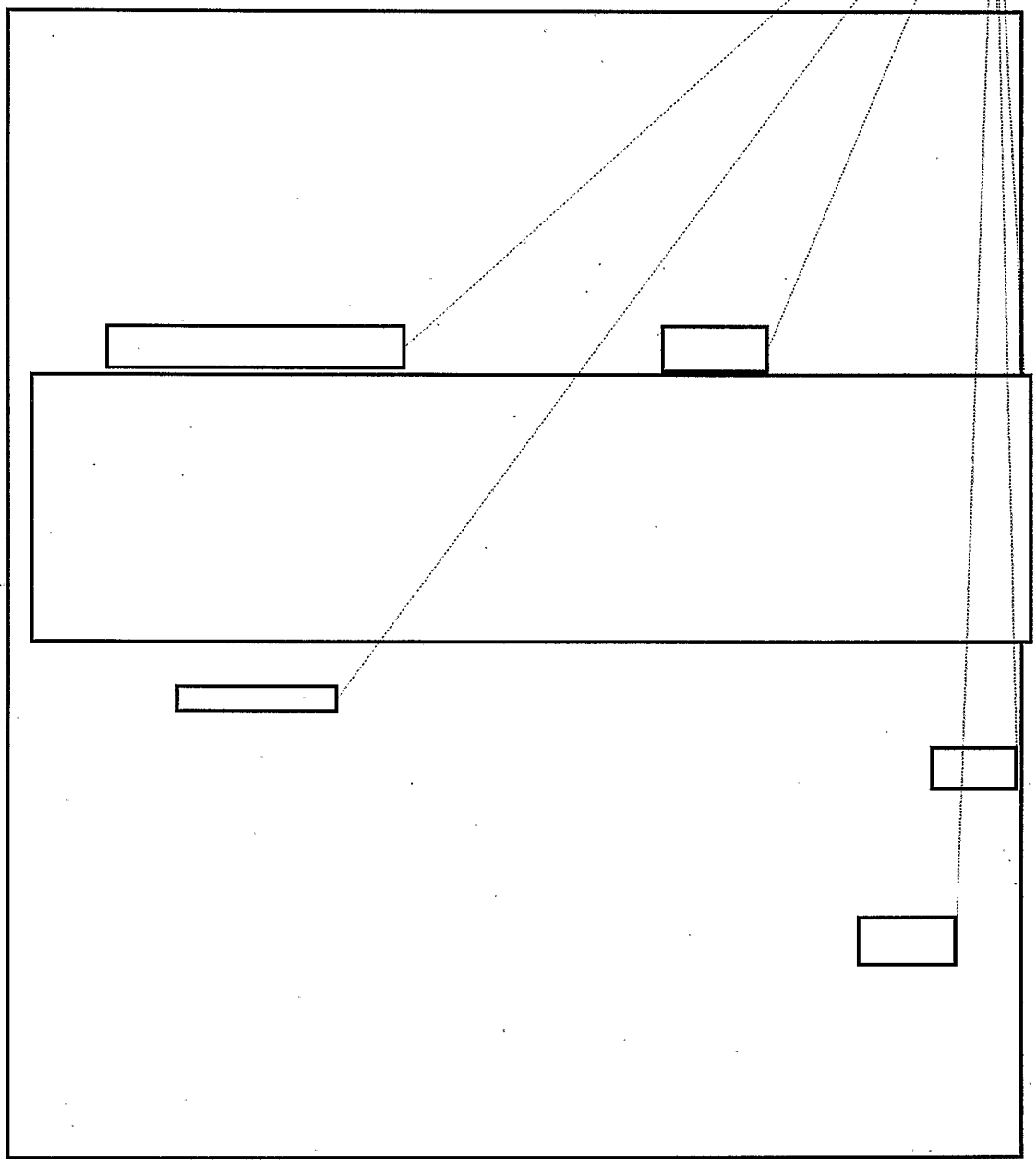

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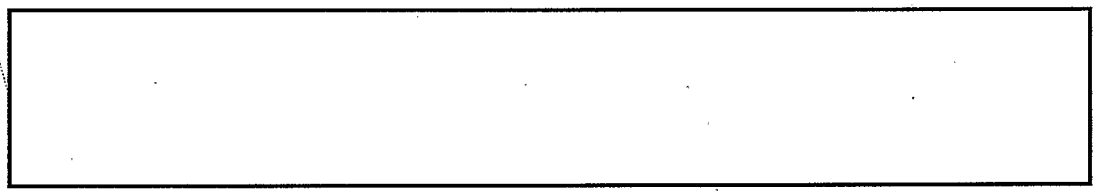
CIA and Cryptographic Materials



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[redacted]

The [redacted] Business

In no area did NSA and CIA clash more frequently and with as much vigor as in [redacted] matters. There, NSCID 5 was in direct conflict with the BRUSA Agreement. The former gave CIA control of foreign intelligence relationships, while the latter required [redacted] one of the half-dozen most important cryptologists in America, had had a choppy relationship with General Canine. [redacted] felt that his own temperament was too methodical for the hip-shooting Canine, and the two were not getting along when Canine, in a mood to reorganize, decreed that all his seniors would rotate jobs in order to infuse the organization with new ideas. [redacted] who had been working in COMINT, was ordered to COMSEC. [redacted][76]

[redacted] was joined by a small but experienced group of NSAers, including [redacted] whose province was COMINT matters. [redacted] who was well aware of the benefits of continued collaboration with the [redacted] partners, brought some order into CIA's COMINT matters.[77]

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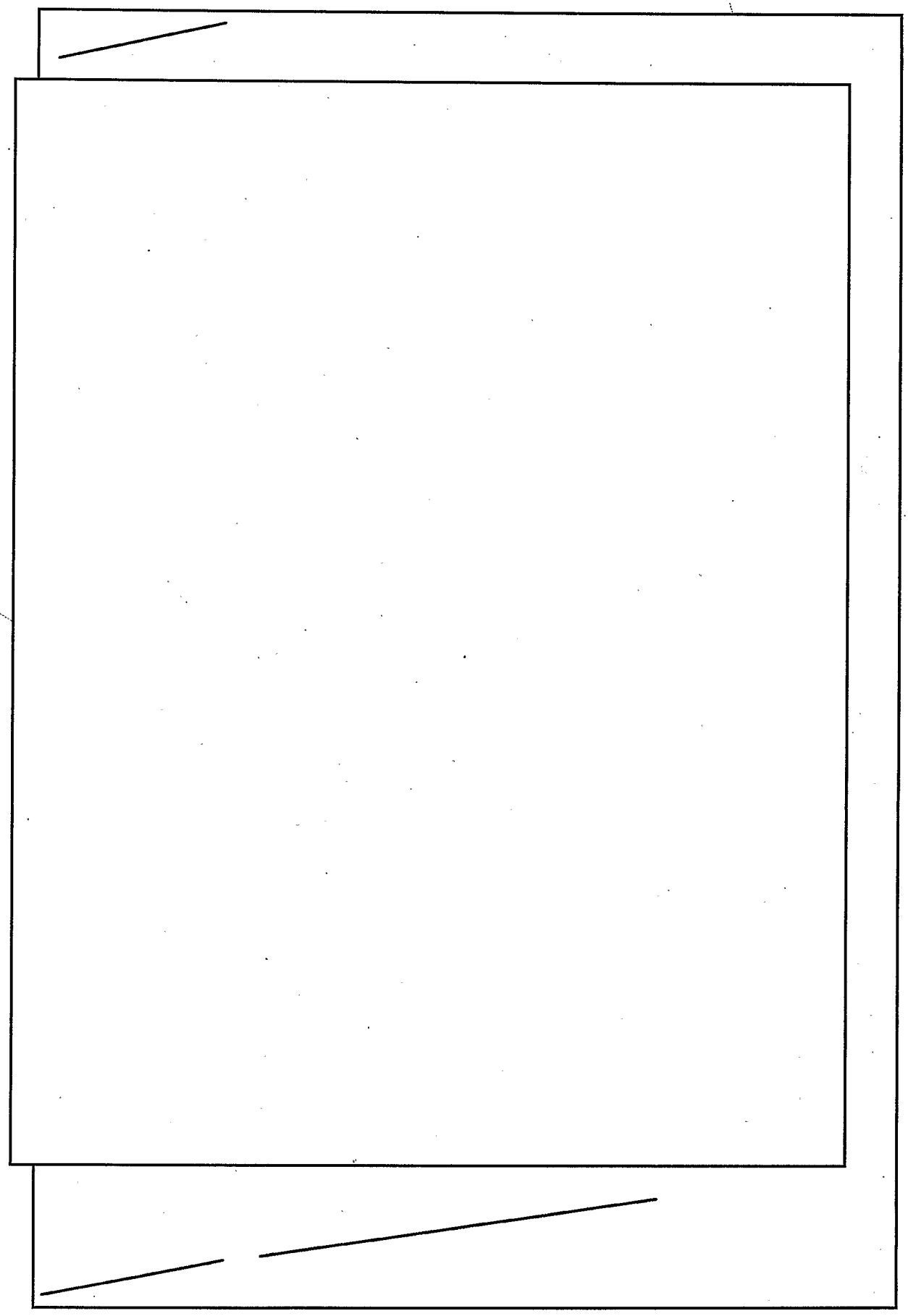

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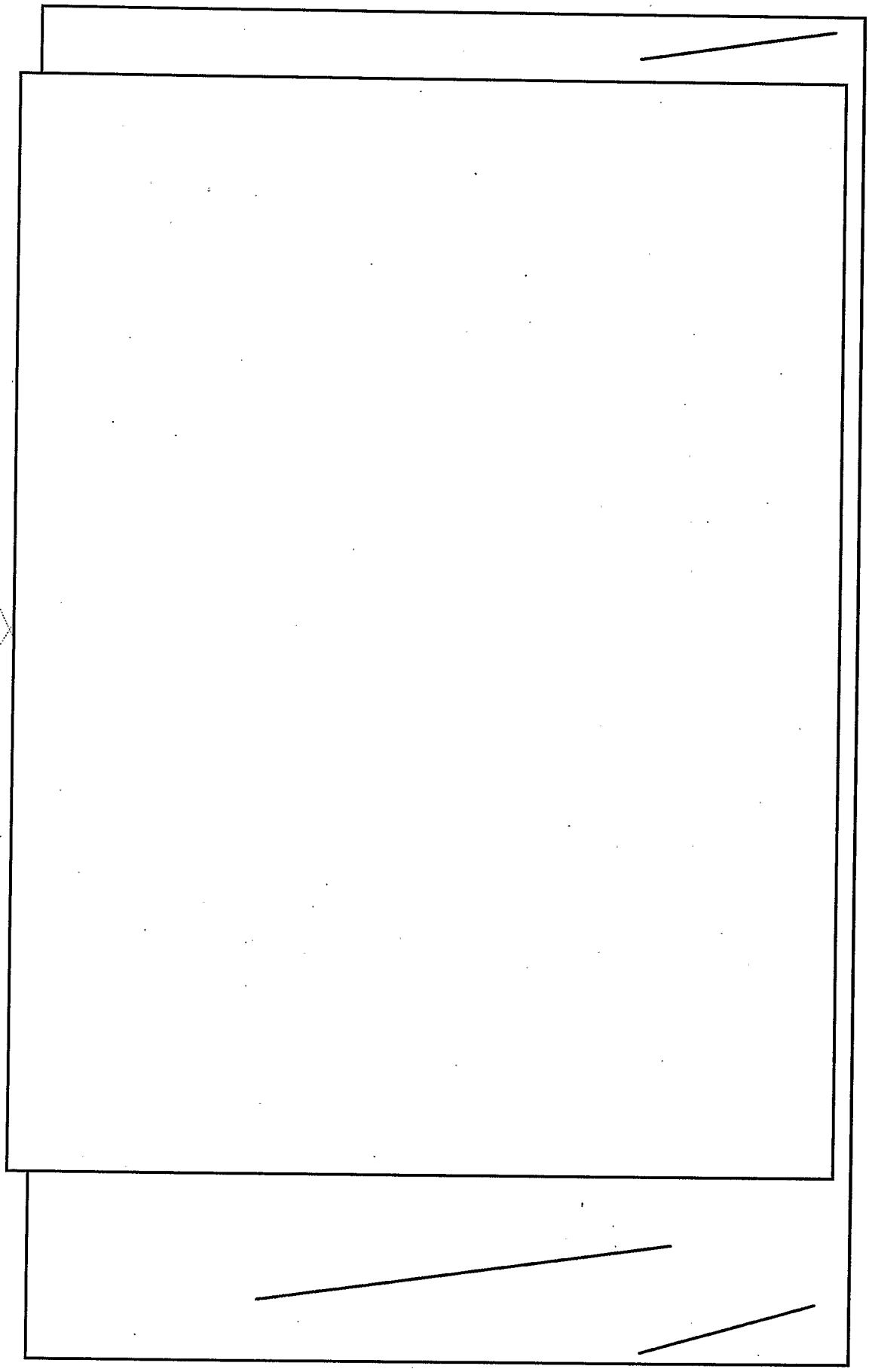

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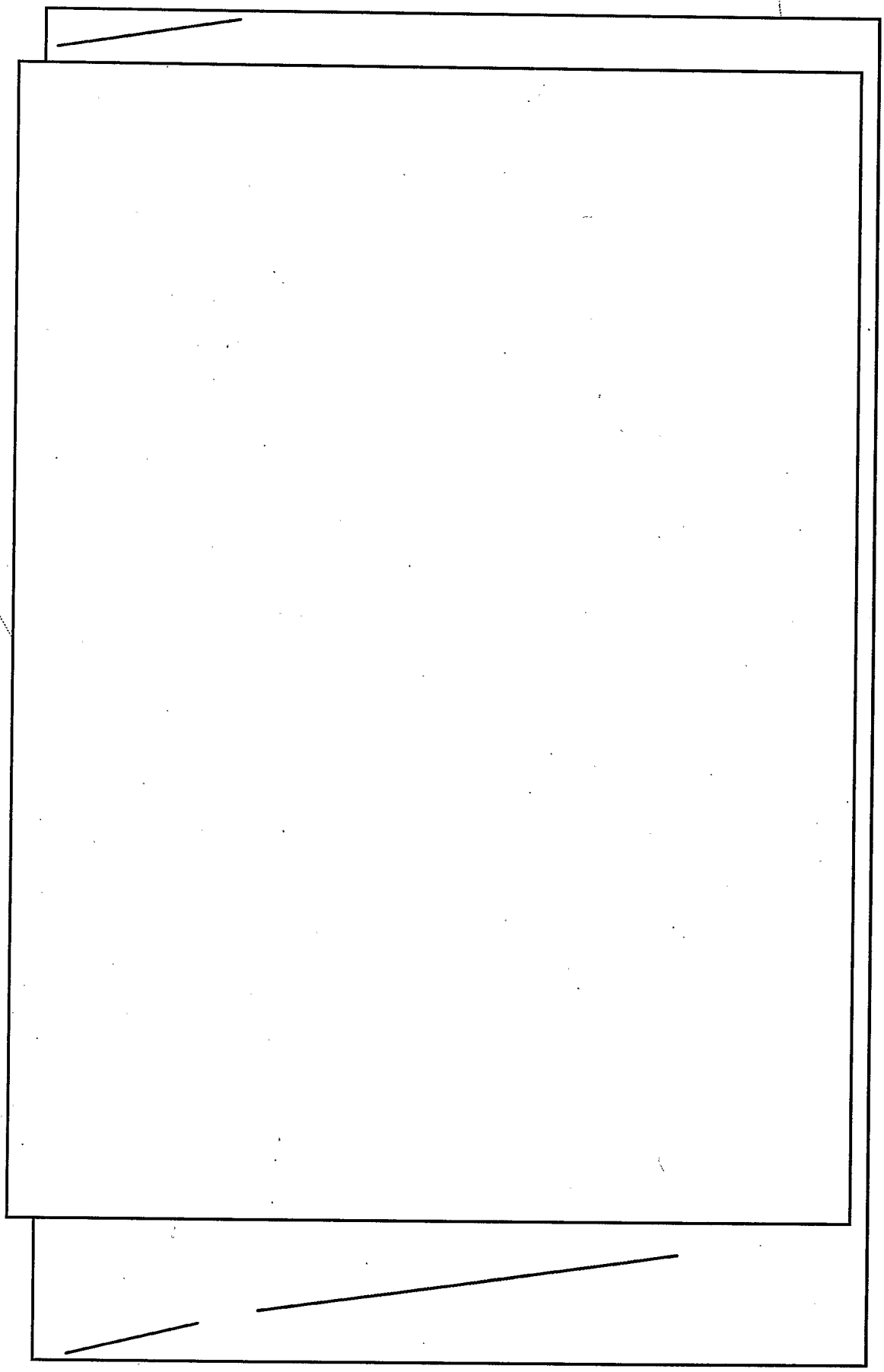

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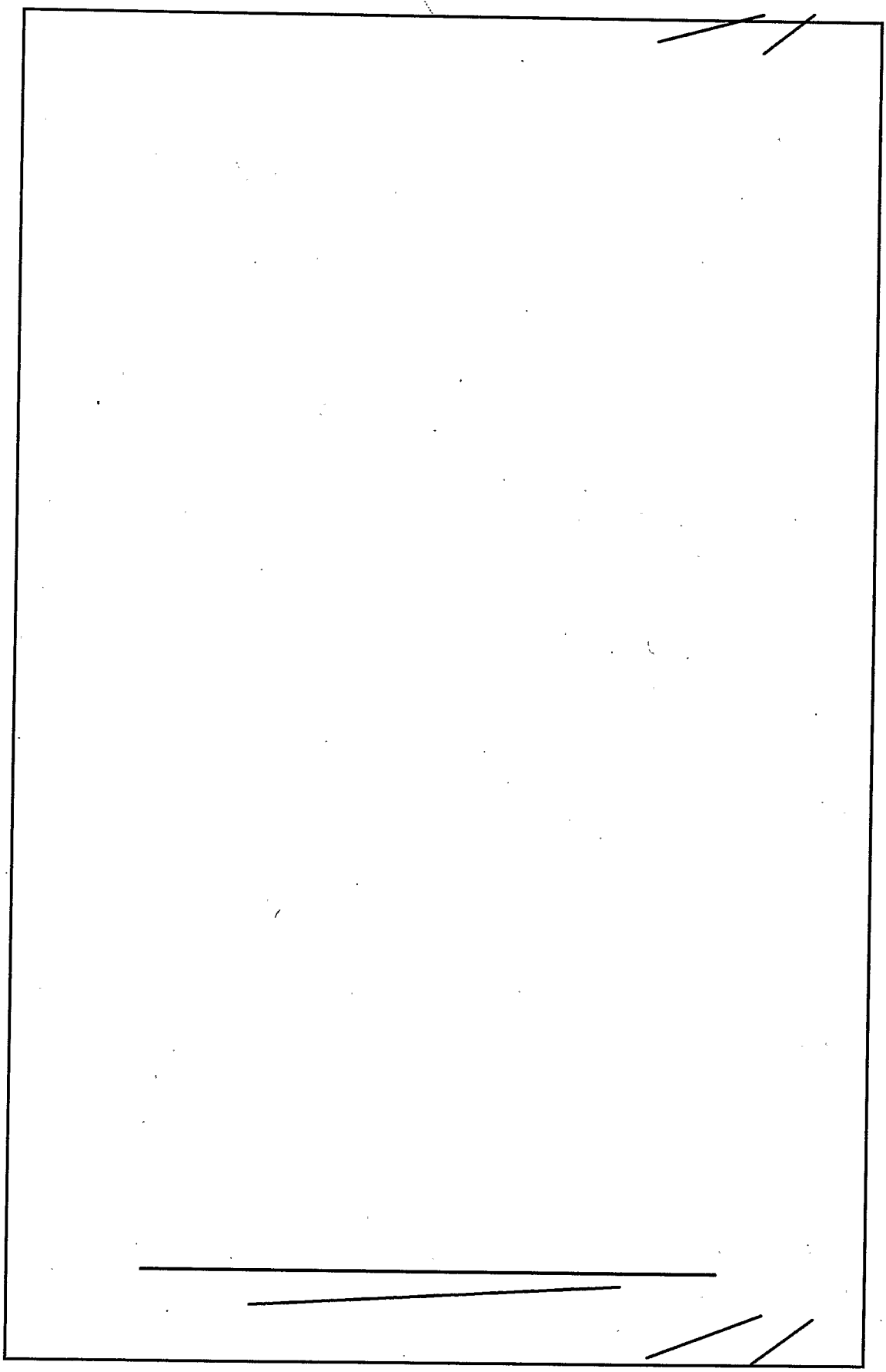

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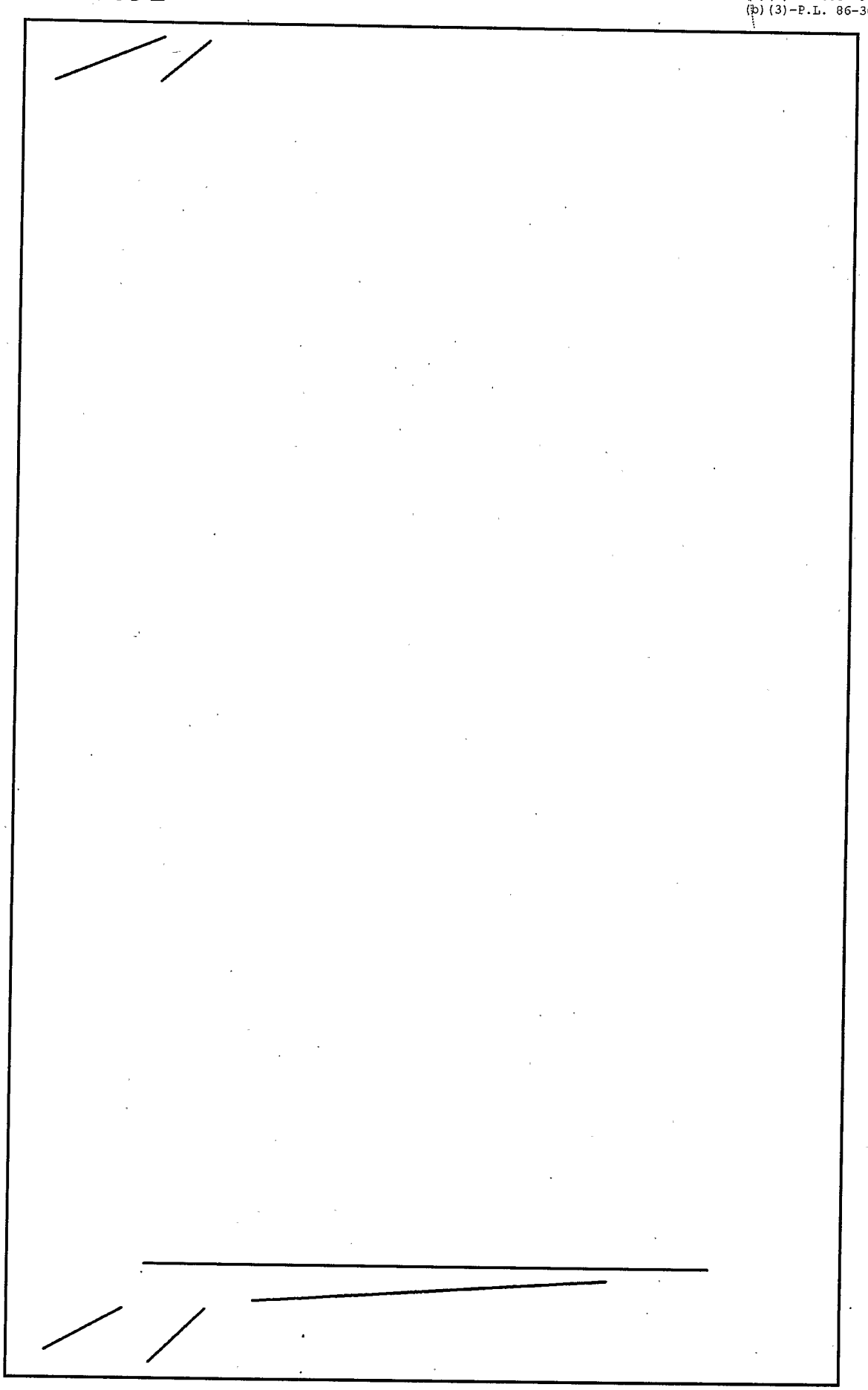

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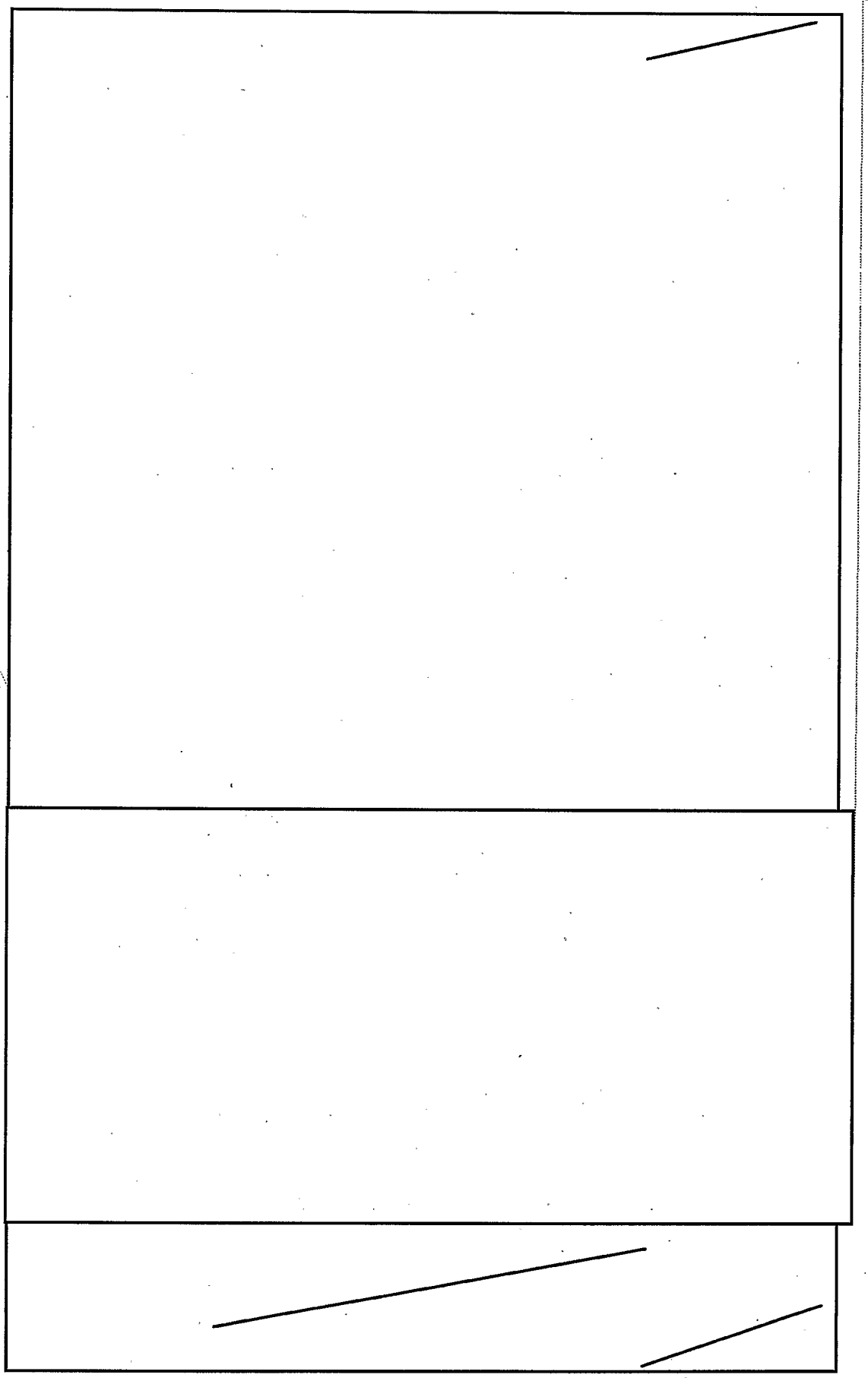

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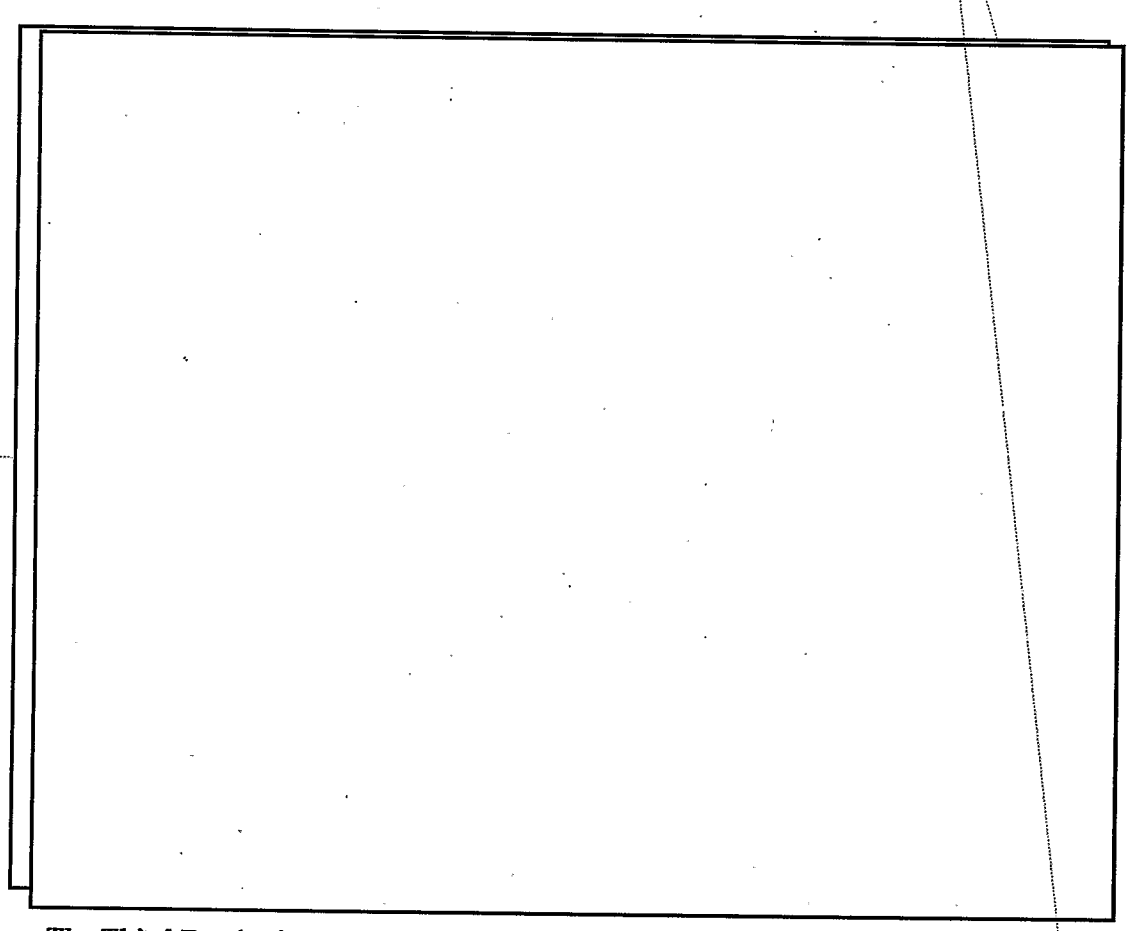
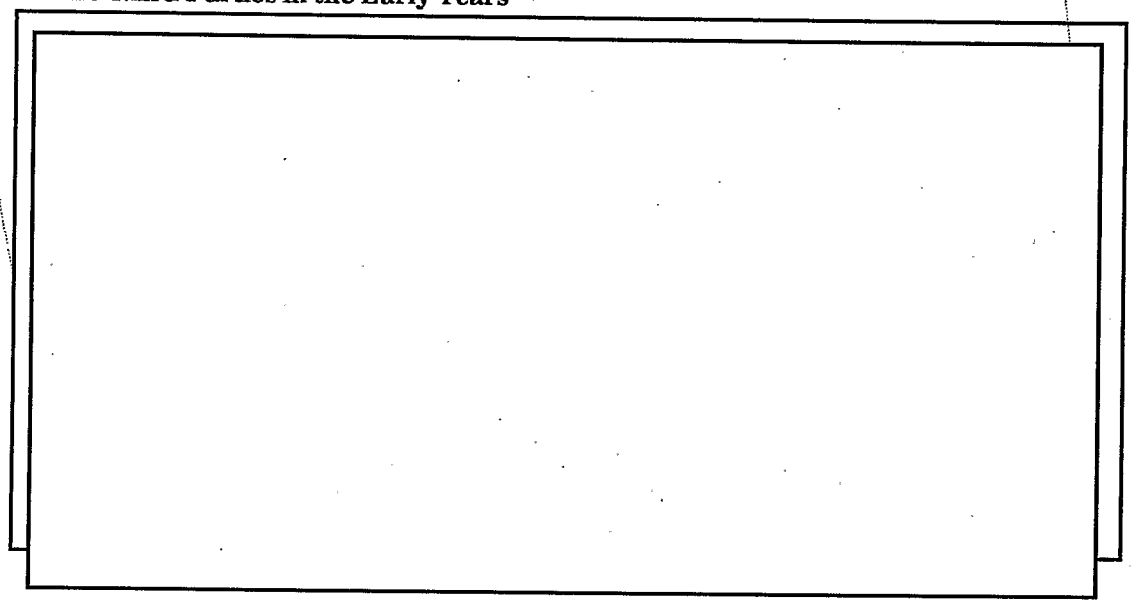


The Third Parties in the Early Years



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[redacted] On its side, however, NSA also made mistakes. The most serious was in denying technical help to some of the more advanced Third Parties. This unyielding position often reduced CIA equities in other areas and damaged NSA's relationship with its senior intelligence partner.

CIA in the NSA Trenches

The most direct CIA involvement in NSA was a CIA-controlled analysis division which existed for the better part of six years. This strange story began with the Soviet explosion of an atomic bomb.

When, in September of 1949, the Soviets exploded their first nuclear device, the eerie light from the explosion silhouetted a U.S. intelligence system in disarray. It had been CIA's job to follow Soviet nuclear technology, but JCS intelligence organizations gave CIA only lukewarm cooperation. The result was a National Intelligence Estimate (NIE), issued earlier in the year, featuring a wide variety of estimates of Soviet acquisition of effective nuclear technology, none of them even close to being accurate.

[redacted]

As AFSA-246 became NSA-75, CIA turned more and more to direct action. In 1953, Canine and Loftus Becker, CIA's deputy director for intelligence, inked an agreement that turned management of the division over to CIA. It was captained by a CIA person, kept its own database, did its own reporting, and even forwarded raw COMINT to CIA headquarters for further analysis.

[redacted]

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[redacted]

In 1948 CIA, in cooperation with a Department of State organization called OPC (Office of Policy Coordination), began beaming propaganda (some would say "news") broadcasts toward the Soviet Bloc. The operation was called Voice of America, and it lived a long and healthy life during the Cold War. Predictably, however, as soon as the VOA stations went on the air, the Communist nations at which they were targetted began jamming the broadcasts. Thus ensued, in February of 1948, yet another area of intense competition between CIA and the cryptologic community.

Tackling the problem of jamming would involve radio monitoring. CIA took on the job in 1949 and immediately began preparing a plan to identify and locate the jammers and devise a solution. In June 1950 an ad hoc group of the IAC (Intelligence Advisory Committee, chaired by the DCI) approved a preliminary monitoring plan, called [redacted].

Just how Admiral Stone of AFSA found out about it is not known, but it was hard to keep secrets at the IAC level. In any case, Stone contacted the Department of State (at the time OPC was still officially part of State rather than CIA) in July of 1950 to let them know that he regarded this as an AFSA responsibility under NSCID 9. Hillenkoetter justified CIA activity to AFSAC as being performed under the section of the National Security Act that permitted CIA to perform "such additional services of common concern as the National Security Council determines can be more efficiently accomplished centrally...." This was a weak reed, and Hillenkoetter made his case even less plausible by stating that monitoring facilities so established could be used for other purposes in time of war. Such a direct challenge to AFSA authority in COMINT brought a predictable AFSAC response, and in November USCIB took up the issue. USCIB concluded in November that [redacted] was a COMINT mission and should be headed by AFSA. A USCIB study costed the problem at $5 million and 355 people. But when the matter went before the National Security Council in early 1951, CIA won. The NSC directed that CIA be the focal point for a multi-agency attack on the jamming problem.

AFSA wrote a supporting plan but continued to insist that it be given the mission. When Canine became director, he took forceful exception to CIA encroachment in the [redacted] situation. But Canine was handicapped by limited resources. [redacted] was going to be expensive, and when the SCAs were polled, they offered only part-time DF facilities. NSA did not have the money to create a separate system just to monitor jamming, and the military services contended that they could not provide the communications to interlock a monitoring system anyway. So in February 1952 President Truman approved a plan for CIA to proceed on its own.

[redacted]

Just what was [redacted] anyway? Jammers actually produced noncommunications signals, and the Army contended that they were ELINT, not COMINT. The entire subject of ELINT was in chaos at the time, and [redacted] simply contributed to the disorder. The services also saw electronic warfare applications, and they wanted their own people in the projected NSA-controlled [redacted] sites to send EW-related information to their parent services. NSA feared this approach because it would spread COMINT-related information outside codeword channels, and the services might turn the information into EW (electronic warfare) projects that would block COMINT hearability. This prompted NSA to appoint a committee to study the matter of jamming versus COMINT requirements. The confusion in definitions foreshadowed more serious divisions during the Vietnam era.

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[redacted] This was a direct invasion of NSA's turf.

In the mid-1950s, as [redacted] continued along an inconclusive course, various schemes emerged for the eventual institutionalization of [redacted] Most had as their central assumption that CIA would not continue in charge, and some placed NSA in control. The services wanted the mission but did not want to budget for it. One proposed plan would even have given the mission to the Federal Communications Commission. In late 1955, the secretary of defense put the matter to rest by decreeing that it was an ELINT mission and made the Air Force executive agent. The Air Force had only recently become executive agent for ELINT, and it had a central ELINT processing center. Since no resources were allocated to do [redacted] it became subsumed in the overall service ELINT mission.

So in the end a separate monitoring system was not built. The jamming mission was handled as a corollary mission by the three SCAs, and when, in 1958, control of ELINT went to NSA, the threat posed by [redacted] vanished.[91]

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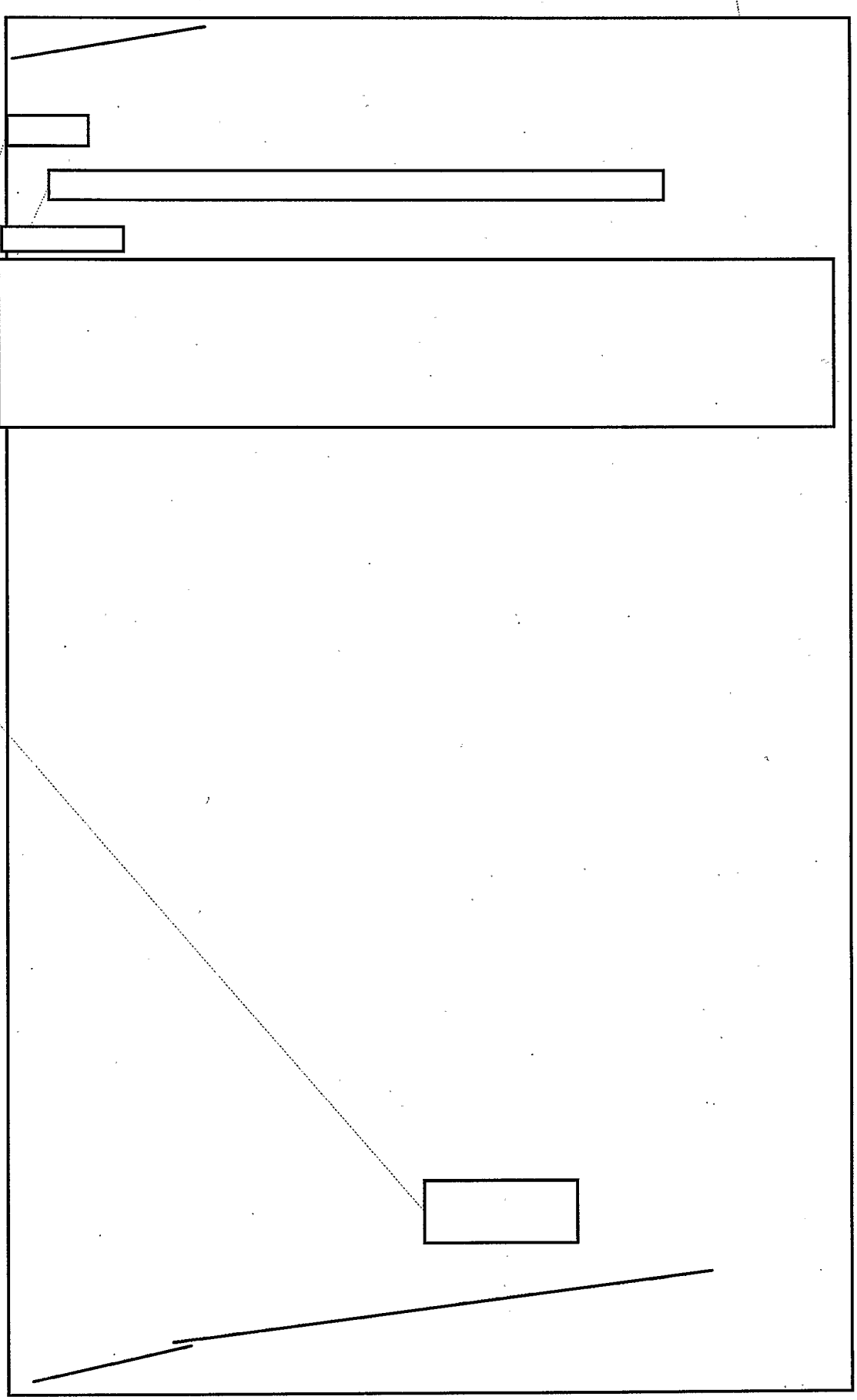

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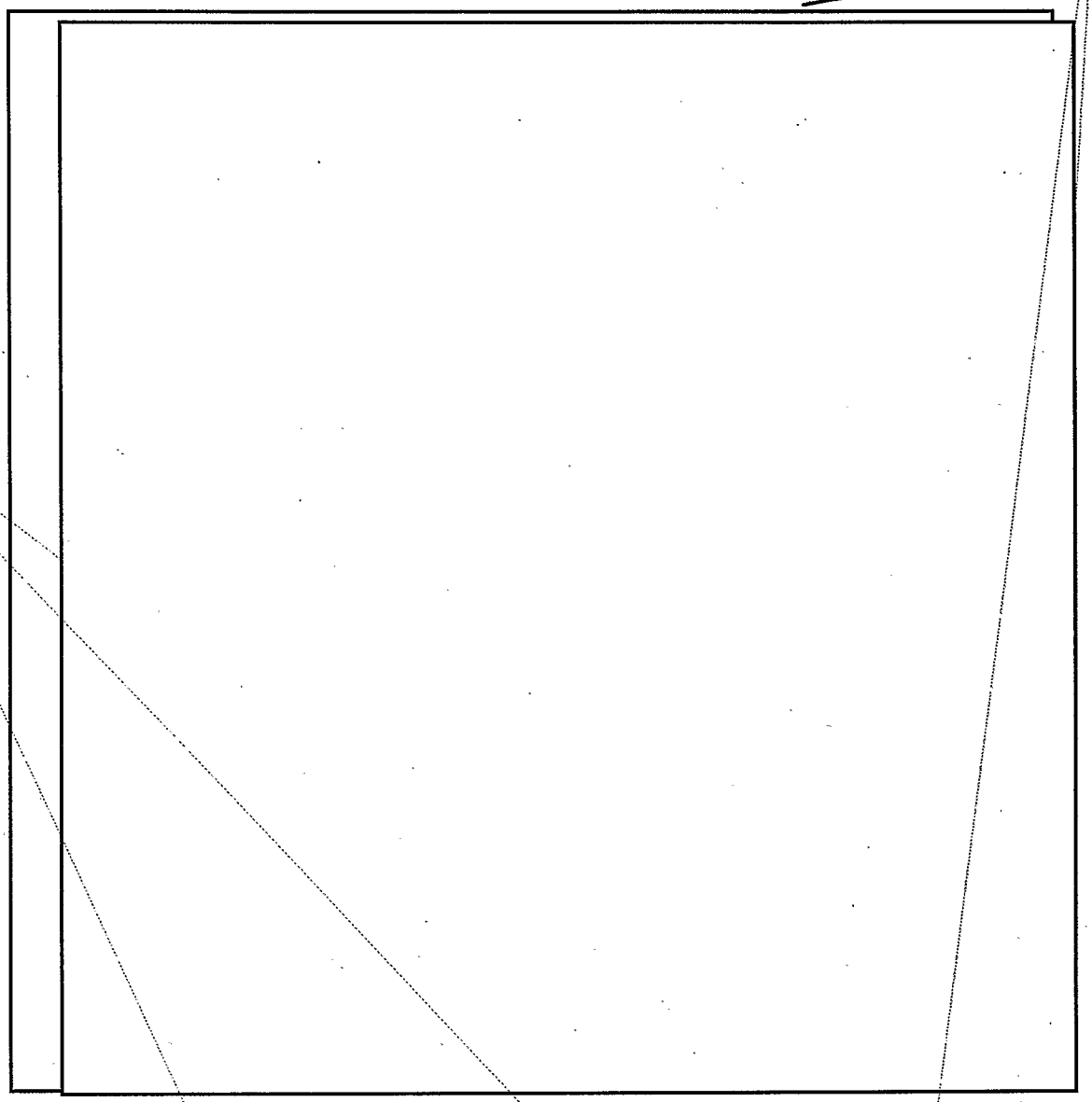

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In April 1956, after heavy rains caused interruptions in communications service in the East Zone, East German maintenance workers discovered the taps and unearthed the entire operation. In the space of a few hours, [redacted] was shut down, and the acting commandant of the Soviet Berlin Garrison held a press conference on the site of the " 'capitalist warmongers' expensive subterranean listening post.' " Now that the whole world knew about [redacted] CIA could not continue [redacted] for security reasons. After April 1956, CIA sent an enormous volume of unprocessed channel hours

[redacted]

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Years later the "accidental" discovery of [redacted] came under serious question. In 1961 George Blake, a British MI-6 official who had been involved with the planning of [redacted] was identified as a Soviet mole by a Polish defector and was subsequently arrested and jailed. In 1970 Blake, who had escaped from a British jail and fled to Moscow, bragged to the press that he had betrayed the Berlin Tunnel operation. It was also suspected that he had blown the whistle on the [redacted] operation, too.

George Blake

Bitterness between NSA and CIA lasted for years. Canine was understandably upset when he found that he had been bypassed and left in the dark. DCI Allen Dulles once mused that,

[redacted]

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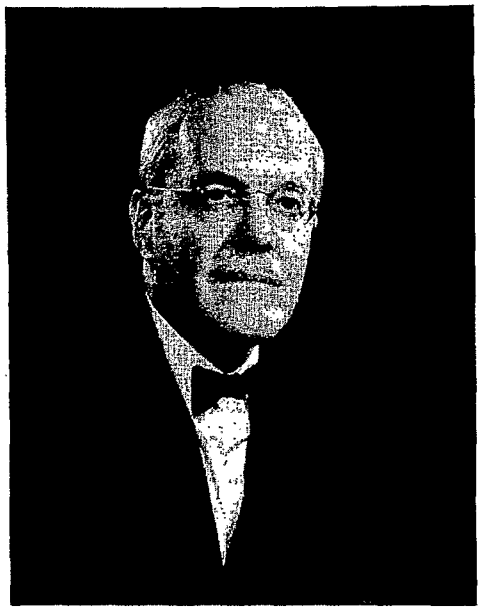
NSA and CIA continued to clash over a variety of issues as long as Dulles and Canine were the respective helmsmen. Yet the warfare was oddly out of place in Dulles's office. According to historian Thomas Powers, Dulles "never attempted to exercise [authority over the Defense Department intelligence components], partly in the interest of maintaining bureaucratic peace with the military, and partly because he just did not care."[93]



Allen Dulles

Dulles was interested in HUMINT and covert operations, not technical intelligence. Richard Bissell, who headed the CIA's operations organization in the late 1950s, once said that "Dulles was always being encouraged by successive Presidents to exercise more direction of the whole intelligence community. And Allen always resisted that. . . . He always wanted to run his Agency and exercise a direct, unambiguous control. . . ."[94]

According to senior NSA officials of the time, the era of CIA's SIGINT system was already beginning to fade. They had neither the time nor the money to pursue a big SIGINT system and a big HUMINT/covert actions system simultaneously, and so SIGINT was sacrificed.

General John Samford, who replaced Canine in 1956, moved to heal the breach with Dulles and the CIA. Samford was a consummate diplomat, and he probably gained more by soft-soaping the downtown intelligence people than Canine could have done through head-on collisions.[95]

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NSA's Other Competitors

The growing size and importance of COMINT made it inevitable that the cryptologic organizations of the armed services would have other competitors from time to time. During World War II there had been several.

The Federal Communications Commission had a long history of communications monitoring to secure compliance with federal radio regulations. During the early part of World War II, the FCC published a series of magazine articles plugging their successful efforts at finding Axis agent communications. The Army and Navy cryptologists did not appreciate this glare of publicity on their secret profession, and they sought to get Roosevelt to close down FCC operations. Roosevelt's order of 1942 (cited at the beginning of this chapter) was meant to apply to the FCC and other competitors of the Army and

Navy, but there is evidence that the FCC continued a small intercept effort into the postwar period. At some undefined point in the 1950s, the effort was probably shut down.

The FBI represented a far stronger and potentially more dangerous foe. But J. Edgar Hoover's interests were more limited, and throughout his life the FBI displayed a certain ambivalence toward involvement in COMINT. During World War II the FBI was one of the three organizations given a COMINT role. Namely, they were responsible for monitoring of the communications of Axis agents in Latin America. This apparently simple division of effort placed the FBI in almost constant conflict with OP-20-G, which had a very similar mission. By all accounts, the FBI had a small but competent intercept and cryptanalytic section of indeterminate size. But COMINT had nothing to do with Hoover's main thrust as FBI director, and after the war the FBI COMINT effort was reduced. When FBI joined STANCIB in 1947 (which then became USCIB), Rear Admiral Thomas Inglis, the chairman of USCIB, offered COMINT resources to monitor agent communications and do the cryptanalysis. Hoover accepted, mainly because this would allow him to divert FBI resources to other matters. In 1947 FBI withdrew from USCIB, allegedly because of declining budget to do COMINT tasks.

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[redacted] Even more important was the AFSA-FBI liaison which led ultimately to the arrest of the atomic spies (see p. 160).[96]

ELINT and NSA

ELINT as an intelligence discipline probably began during the Battle of Britain. The intercept of noncommunications signals was first attempted by one R. V. Jones, who successfully collected mysterious German navigational signals used by the Luftwaffe to steer their bombers to targets over Britain. Jones employed electronic countermeasures to divert the bombers and cause many of the bombs to fall off target. It was one of Churchill's top secrets of the war.[97]

The British understood the close relationship between ELINT and COMINT, and they centralized both under GCHQ. But when they tried to deal with the United States, they found American ELINT to be frustratingly decentralized. It wasn't just that they had to deal directly with the SCAs rather than AFSA and NSA, they found that even within the individual services there was no focal point.

The SCAs did much of the ELINT collection for their respective services. Each one had a network of ELINT collection sites, often collocated with COMINT sites. But the tactical commanders also had their own ELINT assets, often airborne (and shipborne, in the case of the Navy). Once collected, the intercepted tapes were forwarded to processing centers in

the theater and on to the United States. Some of the processing centers were joint-service operations, while some were single-service.

By 1953 the Army and Navy had established a consolidated ELINT processing center called ANEEG (Army-Navy Electronic Evaluation Group) collocated with NSG at Nebraska Avenue. The Air Force did not participate, preferring to keep a separate processing facility at AFSS headquarters, under the auspices of the Air Force Technical Intelligence Center (ATIC) at Wright-Patterson Air Force Base near Dayton, Ohio. NSA was not involved in this tangled web.

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In 1953 the Robertson Committee (see p. 227) reported to Canine on the profoundly disorganized nature of American ELINT and concluded that as a source of warning information, this intelligence discipline was in danger of becoming irrelevant. The committee recommended that a focal point be found.[98]

CIA, too, was unhappy with the way ELINT was being managed and in the same year conducted an internal study that indicted the Defense Department for mismanagement of ELINT. CIA pointed out that there was no central authority, no coordination of ELINT activities, and no central processing. The study opted to place central control in USCIB, but one option which the drafters seriously considered was to give NSA the job.

There being no focus in U.S. intelligence for ELINT, CIA began to take on this task also. In 1954, the deputy director, General C.P. Cabell (USAF), appointed an ELINT czar by giving H. Marshall Chadwell, the assistant director for scientific intelligence, an additional hat for ELINT.

When he received the Robertson study in November of 1953, General Erskine in the office of the secretary of defense called in Canine and requested an NSA response. On returning to Arlington Hall, Canine found his agency badly divided over what to do. The eminent logic of combining ELINT and COMINT was sometimes obscured by the evident difficulty of getting the services to heel to central authority and the dismal prospect of ever getting a charter as clear and unequivocal as NSCID 9. If COMINT, with NSCID 9 conveying absolute authority, was proving so difficult to manage, what of ELINT?

Despite this, the allure of finally getting the two pieces of the electronics puzzle together proved too strong. Under Canine's direction, NSA's Office of Plans and Policy

produced a draft report which placed operational and technical control of ELINT with DIRNSA. The battle was joined.

When the issue went to USCIB, the JCS predictably defended decentralization. Over the ensuing two years, piles of studies were completed, and hundreds of options were tossed about. The services never relented in their opposition to any sort of restriction on the latitude of the tactical commanders to collect, process, and report ELINT. All concerned recognized that there should be some sort of overall coordinating mechanism and that the government must set up a central processing facility at which all the players would be represented, including non-DoD organizations (i.e., CIA). NSA appeared to be the only organization that felt that NSA should be in charge.

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The "ELINT Problem" was temporarily resolved in May of 1955 with the publication of NSCID 17. This document gave ELINT policy to USCIB and directed that a centralized ELINT processing center be set up (the National Technical Processing Center, or NTPC). However, it still allowed for separate management of DoD and CIA ELINT activities. The Air Force was given executive responsibilities for both ELINT and monitoring of jamming signals, [redacted] Neither NSCID 17 nor the DoD implementing directive resolved the issue of where NTPC was to be located. After months of discussion, the services decided to keep it at Nebraska Avenue, where ANEEG was already located.

NTPC was comprised initially of approximately one hundred people from the three services and CIA – NSA was not even represented. Most of the billets came from ANEEG, and the SCAs exercised a predominant influence since they provided most of the expertise. CIA, however, sent a very strong delegation. An ELINT requirements group was established in 1956, comprising representatives from the services plus CIA, and later in the year a committee on [redacted] was created. This was the first NTPC organization that had any sort of NSA representation.

In 1956 NTPC was given the additional mission of processing telemetry from Soviet missiles. This problem was to grow and multiply almost geometrically as the Soviet missile problem became a national preoccupation. Sitting between COMINT and ELINT, telemetry would soon become another area of controversy between NSA and its competitors.

NSCID 17 was remarkable for what it did not do. It did not establish operational control in one organization. Nor did it rein in the propensities of the armed services to fund separate ELINT assets for nearly every operational command. It did not unify the technical aspects of the business. Instead, it consigned management to a committee which was already deeply fractured on other issues (such as the dispute between NSA and CIA over control of COMINT). It did not resolve anything at all, but it merely perpetuated an existing condition.[100]

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(b) (3)-50 USC 403
(b) (3)-18 USC 798
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BUILDING THE OVERT COLLECTION SYSTEM

Few cryptologic field sites survived World War II (see map on p. 113). By 1947, the two services were operating [redacted] The Army maintained large fixed field sites, but very few of them. The Navy tended toward small sites, many with only a DF mission, scattered throughout the world to maintain a DF baseline.

Even more striking was the geographic pattern. The United States had but one cryptologic organization on the continent of Europe. [redacted] sites were in the U.S. Of the rest, the Army collection site in [redacted] had existed since the early days of World War II. The other overseas sites were in [redacted] and they copied primarily [redacted] targets. The Navy's overseas sites were all in the [redacted]

This soon changed. The Cold War, the Communist takeover in Czechoslovakia in 1948, the Communist victory in China in 1949, and the unpleasantness in Korea, combined to force a revolution in America's cryptologic posture. The somnolent late 1940s became the go-go 1950s. Cryptologic planning was stirred to a white heat, and the collection system fairly exploded. By 1960 American's cryptologic collection system [redacted] had basically been built.

Three things typified this system:

1. The target was the Soviet Union. China, Korea, and the East European satellites were simply corollary targets. [redacted]

2. Containment of Communist expansion was the objective. The collection system became geographically arrayed to resemble Lenin's predicted "capitalistic encirclement," a figurative string of pearls beginning in [redacted] And despite this seemingly heedless expansion, NSA was barely able to keep up with customer requirements.

3. This was the Golden Age of HF. Long-haul HF systems dominated the world communications networks. Above-HF transmissions did exist, but in HF's Golden Age, most of the truly important messages seemed eventually to find some mode of HF expression. Propagation vagaries demanded that collection sites be placed in a wide variety of locations. But in theory, if one established enough sites and built

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[redacted]

Expansion proceeded on two fronts. The first was ELINT, which was chaos reborn. The services embarked on a period of virtually uncontrolled site-building. ELINT was above HF, so sites tended to be located in great profusion [redacted] In this field each SCA had been given the primary collection job by its respective service, and each moved quickly to establish sites. In many, if not most, instances ELINT preceded COMINT, and again in most cases ELINT sites already existed where COMINT sites were later added. [redacted] Added to this was a burgeoning airborne collection system, fielded by USAFSS. NSA played no role in ELINT, either in collection or processing.

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When it came to COMINT, though, NSA employed its guiding hand. Even before NSA was created, AFSA had a master plan for the establishment of SCA intercept sites which [redacted] This plan was passed on to NSA, which refined it. NSA worked very closely with each SCA to determine collection requirements and determine the best candidate locations. In the early 1950s NSA asserted control over site surveys, without which no collection site could be established. NSA balanced customer requirements against existing overt [redacted] sites, documented hearability, and Second and Third Party contributions. If the project did not make sense, DIRNSA could be counted on to oppose it.[101]

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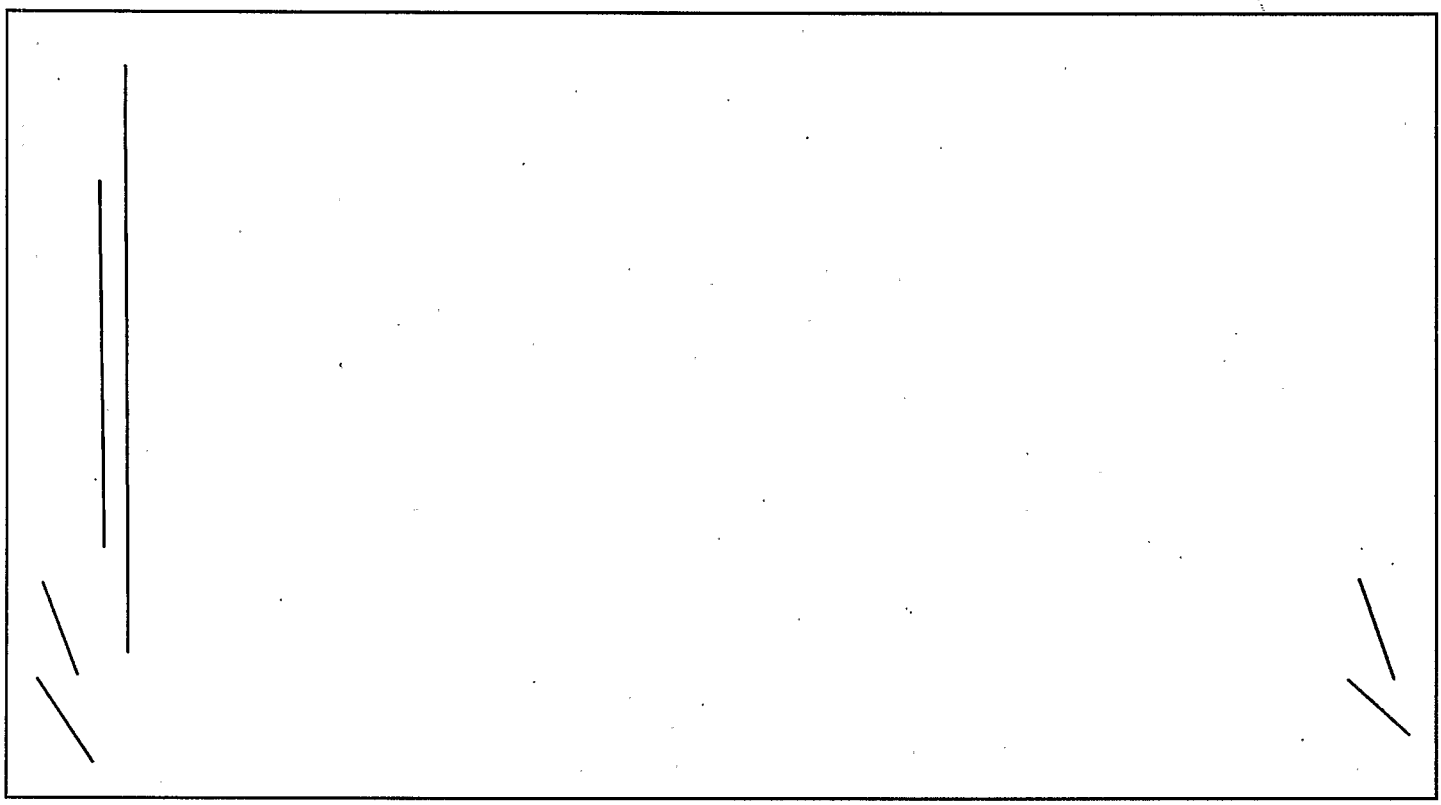

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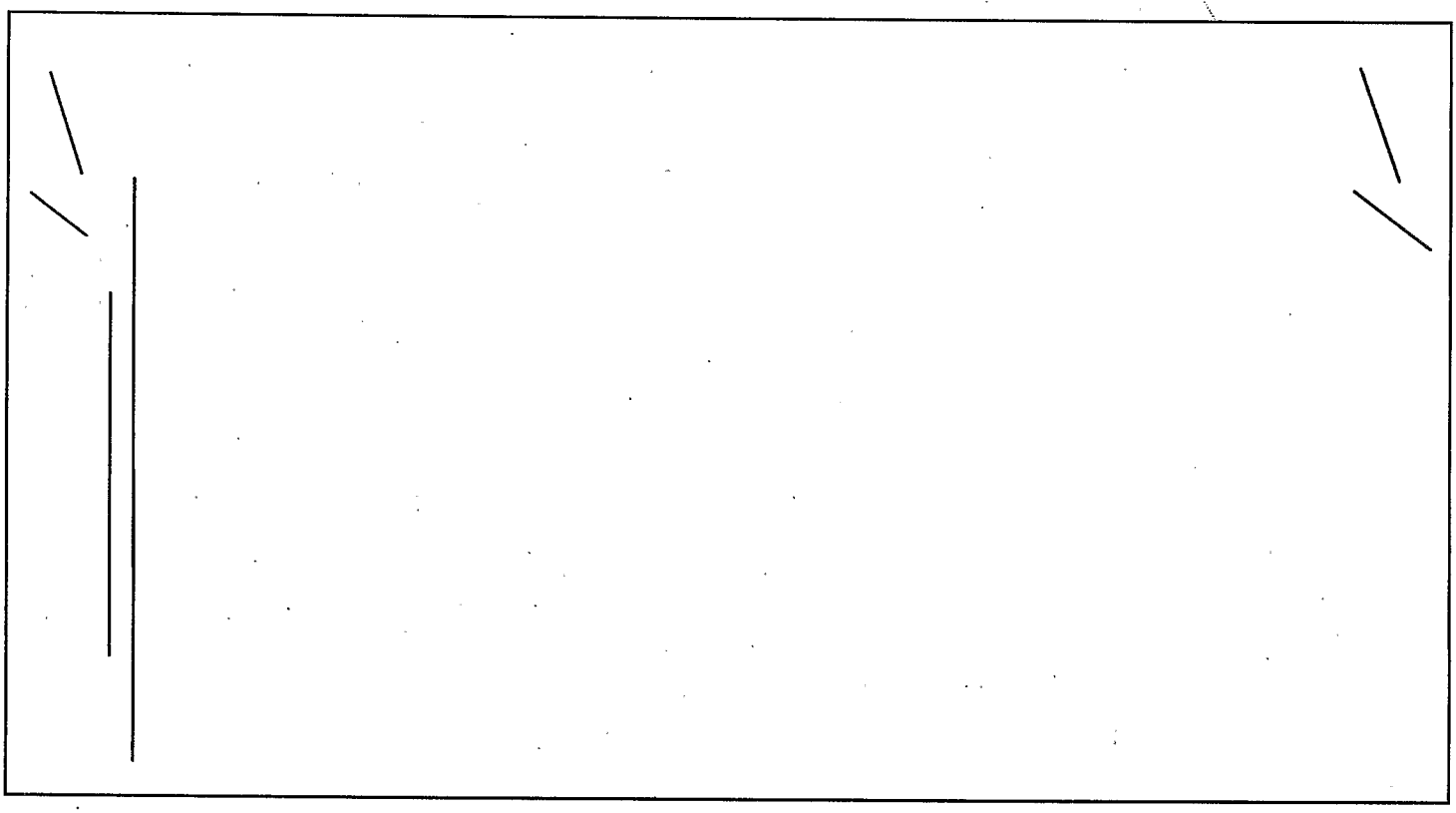

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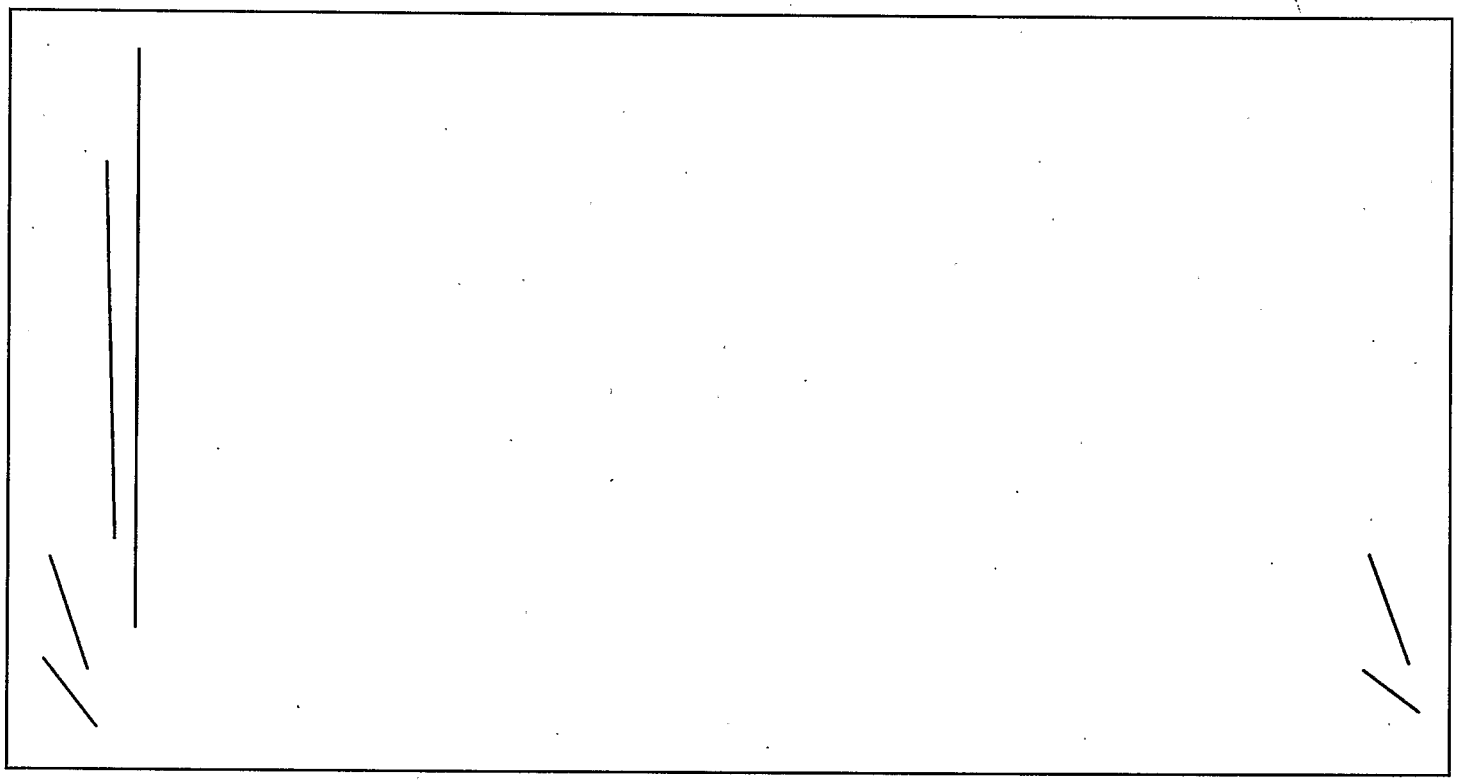

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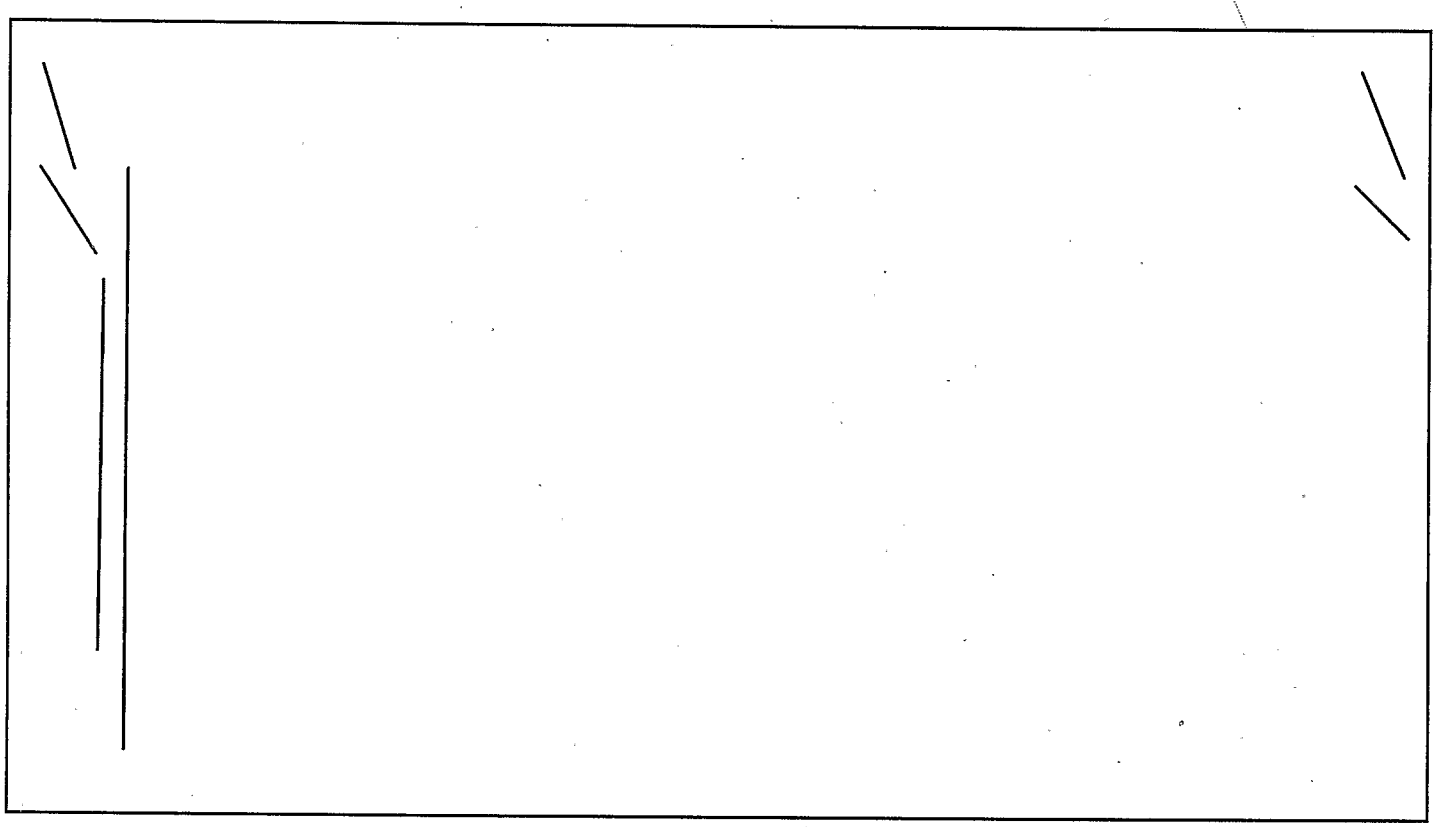

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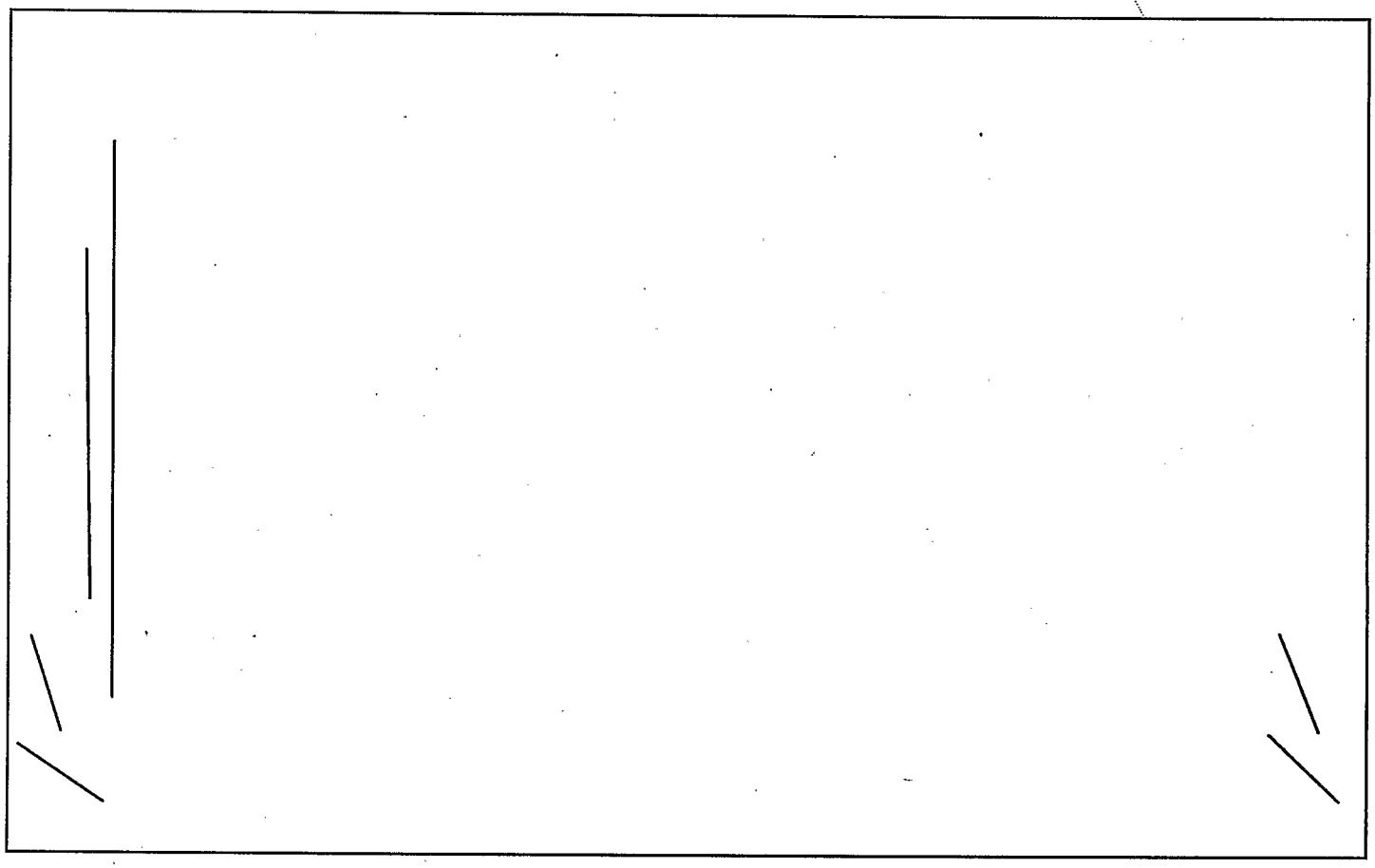

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Berlin was in an entirely different situation. Its status as a four-power occupied city meant that Soviets could walk relatively freely even in the American Sector. Stalin's attempt to squeeze the Westerners out of Berlin (resulting in the Berlin Airlift) in 1948 placed the city in a uniquely precarious position. In such circumstances the first COMINT intercept organization, a detachment of the ASA site [redacted] arrived in a covert status and stayed only a few weeks in 1951. But ASA covert detachments kept appearing in Berlin, and in the following year the command established a permanent unit there, and the troops moved from tents to covered buildings.

In 1953 the Army G-2 concluded that the results had been paltry and recommended the site be closed, a strange finding given the later reputation of Berlin as a SIGINT bonanza. Fortunately, no one listened to the G-2, and ASA continued to occupy a variety of locations [redacted] AFSS followed ASA into Berlin in 1954, beginning a presence in the city that would last until after the fall of the Berlin Wall.[102]

Berlin became a SIGINT gold mine, a window into the heart of the Communist Bloc military system. In the mid-1950s the collection sites began to report the existence of VHF communications, and NSA moved in to investigate. An NSA technician [redacted] discovered that Berlin was crisscrossed with above-HF communications that the West had never before intercepted, including Soviet high-capacity multichannel and microwave transmissions. The discovery was to have a profound influence on the development of the SIGINT collection system.[103]

[redacted]

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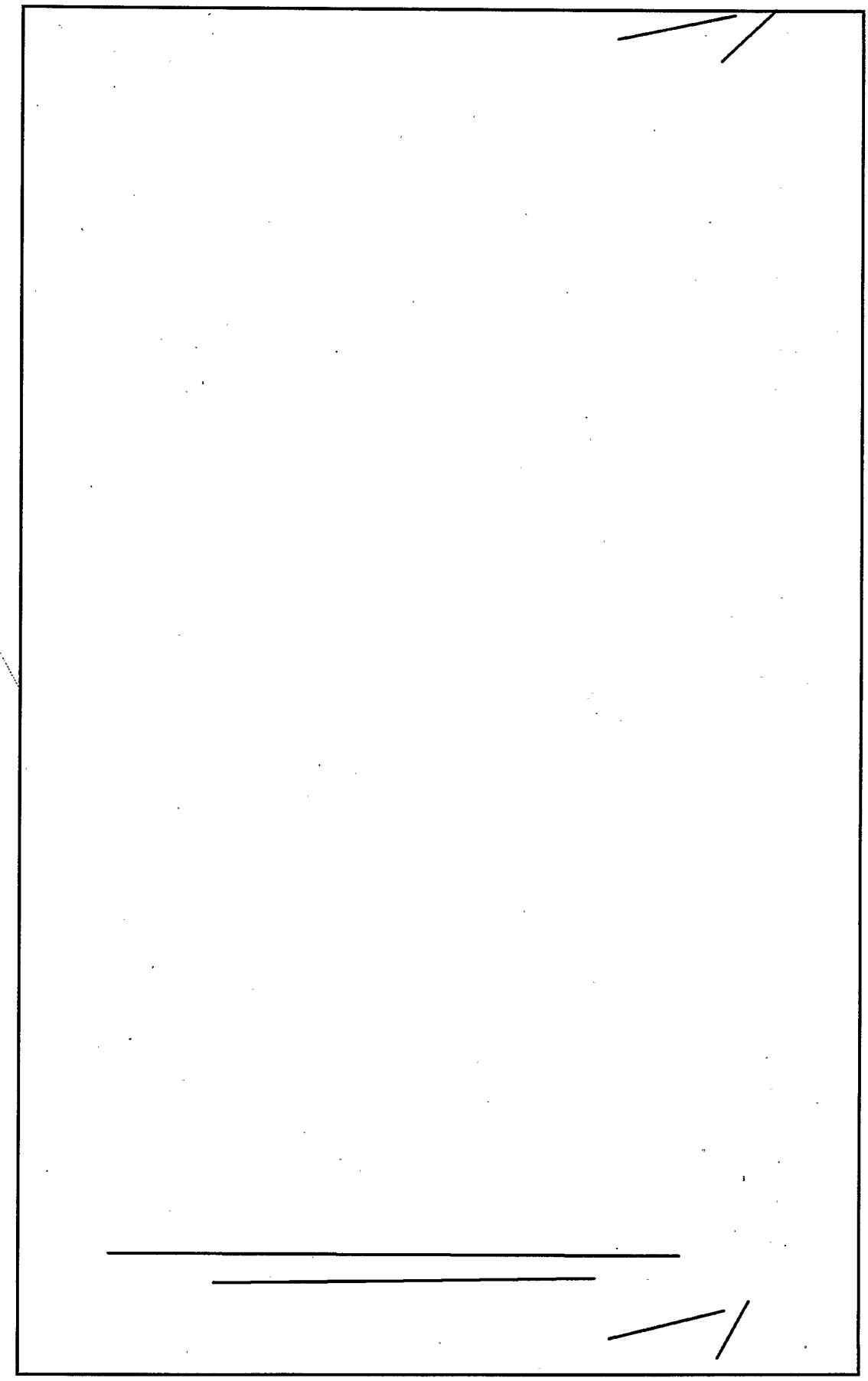

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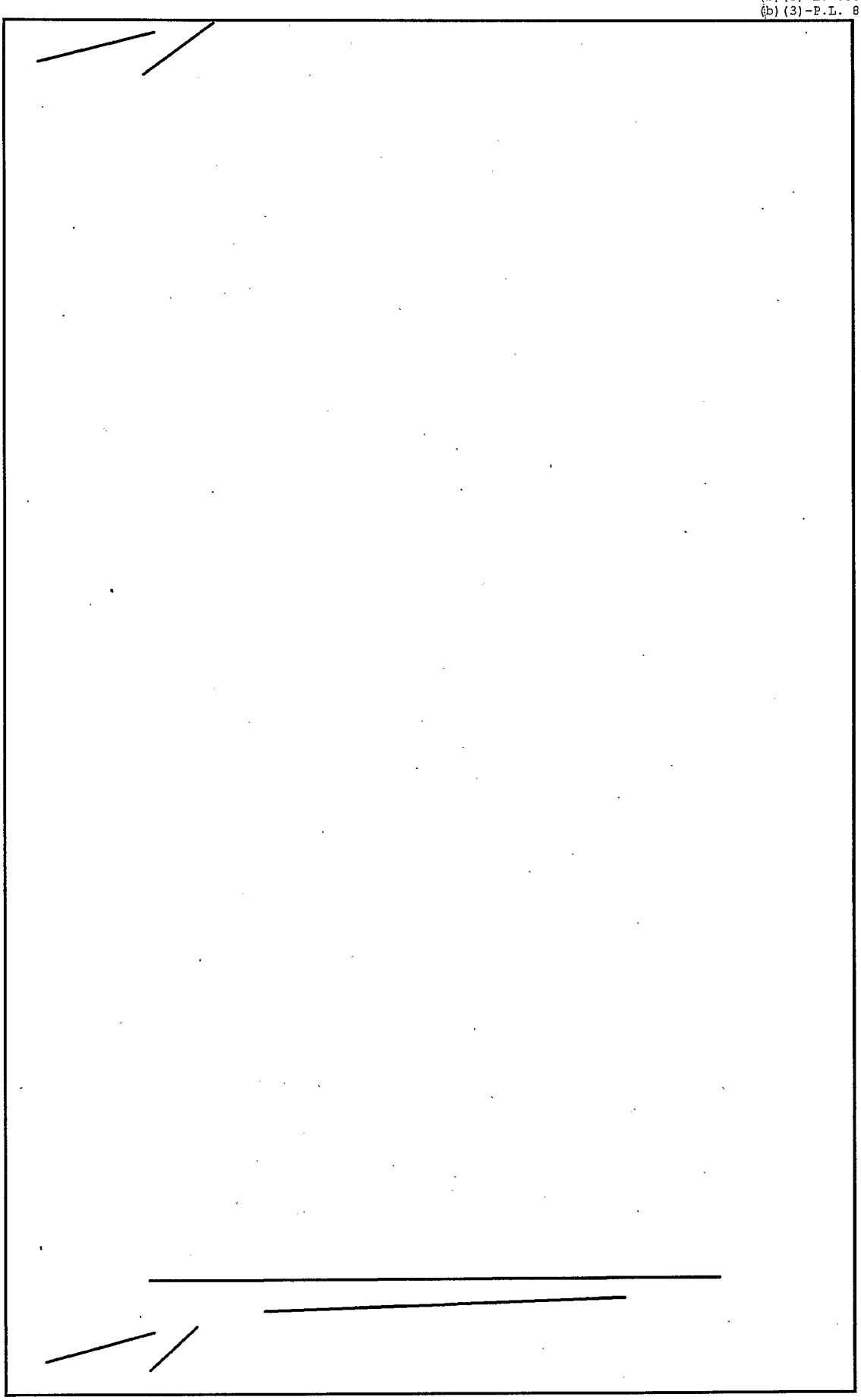

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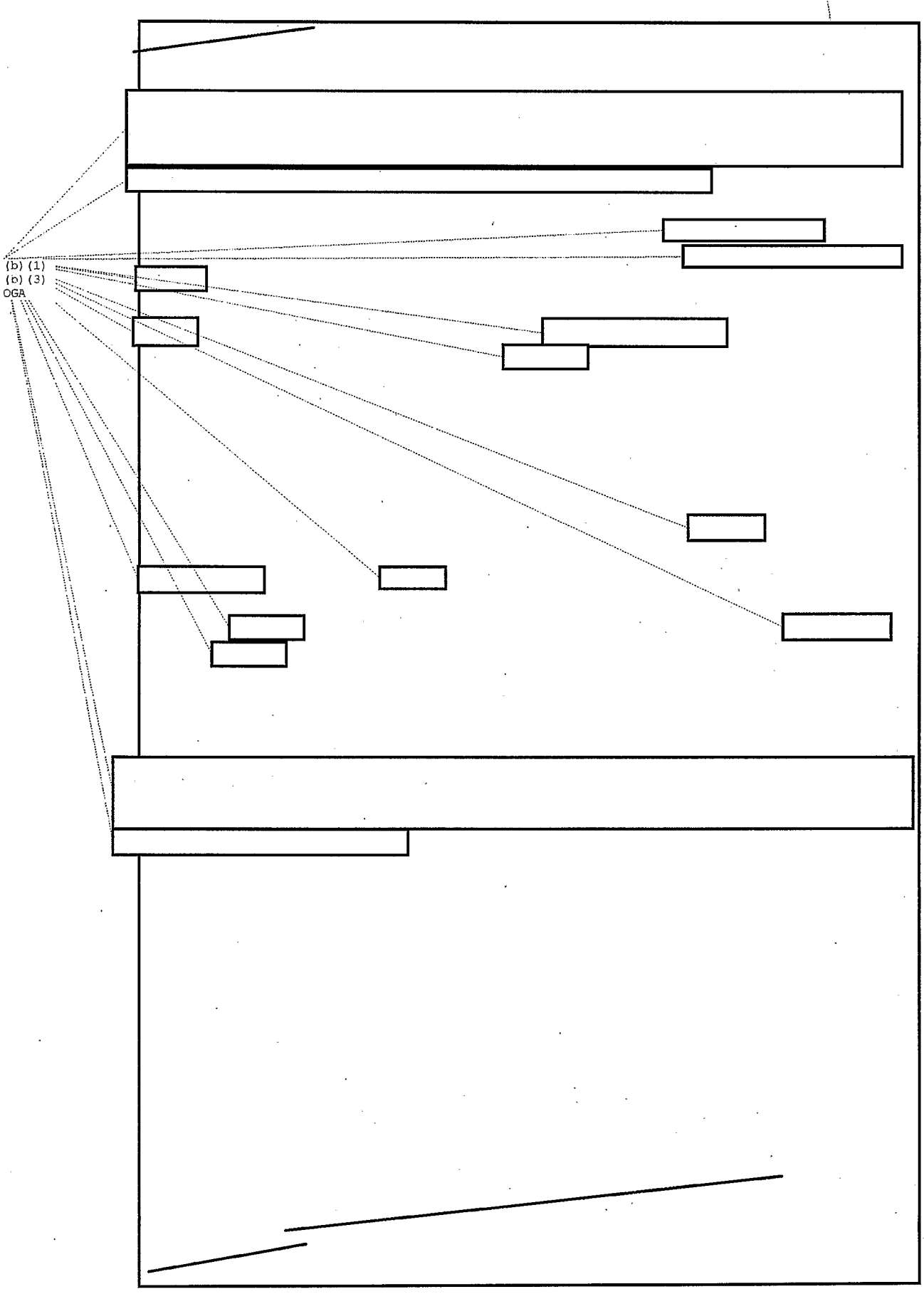

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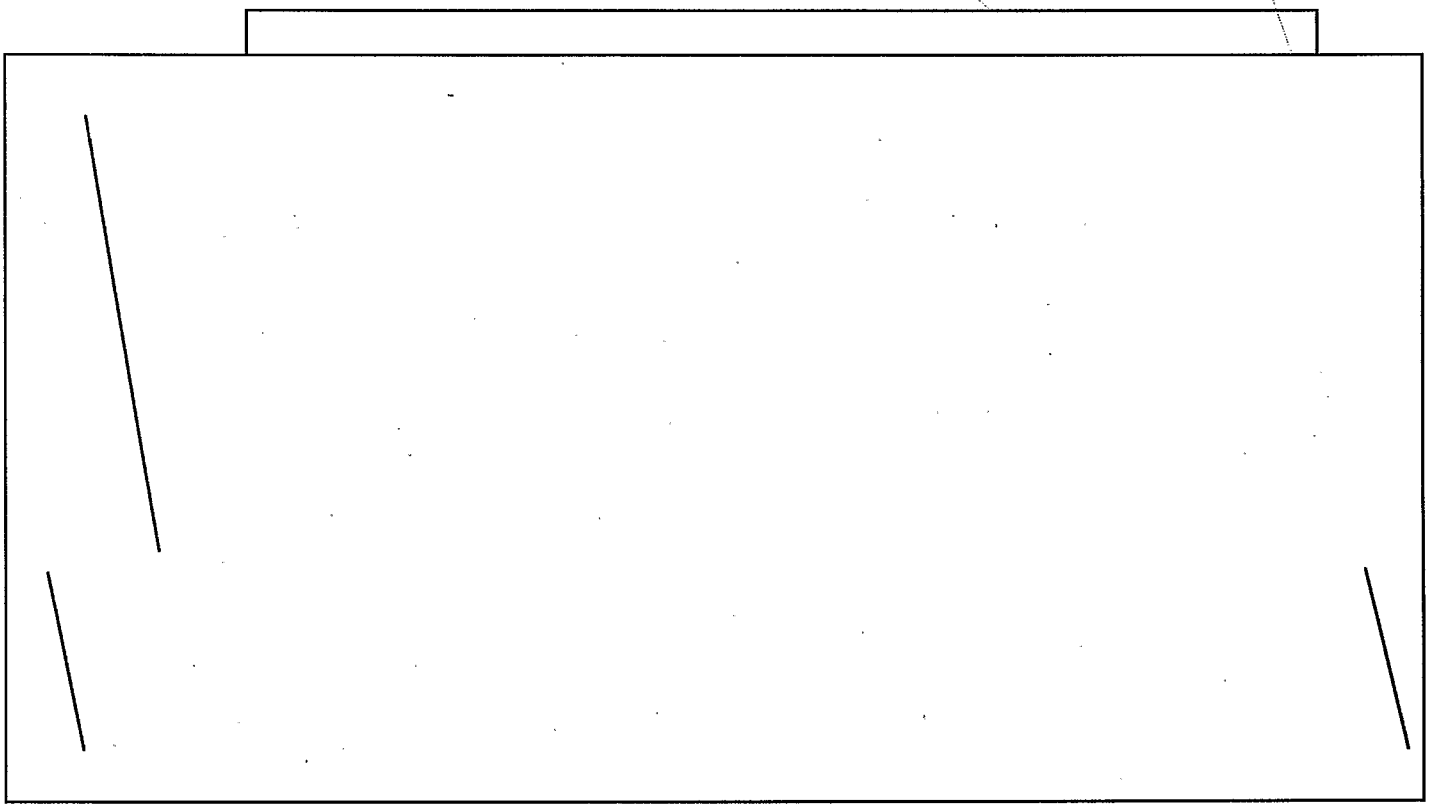

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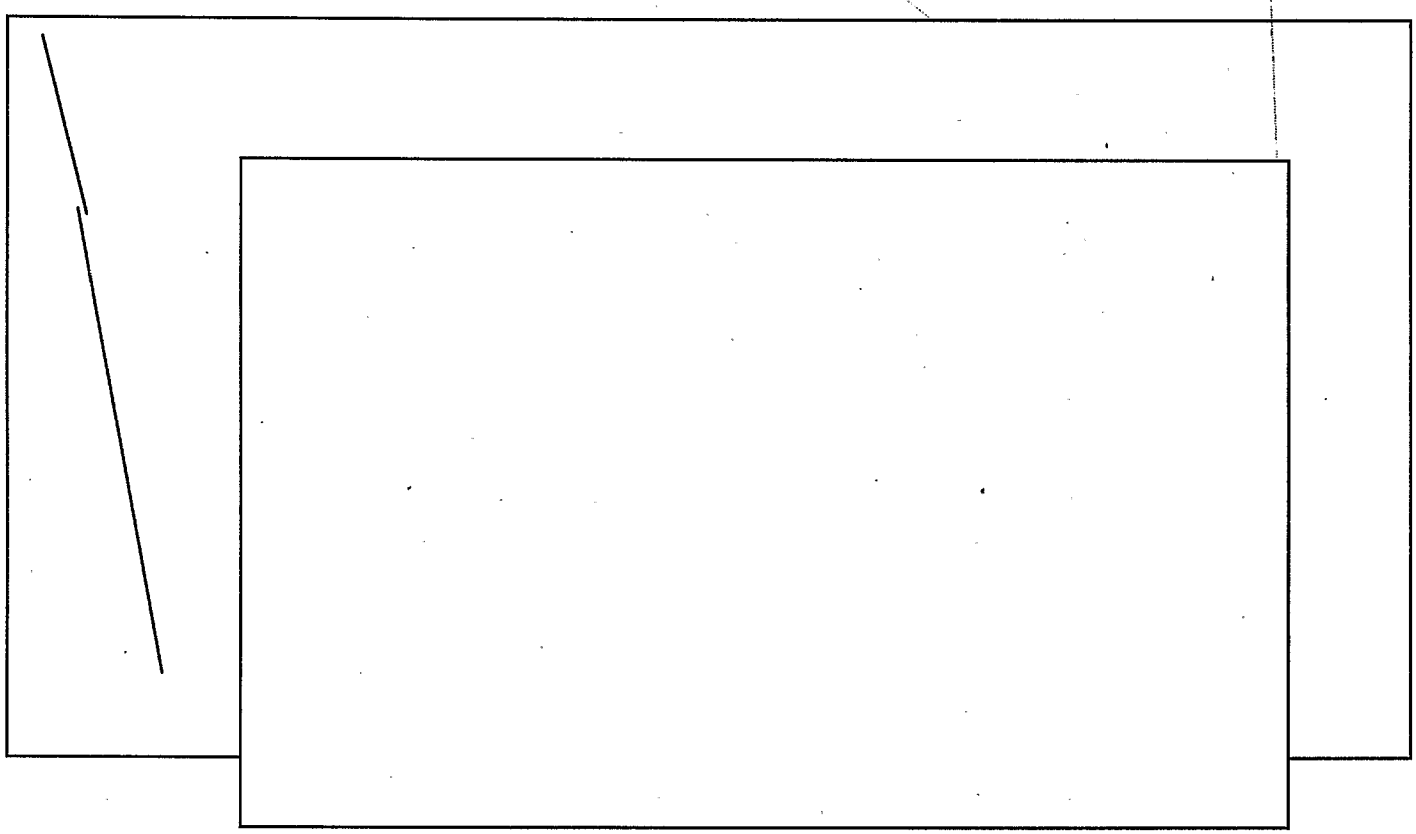

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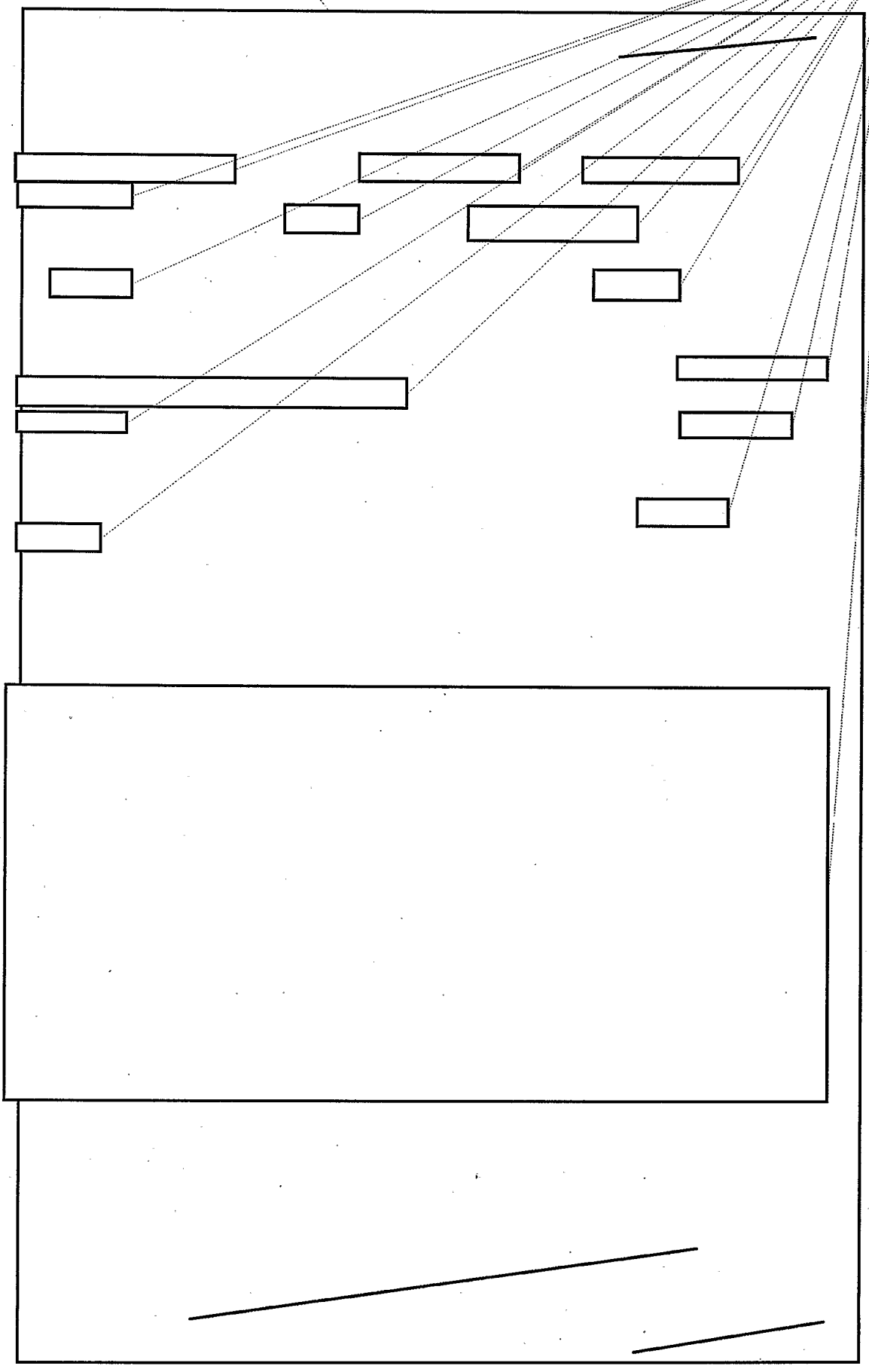

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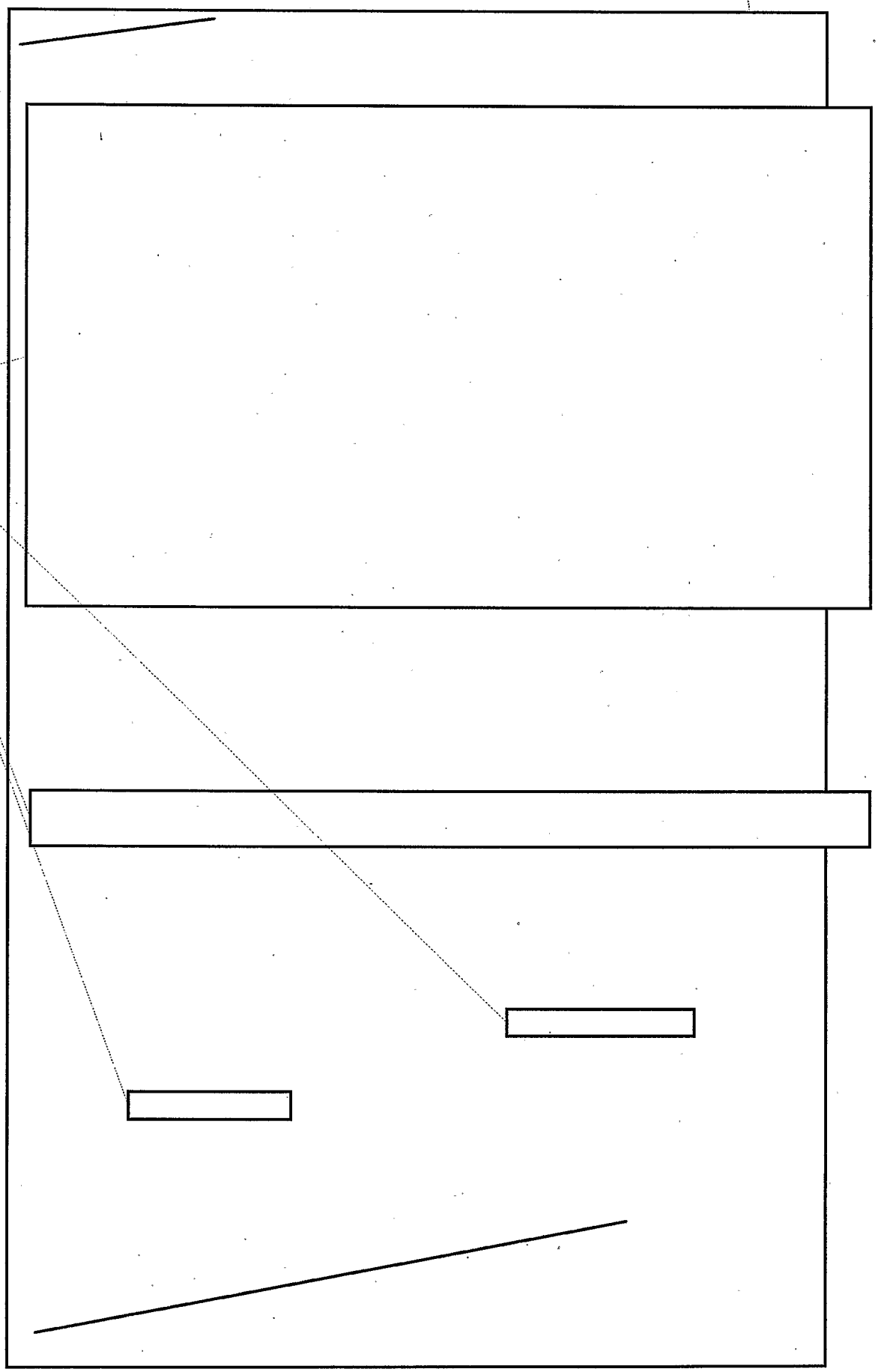

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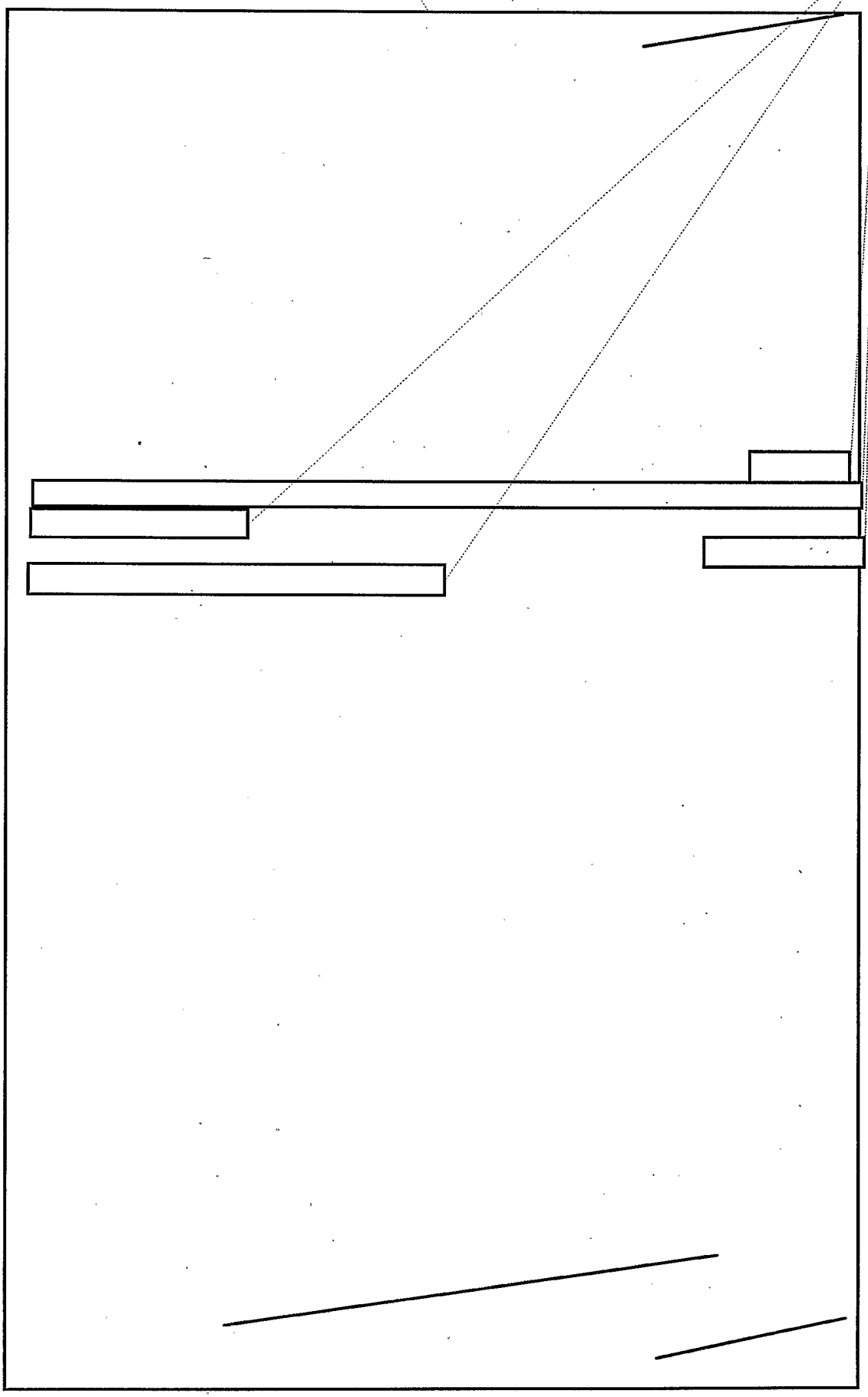

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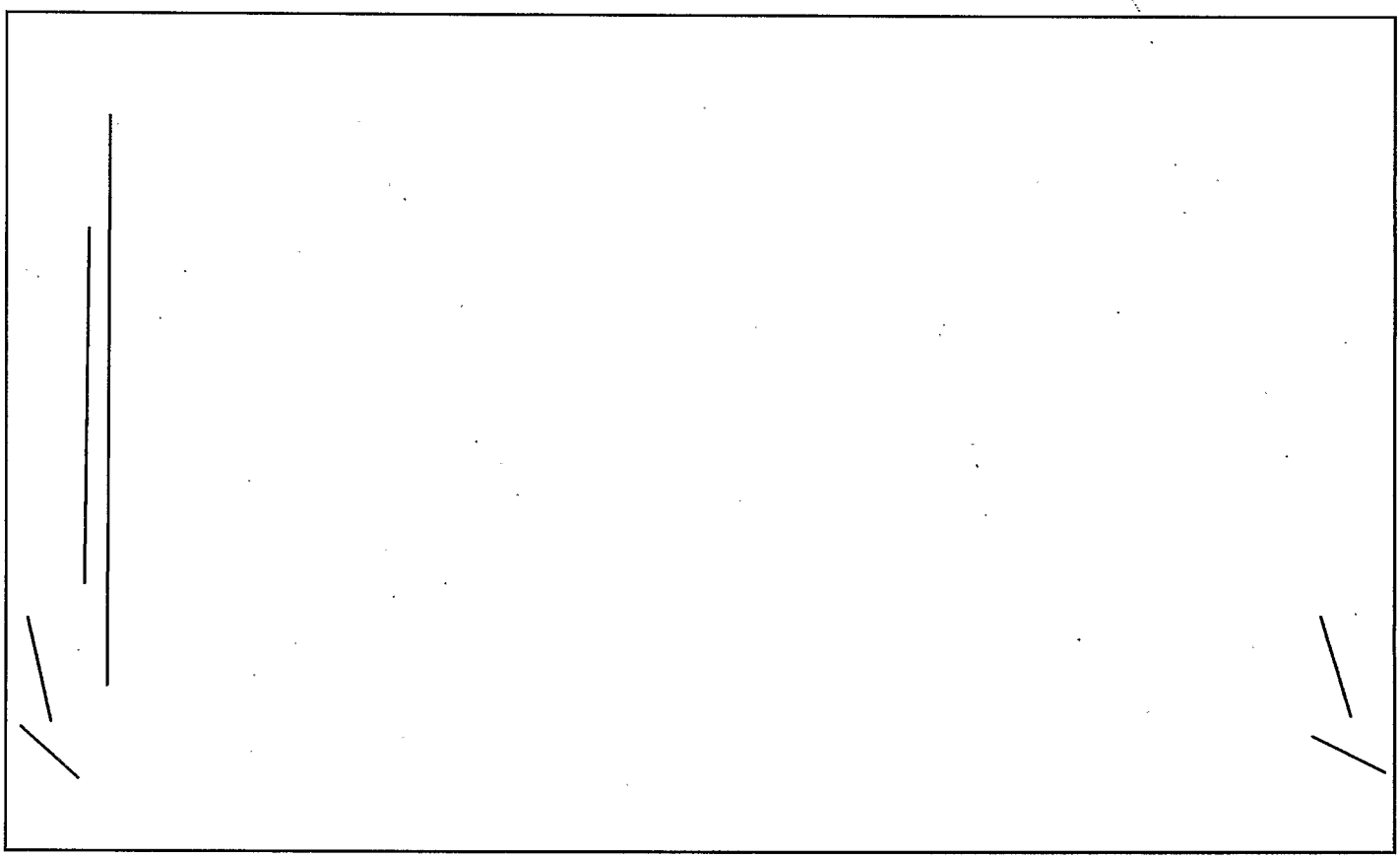

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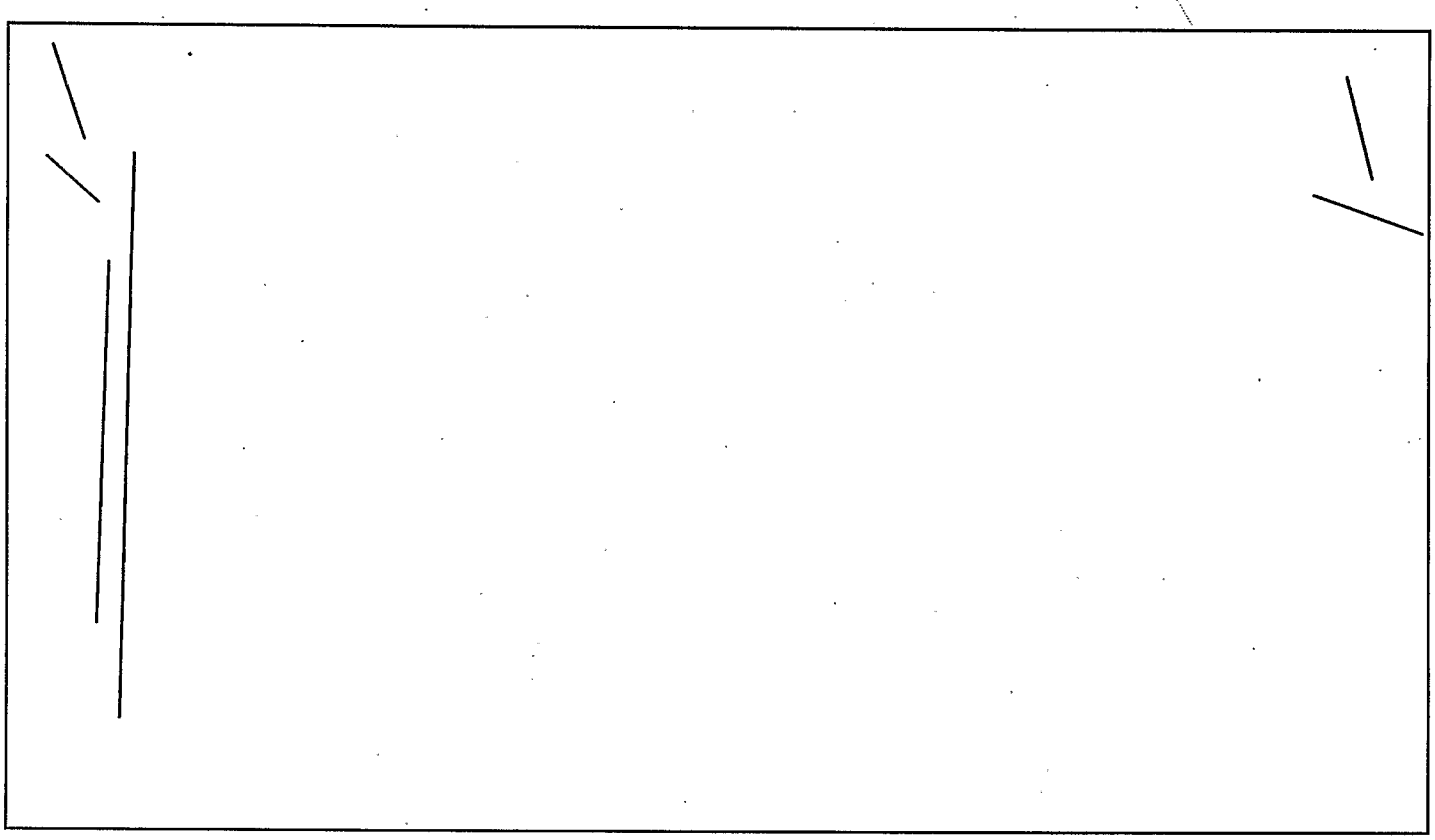

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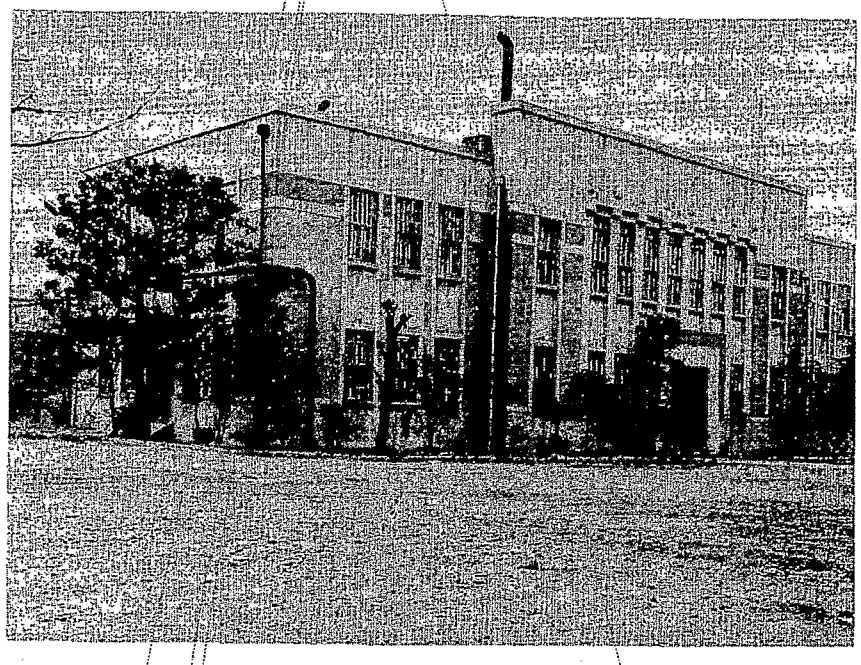

ASA PAC in the 1940s
ASA's first postwar Far East headquarters was in a relatively intact building in downtown Tokyo. Japanese nationals staffed the support services.

The Far North

All three services established collection sites in Alaska. The Navy site at Adak dated back to World War II, and the Air Force and Army soon followed. The USAFSS site grew out of the [redacted] a World War II Army Air Corps asset. Security Service established its first collection site [redacted] The Army site was established near Fairbanks (1950). But AFSS soon eclipsed ASA in resources, as the [redacted] proved to be very lucrative and the predominant one in Alaska. [redacted] eventually grew to become one of the major Security Service sites, while the ASA site closed in 1959.

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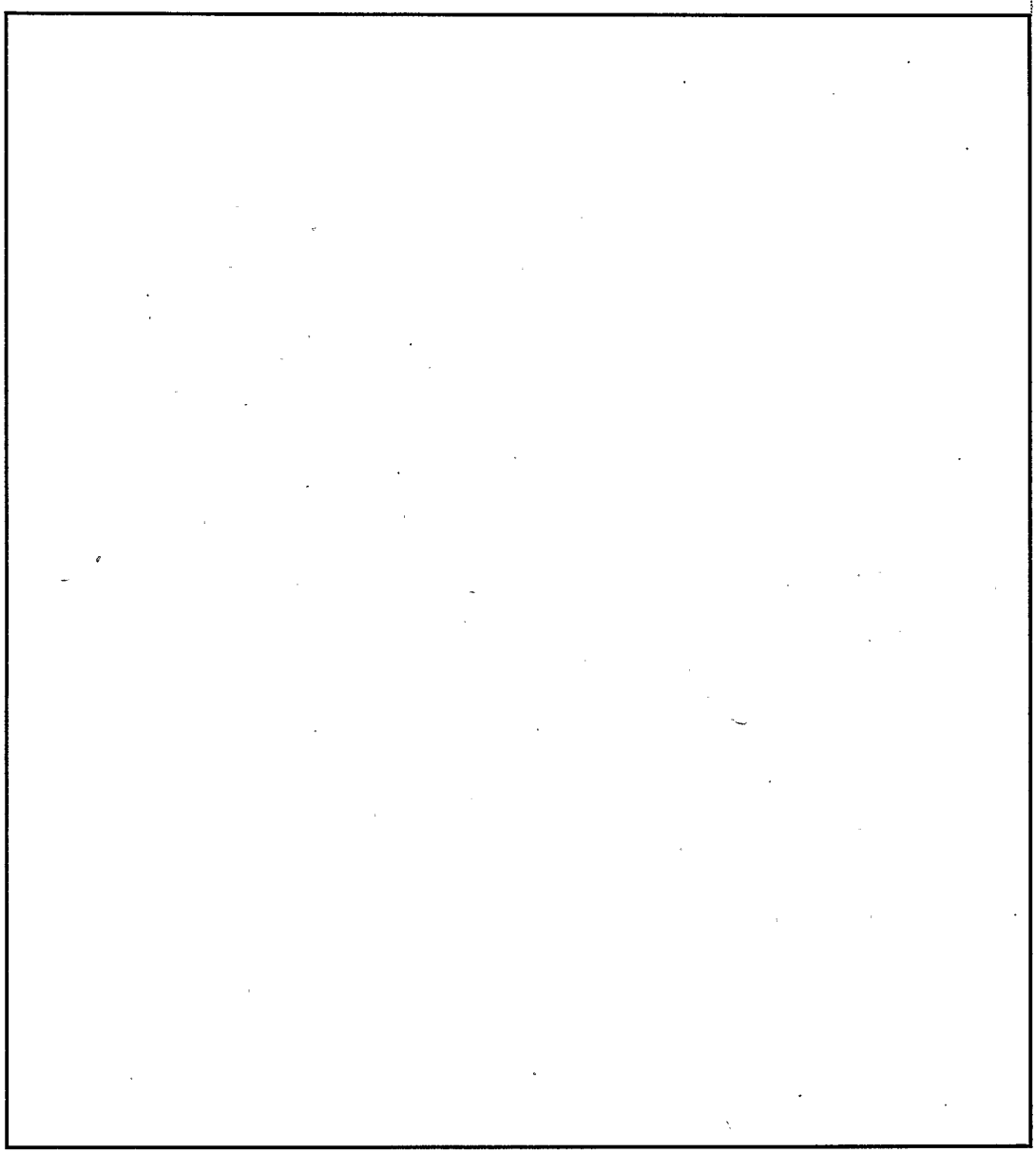

What It Was Like

Military units tend to form around existing support organizations. Army units cluster at Army posts, Air Force organizations locate at existing Air Force bases, Navy units form at Navy bases. Cryptologic units, however, must go where they can hear targets. Where there is an existing military base, so much the better. But if there is none, one must be built specifically for the collection organization. This condition was especially true in the 1950s, when collection was done primarily to satisfy national, strategic requirements

rather than to support tactical commanders. In such a situation, it was not necessary for cryptologic organizations to stay with a supported commander. They could, and often did, go off on their own.

Geographically, collection sites were scattered. They tended to be small, isolated, and largely self-sufficient. Running a site required a very high level of independence and self-reliance. Even when collocated on a major military installation, the SIGINT unit was not part of the command structure. The post or base commander was generally not SI cleared and treated the cryptologic unit somewhat like a leper. Under such conditions, support was difficult to obtain.

In the late 1950s, Air Force Security Service under Major General Gordon Blake decided to solve its logistics problems itself. With the blessings of the Air Force, AFSS began managing bases at which its unit represented the major activity. Begun in July of 1958, the program eventually resulted in USAFSS's taking over [redacted] as well as their training base, Goodfellow AFB, Texas. The huge 466L building program (see chapter 8) may have been a factor, but Blake himself claimed that troop support was the driving force behind this program. It changed USAFSS into a large-scale landowner, and it was not copied by either ASA or NSG.[119]

Climate could be an enemy. Air Force and Army sites at places [redacted] would frequently be snowed in much of the winter. Roads [redacted] were often impassable. Some sites could be supplied only by helicopter. In the tropics, the lack of air conditioning at places like Clark made work almost unbearable.

Even when the weather cooperated, conditions in places [redacted] were primitive. Army troops arriving [redacted] lived in pup tents for months. There was initially no air strip, and visitors to the site had a two-day drive from [redacted] over almost nonexistent roads.

Living conditions presented further challenges. A former resident of [redacted] a relatively "plush" location [redacted] describes the site in fairly realistic terms:

> The station itself was a loose cluster of small, dusty buildings perched on the cliff above the village [redacted] The age old strategic value of the place was shown by the fact that our work went on in the shadow of a ruined [redacted] castle.

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Water had to be hauled a mile from a spring. The site produced its own electricity with diesel generators, as the local power could not be relied on. There were no barracks, and the site personnel lived in apartments [redacted] and commuted by bus and boat [redacted] to the site. Since the ferry did not run after dark, the eve and mid shifts had to report at 1600, and the off-duty watch slept in bunks in a quonset hut.[120]

In the early days, intercept sites took on all manner of configuration, from squad tents to quonsets to clapboard "hootches" in Southeast Asia. (The term "hootch" derived from the Japanese word "uchi," meaning "home," and migrated from the postwar occupation forces to the jungles of Southeast Asia.) But they gradually assumed a classic appearance as systems were standardized and permanent structures built. Most permanent sites were windowless blockhouses surrounded by high chain link fences with a single, guarded aperture.

[redacted] and the base commander sometimes economized on space by building the golf course in the antenna field.

[redacted]

The intercept area was generally divided into smaller rooms. Manual Morse, radioprinter, and voice modes usually had separate rooms, and at larger sites the Morse mission was frequently subdivided into rooms by target. Operators in the early days often

[redacted]

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The "spaghetti panel" RF distribution room at USM-1 (Vint Hill Farms)

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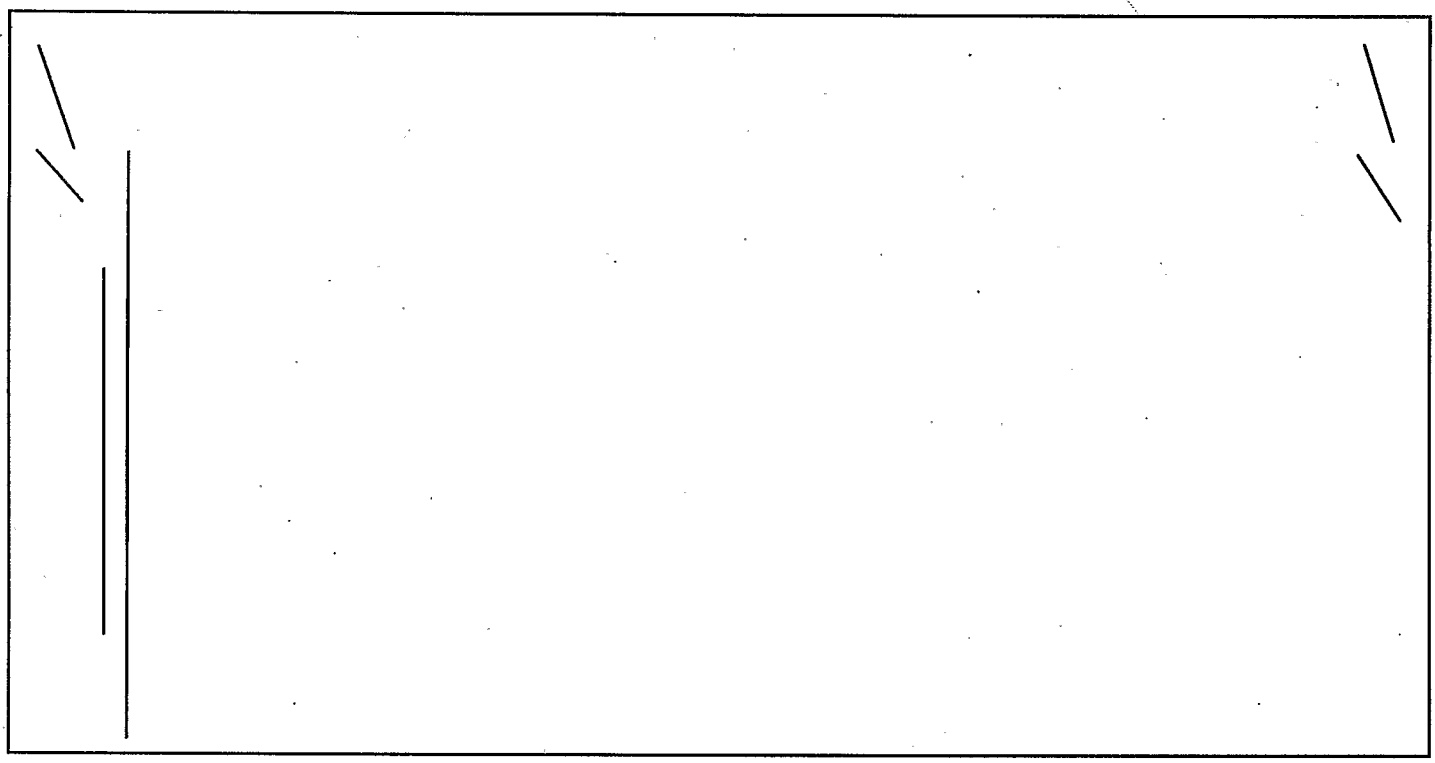

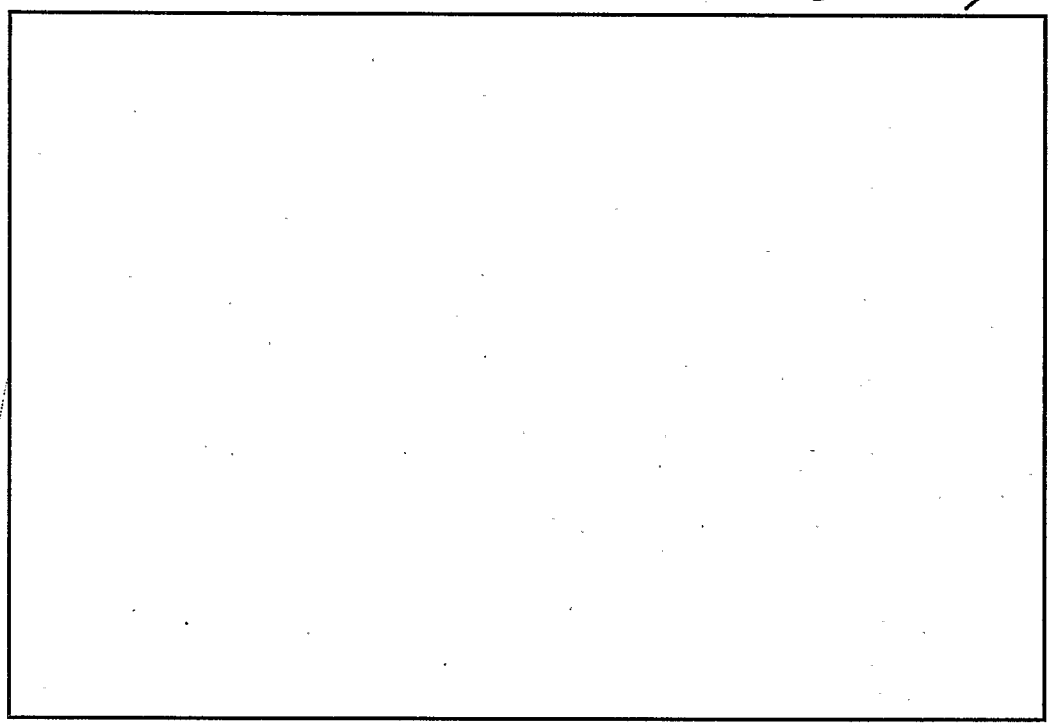

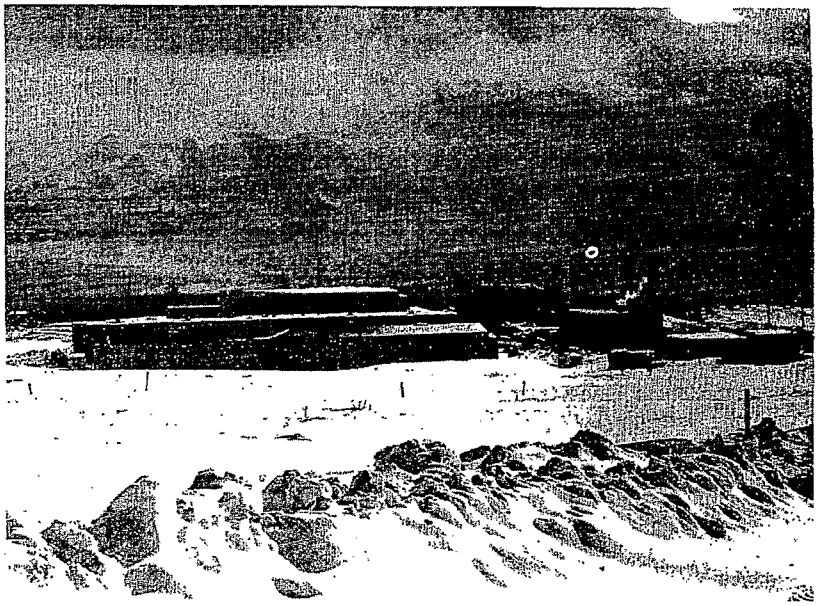

The Navy site on Adak Island in the Aleutians survived and prospered despite the cold and snow.

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~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY NOT RELEASABLE TO FOREIGN NATIONALS~~

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Barracks, USA-57, Clark AB, Philippines, early 1950s
These early "hootches" lacked air conditioning
(and just about everything else that would make them habitable).

All services showed an interest in DF as a SIGINT technique, but the Navy was far ahead of the other two. The Navy had begun experimenting with DF as a navigational aid as early as 1906, and until the mid-1930s DF was developed for its short-range navigational value. But by 1935 OP-20-G had got hold of DF for intelligence purposes, and it gradually turned the Navy's primary interest toward strategic and tactical intelligence applications. By 1941 the Navy operated twenty-two strategic DF stations, organized into Atlantic, West Coast, Mid-Pacific, and Asiatic nets. In addition, the Navy had found that the British had invented effective shipboard DF systems (something the U.S. Navy had yet to accomplish) and began buying these systems from the British.

[redacted]

SIGINT Goes Airborne

Even by the end of World War II, the HF spectrum was becoming very crowded, and the Germans were beginning to experiment with VHF communications. Both the British and Americans flew airborne intercept missions against VHF targets during the latter stages of the war.

Eighth Air Force, concerned about the possibility of a German march into the VHF spectrum, began to install recorders and receivers set to pretuned frequencies on some of their strategic aircraft [redacted] This they referred to as their "airborne Y Service." General "Hap" Arnold of the Army Air Force directed a crash program to develop a dedicated airborne reconnaissance program, replete with special schools, dedicated aircraft (a modified B-24) and designated equipment. The AAF called the program "Ferret," and in early 1943 sent the first B-24s to Adak in the Aleutians. In March of 1943 a Ferret aircraft flying out of Adak obtained what was probably the first airborne intercept of a Japanese radar emission.[124]

Spurred by the fortuitous capture of a Japanese radar on Guadalcanal in 1942, the Navy put together a seat-of-the-pants ELINT collection effort in the Pacific. The program did not have dedicated aircraft or specific units; the people involved just loaded their intercept gear on any airframe that happened to be flying in the right area. The effort paid off in June 1943, when Navy airborne intercept operators collected their first Japanese radar emission. Despite this success, however, the Navy realized that this approach was too haphazard, and in late 1943 a special reconnaissance unit was formed for the Southwest Pacific Theater. This very early effort eventually became the VQ-1 squadron.[125]

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Following the war, the Air Force continued aerial reconnaissance against the [redacted] By 1947 the Army Air Force already had a rather elaborate postwar Ferret program in both the Far East and Europe. The AAF requested ASA assistance in placing COMINT intercept aboard, but at the time ASA displayed little interest.[126]

BLUE SKY

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Postwar COMINT airborne collection, however, developed from the Korean War rather than from the Soviet threat. In 1952 Air Force Security Service became concerned about reports that North Korean pilots were using the VHF spectrum for GCI communications. As their intercept of HF GCI communications was beginning to dry up, this seemed plausible and led to the establishment of a survey site on Cho Do Island. Cho Do definitely proved the existence of VHF GCI communications, and this finding boosted an embryonic USAFSS program to build a COMINT collection aircraft using an RB-29 as the platform.[127]

But the people in the Far East were not willing to wait for a long-range fix. The commander of [redacted] working with Far East Air Force, initiated an in-theater effort which they called Project BLUE SKY. The idea was to seize whatever platform was available – this proved to be a C-47. It was modified by the addition of collection equipment and antennas formed up into a single intercept position and was launched into a series of trial orbits. Although there was plenty of VHF to be had, the orbit, because of requirements to be able to communicate with the ground station, was far from ideal, and the initial trials were only moderately successful. The Air Force adjusted the orbit, but results were still mixed because the wire recorder produced scratchy, almost unintelligible voices.

After the armistice in 1953, coverage requirements became even more pressing, and an additional VHF position was added. Results were better, but aircraft maintenance problems, equipment failures and lack of qualified transcribers on the ground prevented the program from fully realizing its potential. By 1958, however, BLUE SKY had expanded by the addition of three more C-47s, and the program continued until 1962, when all C-47s were replaced by USAFSS RC-130s.[128]

Peripheral Reconnaissance

The reconnaissance program of which BLUE SKY was a part came to consist of a bewildering variety of programs operated by [redacted] American military services. Most of the missions were peripheral to the Soviet Bloc nations, and to those missions some rather strict rules applied. But some parts of the program apparently dealt with deliberate overflights. In the very early days, the penetration missions in Eastern Europe were for the purpose of unloading tons of propaganda leaflets. As time went on, however, CIA radio broadcasts substituted for more intrusive measures, and the overflights turned toward

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intelligence collection. The best known of the latter were the U-2 overflights which originated in the mid-1950s. Even when actual penetrations went out of favor, SAC continued to fly "exciter flights" along the periphery, nudging the boundaries of the Soviet air defense system to actually stimulate reactions and get them to turn on their equipment.[129]

By the early 1950s the Soviet Union had built a capable air defense system. It was deficient in high-altitude aerial intercept capability, but the Soviets had an outstanding radar detection system, beginning originally with American lend-lease equipment. And as American [redacted] aircraft began playing with their borders, the Soviets began coming up after them.

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The ensuing twenty years were marked by repeated border incidents, both aerial and naval. A study by NSA in 1986 documented 126 incidents, 81 of them occurring during the 1950s. The peak year, 1952, was marked by nineteen incidents, including the downing of an RB-29 in the Sea of Japan on 13 June, the first SIGINT aircraft shot down during the Cold War (and the first loss of life by USAFSS intercept operators).

The Soviets and their allies became hypersensitive to peripheral reconnaissance, and on occasion they acted "trigger-happy." In some cases, such as the shootdown of a USAF photo mapping mission north of Japan in 1954, Soviet radars showed the American aircraft in Soviet territory. In other cases, especially in the Berlin air corridors, Soviet pilots showed a predisposition to fire at an Allied aircraft no matter which side of the border it was on. Some missions were shot down; others were simply fired on or harassed by "buzzing."

Although there is no direct evidence for it, it appears very likely that the pattern of peripheral reconnaissance employed by the U.S. and its allies exacerbated an already touchy situation and led to more incidents. As Table 5 shows [redacted] of the incidents were clearly aerial reconnaissance, [redacted] and of the [redacted] reconnaissance incidents, [redacted] Reconnaissance CPAs (closest point of approach) were frequently within a few miles of the twelve-mile limit and often paralleled the border at that distance for many miles. To the Soviets, this must have appeared as a taunt. The SAC exciter flights were the most provocative by far. This was made worse by the inherent inaccuracy of radar, which sometimes placed the Allied reconnaissance aircraft closer to the Soviet border than the aircraft's navigator believed to be the case. Into this volatile mix came the Soviet bloc fighter pilot, who had no way of knowing exactly where he was relative to the international boundary.

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Table 6

Summary of Incidents by Type, 1949–1985

Type	Number
[redacted]	
Non-SIGINT aerial reconnaissance	22
Other military	56
Commercial/private air	18
Military ship	3
[redacted]	
Commercial ship (*Mayaguez*)	1

The number and pattern of peripheral reconnaissance flights over the years, and the nationalist sensitivities of the Communist nations, produced a lively time. Some of the shootdowns became international incidents which heightened the Cold War tensions and seriously affected international diplomacy.[130]

All three services developed their own aerial reconnaissance programs, each using different types of aircraft. Of the three, USAFSS had the largest program. Security Service began laying plans as early as 1948, but it was not given the go-ahead from USAF until August 1950. Originally USAFSS hoped to use the C-47 as an airframe, and it actually tested that aircraft and a C-54. USAFSS decided on the RB-50, a modification of the B-29, as its long-range airframe, but none was available, and in the early 1950s the command used an RB-29 as an interim measure. The single RB-29 went operational in the Pacific in 1954, flying out of [redacted] but this was never more than an experiment. AFSS finally ended up with a group of ten RB-50s in 1956, and by the fall of 1957 all ten were distributed – five to Asia and five to Europe. The program was a joint effort between AFSS and the theater commanders, who operated the front end of the planes. In the early years of the program, only the back-end crew was COMINT cleared. All positions were under local control, and tasking was done by USAFSS with little or no NSA input.[131]

The Navy program developed from the early VQ-1 and VQ-2 squadrons originally established in World War II. VQ-1 was originally based at Sangley Point Naval Station in the Philippines, flying P4M Mercators, P2V Neptunes, and A3D Skywarriors. In 1955 the [redacted]

In Europe the SIGINT reconnaissance mission, VQ-2, evolved out of a World War II naval unit at Port Lyautey, Morocco. [redacted][132]

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RB-50
When converted for reconnaissance use, the World War II B-29 was renamed the RB-50.

The SAC Ferret program continued in the postwar years with only minimal involvement by the cryptologic community. [redacted] By late summer of 1951, both AFSS and AFSA had become interested in the program, and by September the plans were expanded to include [redacted]

The Origins of Advisory Warning

The AFSS unit at [redacted] by now renamed [redacted] realized that they held in their hands information that could save an aircraft from being shot down. [redacted] In early 1952 [redacted] worked out a plan to warn aircraft in imminent danger, by passing a coded warning to the Air Control and Warning (AC&W) sites [redacted] They wrote down their plan into a document which they

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called Project BITTERSWEET and sent it to USAFSS for approval. In May 1952 AFSS approved the plan for temporary implementation, [redacted] details of the new warning procedure were still being worked out when, on 13 June, an RB-29 SIGINT collection flight was shot down over the Sea of Japan. The two AFSS operators who were killed might have been saved had a system been in place; the event added a real sense of urgency to this, the earliest advisory warning plan in American SIGINT history.

At this point BITTERSWEET got bogged down in the tangled thicket of COMINT classifications. The problem revolved around the possible [redacted] USCIB approved the USAFSS advisory warning plan for the Far East, but LSIB was reluctant to go along except in a war zone (i.e., Korea).

It appears that at least one version of the plan was given interim approval by USCIB, and a former USAFSS operator claims that it was actually implemented in the early 1950s for at least one mission. Various modifications were introduced to make it more palatable, such as the use of bogus messages disguised as warning messages by AC&W units.

In 1956 President Eisenhower, concerned over the number of incidents and loss of reconnaissance aircraft, directed that positive action be taken to remedy the situation. The only change that resulted was the implementation of a Navy warning program in the Far East, which contained certain safeguards, chief among these being the initiation of "blind" (unacknowledged) broadcasts. Through the summer of 1958, there existed no universal advisory warning program. [133]

The RC-130 Shootdown

The RB-50 program lasted only a few years. The aircraft were old and difficult to maintain and had room for only five positions. The success of AFSS collection against the growing VHF problem led to a new program on the heels of RB-50s, in which the new McDonnell-Douglas C-130 would be converted to a collection platform. The C-130 had room for [redacted] positions, could fly longer and higher, and, being new, had few maintenance problems. AFSS planned for a fleet of [redacted] in each theater, to begin in 1958. The first [redacted] went to Europe, and in September AFSS, in association with USAFE, began to fly trial reconnaissance missions in [redacted] areas. [134]

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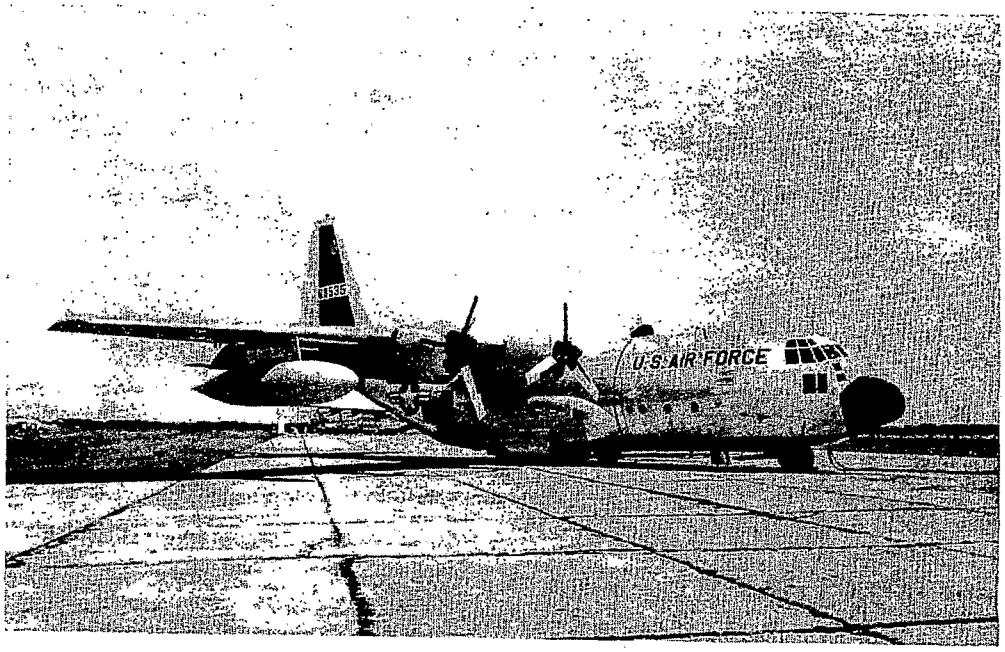

RC-130

Then disaster struck. On 2 September 1958 an RC-130 on its initial flight out of Adana strayed over the border and was shot down. Two pairs of MIG-15s (or 17s; there was not enough evidence to determine which) attacked the reconnaissance aircraft in waves in a well-coordinated operation which left no room for doubt that their intent was destruction. The voice tapes were as dramatic as they were damning. (See p. 146.)

The Soviets said nothing, so the State Department on 6 September sent a note to the Soviet government requesting information on an unarmed C-130 carrying a crew of seventeen which had disappeared during a flight from Adana to Trabzon, Turkey. Finally, on the 12th the Soviet embassy in Washington replied that the missing transport had crashed in Soviet Armenia, killing six crew members, but that Moscow had provided no information about an additional group of eleven. An exchange of diplomatic notes over the next ten days shed no further light on the missing eleven bodies, so on 21 September the State Department admitted that they knew the aircraft had been shot down and appealed for information on the rest of the crew on humanitarian grounds. The Soviets replied that they considered the flight to have been an intentional violation of their borders but made no reference to the involvement of fighter aircraft or a shootdown.

~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY~~
~~NOT RELEASABLE TO FOREIGN NATIONALS~~

PBS	CONVERSATION
[pilot billet suffix]	
582	The target is a large one. . . . Roger
201 to 218	Attack! Attack! 218, attack.
201	I am attacking the target
201	Target speed is 3000, I am flying with it. It is turning toward the fence [i.e., border].
201	The target is banking. . . . It is going toward the fence. Attack!
218	Yes, yes, I am attacking.
[missing]	The target is burning. . . .
[missing]	The tail assembly (b% is falling off) the target.
[missing]	Look at him, he will not get away, he is already falling.
[missing]	Yes, he is falling (b% I will finish him off) on the run.
[missing]	The target has lost control, it is going down.

A crew of seventeen men, including eleven USAFSS airmen and a front-end crew of six, was lost.

In October the Soviets produced the bodies of the six members of the front-end crew, but the bodies of the eleven USAFSS airmen were never turned over; and this strange circumstance produced a spate of conspiracy theories regarding the possible capture and long-term incarceration, not to mention forceable interrogation, of the COMINT crew. The evidence of the voice tapes makes it quite clear that no one could have escaped the fiery crash in a mountainous region of the Caucasus, but what happened to the bodies remains a mystery to this day.[135]

In November, after more than two months of Soviet "stonewalling," Deputy Under Secretary of State Robert Murphy summoned Soviet ambassador Mikhail Menshikov to his office, told him he had the voice tapes of the shootdown, and said he would play them immediately. Menshikov declared that he was not a technician and walked out of the office. In January of the following year, Vice President Nixon and Secretary of State

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Dulles protested the Soviet attitude on the shootdown to First Deputy Chairman of the Council of Ministers Anastas Mikoyan, but their representations were again brushed aside. Out of patience, the administration on 5 February released copies of the tape to the *New York Times*, which published them on page one. This deliberate leak of COMINT had already been placed before USCIB, which had concurred, as had the British.[136]

The downing of the RC-130 had immediate and serious consequences. USAFE grounded the entire RC-130 fleet, and Headquarters USAF requested a complete review of the ACRP program worldwide. USAFSS produced statistics designed to prove the effectiveness of the program when compared with ground collection sites, and by mid-October the flight ban had been lifted. As part of its review, USAFSS also investigated the possibility that the aircraft was meaconed (intentionally lured over the border) by Soviet navigational facilities. This possibility added to the conspiracy theories surrounding the fate of the RC-130, but it was largely contradicted by the internal evidence of the study which showed that three navigational beacons in the area, two of them in the Soviet Union, were all operating on virtually the same frequency. Thus, the aircraft very likely homed on the wrong beacon and pulled itself off course.[137] Although President Eisenhower himself believed it to have been a deliberate meaconing incident, it was more likely a navigational error on the part of the SAC crew.

Advisory Warning Is Implemented

The downing of the RC-130 decided the advisory warning issue. USAFSS gave its units immediate authorization to man the heretofore unmanned manual Morse position aboard the RC-130s for internal advisory warning. And the long-stalled plans for the provision of warning [redacted] got untracked. By 1961 USAFSS and SAC had implemented a limited advisory warning program, [redacted] applying to their own reconnaissance aircraft. In 1963 this was merged into a national program encompassing all peripheral reconnaissance aircraft, a JCS plan named WHITE WOLF.[138]

[redacted]

The construction of the super-sites in the 1950s resulted in an intercept system that was increasingly effective in its ability [redacted] By 1960, USAFSS demonstrated a high level of competence to [redacted] during the U-2 shootdown. (See p. 148) But since [redacted]

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communications in the 1950s [redacted]

The RB-47 Shootdown

As time went on, progressively fewer reconnaissance aircraft were shot down, but those that were took on a heightened diplomatic importance. Surely the most signficant was the 1 May 1960 shootdown of the U-2 piloted by CIA's Francis Gary Powers. (This shootdown will be treated in detail in a separate section.) Second only to that, however, was the shootdown of an RB-47 ELINT mission over the Barents Sea on 1 July 1960. The aircraft took off from [redacted] and proceeded on its charted course in the Barents, until it was intercepted by a covey of Soviet fighters. As the aircraft paralleled the Murmansk coast, two Kilp'Yavr fighters intercepted it, and at least one fired a burst, destroying two of the four engines. As the pilot fought to control the seriously damaged aircraft [redacted] After a twenty-minute struggle, the plane crashed in the icy waters of the Barents off the coast of Ostrov Kolguev. Two of the crew were picked out of the waters alive by a Soviet trawler, but the other four died.

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Coming as it did only two months after the U-2 incident, it presented Soviet premier Nikita Khrushchev with another opportunity to heat up the Cold War. After waiting a few days to see what the Eisenhower administration would say, the Soviet leader went on the attack, revealing that they had shot down the plane and were holding the two survivors in Lubyanka Prison. [redacted]

[redacted]139

In the Oval Office, Eisenhower worried about the diplomatic and political implications of peripheral reconnaissance and asked his military advisors if it was worth it. General Nathan Twining of the Air Force delivered a ringing defense of the program, and he convinced Eisenhower to keep the airplanes flying. But the president directed that the Air Force find faster reconnaissance aircraft so that the Soviets would have a more difficult time shooting them down. The quest for a better aircraft eventually led to the SR-71 program.[140]

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During the Oval Office review of the peripheral reconnaissance program, the Air Force revealed the extent of the program in 1960. [redacted] SAC had two strategic reconnaissance wings flying worldwide missions, [redacted] In Europe the COMINT aircraft (mostly RC-130s) were operated by USAFE, which seemed to be getting all the newest and best aircraft and collection gear, in line with Eisenhower's expressed desire to [redacted] (The promised nine RC-130s had evidently not yet arrived.) The Navy had a naval air squadron at [redacted] equipped with smaller naval patrol craft. [redacted] and the Marines operated an airborne collection unit from [redacted] A special naval unit operating from [redacted][141]

As for the fate of the RB-47 flyers, Khrushchev kept them in Lubyanka until after the change of administration and then returned them as a cynical olive branch to the newly elected President Kennedy a few days after his inauguration. Kennedy met the released flyers at Andrews Air Force Base and, to flaunt his Cold War sympathies, had them to the White House for coffee.[142] If Khrushchev hoped to use the reconnaissance program to curry favor, he failed. Kennedy was even more fervently anti-Communist than Eisenhower.

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Notes

1. [redacted] "The History of SIGINT in the Central Intelligence Agency, 1947–1970," October 1971, CIA history office.

2. [redacted] Vol. II, 2.

3. CCH Series VI.D.1.1.

4. The best, and virtually the only, body of information on NSA's early organization is a manuscript by [redacted] available in the Center for Cryptologic History.

5. George Howe working papers, History of the Directorate, in CCH Series VI.D.1.2.

6. Brownell Committee report.

7. "Report on Intelligence Activities in the Federal Government, Prepared for the Commission on Organization of the Executive Branch of the Government by the Task Force on Intelligence Activities, [the Hoover Commission Report]," App. 1, Part 1: The National Security Agency, May 1955, in CCH Series VI.C.1.8.

8. Classification Act of 1949, amended 24 Oct. 1951. See also file on manpower and personnel strengths in CCH Series VI.E.1.4.

9. Robertson Report, in CCH series VI.X.1.6.

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10. "NSA Review of the U.S. Cryptologic Effort, 1952–54," in CCH Series VI.EE.1.3.; interview, Louis W. Tordella, 28 June 1990, by Robert Farley, NSA OH 8-90; [redacted] "Glimpses of a Man: The Life of Ralph J. Canine," *Cryptologic Quarterly*, Vol. 6, No. 2, Summer 1987; Burns, *The Origins of the National Security Agency*, 61.

11. Interview with Abraham Sinkov by Arthur Zoebelein, [redacted] Dale Marston and Sam Snyder, May 1979, NSA OH 2-79 through 4-79.

12. [redacted] "Training in AFSA/NSA, 1949–1960," unpublished manuscript in CCH Series V.F.4.1.

13. "NSA Review of U.S. Cryptologic Effort....

14. Howe, "The Narrative History of AFSA/NSA" Part V.

15. NSA/CSS Archives, ACC 10460, CBRI51.

16. Howe, "Narrative History," Part V.

17. NSA oral history with Hugh Erskine, by Vince Wilson, 1972; oral history with Dr. Robert J. Hermann, 2 September 1994, by Charles Baker and Tom Johnson, NSA OH 45-94.

18. George F. Howe, "A History of U.S. Civilians in Field COMINT Operations, 1953–1960," *Cryptologic Quarterly*, Spring 1973, 5–9; and correspondence file in NSA/CSS Archives, ACC 26430, CBOM22.

19. NSA/CSS Archives, ACC 1664N, G14-0207-7.

20. File of sample COMINT Reports for 1948–1953, in CCH Series VI.M.2.1.

21. CCH Series VI.M.2.1.

22. Production memo 37/53, in "COMINT Reporting Responsibilities, Reports and Translations," in CCH Series VI.M.1.2.

23. NSA 901 Publications Precedures Memo #6, 6 October 1953, in CCH Series VI.M.1.7.

24. See "Reporting Policy" memoes in CCH Series VI.M.1.7.

25. Hoover Commission report.

26. The best, and practically the only, comprehensive discussion of AFSA and NSA training in the 1950s is in [redacted] "Training in AFSA/NSA, 1949–1960," unpublished 1961 manuscript in CCH Series V.F.4.1. Unless indicated otherwise, the material in this section derives from the Bauer work.

27. AFSA School Catalogue 1952, in CCH Series V.F.4.2.

28. [redacted] "Historical Study: The Security Program of AFSA and NSA, 1949–1962," unpublished manuscript in CCH Series X.H.7. See also Interview with Herbert L. Conley, 5 March 1984, by Robert Farley, NSA OH 1-84.

29. [redacted] "Historical Study: The Security Program...." See also Interview, Cecil J. Phillips, 8 July, 1993, by Charles Baker and Tom Johnson, NSA OH 23-93, and written comments by David Boak, October 1994.

30. CCH Series VI.G.1.1.

31. [redacted] *History of SIGINT in CIA*, V. III, 158.

32. [redacted] "The Security Program...."

33. Ibid.

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34. Hoover Commission Report (VI.C.1.8.); "NSA Review of U.S. Cryptologic Effort. . . ." (VI.EE.1.3.); Robert J. Watson, "Consumer Liaison Units,1949–1957" April 1957, ACC 10684, CBRI 52; and "AFSS-NSA Relations, October 1952–September 1954," V. I, USAFSS Official History available at Hq AIA, Kelly AFB, San Antonio, Tx.

35. [redacted] "Early BOURBON – 1945: The First Year of Allied Collaborative COMINT Effort against the Soviet Union," *Cryptologic Quarterly*, Spring 1994, 1–40.

36. CCH Series VI.EE.1.3.; [redacted] "SIGINT Directives,: 28 Sep 1992 NSA(P0443) paper; "Mechanization in Support of COMINT," collection of papers dated from 1954–1956, in CCH Series XII.Z.

37. "Mechanization in support of COMINT."

38. "Site Survey/Hearability Tests," in CCH SeriesVI.I.1.1.

39. George Howe, "Narrative History," Part V.

40. CCH Series V.A.28., and VI.M.1.5.

41. Letter, Canine to SCA chiefs, 14 June 1955, in CAHA, ACC 26418, CBOM 16.

42. CCH Series VI.M.1.5.

43. USAFSS History, "Historical Resumé: Development and Expansion of USAFSS Capability in the Pacific Area, 1949–1957," available at AIA hqs, Kelly AFB.

44. Memo fm MGen Samford (USAF) to Commander, ADC, 2 Mar 1954, in CCH Series VI.M.1.5; Robertson Report in CCH Series VI.X.1.7.

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48. Holtwick memo 13 June 1955, in CCH Series VI.P.2.1.

49. CCH Series VI.NN.1.1. and VI.NN.1.3; see also VI.P.2.2.

50. CCH Series VI.P.1.3.

51. Richard R. Ferry, "A Special Historical Study of the Organizational Development of United States Air Force Security Service from 1948–1963," 1963, available at Hqs AIA, Kelly AFB, Texas.

52. Interview with John E. Morrison, 10 August 1993, by Charles Baker and Tom Johnson, NSA OH 24-93.

53. "A Brief History of AFEWC," May 1977, and "History of ACOM Tasking in the AFSCC, 1 July 1961-31 December 1964"; available at Hq AIA, Kelly AFB, Texas.

54. Interview with Lt Gen Gordon A. Blake, 19 April 1984, by Robert Farley, NSA OH 7-84.

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58. Howe, "Narrative History."; CCH Series VI.H.H.12.11; "AFSS-NSA Relations, October 1952–September 1954, V. I, available at Hq AIA, Kelly AFB, Texas.

59. NSACSS Archives ACC 37911, H03-0305-2; interview with Milton Zaslow, 14 May 1993, by Charles Baker and Tom Johnson, NSA OH 17- 93; interview with Louis Tordella, 28 June 1990, by Charles Baker and Tom Johnson, NSA OH 8-90.

60. See Ray S. Cline, *The CIA under Reagan, Bush and Casey* (Washington, D.C.: Acropolis Books, 1981), 78; Robert L. Benson, "A History of U.S. Communications Intelligence During World War II: Policy and Administration," CCH manuscript pending publication, Chapt II, 14.; [redacted], *Donovan and the CIA* (Washington, D.C.: CIA, 1981).

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61. See Benson, "History"; interview with Oliver R. Kirby, 11 June 1993, by Charles Baker, Guy Vanderpool, [redacted] and David Hatch, NSA OH 20-93.

62. [redacted] "A History of SIGINT in the Central Intelligence Agency, 1947–1970," Vol IV, App. M.; CIA history staff.

63. CIA's early role in COMINT is covered in [redacted] throughout); in a second CIA history, by [redacted] April 1974; and in Cline, "The CIA . . ."

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65. Interview with Louis W. Tordella, 28 June 1990, by Charles Baker and Tom Johnson, NSA OH 8-90.

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71. [redacted] Vol II.

72. [redacted] Vol. II; NSACSS Archives, ACC 9136, G11-0602-1; ACC 3042, G15-0508-4; ACC 9136, CBIB 26; Capt George P. McGinnis, "The History of Applesauce," *Spectrum*, Winter 1973, 9–13.

73. See NARA, RG 457, SRH- 355.

74. [redacted]

[redacted]

76. [redacted] interview; Sinkov interview; Tordella interview.

77. [redacted]

[redacted]

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92. [redacted] *Operation* [redacted] *The Berlin Tunnel*, U.S. Cryptologic History, Special Series, Number 4 (Ft. Meade: NSA, 1988); [redacted] Vol. II; [redacted] "Newspaper Items Relating to NSA," in CCH Series VI.II.1.2.; Kirby interview.

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94. Interview with Richard Bissell, Jr., by Dr. Thomas Soapes, 19 Nov 1976, CIA history staff.

95. "CIA-NSA Relationships . . . ," CCH Series VI U.1.2.; Tordella interview.

96. Robertson Report, in CCH Series VI.C.1.11; NSA/CSS Archives, ACC 29965, H01-0706-5

97. See Jones, *The Wizard War: British Scientific Intelligence*, 1939–1945 (New York: Coward, McCann and Geoghegan, 1978).

98. Draft Robertson Committee report in CCH Series VI.X.1.7.

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100. "Background to the Robertson Report: Potentialities of COMINT for Strategic Warning," in CCH Series VI.X.1.7; Draft of Robertson Committee Report in CCH Series VI.X.17.; "ELINT History and Background

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Papers," in CCH Series VI.O.1.1.; Hoover Commission Report in CCH Series VI.C.1.8.; "History of the Electronic Intelligence Coordinating Group, 1955–1958," in CCH Series VI.O.1.6.

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