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book II

American Cryptology during the Cold War, 1945–1989 – Book II

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national security agency
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UNITED STATES CRYPTOLOGIC HISTORY

American Cryptology during the Cold War, 1945–1989

Book II: Centralization Wins, 1960–1972

HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY
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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 II: Centralization Wins, 1960–1972

Thomas R. Johnson

CENTER FOR CRYPTOLOGIC HISTORY
NATIONAL SECURITY AGENCY
1995

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Chapter 8
The Kennedy Years

THE NEW ADMINISTRATION

> In the long history of the world, only a few generations have been granted the role of defending freedom in its hour of maximum danger. I do not shrink from this responsibility – I welcome it. I do not believe that any of us would exchange places with any other people or any other generation. The energy, the faith, the devotion which we bring to this endeavor will light our country and all who serve it – and the glow from that fire can truly light the world.
>
> John F. Kennedy, Inaugural Address, 20 January 1961

John Kennedy came to the White House with an abiding interest in foreign affairs and defense policy. His politics, forged during formative years of the Cold War, were hard-line anti-Communist and anti-Soviet. But unlike Eisenhower, whose instinctive conservatism drove him toward small government and small defense budgets, Kennedy wanted a liberal remake of the world. Under the driving and optimistic Kennedy, it seemed that anything was possible and that John Fitzgerald Kennedy could make it happen.

Kennedy knew little about intelligence when he arrived at the White House. He needed an interpreter but avoided the existing channels (DCI, secretaries of state and defense). Instead, he came to rely on an official on his White House staff who held the title of national security advisor. His choice for this relatively little-known office was McGeorge Bundy. Previous occupants of the position had been relatively obscure, but Bundy and his successors, Walt Rostow and Henry Kissinger, were to become household names. Power had shifted to the White House staff.

McNamara at Defense

For many years, the office of the secretary of defense had been weak and understaffed. The first secretary of defense had an office but little else. James Forrestal had no legal deputy, no staff, a miniscule budget, and no tools to curtail the interservice feuding which had erupted after the war. In 1949 President Harry Truman got a reluctant Congress to create a Department of Defense, with a staff and a budget to go with the solitary office of secretary. The Defense Reorganization Act of 1958 accorded the secretary more staff and more power. Subsequent secretaries (the despondent Forrestal having committed suicide) battled the three warring services through the Eisenhower years, and each was driven nearly to distraction.

John Fitzgerald Kennedy

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No one quite anticipated someone like Robert McNamara when the Defense Department was established. He had come over from industry. Brilliant and driven, he had become CEO of Ford Motor Company at the age of forty-four. McNamara was a Republican and had been so far from Kennedy's inner circle that the two had never met. He brought with him new techniques for managing large organizations. He was a centralizer par excellence, and he ruthlessly beat back internal opposition. McNamara resembled less a secretary than a cyclone.

Robert McNamara, secretary of defense under Kennedy and Johnson

The new secretary brought with him a management team headed by Charles Hitch of Remington Rand. Hitch had had a hand in inventing a new discipline called Operations Research. Essentially, OR, as it was called, tried to quantify the basis for all managerial decisions. Using scientific methods, he would reduce all the variables of a decision to a mathematical quantity and choose the most attractive. Hitch institutionalized the PPBS (planning, programming and budgeting system), a seven-year planning cycle which is still in use. As DoD comptroller, he scrutinized every element of the defense budget. The largest intelligence package was the newly created CCP, and Hitch and friends examined it rather thoughtfully every year.[1]

Kennedy was not happy with the doctrine of massive retaliation. He was an activist, and MC 14/2 (the document that codified massive retaliation in 1956) was essentially a defensive strategy. Instead, he opted for Maxwell Taylor's strategy of flexible response, which required conventional and unconventional forces to meet tactical threats. Finally codified in MC 14/3 in 1967, flexible response in fact dominated the strategy of both Kennedy and Johnson throughout the decade.[2]

NSA and the Cryptologic System at the Beginning of a New Decade

Flexible response caught off guard an unsuspecting SIGINT system that had been optimized over an eight-year period to warn of, and support, total nuclear war. Not enough

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attention had been paid to tactical SIGINT, not enough resources had been allocated. Servicemen had flocked to large fixed sites and had learned how to work strategic SIGINT problems. The weaknesses of the existing SIGINT system had been exposed [redacted] and the services were working on solutions. But no one was really ready for the decade of crisis and war that was to follow.

This became a decade of SIGINT centralization. Just as the McNamara Defense Department strove to tighten the reins, so NSA, bolstered by repeated recommendations by high-level boards, commissions, and committees, drew SIGINT control back to Fort Meade. True, there were countervailing forces, most notedly tactical commanders in Vietnam, who strove for a decentralized system. But at decade's end, the SIGINT system was far more tightly knit than it had been ten years earlier.

Former deputy director Robert Drake once jokingly formulated a law that said, "Centralization is always bad, except at my level." NSA employed Drake's Law to centralize its own system, but at the same time fought a spirited rear guard defense against McNamara's people at DoD. Centralization was fine, unless it meant giving up any powers to the Office of the Secretary of Defense (OSD). Thus NSA tried to stave off the intrusions of Hitch's budgeteers. Succeeding directors fought the authority of the newly created Defense Communications Agency. The creation of the Defense Intelligence Agency (DIA), too, represented a threat that NSA constantly crossed swords with. And NSA rejected the idea (pushed by Kennedy's PFIAB) that the DCI spend more time coordinating the entire intelligence effort, including the intelligence components of the Department of Defense. CIA was still regarded as a threat.

Even to defense intelligence specialists, NSA was still an obscure agency in 1960. It entered the decade known primarily as a communications research organization which played with expensive toys and produced huge volumes of highly classified translations in a fairly leisurely time frame. Analysts still worked basically an eight-to-five schedule, and shift operations, when mounted, were highly unusual and tailored for specific crises.

But pressure was mounting to change things. SIGINT had proved to be of great utility on a widening variety of targets. It had become the most prolific producer of strategic warning information, and President Eisenhower had demanded that such information get to him faster. Kennedy was an activist president, who demanded even quicker and more accurate responses. He prodded the system, and NSA responded. By the end of the decade, NSA's world would change.

Enter the New Director

Vice Admiral Laurence H. Frost, who arrived at the end of the Eisenhower administration in 1960, was better prepared for the job than any other previous director. He had had three prior tours in intelligence, including a two-year tour as Canine's chief of

staff, and he had been director of Naval Intelligence. In addition, he had achieved distinction as a ship driver in two wars. The Army and Air Force had had their turns as DIRNSA – now it was the Navy's turn.

Frost contributed to SIGINT centralization by revoking the independence of the Soviet Navy problem at NSA. A compromise device instituted by Samford to bring the SCAs more fully into the NSA system, it had resulted in divided loyalties and jurisdictional disputes. In March of 1962 Frost resubordinated the chief of the Soviet navy problem to DIRNSA, removing him from the Navy chain of command where he had been directly subordinate to the director of the Naval Security Group. The independence of the Soviet ground and air problems lasted not much longer than that.[3] But Frost himself lasted only two years in the job, and aside from that organizational change, left behind no distinctive legacy (for reasons which will be made clear on p. 340).

Laurence H. Frost

People, Money, and Organization

By the time Kennedy arrived in the White House, cryptology had become the elephant in the intelligence closet. McGeorge Bundy discovered that of the 101,900 Americans engaged in intelligence work, 59,000 were cryptologists of one stripe or another (58 percent). Of those, about half worked in the Continental United States, while the other half plied their trade overseas at collection and processing sites. NSA had 10,200 assigned (17 percent of the total) but only 300 overseas billets. The field sites were still the domain of the SCAs. At NSA, the military filled 25 percent of the billets.[4]

Of the three services, NSG was still the smallest, with 6,900. AFSS, with 21,200, and ASA, with 20,400, dwarfed the Navy in size, although NSG made up in quality what it lacked in quantity. Cryptologic manpower was projected to grow through the decade until it would hit a peak of 93,067 in fiscal year 1969.[5]

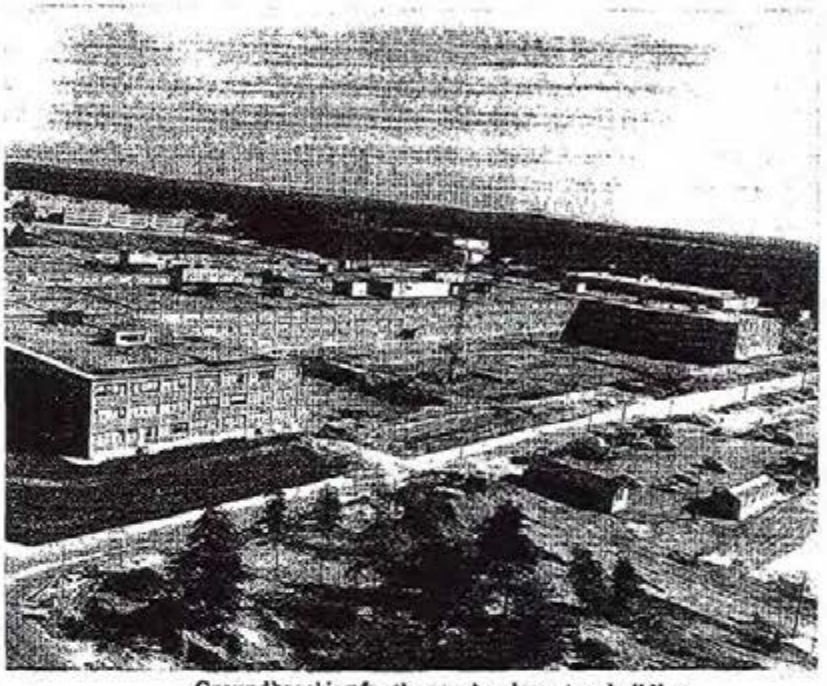
Within NSA's Production organization, fully 50 percent worked the Soviet problem. Another 8.4 percent worked in Acom (Asian Communist) while 7.6 percent were in Allo (all others, i.e., Third World). The remaining 35 percent was allocated to centralized technical or staff functions such as machine processing and collection support (including ELINT).[6]

NSA's complex at Fort Meade underwent a building boom in the 1960s. Ground was broken for the nine-story headquarters building, and it was occupied in 1963. (General Canine attended the ceremony, and his wife cut the ribbon.) The new COMSEC building was dedicated in November 1968, and the quarters on Nebraska Avenue were finally given back to NSG. In the same year, owing to a moratorium on military construction, NSA began to lease three newly constructed "tech park" type buildings at Friendship Airport (which later changed its name to Baltimore-Washington International, or simply BWI). The complex was called Friendship Annex and came to be abbreviated as FANX. In 1961 NSA acquired the buildings that had housed the old Fort Meade post hospital and moved the training school from downtown Washington. The training component, newly renamed the National Cryptologic School, was one of the first occupants of the Friendship complex, gladly abandoning the antiquated hospital structure.

A New Reorganization

Following the Martin and Mitchell defection in 1960, the director established a management board to review NSA's organization. It was the first comprehensive review since the McKinsey study in 1956. This time, instead of an outside management team, Admiral Frost used home-grown talent. The board was chaired by Frank Rowlett (who had rejoined NSA during the Samford administration), Oliver Kirby from Prod, Brigadier General George M. Higginson, Maurice Klein (the head of personnel), and Dr. William Wray, with Dr. Milton Iredell as recorder.[7]

Its report, handed to Frost in July 1961, amounted to a reversal of the McKinsey approach. What was needed was not decentralization (a key element of the McKinsey report) but centralization. The director's staff had grown too small, and too many functions had been farmed to Prod. "The Board found no effective mechanism within the existing organization to exercise the strong centralized control of national policy, planning, and programming functions, which appears essential to insure concentration on and responsiveness to the Director's national responsibilities." Thus it created a policy staff to manage Second and Third Party affairs, to do central budgeting for the CCP and to effect systems planning and evaluation. It was similar in approach to that being used by McNamara's people in OSD (although probably no one at NSA would admit it).



Groundbreaking for the new headquarters building

The Friendship Annex (FANX) complex

The naming conventions for office designations was also tossed out the window. Martin and Mitchell had, at their press conference, reeled off a long list of NSA organizations, and it would be necessary to change to a new system. Out were the pronounceable syllables, in was the obfuscating alphanumeric system. Key components were to be designated by a single letter (R for R&D, P for Production, etc.), and subordinate elements would carry trailing numbers.[8]

PROD itself consisted of three key components:

A the Soviet problem;

B everything else, including former ACOM and ALLO;

C technical functions such as machine processing, central reference, and the former office of collection (including, for the time, ELINT processing).

Included on a central PROD staff would be a permanent watch office and an office of cryptologic research (an early version of P1). The board also recommended that the arrangement come to an end whereby the chiefs of the Soviet naval, ground, and air problems were subordinated to their SCA chiefs. Frost (as noted above) acted on this the next year.[9]

The board recommended that R&D be strengthened to handle increased responsibilities. (This was in accord with, and partly in response to, DoD-level recommendations that NSA take a more active hand in the development of cryptologic equipment across the board.) The R&D organization should assume policy direction on major new projects such as the Air Force's 466L collection system and the space collection (Spacol) systems . The COMSEC R&D function, which historically shuttled between COMSEC and R&D, returned to the research organization.[10]

Finally, the board took another swipe at the continuing lack of a career civilian cryptologic service. This had been a big issue during the Canine years, and fragments of the system had been put in place. But a systematic professionalization system, with categories and criteria, had never been implemented. Under Samford the proposals had languished, and now another board made another recommendation. It was a continuing irritant.[11]

Changing the Field Organization

While Europe remained stable, cryptologic organization in the Pacific was changing. The switch of NSAPAC from Tokyo to Honolulu, already mentioned, occurred under Frost in 1962. In the same year ASA and USAFSS moved their own regional headquarters to Hawaii to be in synch with military organization in the theater. This was also a time when second-echelon processing in the Pacific finally came together in [redacted] In the fall of 1961 a new processing organization, Joint Sobe Processing Center, opened its doors.

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The first commander was an army colonel, Kenneth Rice of ASA, but there was also a large contingent of NSA civilians working [redacted] As time went on, it acquired processing responsibilities for North Vietnamese air, air defense, General Directorate of Rear Services (GDRS), and shipping.[12]

Bucking the trend toward centralization, AFSCC remained operating in San Antonio. NSA wanted to move it to Fort Meade but did not have the space. This problem would not be solved until the Friendship complex was leased in 1968. Meanwhile, AFSCC continued to work the third echelon aspects of the Soviet air problem, and it even acquired the [redacted] problem under an agreement negotiated with ACOM early in the decade.[13]

In the meantime, NSA continued to set its own targeting priorities. Systems were devised throughout the 1950s and 1960s to allow for the expression of customer requirements, but none really had any teeth, and they were so general ("copy and report the world") that NSA was forced to prioritize for itself.

The best indication of where NSA's priorities lay was the Agency's input to the new PPBS system in 1961. NSA thought that exploiting [redacted] was Job One, followed in order [redacted] It is fair to note that the Soviet problem encompassed four of the seven and that Cuba was not among the listed requirements. This omission would not last long.[14]

THE CRYPTOLOGIC MAP IN THE MID-1960s

By the time NSA was eight years old, the cryptologic map had exploded. NSA and the SCAs were in seventeen countries plus the Continental United States, Alaska, Hawaii, and Puerto Rico. The biggest growth was in Germany. The three SCAs had major field sites in thirteen locations, and NSA had a theater headquarters in Frankfurt. [redacted]

Europe

Although the Robertson Committee warned against vulnerability to Warsaw Pact forces, collection sites were still strung out in a wide arc east of the Rhine. [redacted]

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[redacted] ASA began occupying the "Rubble Pile" late in 1962 or early in 1963.[15]

Across Western Europe, new U.S. SIGINT sites were springing up. [redacted] ASA and AFSS were building sites [redacted] and AFSS had occupied land on Crete (a Greek possession in the Mediterranean) and Wheelus Air Base in Libya. (Wheelus was deactivated in 1960 rather than pay additional rent to the increasingly nationalistic Libyan government, and the mission was moved to Crete.) All these sites were important because of the geographic cushion they gave from the potential advance of Soviet divisions.

Turkey

As a base of [redacted] however, no country was more important than Turkey. The Soviet missile testing program drove the Turkey option, and in the 1950s the administration became increasingly close to the Turkish government. In 1955 Turkey joined the Baghdad Pact (a long-forgotten Eisenhower initiative to knit together the pro-Western countries on the southern periphery of the USSR). Five years later a relatively antiseptic military coup placed the pro-American General Menderez in power in Ankara and ushered in a period of harmonious relations between the two countries.[16]

The United States had been frantically building collection sites in Turkey in the 1950s. [redacted]

[redacted]

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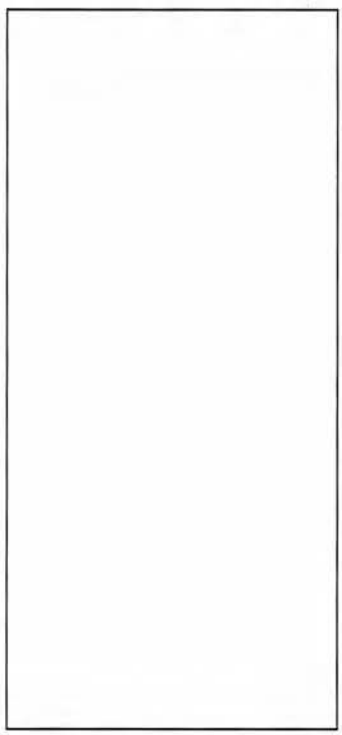

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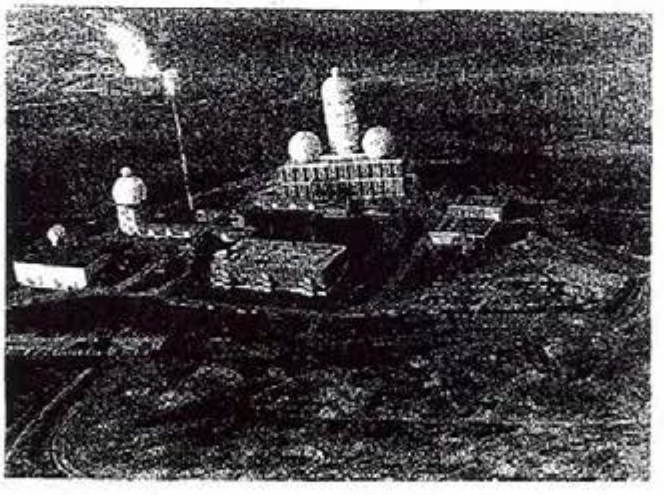
ASA's first collection effort on Teufelsberg, established in 1961, operated out of vans.



The Rubble Pile
(Teufelsberg, West Berlin, as it looked when completed)

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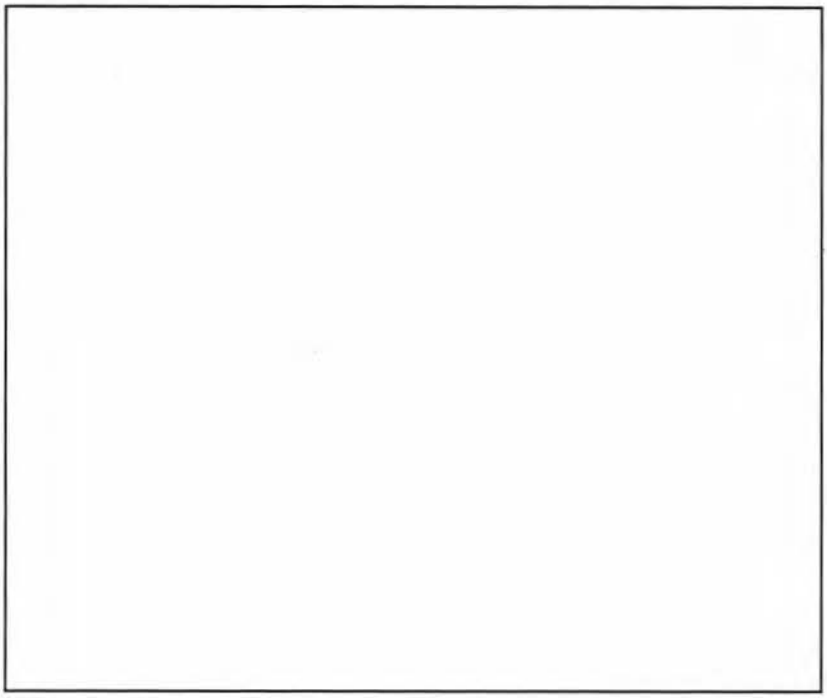

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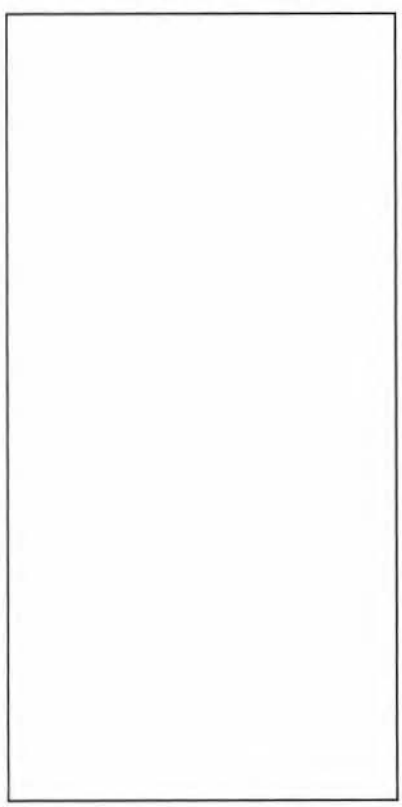

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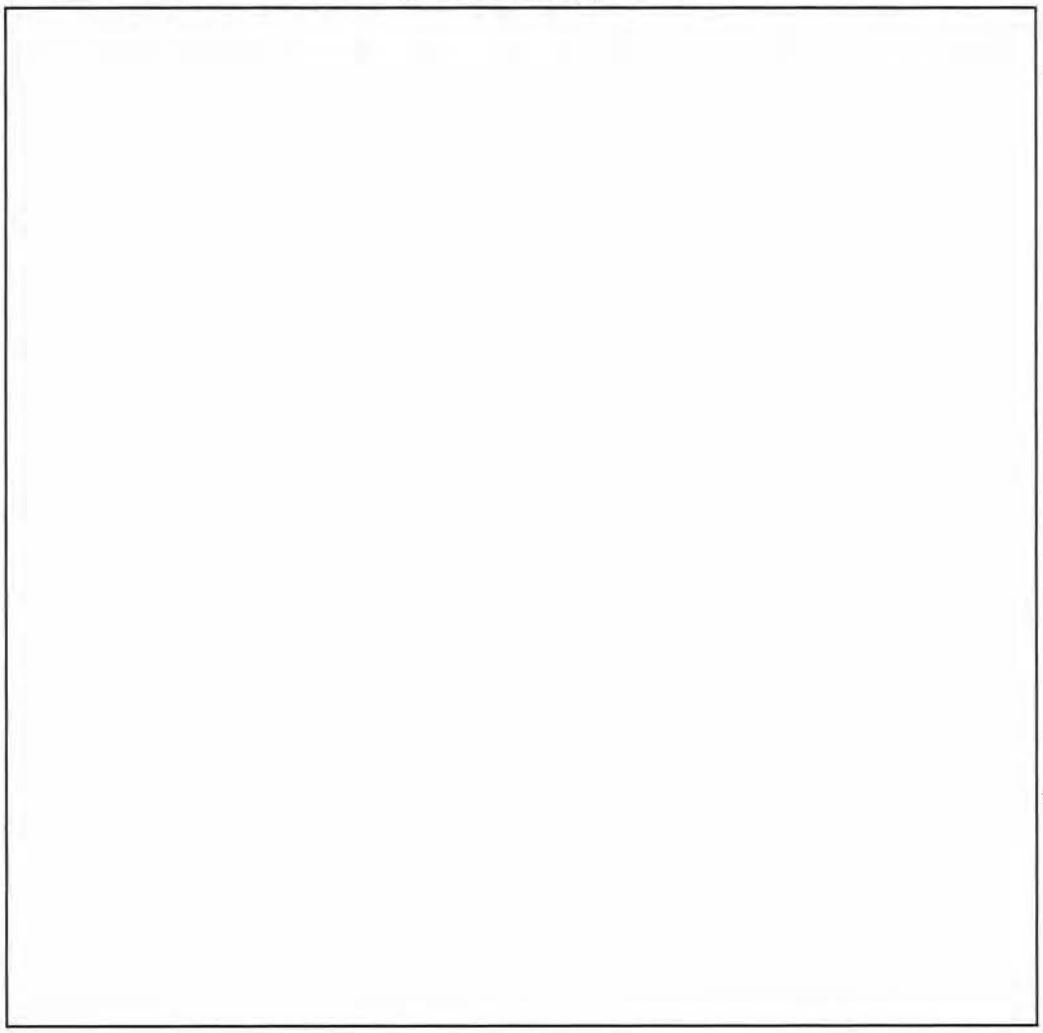

Pakistan

Like Turkey, Pakistan became geopolitically important to the Eisenhower administration because of its concern over the Soviet menace. Pakistan, Iran, and Turkey were lumped together by Secretary of State John Foster Dulles as the "Northern Tier of defense," and the administration cultivated all three. During the 1950s they were successful. Pakistan joined both the Baghdad Pact and the Southeast Asia Treaty Organization (SEATO). In 1954 Eisenhower announced that Pakistan would receive American military assistance.[22]

John Foster Dulles had a friend in Karachi. His name was Mohammed Ayub Khan (normally referred to as "Ayub"), and he happened to be the military chief of staff. Ayub

worked consistently in the direction of close American-Pakistani ties. When, in 1958, he took over the government in a coup, the Eisenhower administration was hopeful that relations would grow even closer. The signing of a mutual assistance agreement in 1959, whose wording appeared to leave no doubt that the United States would defend Pakistan against its enemies, seemed to be a harbinger of the future. [23]

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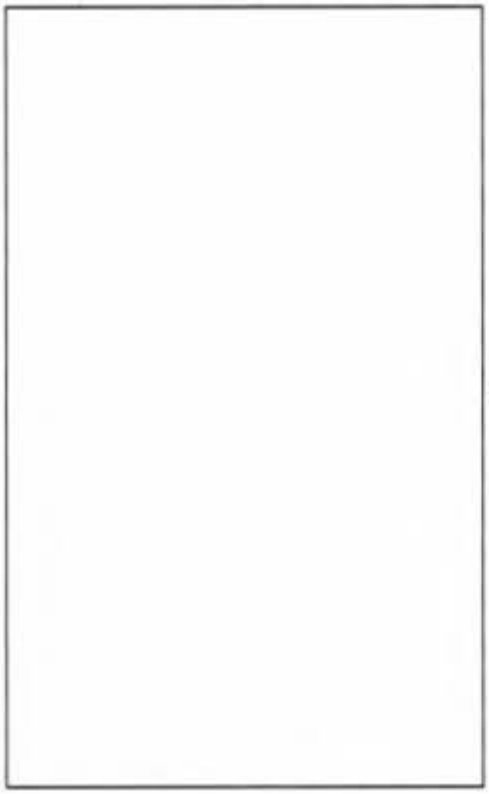

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The Far East

Diplomatic problems of the magnitude of [redacted] and [redacted] did not present themselves in the Far East. American SIGINT sites in the former American colony of the Philippines remained unquestioned and unnoticed at Clark Air Base, north of Manila, and San Miguel near the giant Subic Bay Naval Base. [redacted] Okinawa had become a virtual aircraft carrier for American SIGINT collection, with sites at Sobe, [redacted] Hanza, and Kadena (where the Air Force had begun an airborne intercept program). Processing operations were becoming centralized on the island, partly a result of the recommendations of the Robertson Committee in 1957.

Japan was like Germany – close to the enemy, an ideal SIGINT platform, and in a quasi-subordinate diplomatic status resulting from the American occupation. SIGINT sites at [redacted] Misawa, and Wakkanai provided the Americans with excellent access to Soviet Far East, Korean, and Chinese communications, [redacted]

Korea, still reverberating from the late war, remained heavily outfitted with SIGINT sites. An early plan to close sites after the war was over had been scotched, and the peninsula was still dotted with tactical ASA and AFSS units.

On the Pacific rim, Alaska, Hawaii, and Guam rounded out the SIGINT structure. Hawaii was important as the headquarters of CINCPAC (with resulting SIGINT representation) and as a communications relay in the long HF hop across the Pacific. Alaska was far more important from the collection standpoint, fronting as it did the Soviet Arctic. AFSS virtually took over the SIGINT mission there, doing HF and VHF collection from various places, and flying ACRP aircraft out of Eielson AFB. The most famous (or infamous) site was on Shemya, a miserable, wind-swept island known affectionately as "The Rock," first occupied by SIGINTers in 1955. [redacted]

Back Home

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In the Continental U.S., ASA maintained major collection sites on both coasts, at Vint Hill Farms in Virginia and Two Rock Ranch in Petaluma, California. These had been important sites during World War II, but they were gradually losing their importance to the more far-flung European and Pacific collectors. Navy SIGINT operations consisted primarily of DF sites along both coasts and remained fully as important as during the war because their targets, being mobile, came to them rather than the other way around. In the Caribbean, the Army dominated the Panama area with a site at Fort Kobbe, while the

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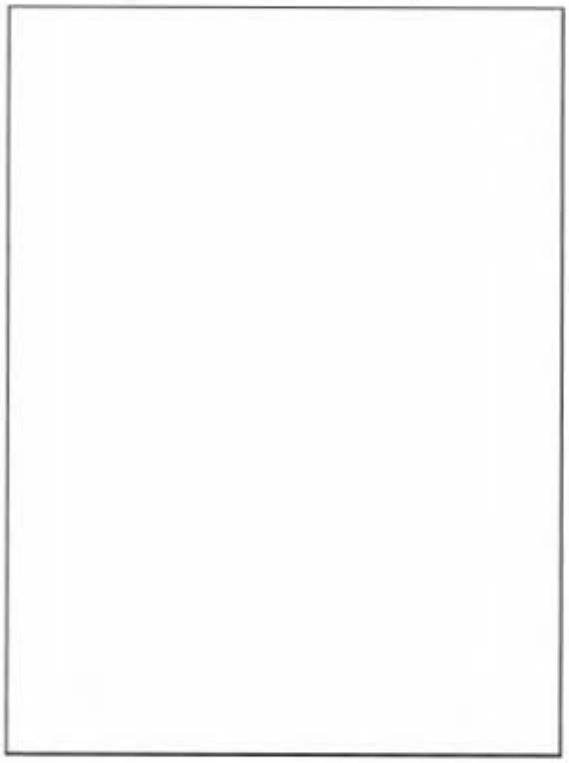

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Navy maintained collection in Puerto Rico. The nice thing about collection close to home was that it minimized costs (collection from foreign locations being outrageously expensive), and it was not burdened with diplomatic problems. But the disadvantage was hearability, and the U.S. collection base was slowly being eroded by the success of places like Peshawar, Wakkanai, [redacted] The future (at least the immediate future) was in exotic (and expensive) locations.

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New Collection Systems

All three services modernized their field site equipment to equip the new sites being built around the world. But during the 1950s no SCA was as aggressive as AFSS. The 1950s marked the birth of a major new HF and VHF collection system whose trademark became a huge Wullenweber-style antenna called the FLR-9. Its distinctive appearance came to symbolize SIGINT to the outside world.

The Navy was actually the first SCA to become involved with the Wullenweber design. NSG needed a worldwide DF system, and after having experimented with Wullenweber designs (chapter 4, p. 138), they settled on a system which came to be known as the FRD-10. A large circularly disposed antenna array (CDAA), the FRD-10 divided the HF spectrum into two bands, and thus it had double rings of antenna elements in a ring 873 feet in diameter. RF cables from the antenna elements were routed into an intercept building in the center of the array. This was a cheap and secure option but limited the size of the building. But DF, rather than collection, was the primary objective, and owing to an NSG strategy that scattered many small sites around the world (rather than concentrating into a few large ones), the size of the building was not a big issue.

Beginning its systems R&D work in 1956, NSG fielded its first CDAA at Hanza, Okinawa, in 1962. By 1966 they had built thirteen FRD-10 sites in three foreign countries, the U.S., and its territorial possessions.[27]

Among the three SCAs, Air Force Security Service began life in the worst shape from an equipment standpoint because it simply inherited cast-off ASA equipment. But the Air Force emphasis on building its own, completely independent and self-sufficient SIGINT system resulted in very large amounts of money being poured into the USAFSS coffers. It also resulted in an AFSS R&D organization that was larger and better funded than the other two SCAs. In the early 1950s, AFSS set to work designing a new collection system from the ground up.

The proposal went forward as a package under Gordon Blake, the new USAFSS commander, in March of 1957. It was called Project 466L, and included three components:

a. GLR-1, a VHF system, optimized for ELINT collection and first-echelon processing.

FIRD-10, Hanza, Okinawa

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b. [redacted] the HF system, optimized for COMINT. The distinctive antenna was called FLR-9, but the package included more than just that.

c. [redacted], a VHF airborne system. It never got past the prototype stage.

In addition, the 466L project came to include computers for second-echelon processing. It was a complete field system, minus the buildings. Sylvania won the contract to build the systems.[28]

The most successful portion of the system was the FLR-9 component. With a circumference of 1,200 feet, it was the largest single antenna the U.S. ever designed for SIGINT. It was arranged in three circular rings, each with antenna elements optimized for a certain frequency band, and a 120-foot-high reflecting screen. Antenna leads were routed into a central "roundhouse" where complex beam-forming equipment and DF goniometers resided. From there a cable trench took coaxial cables outside the ring to the RF distribution room of the collection building. The distribution room looked a lot like the old manual "spaghetti boards" that predominated at standard sites, but without the people. An operator selected antennas by pushing a button on the position rather than calling to an RF distribution operator on an intercom to reconnect cables. Early in its life someone called it an "elephant cage," and the name stuck.[29]

The above-HF portion of the system, called GLR-1, was to be optimized for ELINT collection and first-echelon processing. [redacted] Hof, Samsun, and Wakkanai, with partial systems at Misawa (processing only), Trabzon, Shu Lin Kou, and Northeast Cape. At a projected cost of [redacted] a copy, GLR-1 was hideously expensive. It was also fraught with technical risks which ultimately jeopardized the entire project.[30]

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NSA Gets Involved

NSA watched from the sidelines in the mid-1950s as NSG and AFSS independently designed and fielded separate collection and DF systems. The Agency urged, with no result, that the two services compromise their differing requirements and develop a single system good for both tasks. Then in 1957 NSA became directly involved when it was asked by the Air Force to review the AFSS 466L proposal. The level of involvement increased in 1958 when NSCID 6 gave the Agency a more explicit role in guiding and coordinating service cryptologic R&D.

NSA opposed the way AFSS was proceeding with the project. Apart from the lack of agreement between AFSS and NSG on harmonized development, NSA was concerned that:

a. The project, especially the GLR-1, was far too expensive;

b. Major components were overdesigned (Again, GLR-1 was the culprit.);

c. AFSS was proceeding with a generalized requirement, while NSA believed that AFSS should proceed with a "special purpose" approach, and that this would reduce costs;

d. Sylvania, selected as the prime contractor for the FLR-9, lacked experience in several important areas;

e. AFSS had planned no test models of either system but had designated the initial sites (Hof and Samsun for the GLR-1 and Chicksands and San Vito for the FLR-9) as "prototype sites." Nonetheless, AFSS planned to contract for the follow-on sites before knowing how things were working out at the prototypes.[31]

In 1960 NSA took its concerns about the 466L system to DDR&E and convinced him to freeze money for out-year funding. At this point the 466L prototype design was thoroughly reworked by NSA and AFSS, and many of the GLR-1 "frills" were eliminated before the Wakkanai system was built. So extensive were the changes that the system was retitled and became known as FLR-12. The prototype sites were retrofitted to the new FLR-12 design.[32]

Security Service planned originally for seven FLR-9 sites: San Vito, Chicksands, Misawa, Clark, Peshawar, Karamursel, and Elmendorf. As a result of experience with the prototype systems and NSA participation in the later R&D stages, the follow-on sites eliminated some of the features, such as automated DF flashing, that had made the earlier sites so expensive.[33] Owing to aforementioned diplomatic problems with Pakistan, the Peshawar system was never built.

Alone among the SCAs, ASA showed little initial interest in CDAAs. But by 1960 the command was looking more closely at the future of the FLR-9 and was attending joint-service planning meetings at NSA. Soon thereafter ASA decided that its newly planned intercept site at Udorn in northern Thailand would be a CDAA based on the Air Force's FLR-9 design. They named the project [redacted] and the new site (called Ramasun Station) was opened in 1965. When ASA began planning the consolidation of its three largest German sites (Rothwesten, Herzo Base, and Bad Aibling) into a single super-site, the FLR-9 was again the option selected. By coming into the game late, ASA avoided the substantial development costs that AFSS had incurred. They simply bought "off-the-shelf" designs.[34]

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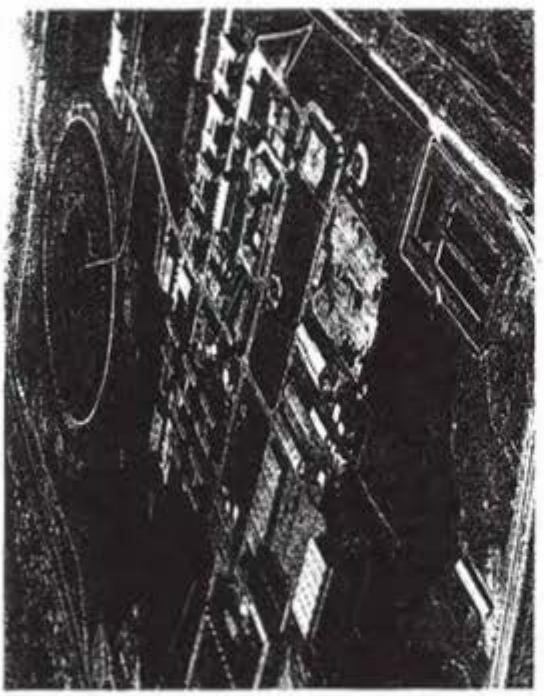

FLR-9, Ramasun Station, Thailand

HANDLE VIA TRIGRAM KEYHOLE COMINT CONTROL SYSTEMS JOINTLY
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DOCID: 523682 REF ID:A523682

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The Airborne System

USAFSS remained the biggest user of airborne collection platforms. Called the Airborne Communications Reconnaissance Program (ACRP), the program then consisted of a fleet of nineteen RC-130s configured with ten COMINT intercept positions each. The emphasis in those days was on VHF voice, especially GCI communications. Most of the routes were along the periphery of the Soviet Union and China, standing well back from the border to avoid another shootdown similar to the 1958 incident over Armenia. The command never experienced another shootdown.[35]

In the late 1950s Security Service began working on a new program that would bring the RC-135 airframe into the ACRP program. It was developed from the KC-135 tanker used throughout SAC. Owing to the fuel capacity, the aircraft could routinely fly in excess of sixteen hours (the RC-130 was generally limited to an eight-hour mission) at altitudes topping 40,000 feet. USAFSS initially funded three airframes, packing fifteen intercept positions into its innards. The flying partner was SAC, rather than a theater component command, and [redacted] positions were converted to ELINT, to be manned by SAC electronic warfare officers. The program was called [redacted], and it began flying out of Eielson AFB, Alaska, in early 1963. The RC-135 became the Cadillac of airborne collectors and eventually took over the entire job from the RC-130s.[36]

In the 1960s SAC continued its own SIGINT airborne collection program. The SAC program [redacted] initially used RB-47s with a limited ELINT capability. Later the program [redacted] converted to RC-135s with ELINT collection being the objective. COMINT positions on board (manned by USAFSS operators, and [redacted] served for advisory warning.[37]

As for the Navy, it continued to rely on its fleet of seven EC-121s, although a newer and better aircraft, the P3 Orion, was first delivered in 1962. It would eventually replace the slower 121s, whose vulnerability was convincingly demonstrated when the North Koreans shot one down in 1969 (see p. 462). The Navy program also retained its specific fleet support role, and it was always regarded as something of a maverick by NSA because its tasking was entirely a Navy matter.[38]

In the rush to collect Soviet telemetry, the U.S. employed a wide variety of collectors. Ground-based sites could never be certain to collect all the telemetry available, the most significant gap being telemetry that was transmitted on the pad before launch and immediately on lift-off. The information from this stage of telemetry was critical to an assessment of missile capability, and the only way to get it (before the advent of overhead collectors) was through airborne collection along the southern Soviet periphery. [redacted]

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The airborne reconnaissance program occupied the thoughts of President Kennedy in the early days of his administration. He had learned that Khrushchev was planning to turn over the surviving RB-47 pilots (shot down in the White Sea in July 1960) as a kind of diplomatic peace offering to the incoming administration. But nothing had been done to avoid future incidents, and Kennedy was anxious to insure that Khrushchev not be able to again hold captured fliers as diplomatic pawns. The White House demanded action.[41]

At the time, six advisory warning programs were in existence in various theaters, all with different criteria and warning methods. Some airborne programs (the Navy being the most prominent example) still flew without any warning capability at all. In 1961 the Pentagon took two actions to try to establish a program that would satisfy the White House. First, it created the Joint Reconnaissance Center, which would be responsible for coordinating and approving all peripheral reconnaissance worldwide. Second, it directed that a USAFSS advisory warning plan be modified and adopted worldwide.[42]

The USAFSS program, which had originated in the Far East in the early 1950s, had received NSA blessing in 1961. The chief impediment to its adoption worldwide was lack of agreement on a standard communications system. The Pentagon finally settled on the SAC single sideband communications system, which was a worldwide HF system accessible to all parties. The Navy held out until 1962, but finally agreed to the standard plan, and the new advisory system, called White Wolf, was adopted the following year.[43]

The shootdowns dropped to almost zero – the only notable exception was the 1969 shootdown of a Navy BEGGAR SHADOW mission along the coast of Korea, an incident that precipitated the creation of NSOC. The danger of peripheral SIGINT airborne reconnaissance missions becoming diplomatic contests dropped almost out of sight, and a long-standing source of diplomatic embarrassment simply went away.

The TRS Program

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The Soviet SIGINT trawler program has been of such long standing and so visible that it is often forgotten that the United States, too, at one time had its own SIGINT trawlers. It was called the Technical Research Ship (TRS) program.

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[redacted] was the beginning. NSA had no collection [redacted] 1956, and, land-based sites being so difficult to acquire, it requested that NSG look into the possibility of building a floating collection site [redacted] The Navy thought that the need could best be satisfied by taking some World War II *Liberty* ships (essentially, freight-haulers) out of mothballs and converting them to SIGINT use. The Bureau of Ships estimated that it could be done for about $4.5 million per ship and would require eleven to twelve months.[44]

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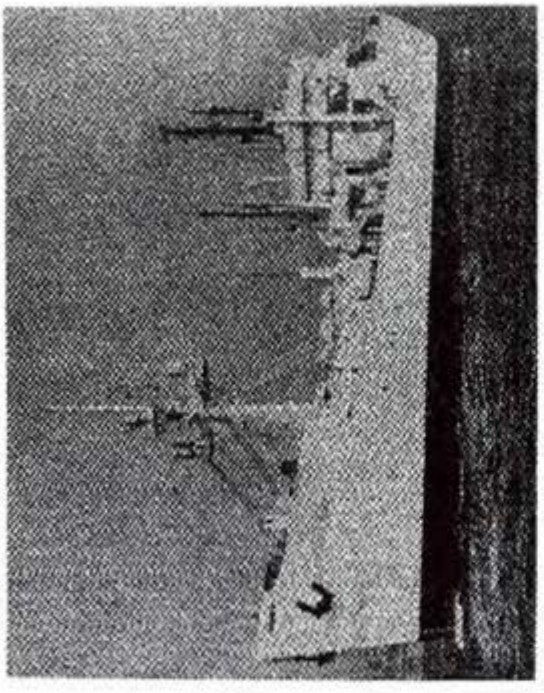
Defense budgets were slim in the late 1950s, and the first money was not in the budget until fiscal year 1960. The first ship selected, the USS *Oxford*, put to sea in 1961. She could do eleven knots [redacted] Not much was happening [redacted] at the time, so the *Oxford*'s first cruise was set for the west coast of Africa later in the year. Instead, in November it was diverted to the Caribbean to cover a burgeoning crisis between the United States and Cuba. Already, the TRS program, only one ship large, was showing how flexible it could be.[45]

Enthusiasm over the potential of such floating collection sites led NSA to cut corners in order to get a second ship on line quickly. In early 1961 the Agency, beset with insistent collection requests by the DCI, found that the Military Sea Transport Service (MSTS) had a smaller, slower vessel that could be converted in fairly short order for only $2.5 million. Despite being smaller, the *Valdez* was crammed with twenty-two positions, and began her first cruise, to Africa, about the same time the *Oxford* was deployed to the Caribbean.[46]

There developed from this decision two sorts of TRSs. The first, of the *Oxford* class, was a wholly Navy owned and manned ship, larger and faster by a few knots. The second, owned by the MSTS, was a coastal type vessel with a civilian crew to go along with the NSG people in the SIGINT compartment. The Navy ships were designated USS vessels, and by mid-decade the navy component of the TRS fleet consisted of five ships: the *Oxford*, *Georgetown*, *Jamestown*, *Belmont*, and *Liberty*. The smaller maritime vessels were designated USNS and consisted of only two ships: the *Valdez* and *Muller*. In 1968 a third was added to this list: USS *Pueblo*.[47]

As for intercept positions, the ships did not vary much. The *Oxford* class typically carried, when fully outfitted, between twenty and twenty-five positions, while the *Valdez* class had between eighteen and twenty-one. Where they differed was in speed and general seaworthiness. Clearly, the *Valdez* class represented a less capable, but cheaper, option.[48]



[redacted]

HANDLE VIA TALENT [redacted] COMINT CONTROL SYSTEMS JOINTLY
NOT RELEASABLE TO FOREIGN NATIONALS

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One variant of this program was established specifically to monitor [redacted] In late 1961 there arose an urgent requirement to monitor a [redacted] An MSTS charter vessel, the *Robinson*, was hastily converted in only a few days and sailed from New York in January 1962. Its SIGINT manning was unique for a vessel – it was a combination of NSG and ASA operators in a partnership similar to the [redacted] program [redacted] at the time. In February the *Robinson* relieved the *Valdez*, which had been pressed into emergency service [redacted]

In May 1963 there was another urgent collection requirement. The *Robinson* was headed for port after a long cruise, and so JCS arranged for NSA to use an [redacted] USAFSS provided an equipped van and ASA furnished ELINT operators for the cruise. [redacted] stayed on station through July, when the *Robinson* returned. So began a collection program that was to result in the [redacted] vessel which became an important [redacted] collector in later years.[49]

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THE CUBAN MISSILE CRISIS

We were eyeball to eyeball, and I think the other fellow just blinked.

Dean Rusk, 28 October 1962

About the greatest crisis of the Cold War, three things can be said that concern cryptologists:

1. It was very definitely not precipitated by SIGINT warning. It was, and always has been, regarded as a crisis initiated by photographic intelligence, and there is nothing in the historical record to alter this statement. It marked the most significant failure of SIGINT to warn national leaders since World War II.

2. SIGINT played a very significant role in the unfolding crisis, a role which subsequent publicity and declassification of documents have not fully revealed.

3. It marked a watershed, like the 1956 event, in the way cryptologists do business.

~~TOP SECRET UMBRA~~

The Cuban situation began on its own. Years of poverty and political repression on the island ended in a young revolutionary, Fidel Castro, marching into Havana in January of 1959. But hopes that it would develop into a pluralistic, liberal-style government were quickly dashed, as Castro put in place more and more institutional trappings of a solid Communist dictatorship. Experts eventually conceded that he had probably not been driven into the arms of the Communists by American hostility, but had planned it all along. Diplomatic contacts with the USSR had begun almost immediately, with the arrival of Soviet foreign minister Anastas Mikoyan in February of 1960 to open a Soviet trade exposition. Formal diplomatic ties were established in May.

A young Fidel Castro only days after his guerrilla army marched into Havana in 1959

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The SIGINT Effort

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SIGINT also tracked burgeoning trade between Cuba and the Soviet Bloc. Although cargo manifests were rather vague, it was becoming clear through SIGINT (as with a variety of other intelligence sources) that much of the trade was military. In July 1960 the first substantial military aid arrived in Havana, and it included Czech small arms and ammunition and five MI-4 helicopters. Soon thereafter Cuban pilots were noted in SIGINT training in Czechslovakia, originally on piston-engine fighter trainers.[50]

The tiny Cuban shop at NSA lived off intercept from the Navy site in Puerto Rico and the ASA station at Vint Hill, Virginia, and had virtually no traffic from Cuban internal nets. Requirements against Cuban military targets were almost nonexistent.[51]

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

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NSA had indications through contacts in the commercial world that Cuban internal communications would eventually go to microwave.

But the target, while audible, was too weak to be copied at that distance. A new approach was needed, and NSA requested that the Navy try to intercept the microwave system from one of its afloat direct support units (DSUs). The first hearability testing was done by NSG operators aboard the USS *Massey*, which circumnavigated Cuba in July 1960.[52]

The Defense Department already had non-DoD competition. Following Castro's successful revolution, it was used primarily to support CIA's covert operations in Cuba.[53]

By the Bay of Pigs failure of April 1961, NSA's level of effort had increased people but was still not a large-scale effort. At that point the Kennedy administration began directing a major concentration of intelligence assets against Cuba, and SIGINT resources increased rapidly. A year later people were involved, and by October 1962, were allocated to the Cuban problem.[54]

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The Berlin Wall

Although it began as a uniquely Caribbean phenomenon, Cuba quickly became a part of the international struggle between the U.S. and the Soviet Union. It came to be a pawn in the Cold War, a piece of Communist real estate located within the American sphere of geographic influence. On the other side was Berlin, Western-owned property clearly located within Khrushchev's zone of control. Khrushchev understood the relationship between the two territories and exploited them adroitly.

Berlin as a crisis first erupted in 1948 when Stalin cut off land access to the city. The resultant Berlin Airlift lasted for just over a year and marked a significant test of American resolve. It remained a potential sore spot, and in 1958 Khrushchev announced that in 1959, lacking an overall settlement of the Berlin problem, he would give control of East Berlin to East Germany. Although the Eisenhower administration managed to talk the problem nearly away, it was clearly only a temporary respite. In 1961 Khrushchev again increased pressure on the city, and it seemed that Berlin, rather than Cuba, would be the flashpoint for war.

At midnight on 11 or 12 August 1961, heavy trucks and troop carriers rumbled to the demarcation line between East and West Berlin. Construction crews jumped out and, under the guard of East German soldiers, began flattening a thin strip of land and

stringing barbed wire in the middle of the zone. The Berlin Wall, soon to become a high concrete and cement block barrier, was begun.

Kennedy was vacationing in his yacht off Hyannis Port, and he was not notified until noon on the 13th. He was reportedly furious, and he summoned CIA director McCone to examine the intelligence failure. CIA, in sifting through everything that had been available, did find one significant bit of information. A 9 August COMINT report of an East German Communist Party message discussed plans to begin turning all foot traffic back at the sector border, and the Watch Committee assessment had stated that this might be the first step in a plan to close the border.[55] McCone could come up with no other predictive information; the Berlin Wall was still regarded as an intelligence failure, despite the existence of fragmentary COMINT.

Kennedy denounced the Berlin Wall, and American-Soviet relations worsened. On 1 September the Soviets ran their first nuclear test since 1958, breaking an informal moratorium that had been in place since the middle of Eisenhower's second term.

But the one bright spot was in comparative strategic strength. The so-called Missile Gap, which had loomed so large in 1960, had become a proven chimera. In September 1961 Lyman Lemnitzer, the chairman of the JCS, briefed Kennedy that the U.S. enjoyed a 7 to 1 advantage in strategic nuclear delivery capability. The Soviets still had only ten to twenty-five operational ICBMs, and Kennedy could launch more than 1,000 delivery systems carrying 1,685 nuclear warheads, compared with 253 for the Soviets.[56]

The Buildup to Crisis

In late 1961, as a result of the Kennedy administration's continuing concern with Cuba, the intelligence community was directed to increase its efforts against the island. NSA instituted a rapid buildup of the problem, almost certainly in response to this edict.[57]

NSA's initial plan was forwarded to McNamara in November. It included manning additional positions at the Navy site in Puerto Rico, bringing TRS resources into the picture, and instituting a new program for translating Cuban communications. This and an augmented plan presented in February of 1962 were pushed rapidly ahead.

Given the go-ahead, NSA assembled cryptologic resources with remarkable speed. The most significant addition was the *Oxford*. This first TRS had been launched in 1961, and the early plans were for an African coastal cruise. But NSA diverted the vessel to copy the new microwave communications in Cuba. [redacted] The *Oxford* conducted a hearability survey off the coast of Cuba in December 1961, and it soon began forwarding [redacted] intercept to NSA.[58]

E.O. 13526, section 1.4(c) | Withheld from public release Pub. L. 86-36

The *Oxford*
The first TRS, the *Oxford*, "won its spurs" during the Cuban Missile Crisis.

HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY
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~~TOP SECRET UMBRA~~

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The linguist project, called [redacted] (because it occupied quarters in the old Fort Meade Post hospital) employed native Spanish speakers in a semicleared status until their expedited clearances came through. They were employed translating the huge volumes of Spanish voice intercept being collected by the *Oxford* and the ACRP (see below).[59]

[redacted]

All this was accompanied by explosive growth of NSA's Cuban shop. At the time the Cuban problem was worked in an organization called B1, whose chief, Juanita Moody, had arrived from the Soviet problem in July 1961. Moody would become a central figure in NSA's Cuban response effort, presiding over an effort that went from [redacted] analysts in April 1961 to [redacted] people in October 1962.[61]

[redacted]

E.O. 13526, section 1.4(c)(d) | Withheld from public release Pub. L. 86-36

Withheld under statutory authority of the Central Intelligence Agency Act of 1949 (50 U.S.C., section 403g)

The SIGINT Contribution

The first important SIGINT contribution to the Cuban problem was the reporting of Cuban commercial ties with the Soviet Bloc in mid-1961. By early 1962 [redacted] was reflecting extensive Cuban trade with the East Bloc and Canada. Soviet communications revealed very large cargo shipments, but the cargo manifests were conspicuously missing, and this, in and of itself, was an indicator of sensitive military cargo. SIGINT, photography, and HUMINT all combined to form a very accurate mosaic of the increasingly close commercial and arms ties.[63] The U.S. government was kept fully informed of these developments through intelligence sources.

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The Cuban military problem also began to take on distinctive East Bloc overtones. Intercepts of Czechoslovak communications showed, as early as the fall of 1961, that Cuban pilots were training in East Bloc fighters. Still later, Cubans were discovered [redacted] to be training in IL-28 light bombers in the North Caucasus Military District. It came as no surprise, then, that photography began showing various MIG fighters and IL-28 bombers in Cuba in mid-1962.[64]

In June 1961 the first ELINT intercepts from Cuba showed that they had Soviet radars, and before the end of the year there were both early warning and AAA fire control varieties. By May of 1962 Cuban air force communications reports [redacted] Just a month later NSA reported intercept of the first airborne intercept radar in Cuba, definitely indicating the presence of MIG fighters on the island. Soviet controllers were being heard on VHF frequencies in heavily accented Spanish, instructing Cuban pilots and controllers in operational procedures.[65]

The Soviets became progressively more active, both in numbers and in degree of control over the Cuban air defense system. USAFSS field sites intercepted the first Cuban grid tracking on 9 October – it employed the classic grid system used by the Soviet air defense system. After 27 October (the date the U-2 piloted by Rudolph Anderson was shot down; see p. 329), the Soviets virtually took over the air defense system, and Cubans, who had been in the center of things from the beginning, moved to the sidelines.[66]

By mid-August [redacted] reports began to refer to objects that sounded like SA-2s. On 29 August the first SA-2 construction was noted in U-2 photography. In September NSA confirmed operation of a SPOON REST radar, often associated with the SA-2 system. At least one site appeared to be nearing operation.[67]

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The Crisis

The crisis itself did not begin with the 14 October U-2 flight that found the missile construction sites, nor with the 22 October presidential broadcast announcing that fact to the world. It had been building all summer, and each escalation of Soviet assistance to Cuba brought the White House more directly into the picture. The president was deeply concerned about Soviet military assistance, and the reports he was getting (primarily CIA HUMINT sources) indicated that the technicians accompanying the military equipment were really Soviet troops disguised as civilians.

The confirmed arrival and operation of SA-2s brought the crisis to a new level. CIA director McCone contended that theonly purpose he could see for such a modern defensive armament would be to protect something of very high value, and that something, he felt, would be offensive missiles. So from August on, the intelligence community focused quite specifically on that possibility.

John McCone, Kennedy's DCI, was virtually alone in predicting that Khrushchev would introduce offensive weapons into Cuba.

To try to head off a crisis, Khrushchev on 4 September dispatched Anatoly Dobrynin, the USSR's ambassador in Washington, to the Oval Office to reassure Kennedy that offensive missiles were not in Cuba. On the basis of this reassurance, Kennedy authorized Pierre Salinger, his press secretary, to announce the arrival of the SAMs, but to stress that they were not offensive in nature. But, Salinger added, the gravest consequences would result from the introduction of offensive missiles. On 11 September the Soviet newspaper *Tass* buttressed Khrushchev's confidential communique on 4 September with a public announcement that the weapons in Cuba were defensive.[68]

On 31 August politics intruded. Senator Kenneth Keating of New York, a Republican, reported in the Senate chamber that he had evidence that there were 1,200 Soviet troops in Cuba, and "concave metal structures supported by tubing" that appeared to be for rocket

installation.[69] To this day no one knows where Keating got his information, but CIA had at the time a profusion of unsubstantiated HUMINT reports dealing with such possibilities from their HUMINT interrogation center at Opa Locka, Florida.[70]

The overt result of Keating's charges was political. The congressional elections were due in November, and Kennedy obviously wanted to hang onto as many Democratic seats as possible. He was keeping his hands off Cuba with Soviet assurances that no such missiles existed there, but the clamor for action on both sides of the congressional aisle was considerable. Any revelation that affected the equation could become politically explosive and might alter the balance of seats during the election. In this atmosphere the White House became extremely sensitive to any intelligence that might bear on offensive arms in Cuba.

Meanwhile, on 7 September Kennedy was confronted with a new crisis. Major General Marshall "Pat" Carter, the deputy DCI (who would, three years later, become DIRNSA) showed the president U-2 photographs of a surface-to-surface missile complex under construction at the Cuban coastal town of Banes. The installation was for a short-range naval coastal defense missile, and Ray Cline, CIA's director of intelligence, speculated that it might be for the purpose of insuring that the *Oxford* stay well offshore. But in view of Keating's recent charges, any surface-to-surface missile might be misconstrued as offensive (as Kennedy at first did), and such information had to be held very closely. So Kennedy directed that any indication, however tenuous, of the introduction of Soviet offensive forces in Cuba, be kept tightly compartmented. Huntington Sheldon, the assistant deputy secretary for intelligence (and CIA's top liaison on SIGINT matters) designed a compartmentation system, which was subsequently approved by USIB.

The result of this decision was an overly tight compartmentation at NSA. Information on the subject was extremely limited in distribution, and SIGINT reporting on the subject was to be specially flagged "Funnel." This was on top of an already rigid compartmentation system for U-2 photography, so secret that even Juanita Moody, the chief of B1, and her chief of staff, Harry Daniels, were not brought into the picture (although Moody was told about the impending 14 October overflight by William Wray of NSA the morning that it happened). During the crisis SIGINT analysts were forced to work in a vacuum. (However, some of the A Group analysts on the Soviet problem knew about the photography program.)[71]

SIGINT was coming up dry. Intensive effort by both B1 and A6 analysts revealed no indication whatsoever that the Soviets were bringing in offensive missiles. But unknown to NSA, CIA, or the White House, the materials for the missile sites were already in Cuba. Since the end of the Cold War, top Soviet officials have revealed that the decision to place offensive missiles in Cuba was taken in May, and this was followed immediately by the preparation and shipment of site construction materials. The first materials arrived in Cuba in mid-August, followed, the first week of September, by large pieces of equipment for the MRBM sites. The Soviets assessed that October would be the month of maximum

vulnerability – site construction would be visible from the U-2, but the missiles would not be ready to fire, and Cuba would thus still be vulnerable to U.S. military action.[72]

NSA did not have the information, but neither did anyone else. The matter of the Soviets introducing offensive missiles in Cuba was considered by the intelligence community no fewer than four times in the first nine months of 1962, and each time the assessment was negative.[73] On 19 September, during the middle of the building crisis, National Intelligence Estimate 85-3-62 assessed that such activity "would be incompatible with Soviet practice to date and with Soviet policy as we presently estimate it. It would indicate a far greater willingness to increase the level of risk in U.S.-Soviet relations than the USSR has displayed thus far. . . ." John McCone was out of town at the time, but indicated that he did not concur with the assessment of his own estimates shop.[74]

In early October CIA got photos of crates on board Soviet ships bound for Cuba, which probably contained IL-28 light bombers. These were clearly offensive (if a bit deficient in real offensive punch), and Kennedy directed that the information be suppressed. McCone "stated that this was extremely dangerous," but he was overruled. He and Kennedy then agreed that such information be disseminated to the principals of USIB (which included NSA's director, Lieutenant General Blake), who would in turn restrict it "to their personal offices."[75]

Since the first of August, CIA had mounted seven U-2 flights over Cuba, and it would have flown more but for Secretary of State Dean Rusk's constant protests that overflights were diplomatically risky. (Those protests were given additional weight when, on 8 September, a U-2 on loan to the Chinese Nationalist government on a special CIA program was shot down over western China.) Those that were flown carefully skirted Cuba's periphery, darting briefly into Cuban airspace for a quick overhead photo. Much of the island was thus going unphotographed.

McCone persisted and finally got authorization for overflight of an area west of Havana which, according to some fairly coherent HUMINT reports, was undergoing construction for what looked like missiles. Bad weather forced several postponements, but the flight finally took off on 14 October and flew directly over the suspect area. The National Photographic Interpretation Center (NPIC) got a look at the pictures the afternoon of 15 October, and the CIA analyst, Victor DiRenzo, found what looked like six SS-4 MRBMs at a construction site. Looking at the photos on a light table in the Steuart Building in downtown Washington, NPIC's director, Arthur Lundahl, turned to the photo interpreters huddled around the light table and said, "We are sitting on the biggest story of our time."[76]

It was seven days before the president would go before the world and announce the presence of the missiles and impose a naval quarantine around Cuba. Back at NSA, it was a frantic seven days. The Soviet and Cuban shops concentrated their resources on communications that bore on the problem. The A Group element that was working the

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Cuban air defense system (controlled by the Soviets) physically moved into B1 spaces to facilitate interworking. A and B issued independent product reports, but they also issued periodic combined wrap-ups in order to tell a coherent story. Upwards of [ ] A Group analysts and linguists joined the new combined outfit.[77]

NSA needed a command center for the crisis. As it happened, A05, headed by Colonel [ ] (USAF) and NSA civilian [ ] had recently taken over a small room across the hall from the A Group front office to receive and display compartmented information like photography (TK). During the crisis this became the new command center. [ ] hurriedly outfitted the room with telephones and employed A Group analysts to begin publishing a new product, the [ ] a daily electrical report detailing the status of [ ].[78] The director, Gordon Blake, kept the *Oxford* on station throughout the crisis, and AFSS upped its ACRP flights off Cuba [ ]. Blake directed that ASA get its SIGINTers [ ] as soon as possible and that the shipment of new equipments to the existing SCA intercept sites [ ] be speeded up.[79]

The most valuable intercept came from [ ] There being no processing capability in the field, all this was shipped back to NSA; there the [ ] Throughout the crisis new and better equipments were added to the mix for faster and more complete processing.[80]

The Soviets and Cubans had their own separate communications systems on the island. As the Soviets set up military operations (SAM sites, naval surface missile batteries, air defense networks, etc.), they maintained separate communications, supplying to NSA strong evidence that they were not integrated with the Cuban armed forces. NSA intercepted no cross-net communications. There must have been points at which the two sides talked – for instance, in Havana there was a command center housing both Soviets and Cubans, and it was served by communications of both countries. But there were no instances in which Soviets were intercepted talking to Cubans on the same communications facility. NSA concluded that the Soviets controlled all their own facilities, including their SAM and air defense systems, and this conclusion was accepted at the national level.[81]

The [ ] intercepts provided a wealth of command and control information, and when married with photography, supplied a good picture of what was happening in Cuba. [ ] although photography showed

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DOCID: 523682 REF ID:A52366.

MRBM site, Cuba
CIA photos like this one convinced the president to act.

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microwave radio relay equipment being readied at three of the six MRBM sites and two of the three IRBM locations.[82]

Once Kennedy went on television (22 October), Soviet communications in Cuba lit up. A new air defense-associated net went on the air immediately. (This was what prompted the A Group processing element to physically move into space in B1.)

The crisis continued to deepen over the next two days. Soviet merchant ships steamed toward Havana, heedless to the looming catastrophe. But early on 23 October the Navy intercepted a broadcast from Moscow to all ships headed for Cuba to stand by for an extremely urgent cipher message. The message came through an hour later, and the intelligence community waited tensely for the reaction. Although undecipherable, it appeared to contain some sort of instructions.

Late the same day NSG direction finding indicated that some of the Soviet merchant vessels heading for Cuba had stopped dead in the water, while others appeared to be turning around. At this point, according to CIA's Dino Brugioni, the Office of Naval Intelligence (ONI) felt that this information had to be verified before it was reported. John McCone was awakened in the middle of the night and informed that the Navy had unconfirmed information, but this was not passed to the White House or the secretary of defense until around noon of the following day, once ONI had "confirmed" the information. When he found out, McNamara was furious, and he subjected Admiral Anderson, the Chief of Naval Operations, to an abusive tirade. So many years have passed that it is impossible to determine why the Navy held up information that seemed critical to the president's decisions.[84]

On 27 October the crisis reached its climax. At that point, Soviet ships had turned away from Cuba, a clear indicator that Khrushchev was wavering. But so far the two nations had not resolved anything. That day a U-2 piloted by Air Force major Rudolf Anderson (SAC had taken over U-2 flights from CIA on 12 October) was shot down, and NSA reported that an SA-2 from the area around the naval base at Banes had been responsible. Based on COMINT intercepts, the U.S. believed that the SA-2 sites were manned and controlled by Soviets.[85] The shootdown of Anderson was a wide departure from the caution the Soviets had so far shown. Was it a major escalation?

The shootdown of Anderson precipitated an ultimatum. In a meeting with Dobrynin that day, Kennedy told him that the United States would attack the missile sites in Cuba by Tuesday morning unless there was firm evidence that the missile sites were being dismantled. That gave the Soviet Union only forty-eight hours to resolve the crisis before air attack, which would be followed by a full-scale invasion. Khrushchev caved in, and he sent a frantic telegram to Kennedy that very night promising to remove the missiles.

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The Aftermath E.O. 13526, section 1.4(c)

NSA learned two years later that Cubans might have been in control of the site that fired at Anderson. In digging through the intercepts, NSA analyst [redacted] pieced together some fragmentary SAM-associated multichannel communications from the Banes area, and discovered that the Soviets at one of the SAM sites were talking about a firefight at one of the other sites on 26 October possibly involving invading Cuban military forces. Soviet security forces at neighboring SAM sites had been summoned, and it appeared to [redacted] that the fight was over by the morning of 27 October when Anderson's U-2 was shot down. But he could not be absolutely sure that the Soviets were back in control, and the possibility remained that Cubans had actually "pulled the trigger." This story created a sensation when, in 1987, investigative journalist Seymour Hersh published an account of the incident, as related to him from an unnamed analyst from an "intelligence agency." Internal evidence from Hersh's article points away from any NSA analyst as a source of the information, but the basic story line was correct.[86]

The Hersh story appeared in conjunction with a series of conferences on the Cuban Missile Crisis, which came to include Soviet as well as American participants. During a conference in Havana in January 1992, a Soviet general claimed that the Soviet commander on the island, one Issa Pliyev, had been given authority to launch nuclear missiles if Cuba were attacked. If true, this would have brought the world much closer to nuclear war than anyone suspected at the time. Robert McNamara, who had been secretary of defense at the time, uncritically accepted the Soviet's story, as did most other observers at the conference. The issue was sensationalized in the press.[87]

It made good press, but it was not true. A search of declassified Soviet documents relating to the crisis showed that precisely contradictory orders were issued to Pliyev. (Even the general who made the statements, Anatolii Gribkov, eventually backed away from his earlier assertions.) All evidence now supports NSA's long-held contention that Soviet forces were subject to monolithic central control and that local commanders, particularly in situations involving nuclear weapons, were strictly controlled through central release authority similar to that in the U.S. armed forces.[88]

The U-2 flights over Cuba had not been receiving advisory warning support from the cryptologic community. It occurred in that interregnum between the JCS decision to impose a standard, worldwide warning system and the actual publication and implementation of the resulting White Wolf plan. After the Anderson shootdown, Juanita Moody and Harry Daniels directed the hurried implementation of a warning system for the Caribbean area, and it was subsumed the next year under the White Wolf program.[89] The shootdown undoubtedly increased pressure for the system that soon emerged.

One of NSA's major jobs during the crisis was watching Soviet force readiness. On 11 September the Soviets suddenly went into their highest readiness stage since the

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beginning of the Cold War. Although the units at highest readiness were generally defense-related, the alert included some unprecedented activity among offensive forces, too. Of greatest concern was a total standdown of the Soviet long-range air forces. It also coincided with marked standdown of activity in the GSFG (Group of Soviet Forces, Germany), a highly realistic major exercise in the Far East, a major maritime communications exercise, a dispersal exercise by Baltic Sea Fleet elements, a major exercise in the North Sea Fleet involving apparent nuclear dispersal actions, and the first ever western Atlantic patrol by a Soviet submarine. The alert may have been called because Moscow suspected that Kennedy had found out about the missiles.

The 11 September alert was cancelled ten days later, but on 15 October Soviet forces went into a preliminary, perhaps precautionary, stage of alert. This was followed a day later by Soviet reporting of North American weather. Once again, this readiness was likely due to Khrushchev's supposition that the U.S. had discovered a missile site. (He knew the White House would find out; the only question was when.)[91]

Following Kennedy's Oval Office speech on 22 October, Soviet forces again went into an extraordinarily high state of alert, similar to the September event. This time, however, with nuclear war threatening, defensive forces were primary. Offensive forces avoided assuming the highest readiness stage, as if to insure that Kennedy understood that the USSR would not launch first. Long-range aviation units continued normal training, although some precautionary steps were taken, such as insuring that the Arctic staging bases could be used. (Bombers were not deployed to the Arctic.) PVO (air defense) units went into the highest state of alert ever observed, as did Soviet tactical air forces.[92]

Although Soviet offensive missiles and IL-28 bombers were pulled out of Cuba following the end of the crisis, a Soviet garrison force remained, The air defense system which the Soviets had imported to the island was slowly turned over to the Cubans, although during the crisis the Cubans had had no say whatever in its operation (which might in turn have led to the 26 October attack at Banes). The SIGINT site at Lourdes was activated during the crisis. The Soviets maintained their western Atlantic submarine patrols until the mid-1980s. In later years Soviet TU-95s flew regularly between the Soviet Union and Havana, Cuba remained a bastion of Soviet influence and military force presence until the collapse of the Soviet Union itself.[93]

As for the cryptologic community, temporary sites became permanent. It was a permanent diversion of SIGINT assets, contributing to the overall SIGINT force buildup during the decade.[94]

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SIGINT warning, so highly touted during the Eisenhower administration, failed in Cuba. Although SIGINT detected some of the troops and equipment as they were moving, the key elements of the movement that would have given the Kennedy administration decisive information about offensive capabilities did not come from SIGINT. In a 1963 post-mortem, the National Indications Center faulted the entire intelligence system for failure to detect those key elements. Soviet communications security was almost perfect.[95]

Although SIGINT failed in its job to warn, it was an integral link in the chain of intelligence that supported the administration during the crucial days of decision-making. It gave the United States its most timely and specific information about the movement of troops and supplies to Cuba. It provided the only information about force command and control – absolutely critical in making decisions about Soviet involvement. It gave the White House the only timely information that it had about Soviet reaction and military force alert posture. And it provided most of the hard information about the air defense system, should the invasion (set for 30 October) proceed as planned.[96]

The response to the crisis at NSA was more coherent and orderly than in 1956. The six-hour SIGINT wrapups, including both Soviet and Cuban activities, were the first such attempt by NSA. Agency reporting gave a better overall picture to customers than it had in earlier crises.[97]

Within the intelligence community, the crisis precipitated a debate about NSA wrap-up reporting. Roundly criticized in the fall of 1962 for exceeding its supposed reporting charter, NSA defended itself in USIB circles by pointing out that no other agency was performing the essential function of summarizing developments as seen through SIGINT. In the months following the crisis an unrepentant NSA began putting out a daily wrap-up of SIGINT events, called the *SIGINT Summary*. The name was customarily abbreviated to the term "Sigsum," but many just called it the "Green Hornet" (because it was distributed under a cover of dark green paper). It survives today as the *SIGINT Digest*.[98]

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Chapter 9
The Post-Cuban Missile Crisis Reforms

> The CCP review process has, in the judgment of NSA officials, become a vehicle for various OSD and outside DoD elements to manipulate resources assigned to the Director, NSA and a forum for the encouragement of opponents of a centralized SIGINT structure....
>
> NSA internal memorandum, 1967

Intelligence reform did not, of course, begin after the Cuban Missile Crisis – significant soul-searching had begun after the Bay of Pigs. But the events of 1962 made the matter more imminent. Kennedy demanded a responsive intelligence system to get him information when he needed it. The emphasis was on speed.

At CIA, the Bay of Pigs ended the intelligence careers of both DCI Allen Dulles and Richard Bissell, who had supervised the invasion attempt. Owing perhaps to the rather small SIGINT involvement, it did not end careers at NSA, but it definitely hastened the pace of centralization.

PFIAB, which had been told to get the intelligence house in order by a disturbed president, reported in June of 1962. Its SIGINT emphasis was on further centralization of the system under NSA. PFIAB wanted NSA to corral fugitive SIGINT efforts and to exercise strong central management over those it already headed. Noting that ELINT centralization directed in the 1958 NSCID 6 had been a failure, it suggested ways that NSA could gain control of the process. It specifically wanted a National ELINT Plan with stern NSA management of resources under the plan.[1]

In 1964 it reported on progress over the two-year period. The board was intensely unhappy about ELINT, which remained frustratingly decentralized. As for internal NSA management, PFIAB made several technical recommendations for strengthening the research and development process, for rationalizing SIGINT requirements, and for establishing an operations research discipline at NSA similar to that which existed at the DoD level. PFIAB especially wanted NSA to expand its influence over the cryptologic research and development process then performed by the services. The SIGINT effort was expensive, and PFIAB felt that a stronger NSA could reduce duplication and bring down the cost.[2]

Studies of the cryptologic system in the 1960s by the PFIAB, by DoD-level committees, and by the Bureau of the Budget all came down heavily on a more centralized process. The emphasis was always on doing more with less, but in fact, cryptologic budgets increased steadily during the decade. What happened in practice was that NSA did more with more.

The National Security Agency was only too happy to oblige. Beginning in the early 1960s, NSA management began working on a plan to centralize cryptologic operations in the United States. Field operations would be reduced, especially at the theater level; SCA processing centers would be phased out; and, using the new digital data links sprouting up in the DoD communications system, data would be brought back to the States for processing. Using the PFIAB's recommendations as a hammer, NSA could achieve a degree of centralization dreamed of, but never achieved, in earlier years.[3]

The Dilemma of Centralization

Whenever there is a major foreign policy crisis, the response of an administration is usually to tighten up. The Kennedy administration responded to the Bay of Pigs and the Cuban Missile Crisis with a series of actions which resulted in an ever-tighter centralization of the intelligence mechanism. The effect on the SIGINT system was to further centralize a process which had been on a course toward centralization ever since World War II.

But centralization meant the same both upwards and downwards. As NSA further strengthened its hold on the cryptologic system, McNamara got a firmer grip on the Defense Department, including NSA. The Agency had never had to answer in detail to anyone about its program – certainly Graves B. Erskine's miniscule staff in OSO could not police a system composed of tens of thousands of cryptologists working in over twenty countries, with a budget of hundreds of millions of dollars. But McNamara did away with OSO in 1961, and in its place he put the director of defense research and engineering (DDR&E), Dr. John Foster, in charge of cryptologic matters. (The post of DDR&E had been created by the Defense Reorganization Act of 1958, as a response to the *Sputnik* crisis.) Foster in turn delegated the job to his deputy, John Rubel. The reform measure was accomplished without even contacting Admiral Frost at NSA.[4]

McNamara brought with him a team of "whiz kids" and a whole new management superstructure. Instead of dealing with just Graves B. Erskine or just John Foster or just John Rubel, Frost suddenly found himself talking to all sorts of subalterns like an assistant secretary for comptroller, an assistant secretary for management, an assistant secretary for international security affairs, ad infinitum. Each one felt he owned a piece of NSA. None was experienced in cryptology, and few managed to attain any appreciation for the arcane business of breaking and protecting codes: and the flip side of the coin was increasing OSD control over NSA. McNamara's staff bore down hard on the Agency's programs, placing each one under a microscope. As the CCP made its annual pilgrimage through the OSD machinery, increasing numbers of officials came to question cryptologic

programs. NSA's existence became a constant battle to educate the legion of noncryptologists on McNamara's staff.

Cost control was a dramatic example of the dilemma that successive directors of NSA had always found themselves in. Late in the 1950s the Eisenhower administration introduced the concept of centralized cryptologic budgeting, in which the SCAs would send their annual budget recommendations to NSA, which would consolidate the inputs, add its own, and produce what came to be known as the CCP. This changed NSA's role from that of coordinator to centralizer. The SCAs were now beholden to NSA for their very livelihood. When the Agency looked down its nose at a major SCA procurement, as it had with the Air Force's 466L program, that program was in trouble.[5] The new CCP was not fully implemented until fiscal year 1961, but in the two years in which it was being phased in it had already changed the landscape significantly.[6]

McNamara arrived with a new cost management system called the Planning, Programming, and Budgeting System (PPBS). There were, under PPBS, nine major military programs. Cryptology, which began in Program Seven (general support), was soon switched to Program Three, general-purpose forces, where it stayed. Within each program there were five cost categories: R&D, procurement, personnel, O&M (operations and maintenance), and military construction. The cryptologic budget itself was in turn divided into fifty-six cost categories, called subelements. All cryptologic expenditures, both for NSA and the SCAs, had to fit into one of the fifty-six.

This new process gave NSA substantial power. The subelements were managed at NSA, and the SCA budgets had to be structured and submitted to the subelement managers for their review. After DDR&E and the secretary of defense approved it, the plan became the approved cryptologic force level. NSA could then change the mission of each cryptologic component, right down to the collection site, to fit the program. The entire process resembled a gigantic funnel, in which the most significant narrowing took place at NSA. It effectively ended SCA independence.

NSA's influence came to extend even to the equipment on collection positions. In a spate of technical control never before achieved, NSA wrote a document (TECHINS 1037) which dictated what equipment must be on each position to make it conform to the program. It was up to the SCAs to get their positions in line with the edict.

Most directly involved were Jack O'Gara, who managed the cryptologic program at the OSD level, and Dr. Eugene Fubini, who became deputy director for research and engineering under McNamara. O'Gara had a cryptologic background, but Fubini was a scientist. For the first time, the director's cryptologic staff found itself arguing individual line items at the OSD level with people who wanted to know why it was necessary to have more than one position targetted on the North Vietnamese Navy or why two positions at different locations remained targeted on the same case notation. NSA was forced to provide proprietary personnel and facilities information to GSA (General

Services Administration) and the Bureau of the Budget, and the Agency frequently discovered that outside organizations were auditing NSA's operations without its concurrence, or even, in some cases, its knowledge. In 1967, Director Marshall Carter charged that ". . . the CCP review exercise became a means for various DoD elements to manipulate resources assigned to the Director, NSA . . . an undesirable feature of this Office of the Assistant Secretary of Defense for Administration (OASD [A]) review is that these officials are not SIGINT-oriented and they frequently make unrealistic comparisons of agency positions to those in the Defense Agencies." Each director in the 1960s, from Frost to Blake to Carter, claimed that McNamara's OSD staff was micromanaging NSA.[7]

Everywhere NSA turned, there were new restrictions on its independence. Allen Dulles's replacement as DCI, John McCone, did not share Dulles's aversion for centralized management of intelligence resources. McCone moved aggressively to place the extensive Defense Department intelligence assets under CIA's general coordination. His newly created National Intelligence Programs Evaluation (NIPE) office was an early attempt to establish an intelligence community staff; it gave the DCI a way to inventory and evaluate all intelligence programs. He never achieved control of DoD intelligence budgets, but under him CIA was clearly headed in that direction.[8]

A New Director

The hard-driving McCone was partly responsible for the relief of Admiral Frost as director. Frost was not a driver. His soft-spoken manner and laid-back style were not for McCone. He did not have Canine's "presence," and at USIB meetings would speak in a voice so low that he could scarcely be heard. One very senior NSA official who worked directly for Frost said, "He was a professional SIGINTer, he knew about SIGINT, but somehow or other he did not project that he was a knowledgeable, dynamic leader for the SIGINT effort." Nor did he fare well with McNamara and his staff. People like McNamara and Fubini expected clipped, precise answers to specific questions, and when they did not get them, began to look

Gordon Blake

elsewhere for a director. Frost was relieved on 30 June 1962, more than a year before his term was up, was reduced in rank by one star, and was placed in charge of the Potomac River Naval Command. Such was the ignominy that Robert McNamara could visit on someone in his personal doghouse.[9]

Frost's relief, Lieutenant General Gordon Blake (USAF), had shuttled between air operations (he was a command pilot) and communications assignments his entire career. His only intelligence assignment had been as commander of the Air Force Security Service from 1957 to 1959, but that had at least given him an introduction into the field which Canine, for one, had lacked. Blake, like Samford, was exceptionally good at personal relations and was very highly regarded in Washington. He had been in the job only three months when Cuba erupted, and he established high marks in the White House during the crisis. It has been said that no one disliked Gordon Blake, but even as smooth an operator as he still acknowledged difficulty getting along with McNamara's staff.[10]

NSA's Community Relationships

USIB, which in 1958 had become preeminent in intelligence affairs with the disappearance of the Intelligence Advisory Committee, became honeycombed with committees in the 1960s. Instead of dealing solely with COMINT, as had USCIB, it dealt with general intelligence matters, and it assigned SIGINT to the dual COMINT and ELINT committees. By the time Kennedy took office, USIB already had twenty-six committees, and most of the work was done there rather than in a committee of the whole.

In 1962 John McCone combined the COMINT and ELINT committees into a new SIGINT committee and chose John Samford to head the new panel. Samford was an ideal choice; he lent prestige to the committee – never before had such a senior person been chosen to head a USIB committee. Samford spent a lot of time trying to rationalize SIGINT requirements, and it was he who first proposed that COMINT requirements be related to CCP line items. His overhaul of the antiquated requirements system in place paved the way for a new system introduced in the mid-1960s, the Intelligence Guidance for COMINT Programming.[11] Throughout this period the day-to-day influence of USIB became more pervasive, and it operated as yet another check on NSA's independent authority.

The dark days of the Canine-Dulles feud were over, but that by no means ended the problems between the two agencies. CIA still had intercept operations spread throughout the world, and by 1970 it was reputed to have

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In 1966 Huntington Sheldon of CIA studied CIA SIGINT operations to determine the proper size and to allocate funds. He found that CIA had [redacted] people doing SIGINT, with a budget of [redacted] The result, which became known as the Sausage Study, was the first to document the truly significant CIA stake in SIGINT.[13]

In 1961 a new competitor arose. The Defense Intelligence Agency (DIA) was created to centralize defense intelligence matters. DIA began life with a headquarters in the Pentagon but with subordinate offices scattered all over Washington. Arlington Hall's A and B buildings housed much of the effort.

The fragmented physical situation in which DIA found itself came to symbolize its participation in the intelligence business. DIA had stepped into a department whose intelligence was fragmented and decentralized and whose intelligence programs were managed under feudal baronies with great power and internal cohesion. None was more powerful than NSA.

DIA began churning out intelligence reports and estimates in competition with the existing organizations. But ultimately the organization had to carve out its own unique turf, and one of the first areas it chose to invade was the private game preserve of SIGINT. In 1963 DIA proposed that it, rather than NSA, should run the COMINT dissemination system. The next year it wrote a draft directive which would have the director of DIA become the principal advisor to the secretary of defense "concerning the security, use, and dissemination of COMINT." DIA would take over the SSO system, including the communications apparatus. McNamara accepted the proposal, and the SSO systems of the SCAs were turned over to DIA in 1965.[14]

The post-World War II SSO systems managed by the SCAs had long since become more administrative than substantive, and by the time DIA got hold of them, they were serving as little more than communications and security managers. In their place, NSA was in the process of establishing a network of SIGINT representatives. This network consisted of two components. The first was the official representation system, which NSA managed at Unified and Specified levels, and the SCA's represented SIGINT to the component commands. This system took some working out, and resulted, especially in the early (post-1958) years, in turf battles between the SCAs and NSA.

The second type of organization was the CSG (see p. 264). This was where the interpretive function was performed, and it closely resembled the functions performed by the World War II SSO network, minus most of its dissemination control (i.e., housekeeping) features.

DIA's demarche into the SSO field accelerated the creation of CSGs. The first CSG, called NSAEUR/ISS, had been around since the late 1950s, and it served as a model for

others. In 1964 Brigadier General John Morrison, NSA's representative in Hawaii, heard about NSAEUR/ISS and journeyed to Paris to see how it worked. He liked what he saw and created what he called the NSAPAC NOG (NSA Pacific Operations Group). The idea of having CSGs spread quickly and was incorporated into JCS Memo 506-67, which became the bible for SIGINT support to military organizations. By 1974 there were eight CSGs, with two additional CSGs in the process of being formed.[15]

CSGs became effective because of the access they had to the SIGINT system. To a great extent they depended on the growing network of Opscomms to get them that access. Every CSG began life with an Opscomm circuit to NSA. With it, the CSG could get quick and accurate information to the supported commander.[16]

ELINT (Again)

While COMINT was coming under increasingly centralized control, ELINT was still fragmented. A study commissioned by McNamara in 1961 concluded that little real control over ELINT had been instituted in the three years since NSA had been given the charter. Theater commanders were still running their own ELINT operations, and in many cases they were proliferating processing centers without coordination or control. Their Third Party ELINT relationships continued unabated, and their collection assets were pumping low-quality and often inaccurate ELINT into the processing system, unaffected by any sort of quality control.

The study group concluded that there should be a strict apportioning of ELINT assets between the U&S commands and NSA, and that the Agency should institute stringent technical controls over all DoD assets. NSA should take control of all Third Party ELINT arrangements. Theater-level ELINT processing centers should not be established willy-nilly, but should conform to some overall plan. That plan should be coordinated by NSA, which would accept inputs from the military commands and crank out the final product. It would be called the National ELINT Plan (NEP). But the bottom line was that it would have no teeth. Coordination, not direction, would be the modus operandi.[17]

A National ELINT Plan finally emerged in 1966, after several years of bureaucratic struggle and false starts. It marked the first real attempt to organize and control ELINT, but since it was not directive, it had only a minimal impact on the actual course of DoD ELINT.

Meanwhile, NSA and DIA tried to negotiate a system of ELINT tasking which would conform to DIA's new charter to centralize all DoD intelligence requirements. They worked out a complex system in which all parties to the National ELINT Plan (including CIA) would forward ELINT requirements to DIA for registry. NSA would maintain a complete list of all ELINT collection assets (including those that the Agency did not control) and would assess the capability of relevant assets to satisfy each requirement (called a

SICR, Specific Intelligence Collection Requirement). NSA would then return the requirement to DIA, which would task the appropriate U&S command, while NSA would task assets under its own control.[18]

Attempts to rationalize theater-level ELINT processing centers were only semi-successful. Proposals for NSA control were opposed by theater commanders and thus went unimplemented. The best NSA could achieve was to appoint a technical assistant to the director of the theater processing center and to transfer CCP billets and NSA people into the center to help maintain quality control, as was done in Europe, in the Pacific, and in the Atlantic Command.[19]

Successive directors felt that the job of managing ELINT was simply too much for NSA. General Blake felt that "a National ELINT Plan [was] neither desirable nor practical." Given the job of writing the plan, General Carter found that NSA was not set up internally to manage such an effort, and he had to create an ad hoc group, which he called Dagger, to write it. Looking back in later years, Carter called the NEP "unworkable." Difficult relationships with the Unified and Specified commands, disputes over ownership with DIA and CIA, and internal dissension over how the effort should be organized within NSA all contributed to the sense of frustration.[20]

News from the ELINT front continued to be gloomy throughout the decade. In 1964 PFIAB launched a rocket at theater ELINT centers: "Meanwhile new centers from ELINT analysis are being established without coordination, terms of reference, or technical guidance from our proven competency in established programs." CIA, which had retained a tenacious hold on telemetry, opened a new telemetry center called FMSAC (pronounced "Foomsack": Foreign Missile and Space Analysis Center), which became, as was intended, a direct competitor with NSA's efforts. ELINT requirements were in a chaotic state, and local commanders were constantly confusing the situation with overlapping demands.[21]

The 1968 Eaton Committee (see p. 479) found that the NEP was a marginally effective document negotiated to compromise among various competing power centers. NSA had never been given tasking authority over many ELINT collectors – SAC airborne assets came immediately to mind. There was no central budget review process for ELINT and no way to deconflict competing assets. There was no effective quality control, resulting in parametric garbage cluttering disparate databases managed by widely separate organizations that did not talk to each other. Despite the 1961 recommendation that NSA should take over Third Party ELINT, nothing of the kind had taken place, and those relationships were still being managed by CIA and the theater-level component commands, as well as by NSA.[22] No wonder NSA directors were so ambivalent about the task which NSA had shouldered for ten years running.

DEFSMAC E.O. 13526, section 1.4(c) Withheld from public release Pub. L. 86-36

Occasionally the demands of centralization resulted in measurable steps forward, relatively unaffected by bureaucratic rivalries. The 1964 creation of the Defense Special Missile and Astronautics Center (DEFSMAC) was such a moment.

[redacted]

A41 had two round-the-clock operations centers. The A41 Operations Center (Opconcen), located next to the A41 offices on the third floor of the operations building, was the nerve center. It had Opscomms to the primary warning sites and had established a tip-off system so that warning information [redacted] could be flashed back to A41. That organization, in turn, alerted [redacted] that were standing by. By 1962 the Opconcen had six Opscomms to collection sites. It was further linked by Opscomms to customers, notably NORAD (North American Air Defense Command, which had responsibility for tactical warning of missile launches) and the Washington-area organizations.

Downstairs in the computer complex was the Sigtrack center. [redacted] The Sigtrack center was in close touch with the Opconcen, but, although there were plans to consolidate the effort, they were still physically separate.[23] E.O. 13526, section 1.4(c)

When the consolidated facility, the Space and Missile Analysis Center (SMAC), was created in January 1963, it had Opscomms to sixteen facilities, plus the customers. Several different organizations had mounted twenty-four-hour operations, but SMAC and NORAD were far and away the major players – others simply fed off the information generated through the air defense and SIGINT warning systems.[24] Withheld from public release Pub. L. 86-36

The disorganization in the missile warning business led, in 1963, to a full DoD-level review. The team surveyed the entire problem, talked with every organization involved, and made field trips to warning facilities like SMAC and NORAD (in Cheyenne Mountain, outside Colorado Springs). They found that NSA had the only coherent, centralized program, and, at the suggestion of A4, they took SMAC as the organizational model for a new, combined facilty.

It would be called DEFSMAC, would be located at NSA, and would be jointly staffed by NSA and DIA people. The chief and deputy chief would be selected jointly by DIRNSA and the director of DIA. Because most inputs were SIGINT-based, NSA

possessed virtually the sum total of technical expertise. DIA was charged with integration, reviews, and nontechnical analysis of findings. DEFSMAC would have the same inputs, through the same Opscomm net, that SMAC had had. But because its official charter was established at the Department of Defense level, it carried with it far more authority than had SMAC. DEFSMAC had tasking and technical control of all DoD intelligence collection activities directed against foreign missile and space activities. It provided technical support, including tip-offs, to all DoD missile and space intelligence collection activities. The only exception to its virtual blanket authority was that it could not launch airborne collection platforms on its own – that required a JCS go-ahead.[25]

E.O. 13526, section 1.4(c)

At its creation in 1964, DEFSMAC had [redacted] NSA billets, to twenty-three for DIA. Its first director (and all thereafter) was an NSA official, Charles Tevis, while the deputy was a DIA official.[26]

Charles Tevis

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The Advent of the Command Center

Present-day NSOC and the plethora of round-the-clock watch operations that Agency workers know evolved slowly over a long period of time. The key date in its evolution was October 1962 – the Cuban Missile Crisis. But the development began years before that.

AFSA had had a shift operation, established originally to monitor developments in the Far East during the Korean War. It was part of AFSA-25, the organization that dealt with customers, and, within that organization, the publications and distribution branch. Manned originally by a staff of two junior officers and several analysts and enlisted communicators per shift, it scanned outgoing messages for release and maintained a liaison group to answer requests for information. After NSA was created, it became known as the Prod Watch Office, or PWO, but proposals to give it executive powers were scotched whenever they came up. In 1954 it became responsible for the director's daily intelligence briefing, and when the Critic program was created in 1958, the PWO insured that all Critics had the correct external and internal addressees. But when real horsepower was needed, the PWO called in day workers.

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The COMSEC organization also had a watch office, charged specifically with responding to reports of compromise. Although small, it did a good job of quick response, and over the years kept potential compromises from becoming major hemorrhages.[27]

Through a succession of reorganizations, the PWO became the PIWO (PROD Intelligence Watch Office), and more civilians were added. In 1962, the last year of its life, the PIWO consisted of [redacted] people, ten of whom were civilians. But its functions still remained procedural rather than substantive. NSA's method of handling round-the-clock responsibilities bespoke the way that the organization viewed itself. NSA thought of itself as a long-term reporting shop, a concept which had become completely outmoded by the Soviet strategic threat and the role of SIGINT in warning of that threat.

The vision of NSA as Sleepy Hollow ended abruptly in October 1962. The new director, Gordon Blake, realized that he did not have a command post, and his assistant director for operations, Major General John Davis, created one during the middle of the crisis. The chief of the new shift operation was known as the SNOO (Senior NSA Operations Officer), and he had [redacted] analysts on duty. The original command post was located close to the PIWO and the communications center and had telephone connectivity to both.[28]

After the dust settled, General Davis decided that he could not continue to operate on an ad hoc basis, and early in 1963 the Command Center was made permanent. With eight bays of space and $50,000, the reporting staff headed by [redacted] and [redacted] fashioned a command post look-alike, with situation maps, multicolored telephones, and pony circuits from the communications center. (This came to include a KY-3, which permitted secure voice contact with the White House, CIA, DIA, and several other Washington consumers.) The PIWO was wiped out and the bodies transferred to the Command Center.

Although the Command Center became a nerve center of sorts, it never became what its creators had hoped. To begin with, the SNOO did not represent the director; he only represented the assistant director for production. Executive decisions above Production required that other deputy directors be called in. Second, even within PROD the Command Center was to some degree emasculated. This owed to the refusal of the analytic groups to contribute skilled analysts. The Command Center wound up with a personnel cadre, but the real power remained within the analytic groups themselves, each of which, over a period of years, established various watch operations. These "puddles" (as they were called) tended to arise during crises and simply continue. Thus it was that the B Watch Office was set up in 1965, when Vietnam heated up, and the B1 Watch was established as a result of the *Pueblo* capture. G Group established no permanent watch but continued to call analysts to duty during crises.[29]

Regulations governing the Command Center carefully circumscribed the authorities of the SNOO who, after all, was only a grade 13 or 14. He monitored the Critic program,

and could change distribution, but he could not change the text or issue a new report. He could not call a SIGINT readiness, did not have direct connectivity to field sites, and could not modify field site collection instructions. A and B Groups had "coordinators" in the Command Center, but whenever a problem arose, either referred the matter to one of the "puddles" or called someone in.[30]

Centralization of Theater Processing

As the Vietnam War heated up, Robert McNamara began looking for money. He put considerable pressure on all DoD elements to become more efficient. In the early 1960s Gordon Blake was under considerable pressure from McNamara's staff. According to them, the SIGINT system was too big, too costly, too spread out, and inefficiently organized. If McNamara needed money, they thought they could sweat some of it out of the SIGINT budget. And anyway, they believed that centralization was inherently good as well as cost-effective. McNamara's point man in this effort was Dr. Eugene Fubini.

In 1964 Blake was directed to take a close look at theater processing. Fubini believed that there were too many theater processing nodes, especially in Europe, and so NSA turned its attention to the European theater. Studies in that year turned up quite a complex of centers spread across Germany [redacted]

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The Air Force had centralized SIGINT processing at Zweibrucken, which by 1964 had become a complex of over [redacted] people, IBM 1401 processors, and Opscomm connectivity [redacted] over Europe [redacted] The reporting operation alone was the busiest and largest reporting center ever put together up to that time. It was the hub for timely reporting [redacted] an absolutely irreplaceable asset.

[redacted]

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The Army operation, centralized in Frankfurt, had a very different focus. Its COMINT Processing Center (CPC) concentrated on preliminary processing of the increasing volumes of [redacted] ASA refused to join [redacted] and it maintained its own development effort in [redacted]

NSA's theater focal point was also in Frankfurt, where NSAEUR had put together a processing effort called JNACC (Joint Non-Morse Acquisition Control Center). [redacted]

[redacted]

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In July 1964, under continuing pressure from Fubini, Blake named Benson Buffham to chair an ad hoc committee to produce an austere SIGINT posture in Germany. This group wrestled with the problem of the competing power centers in Frankfurt and Zweibrucken, and it finally came down on the side of Frankfurt. But the committee went much further. It decided that ultimately much of what was going on in Germany would be done at Fort Meade.

The interim European architecture would close Zweibrucken and create two separate but closely related organizations in Frankfurt. The first, would take over theater processing operations The second, called , would take over the timely reporting functions then exercised at Zweibrucken. Manning for the new facilities would come directly from the hides of ASA and AFSS, with a significant NSA admixture.

The panel was looking at far more than reorganizing theater assets, however. It began to consider a longer-range plan of closing theater operations and moving them to Fort Meade. NSA would establish a high-speed (2400 baud, high speed for the mid-60s) data link from Frankfurt to Fort Meade. Frankfurt was clearly a way station on a much longer journey.[34]

The plan to close theater functions also included JNACC. NSA decided to establish a worldwide printer steering group at Fort Meade. Called the COC (Collection Operations Center), it functioned much like JNACC, interacting with field sites through a network of Opscomms. When opened officially in 1969, COC began using a new reporting system, called The basis of reporting was a short, preformatted report resembling a The reports were formatted for computer input and formed a database on all printer intercept worldwide. COC adjusted collection of links based on the reporting and daily contact with cryptanalysts in A5, the office of . It was not finally phased out until 1993.[35]

Back in A Group, the planning committee came up with two schemes: Plan A and Plan B. Plan A assumed that processing functions would be moved to Fort Meade but that basic timely reporting would remain in the theater, at and Plan B assumed that these centers would eventually be closed and the functions moved to Fort Meade. General Carter favored Plan A, but his staff favored Plan B. Ultimately, the reluctant director was persuaded to sign Plan B, and the residual organizations in Frankfurt were doomed.[36]

The adoption of Plan B required drastic changes in A3, the analytic organization responsible for the Soviet problem. A3 was basically a term reporting organization, but

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under the new scheme it would have to split into two camps, the term shop (A7, material older than seventy-two hours) and the current shop (A8, material not yet seventy-two hours old). The current shop, A8, would have to pick up responsibility for a number of daily summary reports produced by Zweibrucken. More significant, it would have to create a shift effort to monitor timely reports like spot reports and Critics. It would interact closely with the [redacted] which would retain some of Zweibrucken's reporting functions. The [redacted] would be an emasculated [redacted] retaining substantial authority for coordinating timely reporting on U.S. reconnaissance flights, but without the reporting or collection management authority that Zweibrucken had exercised. A3 would pick up some [redacted] billets in order to mount the required reporting effort.[37]

CSOC

The A8/A7 split was the genesis of a new organization, called the Current SIGINT Operations Center. CSOC, as it was usually referred to, was formed by Walter Deeley of A05 from a group of A Group analysts and reporters who had been in proximity to, but not an integral part of, the Command Center. Deeley believed that, by integrating processing computers with communications systems, he could create an analytic and reporting center in which all activity was electronic. He later popularized this as his "paperless environment," a concept that was adopted when NSOC was created.

Deeley planned to reterminate the [redacted] reports from Zweibrucken to CSOC, but instead of the reports being dumped onto a Teletype Corporation printer, they would appear on computer screens, where analysts could manipulate them. A communications interface computer would be required to receive the incoming [redacted] reports, sort them according to type of activity, and route the sorted reports to analysts who were trained to watch different types of activity. CSOC would have the same reporting and collection management authorities that Zweibrucken had. Deeley wanted a new name for the tip-off reports, and he came up with the name KLIEGLIGHT, which would be used into the 1990s. The computer Deeley selected was a Univac product, which was the best machine at the time for communications interface. The TIDE software system, which managed the KLIEGLIGHT database and routed reports throughout CSOC, was written for the Univac computer.[38] A8 was established officially in June of 1967.

CSOC guaranteed that [redacted] would die. It was put into operation a year prior to [redacted] and by the time Frankfurt was ready to assume Zweibrucken's reporting responsibilities, CSOC had already proved it could do them. Real authority thus bypassed Frankfurt and went directly back to Fort Meade.

Moreover, CSOC proved the feasibility of a global SIGINT view. Now there was a reporting center that had inputs from all SIGINT sources on the Soviet problem. Army, Navy, and Air Force data flowed into the new center, and CSOC could see the

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~~TOP SECRET UMBRA~~

Walter Deeley
He was the driving force behind cryptologic centralization and the automation of timely reporting.

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

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interrelationships between activities in differing Soviet military forces and theaters of operation. The idea that SIGINT might get a handle on Soviet force posture by such an across-the-board look took hold, and A8 analysts William Black, [redacted] and others began looking at activity level indicators from various areas of the Soviet problem.

Just as [redacted] was in its death throes, [redacted] was under threat. The high-speed data link, called the DLT-5, permitted SIGINT to flow back to Fort Meade at the then-incredible rate of 2400 bauds per second. Cecil Phillips, who was placed in charge of processing operations in C5, was told to try to duplicate, as near as possible, the operations then existing at [redacted] Phillips even used the same computer, an IBM 1401, to receive the data and format them for follow-on processing on the IBM 7010, which was an upgraded version of the 1410 used at [redacted] Originally he used the same software package in use [redacted] As long as the DLT-5 was operating, [redacted] was superfluous. NSA had succeeded in duplicating the field processing center.[39]

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SIGINT at the White House

All presidents since Pearl Harbor had a mechanism for timely notification of crises. In the 1950s intelligence warning was funneled through CIA, which was responsible for alerting the president through his military advisor. The Army ran the White House communications center, which in turn served the military advisor. This placed CIA in the position of deciding what the president saw and when he saw it. By the time of Kennedy's inauguration, the alerting mechanism in the White House had come to be called the White House Situation Room. It was basically a communications handler – no substantive analysis was performed in the "Sit Room."[40]

Following the Bay of Pigs incident, Kennedy decided to put some teeth into the Situation Room. [redacted] CIA was brought in to create a truly round-the-clock intelligence center. The Situation Room began taking a more active hand in crisis alerting and in keeping the president informed. It was basically an arm of the CIA, however.[41]

All SIGINT product of interest to the president and the National Security Council staff passed through CIA, which forwarded key items after it had taken off the NSA header. SIGINT reports arrived in fairly significant volumes, but NSA was not directly involved. It produced only "information," not "intelligence." Some of the products got to the White House because they related to impending or ongoing crises. Other reports were forwarded simply because the intercepted messages mentioned political figures by name.[42]

During the Cuban Missile Crisis, the "White House " (presumably National Security Advisor McGeorge Bundy) was unhappy with the delay experienced in getting certain SIGINT reports. The incident involving McNamara and the DF of Soviet merchant

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ships (p. 328) was emblematic of the problem. But CIA remained the choke point as long as Kennedy lived.[43]

Things began changing under President Johnson. In late 1965, [redacted] began meeting with Deputy Director Louis Tordella and Chief of Policy John Connelly, along with representatives from CIA and State. The president wanted direct distribution of certain SIGINT, and he wanted it immediately. CIA and State protested that NSA did not produce "intelligence" and that it should not send things directly to the White House. [redacted] was adamant – they could protest all they wanted, but the president had already decided. A direct circuit to NSA was already being installed, and [redacted] and Tordella had developed a procedure to courier especially sensitive material to the Situation Room.[44]

The White House wanted direct distribution for Critics. Moreover, it wanted to see product reports that quoted or named White House people, including the president, his key advisors, and cabinet secretaries. (This was the material that Tordella was having couriered to the White House.) Late in the year, Tordella appointed Edward Fitzgerald as the first NSA liaison officer to the White House.[45] The White House concern may have been spurred by SIGINT product reports detailing [redacted] Placing the White House on direct distribution for these reports, and cutting off other addressees from normal distribution [redacted]

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It is difficult to know what John Kennedy thought about SIGINT, if he ever thought about it at all. His national security advisor, McGeorge Bundy, seems to have used it as part of a larger intelligence mosaic, and he acceded to the CIA method of organizing intelligence, in that it came to him only after it had been massaged. Bundy appeared to violate this scheme near the end of his stay at the White House by demanding direct infusion of SIGINT. This was partly to keep a better handle on late-breaking events, but it was also to [redacted]

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But Kennedy was assassinated in November of 1963, and the new president, Lyndon Johnson, replaced Bundy with Walter Rostow in 1966. Rostow had worked in England during World War II to plan the strategic bombing campaign. He learned not to accept filtered intelligence and worked directly with SIGINT every day.[46]

Lyndon Johnson was the most avid consumer of intelligence ever to occupy the White House. He consumed it voraciously, chewing through stupendous piles of intelligence reports every day. Johnson did not like to be briefed – as former DCI Richard Helms once said, "President Johnson, when he had something on his mind, simply wasn't listening to what one had to say to him. . . . But when he read, he read carefully, and he hoisted aboard what he read. . . ." [47] Johnson insisted on direct information. He had a great variety of

direct information feeds, including a three-screen television set for all three networks, tickers, and other devices to stay on top of things.[48]

During crises (and his administration seemed to be one long series of crises), he would sidle down to the Sit Room and pour through the intelligence reports. If a key military operation was about to be launched in Vietnam, he might stay nearly all night, so that he could get the latest information, or he might come in early the next morning to read the latest news. He resembled no one so much as Abraham Lincoln in the telegraph office, waiting for the news of battle to come off the wire. Even when he vanished to the Oval Office during the day, he would often call the Sit Room to receive updates, and he knew many of the officers by their first names. He was totally absorbed in military operations and intelligence reports.[49]

Under Rostow, the trickle of direct SIGINT reporting into the Sit Room widened to a freshet, then a flood. SIGINT reporting on Vietnam was highly regarded in the White House. Sometimes it was used to cross-check other sources, other times as a stand-alone source. During the secret negotiations with the North (which occurred more or less continuously through three administrations), SIGINT was a highly prized source of information

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The main target remained the Soviet Union,

The Agency processed the material ahead of everything else and sent it directly to the White House. Rostow got the information raw, analyzed some of the data himself or employed members of his staff to do it, and sent the conclusions to the president.

Lyndon Johnson confers with Robert McNamara in 1967, during the height of the war in Vietnam. (Secretary of State Dean Rusk is in the background.)

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Having an avid SIGINT consumer in the White House had its drawbacks. David McManis, who replaced Edward Fitzgerald as the NSA representative to the Sit Room, remembers having to explain the nuances of SIGINT reporting to White House staffers all up and down the line. During the height of the war in Vietnam, the National Security Council staff wanted an accurate count of North Vietnamese infiltration into the South, and they buried McManis under a snowstorm of questions about infiltration groups appearing in SIGINT (the only high-validity source on infiltration). To some, he had to explain that there was no turnstile for infiltration groups heading south, but this just got into SIGINT intricacies that the questioners were not prepared to handle. McManis summoned battalions of NSA briefers to the White House to explain trail group accountability in SIGINT.[51]

David McManis

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The White House insistence on raw, unevaluated SIGINT created other problems. Johnson wanted to be kept in touch with every crisis, and he once told [redacted] that he wanted to be called on every Critic, not realizing how many there were. SIGINT Critics on Soviet long-range bombers over the Arctic were fairly commonplace, and [redacted] wisely decided not to call the president on them, lacking other indicators.

Most of the SIGINT reports flooding into the Situation Room were relatively low-level reports and translations, with very little analysis and even fewer assessments. Assessing things was still not NSA's job. This situation kept the volume of reports up, but there was little analytic glue to fit the disparate pieces together. It was critical that someone be available to interpret and assess the SIGINT. Thus McManis found himself spending long hours in the White House. Moreover, NSA began contributing other Situation Room staff members on a permanent basis, the better to minimize the misuse of SIGINT. (The arrangement continues to this day.)

Very few people outside NSA liked the new, elevated status that SIGINT was getting. But it was a logical progression of events. Presidents wanted to know, and to know

quickly. They tended to be impatient with bureaucracy, and when they found a spigot of critical warning information, they turned it on, no matter whose feelings got bruised. When Nixon entered the White House, his Situation Room chief was an NSA official, and a major portion of the inputs to the White House was coming from the SIGINT system. Whatever anyone else in government might think of SIGINT, the White House was known to view it as the fastest and the most unimpeachable source. Through this reputation, the position of NSA grew, until it was virtually coequal with CIA and had far exceeded the other intelligence assets of the Defense Department.

Carter Takes Command

Gordon Blake retired in 1965. He was replaced by Marshall Sylvester Carter, the deputy director of CIA, on 1 June 1965. Carter, a crusty Army general in the mold of Ralph Canine, presided over the stormiest period of NSA's history.

"Pat" Carter (the name he went by was bequeathed him by a Japanese maid when the Carter family lived in Hawaii) was from a military family, his father rising to the rank of brigadier general. As a result, his growing up was itinerant, and he set his sights on a military career very early. He took a traditional path up the chain, graduating from West Point in 1931 and going into the artillery branch (specializing in defensive artillery). During World War II Carter caught General Marshall's eye, and from then on he was a George Marshall protégé, serving Marshall in various executive capacities when he was chairman of the JCS, representing Truman in China, and secretary of state. After Marshall retired, Carter held a variety of positions in combat units and also served a tour as chief of staff of NORAD.

Marshall S. "Pat" Carter

In his NORAD job he had a fairly detailed involvement with various intelligence sources, including SIGINT, but had never had a job directly in intelligence until 1962, when President Kennedy nominated him to become deputy DCI. Carter came upon the position in the wake of the Bay of Pigs fiasco. There had been quite a shakeup at CIA, and one of those to lose his job was Air Force general C. P. Cabell, the deputy director. Carter survived his trial by fire, the Cuban Missile Crisis, in good shape, and was generally regarded to have had a successful tour at CIA.

He provided a human face to the Directorate, which was headed by the austere and remote John McCone. He became known as an inveterate prankster and became popular with the work force while handling day-to-day business for McCone, whose ties were to the Kennedy family rather than to the bureaucracy. One "Pat Carter story" that CIA employees loved to tell was about the door between McCone's office and Carter's. McCone was not close to anyone at CIA, and, as if to make the point, one day he had the door between his office and Carter's walled over. Carter placed a false hand at the edge of the new wall, as if a door had shut on it, and enjoyed a good laugh at McCone's expense.[52] John McCone was apparently not even aware of the hand.

Marshall Carter became DIRNSA almost by accident. When McCone left CIA in 1965, President Johnson appointed Admiral Raborn to replace him. By law, CIA could not be headed by two military officers, so Carter was out of a job. He put his problem to General Johnson, the Army chief of staff. A few days later he got a call from the deputy secretary of defense, Cyrus Vance. Gordon Blake had decided to retire, and Vance wanted to know if Carter wanted the job. It took him only a few seconds to make the decision. He had been a deputy or chief of staff virtually his entire career – as DIRNSA, he would finally run his own show.[53]

Carter knew a lot about NSA and had a high regard for the Agency. But he felt that NSA needed to be more forceful about its conclusions, more aggressive about carving out a place for itself at the intelligence table. He made it his business to make NSA more aggressive. The days of reticence and retirement under Samford, Frost, and Blake were over. Carter fell on a startled national defense community like a bobcat on the back of a moose.

He began with a symbolic assertion of NSA's independence. He directed that the NSA seal, which had its Defense Department affiliation prominently displayed, be changed to a new seal which referred only to the United States of America. Carter seriously considered the possibility of requesting that NSA be removed from the Defense Department and set up as an independent executive agency along the lines of CIA. He often referred to the fact that NSA was for him, as it had been for all previous directors, a final stop in a long military career. He was not up for promotion, and he did not care whose toes he stepped on.[54]

Even when he was deputy DCI, Carter did not get along with Eugene Fubini. He made his acceptance of the NSA job conditional on an assertion from Vance (which he got) that he would report directly to Vance, rather than through Fubini at DDR&E. He did not hide his disdain for the brilliant and opinionated Fubini, once calling him "a radar technician beyond his competence." But since DDR&E continued to exercise a major influence over NSA's programs, it did not matter much whether Fubini was in Carter's direct line of supervision or not. The two battled almost daily until Carter's retirement in 1969, to the ultimate detriment of NSA's programs.

Carter's abysmal relationship with Fubini and the OSD staff was more than matched by his almost disastrous relations with the armed services. The assertive Carter was ever on the lookout for service encroachments on NSA's prerogatives, and he found them daily. The military were, he felt, constantly building up their intelligence staffs, adding more analytic capability than they needed, especially in the SIGINT field, and doing more interpretation of NSA's information than they were qualified to do (especially at DIA). He felt that they were engaged in a continuing effort to redefine SIGINT as "electronic warfare," the better to take it out of codeword channels and build up their own tactical SIGINT capabilities outside of DIRNSA control.

The services, for their part, complained about perceived lack of NSA response to their needs in Vietnam. SIGINT was too compartmented, NSA refused to clear field commanders for the information they so badly needed, NSA was overprotective of its resources and too quick to fence off new capabilities under codewords and compartments. A battle royal erupted during Carter's regime over the handling of SIGINT and the provision of SIGINT support in Southeast Asia. It poisoned the atmosphere and led to a confrontational relationship between NSA and the military it was sworn to support. When Carter retired in 1969, NSA's relationship with the JCS was at an all-time low. Successive directors were so instructed by the experience that they never allowed relations to return to that level.[55]

To the SIGINT community, however, Carter was a champion. Like Canine, he elevated the status and pay scale of the work force, obtaining more supergrade billets and a generally higher average grade. Displaying his vaunted independence of action, he went directly to Senator Sam Ervin to get the billets and to make sure that the new billet allocation was designated specifically for NSA so that OSD could not co-opt some of them (as he suspected Deputy Secretary of Defense Cyrus Vance of planning). After years of struggle at the OSD level, NSA under Carter got the authorization to begin a career cryptologic service, separate and apart from the systems of any other agency.

At the same time, Carter began the civilian intern program, starting with a small number of recent college graduates entering the NSA work force. In 1969 he extended it to the on-board population. He fended off proposals that NSA's cryptologic work force join a DIA-sponsored intelligence community career development program, carrying with it the

clear implication that there should be transferability between the general intelligence field and cryptology.[56]

Internally, Carter wanted a strong central staff, and he created an executive secretariat to manage his staff and its activities. This reflected his Army background and his experience as staff chief for General Marshall. He strengthened the training school by upgrading its staff to assistant directorship and calling it the National Cryptologic School. Frank Rowlett was its first chief, thus bestowing a status and prestige which it had never had before. Carter was an Anglophile, and he worked hard to maintain the strong ties with GCHQ that had developed over the years.[57]

Under Carter the centralization of SIGINT moved quickly ahead. A Group implemented Plan B and closed the theater processing centers. In the Pacific, the decision to close JSPC, opened only in 1961, was made in 1965. JSPC was a victim of improved communications programs, especially the move to automatic forwarding of intercept traffic under the AG-22/STRAWHAT program (see p. 366). At first, arrangements were made for the AG-22 traffic to be routed through Sobe, where data of interest were stripped off for computer processing. But like [redacted] JSPC could do nothing that could not be done at Fort Meade, and the center at Sobe was doomed. As in Europe, the theater military commanders fought the closure of Sobe energetically, but to no avail.[58]

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It was also during Carter's tenure that AFSCC was finally closed. Though closure plans originated as early as the AFSA period, AFSCC was even stronger and more important when Carter arrived than when Canine became the director. But Carter signed a new closure plan in 1967 and made it stick. NSA had begun quietly transferring functions from AFSCC to Fort Meade in 1966, and after the closure plan this accelerated. First to go was the [redacted] followed by larger efforts like the [redacted] AFSCC officially went out of the COMINT processing business on 30 June 1969. [redacted] were transferred to NSA, [redacted] were eliminated, and [redacted] remained in San Antonio, where they merged into a new organization called Air Force Electronics Warfare Center, which analyzed the effectiveness of military-wide electronics warfare efforts, based primarily on SIGINT inputs.[59]

NSA would have closed AFSCC earlier if space could have been found, but the Agency was always chronically short of space. The dedication of the new nine-story headquarters building in 1963 just barely caught up with an expanding population, and there was still no room for the Center. The key event was the lease of the Friendship (FANX) complex (see p. 294). NSA moved into the first building, FANX I, in the fall of 1967, and as new buildings were completed, it occupied those also until by the fall of 1970 the Agency was the tenant in FANX I, II, and III. (NSA was the first and only resident of all the FANX and Airport Square buildings that it leased except for FANX I, whose lease has been given up.) It was not cheap – Carter once stated for the record that for four years worth of rent,

NSA could have built its own buildings. But military construction money was carefully controlled by Congress.[60]

MECHANIZATION OF THE SIGINT PROCESS

> You people are doing a tremendous job producing history. You are not producing intelligence.
>
> Juanita Moody to the B1 work force, 1961

SIGINT had a reputation for being laborious and expensive. Intercept operations tended to be labor-intensive, while processing was equipment-intensive. Of all Department of Defense organizations, the SCAs were the most far-flung, draining the federal government of foreign currency in the attempt to maintain small sites in remote areas difficult and expensive to supply. Robert McNamara had a war to fight, and he exerted intense pressure on the SIGINT system to economize. This manifested itself in pressure to reduce the number of people involved in the system front end, both through field site mechanization, and through the transfer of operations back to the Continental United States.

Along with the economic pressures came demands to speed up the system. Eisenhower's concerns over war warning information, far from disappearing after his administration ended, intensified under Kennedy. The Bay of Pigs and Cuban Missile Crisis instilled a sense of hurry-up.

The twin demands of economy and speed pushed the cryptologic community into a thorough remodeling of SIGINT. The result was the fashioning of a new system, drastically different from the one which had emerged from World War II and had stood relatively intact through the 1950s.

It had been the dream of cryptologists for years to modernize and automate manual Morse intercept, the largest part of the front end. A first try at it was during World War II, when OP-20-G attempted to produce a punched paper tape from a manual typewriter, thus readying the intercept for introduction into a follow-on processor without further manipulation. The results of the experiment are lost. It was the last attempt at that sort of thing for at least ten years.[61]

In 1957 NSA began toying with the idea of copying Morse on a special typewriter that would do more than just copy alphanumeric characters. The Agency modified a Remington-Rand Synchro-tape typewriter by adding special keys at the top of the keyboard that designated tags, indicating such things as callsigns and frequencies. The project was called SPIT (Special Intercept Typewriter).[62]

While technicians modernized the intercept operation, NSA began looking at processing techniques. Since the dawn of America's SIGINT system, intercept sites had forwarded raw traffic to Washington for processing. While raw traffic went by courier and took weeks to arrive, traffic extracts, often called TECSUMS (technical summaries) were prepared at the field site from the raw traffic and were forwarded electrically so that Washington had at least a summary of significant intercepted material. Prior to the late 1950s the TECSUMS went by formal message, but with the advent of Opscomms, more and more TECSUMS were put on Opscomm circuits.

At the time, NSA technicians and analysts were engaged in a philosophical debate about mechanization. Should traffic be brought back in bulk to NSA, where machines could prepare it for computer processing, or should the mechanization occur in the field, closer to the front end of the process? In the end the front-enders won, and NSA began designing equipments that would mechanize the intercept operation.

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[redacted] E.O. 13526, section 1.4(c)

The experiment with the SPIT typewriter spawned a new project, called [redacted] or the AFSAV 311D. The [redacted] equipment consisted of a modified Remington-Rand typewriter similar to the SPIT model, with special keys referring to such traffic components as callsigns and to traffic externals like start-of-message, end-of-message, and case notation. These features would speed the intercept process by relieving the operator from having to type them in manually. But [redacted] added a new feature similar to the World War II experiment – the output was both page copy and a seven-level paper tape. The beauty of this modification was that the tape could be transmitted just like an outgoing message, and it could be input to a computer at the other end, providing that it was compatible with both.[63]

[redacted] quickly became the focus of the Joint Mechanization Group (JMG). This ad hoc committee was the brainchild of Frank Raven and Juanita Moody. Raven, one of the leading cryptanalysts to emerge from the Navy in 1945, was at the time chief of GENS, while Moody was a division chief within ADVA. They were intrigued by the possibility of automating the front end of the system and pushed [redacted] as a possible answer. Moody named her deputy, Cecil Phillips, to head the JMG.[64] A field test performed at ASA's Rothwesten site in 1960 proved the intercept portion of the concept.

The next logical step would be to input intercepted traffic produced on an [redacted] position into a computer and do some processing on it. Frank Pinkston, a USAFSS staff officer, heard about the [redacted] machines, which at the time (1961) were lying idle, and asked if Security Service could run its own test. The Air Force liked the idea because it would facilitate the rapid transmission and processing of highly perishable air-related traffic. Pinkston designed a test in which [redacted] positions would be located at the AFSS site [redacted] would produce communications-formatted tapes, and would forward the

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Frank Raven

Juanita Moody receiving the Distinguished Civilian Service Award from then-DCI George Bush in 1976. NSA director General Allen looks on.

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tapes via Opscomm to [redacted] where they would be fed into the IBM 1401, which would produce an automated TECSUM. The JMG got a Bogart programmer to design the software, and in September 1961 AFSS ran a successful test. (Bogart was one of NSA's RAM systems.)[65]

The project then languished, primarily because every field site would need a 1401. The 1401 was at the time part of AFSS's 466L system, which was under intense fire from NSA because of its complexity and expense. But interest never vanished. ASA had embarked on its own project, called [redacted] which was soon subsumed under the auspices of the JMG. Meanwhile, [redacted] proclaimed the concept revolutionary and proposed that it be broken down into component portions and implemented gradually. Rather than locate computers at each field site, [redacted] proposed that traffic be forwarded to central locations. This concept would reduce the number of computers required (computers were still regarded as exotic and outlandishly expensive), but it would also overload the communications system. Thereby hung the dilemma.[66]

AG-22

While the policy people thrashed out the dilemma, the technical people continued working on improvements to the device. The Remington-Rand equipment was judged not sturdy enough and was replaced by a Teletype Model 35, extensively modified by the addition of the special tagging keys. The Agency named the device the AG-22 and changed the output to an eight-level tape. NSA also standardized the tagging and traffic formatting requirements into a new TECHINS (T-5004), so that Morse traffic intercepted anywhere would look just like any other Morse traffic. Computer formatting requirements were beginning to drive the SIGINT system.[67]

Changing the Communications System

The communications system that AG-22 tapes were preparing to assault had become creaky and outmoded, and it was incapable of handling the new requirements. The Cuban Missile Crisis jammed the communications system as it had not been since the twin Suez and Hungarian crises of 1956.

After the creation of Criticomm, NSA continued to try to develop a high-speed switch that would improve reliability and reduce handling time. At first, technical hurdles delayed adoption of a new switch. But in 1962 a new, bureaucratic obstacle appeared with the creation of the Defense Communications Agency (DCA). Such an agency was a logical outgrowth of McNamara's centralization strategy, but it confused the Criticomm situation. DCA took over the job of searching for a new switch, regardless of the feeling at NSA that this would slow the development process. There is little doubt that the project was further delayed by hard feelings between the two agencies.[68]

HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY
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AG-22 – Configured Morse Position at [redacted]
(R-390 receivers are in the left-hand rack; MOD-35 in the center; and tape unit on the right)

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

In the mid-1960s, DCA decided on a new satellite communications system called Defense Special Security Communications System (DSSCS), and it decreed that the new Criticomm switch would have to be compatible with the rest of the system. The fact that operators in general service (Genser) communications centers were not SI-cleared created more policy problems, and the search for a switch slipped further.

Then in 1964 the picture was further clouded when DIA got approval to manage the SSO system. Part of the package was the creation of a separate communications system for the distribution of COMINT, called Spintcomm. This introduced new bureaucratic conflicts over who would be the ultimate manager of the composite Criticomm/Spintcomm system, and the edict that established Spintcomm further confused the picture by assigning significant responsibilities to all three participating agencies (NSA, DIA, and DCA). Gordon Blake strongly protested DIA management of the system, but he was overruled at the OSD level. This set off new turf battles and further complicated the technical design of a switch that would have to handle all communications requirements.[69]

Meantime, more and more traffic flooded the system, largely because of the Vietnam War, and message throughput actually declined from year to year, while errors increased. To stave off disaster, NSA took various halfway measures. Much traffic was diverted to the expanding Opscomm systems, and Criticomm was reserved mainly for formal messages. The Agency also designed terminal equipment which would speed and improve handling of traffic within the Criticomm centers.

One such solution was the BIX (Binary Information Exchange), a high-speed local message switch which could operate at various speeds to handle traffic from many different inputs. NSA awarded the contract to ITT, which delivered the first BIX in 1961. The principal improvement was in data storage (the BIX used magnetic tape to store large amounts of data) and in improved throughput (BIX could handle 100,000 words per minute). As an automatic switch, however, it failed, and messages still had to be processed manually.[70]

At the same time, the COMSEC organization was working on crypto that would handle the new circuit speeds. The KG-13, which could encrypt circuits up to 2400 bauds per second (the speed of the DLT-5 from Frankfurt) went on line in 1965.[71]

STRAWHAT

NSA planned to install AG-22s in virtually every HF field site in the world, but the Opscomm system would not be able to handle the volume. Originally designed for analyst-to-analyst conversations, Opscomms were, by the mid-1960s, becoming overloaded with new TECSUM and [redacted] forwarding requirements. They were slow of foot, either 60 or 100 words per minute, and barely able to handle current requirements. If AG-22

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Comm Center, 1960s. Lacking a digital switch, Criticomm centers continued to be overwhelmed by five-level tape and manual processing.

data were diverted to Opscomm, it would expand the circuit requirements geometrically. Lacking a revamped Criticomm system, the solution lay in a separate, high-speed data system specifically for AG-22 formatted tapes. In 1967 NSA came up with the answer – the Agency called it STRAWHAT.

STRAWHAT was a 9600-baud data link system from field sites to processing centers. A time division multiplex system capable of up to eight-level forwarding, its equipment could be patched directly from the circuit terminal to a computer, bypassing the person in the communications center. The first circuit became operational in December 1968, and NSA planned to wire up more stations with STRAWHAT circuits beginning in 1969. By mid-1970, the entire SIGINT system would have at least an interim STRAWHAT capability.[72]

The Computer Industry at NSA

By the mid-1960s mainframe computers had taken over much of the manual processing at NSA. Although the dual tracks of scientific versus general-purpose processors were continuing, increasingly the Agency was focusing on the latter. It had to do so in order to handle the TECSUM data flowing into Fort Meade via the burgeoning Opscomm network. At that time, the computer of choice for this operation was the IBM 7010, an advanced model of the IBM 1410. IBM machines almost totally dominated the general purpose processing job, and the collection of 7010s was simply called "the IBM complex."[73]

IBM was not the only company doing business with NSA. In 1963 the first mini-computer, the PDP-1, was delivered to the Agency. That, and its successor, the PDP-10, were used for a wide variety of special-purpose processing jobs. That same year, NSA purchased the Univac 490, which had a capability of handling thirty remote stations simultaneously. The stations were equipped with both paper tape and Teletype Model 35 input devices. The software, called RYE, was developed at NSA and was ideal for handling simultaneous inputs from the remote stations. It was made to order for processing from communications terminals, and thus it fitted NSA's emerging needs for handling Tecsumized inputs from field sites, as well as a variety of other small-job applications.[74]

By 1963 NSA's computer collection was by far the largest in the country and probably the world. The value of its computers topped $50 million, which was greater than the Census Bureau, the Baltimore headquarters of the Social Security Administration, and all the field offices of the Internal Revenue Service put together. By 1968 General Carter could boast that NSA had over 100 computers occupying almost 5 acres of floor space.[75]

NSA continued to do pioneering work in partnership with the commercial computer industry. One such innovation was the so-called Josephson Junction technology. This was a very-low-temperature phenomenon in which "switching an electron tunneling junction between two states is accomplished by means of a magnetic field."[76] Discovered in the mid-1960s, the potential for speeding up computer processing was so attractive that NSA

funded about one-third of the IBM research on the Josephson Junction technology. Unfortunately, it didn't work, and IBM ultimately gave up on the Josephson Junction. The project illustrated both the need for research in advanced technologies and the risks involved.

NSA also pioneered in techniques for mass storage. One such experiment was called TABLON, developed in concert with IBM and Ampex in the 1960s. Tablon used a photodigital process developed at IBM and a tape storage system developed by Ampex. The storage systems were internetted by means of two PDP-10s. The philosophy was to have a central data storage system that could be used by the entire agency. But TABLON had serious technical problems. Ampex was unable to develop a tape drive that met system specifications, and too much software was required to run the PDP-10-based star network. Ultimately TABLON was overtaken by new disk storage technology.[77]

NSA programmers were in the forefront of special computer language development. Agency programmers created special languages for HARVEST (called Beta), for the IBM 1401 (called PAL) and punched card emulation language (Transembler) for the IBM 705. Still, the Agency was losing its edge in pioneering work, as the commercial world forged ahead with new innovations that owed less and less to the inspirations that had stemmed from cryptologic applications. It was an inevitable process.[78]

IATS

The new AG-22/STRAWHAT marriage, innovative though it was, had some problems that could only be called "logistical." A large field site, with row on row of manual Morse positions, could produce a considerable amount of eight-level tape in a day. The process of accounting for, and carting to the communications center, long coils of tape cascading off collection positions was time-consuming, and an analyst (who had now become a communications tape handler rather than a SIGINT analyst) could literally become buried in tape before the end of the shift.

In the mid-1960s K Group (the PROD organization responsible for interfacing NSA with the field sites) began working on a system for accepting manual Morse data directly onto a magnetic tape. After experimenting with several different computers, it settled on the Honeywell 316, which could accept data from 128 different sources simultaneously. (Thus, a field site would have to have more than 128 Morse positions before it required more than one 316.) Honeywell, which sold the 316 at a very competitive $12,500, agreed to loan one to NSA, and a test was run at Vint Hill in Virginia. The test system worked, and the Agency, which called the new system IATS (Improved AG-22 Terminal System), got $10 million in 1968 to install Honeywells at all AG-22 field sites. The AG-22 positions were wired to the on-site Honeywells, which packed the intercept files onto a magnetic tape. Periodically (usually every six hours) the tape was transmitted on a high-speed data link to NSA.[79]

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At this point NSA embarked on a major software development effort to handle the expected influx of IATS data. Cecil Phillips gave the job to John W. Saadi, who was a team chief in Phillips's C Group. Saadi, writing in assembly language, created a series of processes (called [redacted] resident on a Univac 494, which accepted the data from the communications system. The 494 built batch files and passed them to the IBM 360 through a shared disk arrangement. This was a ground-breaking task because IBM machines were notoriously difficult to interface with the machines of any other company.

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The IBM 360, the first third-generation machine, was introduced at NSA in the late 1960s to replace the 7010s. [redacted] Each production organization wrote applications programs for the 360 complex, so that its data, handed to the 360s from [redacted] would be processed and ready for the analyst. The complex did its heaviest work at night, so that the output would be ready for the analysts in the morning.[80]

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Now that raw intercept files were available on computer, each production element developed databases. Some of the work in this area, especially that done by A Group to create a relational database for the Soviet problem, was on the leading edge of technology.[81]

The Communications Solutions

The impasse that had been created between NSA, DIA, and DCA lasted through the end of the Carter regime. By 1968 DCA had still failed to produce an adequate communications switch, and Carter felt that DCA failed to understand SIGINT (despite the fact that the director of DCA, Lieutenant General Richard Klocko, had been one of the founding fathers of the Air Force Security Service). But the next year brought a new director, Vice Admiral Noel Gayler, and a new approach to the logjam. Gayler moved quickly to iron out differences, and in August of 1969 he signed an agreement with Klocko covering management of the communications systems that supported SIGINT.

The agreement was a carefully crafted compromise. DCA would manage the entire system, based on technical specifications submitted by NSA. DCA could satisfy communications requirements using any type of circuitry, as long as NSA technical specifications were adhered to. The next month DCA cancelled the automatic switch contract with ITT. Shortly thereafter, OSD decided that the new DCA communications system, called Autodin, would be used for SIGINT traffic. This decision would result in NSA relinquishing a proprietary net that it had controlled since its birth. Some were not happy, but Gayler held to the compromise package, and an era of relative good feeling resulted between Gayler and Klocko.[82]

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

Lacking a DCA automatic switch, NSA developed its own in-house version and hatched plans to use it in its own communications center at Fort Meade. The Agency decided to scrap the Teletypewriter Distributions System in use since the new building had opened in 1957 and replace it with a new communications center based on the new switches. It was to be called IDDF (Internal Data Distribution Facility), and it opened its doors in early 1972 on the third floor of the Ops-1 building. The year before, NSA introduced optical character readers in the message processing facility, an innovation which led to the elimination of the time-consuming step of teletype operators hand-poking every outgoing message. Called AMPS (Automatic Message Processing System), its rigid formatting requirements and special IBM Selectric typewriter balls were at first hard for secretaries to get used to, but a godsend to the communications center.[83]

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Automating the Collection Process

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New methods of forwarding data to NSA did not change the basic process of signal collection. Most of an operator's time was still spent searching for target signals. But with the new digital technology and smaller on-site computers, it should theoretically be possible to acquire certain signals automatically. In the early 1960s, R&D began working on the development process. The early development work was done in 1963/1964 under a project called

The production model of It was a more sophisticated system, which had an automated digital front end connected to several back-end manual Morse collection positions.

Digital computer-based collection systems eventually became the rule rather than the exception. Some, like the IRON HORSE system used in Vietnam (see p. 549), automated the collection of manual Morse signals. But Morse transmissions had a huge variety of formats, and the length of the mark or space varied depending on the sending operator. Computer-based collection was far more adaptable to baud-based signals. An early success in this area was Flexscop, a digital collection system

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[ ] The on-site computer (a CP 818) [ ] and demodulated the signal, then scanned the plaintext transmissions for key words. The system would alarm on recognition of high-interest text, and the operators would react with special processing and forwarding routines. It replaced the "ancient" CXOF equipment which had been the equipment of choice [ ] since the late 1940s.[86] [ ] with its stable frequencies, plain text, and bauded structure, was especially suitable to automation, and NSA collection and processing systems for that effort became among the most automated in the business.

In the 1960s NSA automated the collection of a very wide variety of signals. [ ] The Agency employed a bewildering variety of minicomputers for these specialized jobs, sometimes buying commercial computers from outfits such as Honeywell and DEC, sometimes building its own computers in-house.[87]

Bauded Signals [ ]

In the late 1950s NSA was struggling to cope with the increasing use of bauded systems for record traffic. The trend toward the bauded world resulted partly from increasing traffic flow, which required faster circuit speeds that radioprinter made possible; it also had a corollary benefit of making [ ] possible. The field sites were collecting ever higher volumes of printer messages, most of which languished in NSA's warehouses on magnetic tape, waiting to be converted and processed. (For instance, the volume of enciphered communications collection increased [ ] from 1958 to 1968.[88]) By the early 1960s the volume of unprocessed magnetic tape was becoming difficult to manage technically and was embarrassing politically.

R&D's first approach was to build a general-purpose digitizer and diarizer for bauded signals. Project [ ] which originated between 1956 and 1958, at first targetted the on-line [ ] was only part of the problem, and R&D, working with A Group, began working toward the on-line digitization and diarization of the entire bauded signals problem. An ad hoc committee was established in 1959 to study the problem, and R&D began designing equipment to digitize printer signals onto magnetic tape at the collection position. [ ] consisted of a number of special-purpose components, [ ] which were designed to digitize, diarize, and format onto magnetic tape. It resulted in two parallel avenues, [ ]

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While R&D experimented with general-purpose processors, DDO was becoming overwhelmed by magnetic tape. During July 1961 NSA received 17,000 reels of magnetic tape, all of which required signal conversion prior to processing. In fiscal year 1961 the Agency needed over [redacted] just to convert bauded signals for further processing.[90]

To stem the tide, Operations initiated a QRC (Quick Reaction Capability) project called [redacted] which quickly changed its name to [redacted] and the various spin-offs of the [redacted] project were in full swing (and in direct competition with each other) when, in 1962, DDO initiated a crash requirement [redacted] to collect the burgeoning [redacted] signals. The urgency of the requirement vaulted it ahead of everything else. The new project, called [redacted] would eventually result in the conversion of [redacted] to a standard position. The new positions would intercept, digitize, and record [redacted] Everything would be processed at NSA in a standard format, thus simplifying the job of the processing organization and the task of designing processors.[91]

[redacted] The Attack Continues

[redacted]

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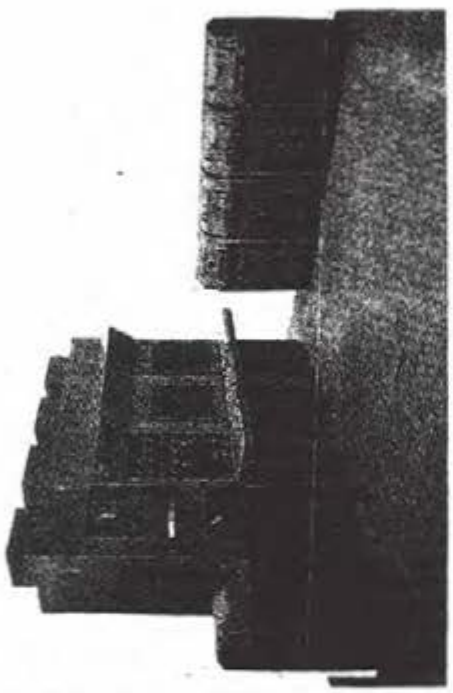

position, with its distinctive cantilevered scopes overlooking the four-channel digitizers

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[redacted]

The Bissell Study

At mid-decade, CIA commissioned a study of the status of NSA attack on high-grade ciphers, the first since the Baker study in 1958. Richard Bissell, a top CIA official unhorsed after the Bay of Pigs fiasco, was named to head the committee. Bissell was a good choice. He had stubbed his toe on covert operations, but he was highly knowledgeable on technical intelligence and had in fact headed the U-2 development project in the 1950s.[96]

Unlike Baker, who had ranged all over the SIGINT landscape, Bissell confined himself exclusively to the project at hand. It was Bissell who first noted [redacted]

[redacted]

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Richard Bissell

The draft of the Bissell report, which made the rounds of NSA seniors in December of 1964, generated a storm of controversy. The Agency believed that only cryptanalysts could make judgments about systems exploitability and that only NSA should make resource allocation decisions. Blake, at the urging of Deputy Director Louis Tordella, tried to get Bissell to change the report draft, but did not succeed. Once the report was released early the next year, the new director, General Carter, launched a blistering attack on the specifics. Regarding the recommendations to reallocate resources, he said, "I am confident that our present mix is about right and shall ensure that appropriate changes in emphasis and use of resources are made as warranted." Basically, Carter folded his arms and did nothing.[98]

So it had finally come to the stone wall. The Agency firmly believed that it would eventually read enough [redacted] traffic to make a difference, but practically no one outside the headquarters complex at Fort Meade believed it. Carter, who had no basis for an independent judgment himself, believed what his deputies told him. He held fast, and in this case his independence of action and absolute refusal to brook outside interference helped save the program.

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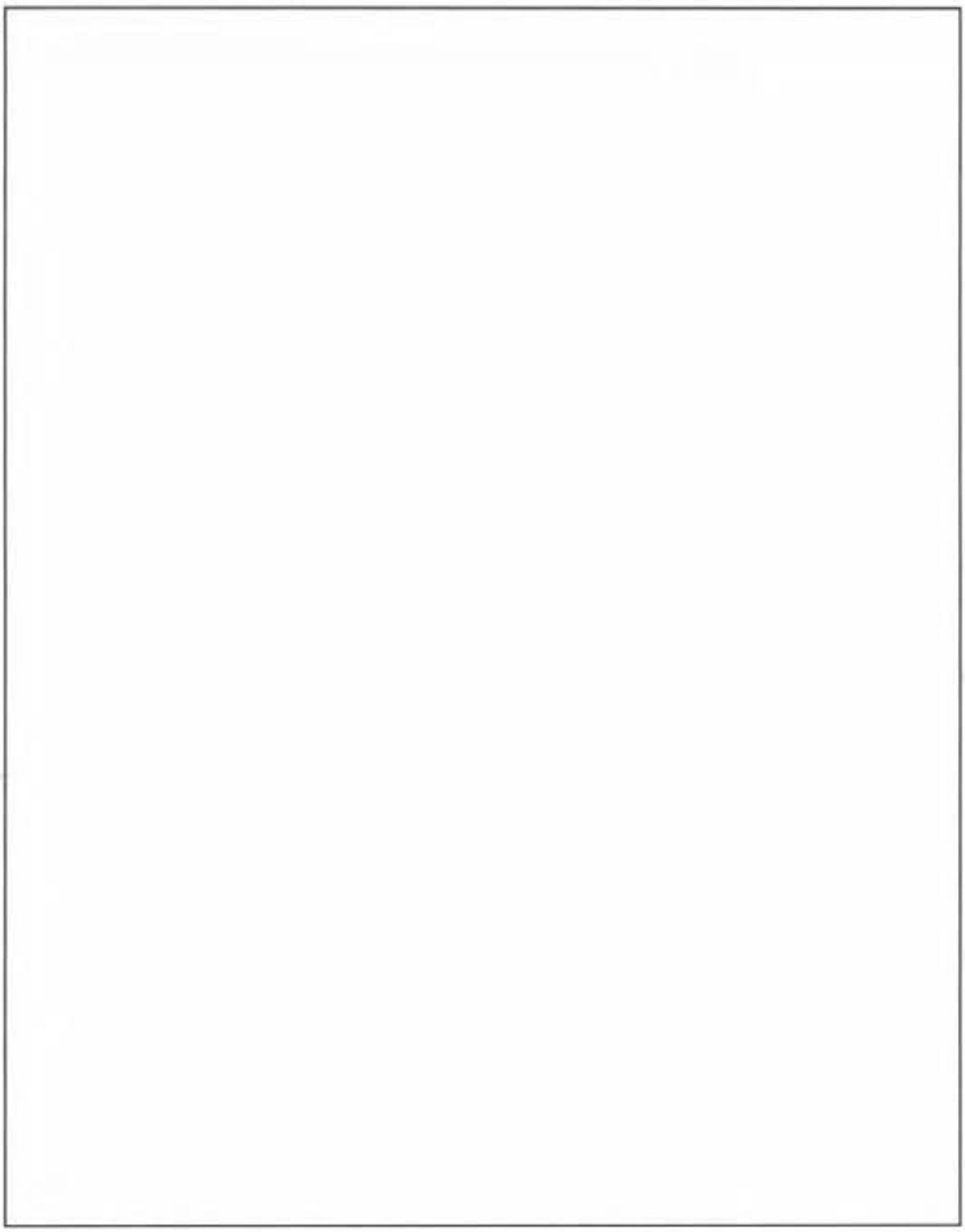

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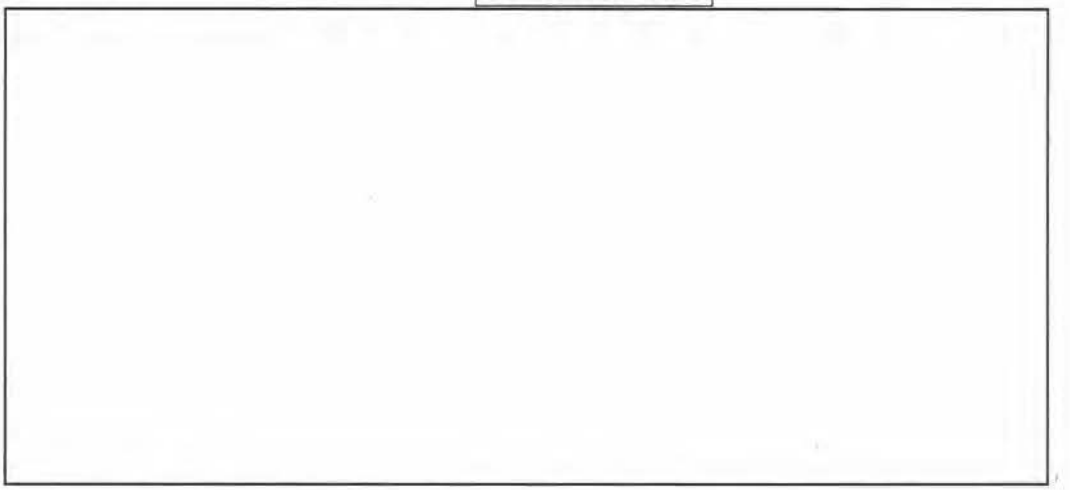


COMSEC at Mid-decade

In the 1960s the KW-26, the equipment of choice for securing long-haul point-to-point record traffic circuits, dominated American COMSEC. But American involvement in Vietnam led to a new set of tactical encryption requirements. Typical of the new COMSEC demands was the need to encrypt record traffic on low-level tactical nets in a combat environment. The KW-26 was ill-suited for this application, and to meet the demand, NSA developed the KW-7 to secure terminals which received traffic from multiple transmitters. This equipment added a unique indicator for each message, so that stations in a multiple-station net could correspond using a single crypto device.[103]

The Development of American Secure Voice

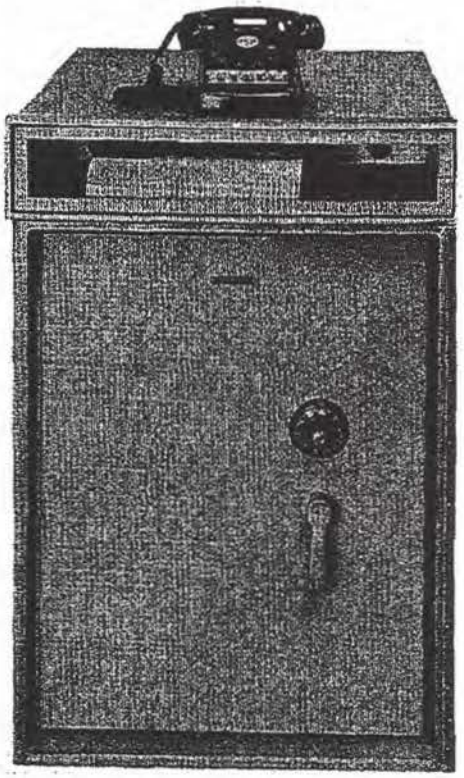
The big news in COMSEC in the 1960s, however, was secure voice. U.S. government users would use the telephone for classified talk, and the only solution was to provide them with a secure handset. Secure voice requirements spanned a broad swath from high-level point-to-point conversations to tactical military applications in the jungles of Southeast Asia. Well aware of the vulnerabilities of voice, NSA approached secure voice cautiously, and for many years secure voice capabilities lagged behind record traffic.

For strategic systems, NSA developed two devices in the 1960s. The KY-9 was a narrow-band digital system using a vocoder, and it was the first speech system to use transistors. The advantage of the KY-9 was that it could be used on a standard Bell System 3 kHz-per-channel telephone system without modification. The disadvantages were many, however. It was big and heavy, encased in a safe that had to be unlocked every morning before the system could be activated. It was also expensive (over $40,000 per

copy) and was a true "Donald Duck" system which required the users to speak slowly to be understood. Only about 260 sets were deployed, all to high-level users, mostly Air Force.[104]

Far more significant was the KY-3, developed about the same time. Built by Bell Labs under contract, it too was housed in a safe. It was big, klunky, and looked a lot like the KY-9, but without many of the drawbacks. The KY-3 was a broadband digital system, so voice quality was better, and it was not a push-to-talk system. But what brought it into wide use was its employment in the Autosevocom network.

Autosevocom was a secure voice network designed by NSA. Local networks consisted of KY-3s, whose individual voice conversations were first decrypted, then reduced to narrow-band signals and digitized in the HY-2 vocoder, and finally re-encrypted for transmission using a KG-13. The Autosevocom system achieved wide acceptance, and some 2,700 KY-3s were sold to users worldwide, including the White House, the Joint Chiefs of Staff, and the Strategic Air Command.[105]



KY-3

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As Vietnam heated up, NSA's attention turned increasingly to tactical voice encryption. An early entry into the tactical arena was a set of systems called PARKHILL. An analog system, it was acknowledged to be vulnerable to exploitation and was not authorized for conversations above the Confidential level. Knowledgeable COMSEC people called it [redacted] But it was better than nothing, and NSA assumed that the Soviets, if they were to exploit it at all, would have to devote inordinate resources.[106]

For digital encryption, the Agency first turned to the KY-8, whose development had begun in the late 1950s. The Air Force tested the KY-8 in its F-100 series jet fighters, but found it heavy and cumbersome to key. (As former COMSEC official David Boak once said, the Air Force would accept a device "only if it had no weight, occupied no space, was free, and added lift to the aircraft.") More to the point, if the KY-8 were to stay, the fire control

radar would have to go. The Air Force opted for the fire control radar, and American aircraft in Vietnam remained without voice encryption.

The Army and Marine Corps, however, found that they could use the KY-8 in jeeps, and some 6,900 devices were eventually deployed. Meanwhile, NSA embarked on a whirlwind project to provide a KY-8 type of device, absent the bulk and weight. The result was two new tactical voice encryption systems, the KY-28 and KY-38. The former was developed for aircraft, while the latter was employed in man-pack radio systems. Weight in both was reduced by the use of integrated circuits. The three devices (KY-8, 28, and 38) were referred to as the NESTOR family. By the end of the decade, there were 27,000 NESTOR equipments in the U.S. inventory.[107]

The next generation of voice encryption systems was called SAVILLE. Consisting of VINSON (KY-57/58) and BANCROFT (KY-67), they were smaller, lighter, and consumed less power than the earlier NESTOR sytems. They also employed updated keying systems and could actually be rekeyed from an aircraft, permitting the control station to remotely change the keys on a net in case a station were overrun by the enemy. BANCROFT was the first-ever combination radio and encryption device in a single unit. VINSON and BANCROFT were not introduced until the early 1970s.[108]

TEMPEST

TEMPEST standards had been set forth in the late 1950s in a document called NAG-1. Like other COMSEC policy documents, however, this one was advisory. What was needed was a directive policy and enforcement procedures. NSA spent the decade of the 1960s working on that aspect of TEMPEST.

In September 1960 NSA briefed the USCSB on existing American TEMPEST vulnerabilities. It shocked USCSB into action, and at a meeting in October the board agreed on a crash program and established its first and only subcommittee, SCOCE (Sub-Committee on Compromising Emanations). The first item on SCOCE's agenda was a request from USIB to evaluate the Flexowriter, which was being considered for almost universal adoption within the intelligence community as a computer input-output device.

The Flexowriter, SCOCE found, was the strongest radiator ever tested, hardly a recommendation for its adoption within the intelligence community. With the proper equipment, an enemy listening service could read plain text as far as 3,200 feet. The subcommittee posted a series of recommendations that became known as the "Flexowriter policy," including recommendations that it not be used overseas at all, that in the U.S. it not be used for classifications higher than Confidential (and then only if the using organization controlled a space 400 feet in circumference), and that the Navy be tasked with a long-range technical fix. At the same time, SCOCE published two lists: one

containing equipment that could not be used at all with classified information, and one listing equipments that could be used only on an interim basis.

USCSB took the issue to McNamara, who became an ally. In December 1964 he signed a directive imposing the policy DoD-wide. The reaction was consternation. Without waivers, some agencies would have to virtually close down. All would have to buy new equipment, that expense coming directly out of their O&M moneys. In many cases the cost of equipment would double – in some cases no fix at all could be designed, and the equipment would have to be scrapped or sold. The result was that many went straight for the waivers, and in the face of imminent operational shutdown, got them. Even most SIGINT sites had to operate under waivers for years as agencies scrambled to comply.[109]

GEOGRAPHICAL RETREAT

> Certain reductions and consolidations in intelligence and communications-electronics activities in Turkey are feasible and desirable.
>
> Blanchard Study, 1963

The conventional collection system reached its point of maximum expansion in the early 1960s. Then, like a star imploding, it began to shrink. The shrinkage was basically a product of two problems, one internal and one external.

The internal cause was money. The Vietnam War, and President Johnson's domestic initiatives like the War on Poverty, began to squeeze the cryptologic budget (not to mention other DoD programs). By 1963 a serious international balance of payments problem had already developed, and the far-flung conventional SIGINT collection system became a prime target for reduction. Directed to study the problem, NSASAB concluded in 1963 that technology to remote collection sites back to the U.S. did not yet exist, except for the technique of recording signals on wideband tape and transporting the tapes back to the CONUS for transcription. Since this did not in most cases meet timeliness requirements, overseas reductions would mean real reductions in SIGINT collection capability.[110]

The second problem was developing Third World nationalism. Many of the countries which hosted SIGINT collection sites were moving toward more independent foreign policies, and foreign troops on their soil did not play well in domestic politics. As the Vietnam War wore on, there was, in addition, a sense of diminishing American power in the world, and a feeling that it was better to move into a neutral camp, rather than to lean on weakening American military protection. These trends often manifested themselves in a demand that the Americans somehow "pay" for their rental of foreign space.

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Turkey

In no country did these trends play out more forcefully than in Turkey. The Anatolian Plateau had become the ideal SIGINT collection platform.

Turkey had been friendly to Americans since the end of World War II, and this friendship continued strong until the Cyprus crisis of 1963. Anti-Americanism first made an overt appearance at that time, intergovernmental relationships were strained, and a Turkish mob burned the USIA library in Izmir.[112]

Leftist, anti-American factions, emboldened during the Cyprus crisis, became increasingly vocal in the National Assembly. By mid-1965 these factions had succeeded in steering the pro-American government of Suleiman Demirel toward a reevaluation of the bilateral relationship with the United States.

BIG RIB was actually an airborne telemetry collection program using RB-57 aircraft newly available from the LITTLE CLOUD collection program in Pakistan (see p. 386). The program was in its very early days, flying out of Adana, when, on 14 December 1965, one of the planes crashed over the Black Sea. The cause of the crash was (and is to this day) unexplained.

Weather was not the best, but did not appear to be bad enough to cause the crash of a high-performance aircraft like an RB-57.

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The unexplained crash resulted in a frantic American and Turkish search for wreckage, which the Soviets independently joined. Fragments of the plane were recovered, but nothing that would have provided clues to the cause of the crash. The incident hit the Turkish press and received wide play, amid leftist demands that the government throw the Americans out. Although the Soviets did not protest the crash itself, they called the search and rescue effort that followed it a "dangerous provocation." This merely oiled the fires of the Turkish nationalists, who contended that Turkey had become a pawn in the chess game between the Americans and the Soviets. Following the Cyprus crisis by two years, and Kennedy's withdrawal of Jupiter missiles without consulting Turkey in 1962, the BIG RIB incident buttressed nationalist contentions that Turkey should draw away from American sponsorship.[115]

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Buffeted by rising nationalist sentiments in Turkey, [redacted] was whipsawed by cost reduction efforts at home. A study by Lieutenant General W. H. Blanchard in 1963 had concluded that [redacted]

In July 1968 the DDR&E, [redacted] informed General Carter that to meet McNamara's gold flow reduction targets, it would be necessary to close Trabzon and either Samsun or Sinop by fiscal year 1970. Carter chose Samsun, and soon Sinop was the only Black Sea collection site remaining.[121]

Pakistan

To the east, Pakistan was an even more difficult case. The Pakistanis had drawn close to the Eisenhower administration in hopes of getting the wherewithal to defend themselves against Hindu India. Eisenhower had a very different goal – to align Pakistan in an anti-Soviet alliance and, coincidentally, to obtain permission to use Pakistani soil for certain sensitive intelligence operations. The Pakistanis did not much care about the USSR, but they cared very deeply about American military arms and agreed to all the conditions for purchase, [redacted]

Under Kennedy, relations between the United States and Pakistan plunged swiftly downhill. After the Sino-Indian War of 1962, Kennedy arranged to send India military aid to help them defend against the PRC, but of course Pakistan felt the arms could be turned against them. Street demonstrations in Peshawar against the American presence did nothing to assuage fears for the safety of the Air Force people on the base. In March 1963, General Ayub (the Pakistani military dictator) began improving relations with the PRC as a hedge against American indifference. Through the next two years it became increasingly obvious to the State Department that Pakistan was playing a double game and that it would accept aid from any quarter if it would improve its defensive position against India.[122]

[redacted]

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The new program, called LITTLE CLOUD, was a unique international SIGINT cooperative venture,

Faced with increasing Pakistani nervousness about Soviet attitudes and an upsurge of militant Islam, the U.S. tried to make the arrangement more palatable to Ayub. To minimize the visibility of the base, NSA held up planned installation of an FLR-9.

The India-Pakistani War erupted in September 1965, in the middle of precarious relations with Ayub. Indian air strikes hit near the city. Angry mobs roamed the streets of Peshawar, and American GIs, whose government was assumed by the Pakistanis to be in league with India, were restricted to the base.

Nineteen sixty-seven was another bad year for American interests in Pakistan. Ayub regarded Lyndon Johnson as even less of a friend than Kennedy, and when the Arab-Israeli war broke out in June he offered aid to the Arab states. Once again militant Muslim mobs invaded downtown Peshawar, and Americans were restricted to the base.

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By the end of 1967, Ayub had just about decided to dump the United States as a sponsor and go for either the USSR or Communist China, depending on what kind of an aid package each could offer. In April 1968, Pakistan's minister of foreign affairs handed Ambassador Oehlert a note that Pakistan had decided not to renew the ten-year lease in Peshawar; this gave the United States about a year and a half to get out.

Ayub would probably have reversed himself if the U.S. had provided Pakistan with a certain quantity of tanks and had downsized the Peshawar site to make it a less visible American presence. This situation touched off a debate in the U.S. government over the value of [redacted] vis-a-vis the tanks and overall U.S. policy toward the government of Pakistan.

The United States began a retreat from Peshawar that concluded when the base was officially closed in September of 1970. By that time, Ayub had been unhorsed by a new military dictator, General Agha Mohammed Yahya Khan, and Lyndon Johnson was no longer president. But neither Khan nor Richard Nixon was inclined to reopen [redacted]

It had occupied the time of two presidents and dominated the attentions of the American ambassador in Rawalpindi. The issue had once again put NSA and CIA at sword's point.

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The loss of geography on the Asian subcontinent indicated which way the winds of nationalism were to blow, and it gave a huge boost to the overhead collection program. In the long run it also gave impetus to efforts to develop remoting technologies,

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Airborne Collection

The success of the [redacted] program in Alaska (first USAFSS use of RC-135s to collect COMINT; see p. 312) prompted AFSS to ask for more RC-135s. After a lengthy struggle, six aircraft were added to the program, and all were initially ticketed for Kadena, Okinawa, to bolster a Far East collection program hard pressed to satisfy collection requirements in both Southeast Asia and the Soviet/PRC/North Korean coastlines. The addition of the far more capable RC-135s pushed the RC-130 program farther down the priority list, and all eventually became strictly theater assets before they were phased out of the inventory in the early 1970s. It also meant that the airborne collection program would inevitably take on a stronger global connotation, with home basing at Offutt AFB in Nebraska and much less of a theater presence.[133]

As collection requirements multiplied, so did AFSS airborne programs. Many responded to the need to collect against [redacted] and they were usually joint SAC-USAFSS operations. During the late 1960s, airborne programs were pulled in different directions by conflicting requirements in Southeast Asia, [redacted] and wars in the Middle East. For several years airborne SIGINT assets of the Air Force and Navy were frantically juggled to keep up with requirements.[134]

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Many of the RC-130s were ultimately replaced by "mini-manned" U-2s. Receiver front ends were placed on a pallet that was loaded on board, and the aircraft served as a high-altitude intercept station, downlinking intercepted RF to operators on the ground.

These programs were preceded, however, by an experiment using drones. Begun in Korea in 1971, the drone program (under a variety of names) never worked. The drones were vulnerable to antiaircraft fire, and it eventually became too expensive to keep replacing them.[135]

The Wood Study E.O. 13526, section 1.4(c) Withheld from public release Pub. L. 86-36

Budgetary pressures and the rise of nationalism in the Third World led to a series of high-level basing studies in the mid- to late 1960s. Aside from the NSA study that led to the closure of [redacted] (see p. 349), the most significant was the so-called Wood Study, named after General Robert J. Wood, called out of retirement in 1968 to chair a Senior Interdepartmental Group (SIG) looking at the worldwide intelligence posture. The objective was to save money; the target was SIGINT.

Wood felt that much of the expense of SIGINT was with the front end – the overseas bases. He put forth a litany of ways that SIGINT could be done more cheaply, which would be repeated by future study groups. NSA should pour money into advanced technologies (such as satellites and remoting) that would reduce force posture overseas. It should place more reliance on Third Parties. It should develop transportable SIGINT assets. It should rely more on technical research ships (despite the relatively recent destruction of the *Liberty* and the capture of the *Pueblo*). And it should be much more aggressive about consolidating overseas field sites.

There were very cogent reasons why SIGINT sites were spread so widely throughout the world; they related to propagation phenomena and a perceived need to diversify intercept in case of attack. But these objections were drowned by the need to economize. The Wood Study increased pressure to "do something" about the huge number of sites, and the first move was to further reduce assets in Germany. Thus the decision was made (it had been impending for several years) to close the three Army sites at Rothwesten, Herzogenaurach

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and Bad Aibling,

One interesting spin-off of the Wood Study was an assessment of political vulnerability in countries housing U.S. SIGINT operations. The chart rates postulated tenure (as measured by the Wood Study) and actual withdrawal dates.

Survivability of SIGINT Sites[137]

Country	Postulated Retention	Actual Retention
Ethiopia	indefinite	6 years
Morocco	10 years	2 years
Taiwan	indefinite	11 years
Korea	10 years	indefinite
Philippines	10 years	13 years
Thailand	10 years	8 years
Vietnam	as long as war lasts	same
Pakistan	1 year	2 years
Turkey	5 years	indefinite
Greece	5 years	24 years
Cyprus	10 years	indefinite
Iran	5 years (depends on survivability of Shah)	10 years

To a SIGINTer used to an expanding SIGINT system, 1968 must have seemed like a shrinking world. General Carter, protesting late-decade cutbacks, protested "a pattern of subtractions from U.S. cryptologic strength."[138] He fought reductions like a tiger. But the twin pressures of paying for Vietnam and reducing the balance of payments deficit combined to trim the SIGINT posture no matter what Carter said. Thus base consolidations in Germany, Japan, and (to a lesser extent) Turkey tightened up the SIGINT waistline. The pressure for this was budgetary, and it came from the top.

Viewed from the standpoint of international geopolitics, however, the picture was a little different. Of the ten countries (above) that the U.S. abandoned from an overt SIGINT collection standpoint, nationalist pressures were the clear culprit in seven cases and were at least partly responsible in two others. Thus, SIGINT reductions came from internal budgetary causes, while outright abandonment of a country resulted almost inevitably

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from nationalist sensitivity. SIGINT sites were generally acceptable as long as they were invisible to the local population. Thus the U.S. was forced to close its site in Thailand in 1976, [redacted] The lesson was clear, and it became a factor in the new remoting technology that was, even in 1968, picking up steam in NSA.

The Harrogate Experiment

Manning the front end of the SIGINT system with civilians had long been an NSA goal. In the 1950s NSA sent integrees to SCA sites, but the numbers were never large, and as the decade wore on, the SCAs tended to get tougher on the idea of NSA invading their turf. The CIA experiment in Cyprus (Project APPLESAUCE; see p. 92) was another attempt at civilian manning. But for an adequate rotation base, it would have succeeded. However, civilianization took on a life of its own, chiefly because of the advantages that could accrue.

The most significant advantage was expertise. The SCAs had trouble training collectors [redacted] Moreover, NSA could sometimes provide linguistic talent that was hard to come by in the military world.

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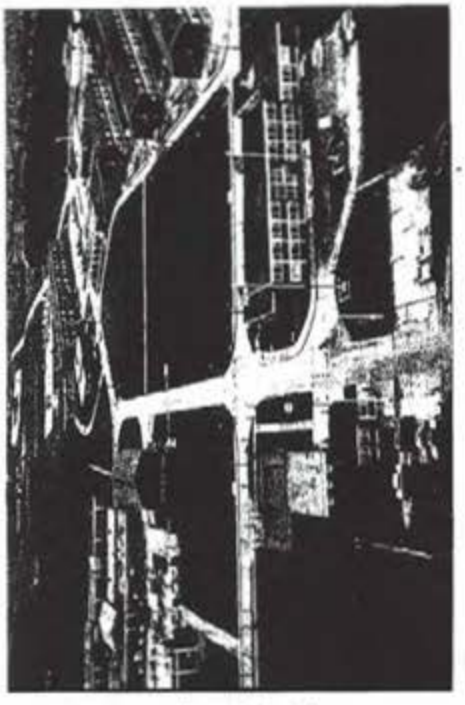
A second advantage was retainability. Military retention rates, low in the 1950s, dropped even lower during the Vietnam war. NSA wanted to [redacted] employ civilian collectors and analysts at the front end of their system for many years. The Americans could not match the expertise found at [redacted] E.O. 13526, section 1.4(c)(d).

The 1958 Robertson Committee initially considered a system of NSA-only collection sites, but withdrew the recommendation from the final report in the face of determined SCA hostility. Instead, the report recommended increasing NSA civilian presence in hard-to-find skills and establishing roving NSA teams of experts to help out with special field site problems. But even that proved difficult to implement, and civilianization appeared to be a dying concept.[139]

This turf fight between NSA and the SCAs stopped civilianization cold until 1965, when a new factor emerged. The factor was Vietnam.

By 1965 the drain on military manpower was becoming severe. In August, the Defense Department canvassed all its activities looking for jobs that civilians could do so that the military people in them could go to the war zone. The most severe pressure was in the Army, and Army stations were threatened with the most serious manpower cutbacks to support the war. Faced with rows of potentially unmanned positions, NSA proposed that it be authorized to coordinate a program of civilianization within the cryptologic community. After a heated internal debate at NSA regarding civilianization at Bad Aibling or Harrogate, NSA proposed the civilianization of Harrogate.[140]



Harrogate in the early days
(Pictured - main gate and support facilities)

HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY
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Harrogate, [redacted] was an ideal candidate. [redacted] Located in the Yorkshire moors, Harrogate had originally been surveyed by ASA in the early 1950s. Construction had begun in 1956, and the site officially opened in 1960 as an ASA field station. A site in the United Kingdom was thought to be an attractive place for civilians to relocate. NSA moved rapidly forward, and the site converted to civilian status in August 1966, less than a year after it was originally proposed.[141]

Naval SIGINT Ships

The signal success of the *Oxford* against Cuban microwave communications during the Cuban Missile Crisis resulted in a boom in the Technical Research Ship (TRS) program. NSA's long-term TRS program included sixteen vessels, eleven Military Sea Transport Service (MSTS) charters and five of the larger *Oxford*-class *Liberty* ships. The Navy had an even more grandiose plan to build a TRS fleet from the keel up, at a cost of $35 million per vessel. They would have a cruising speed of at least twenty knots. But despite the giddy success of the *Oxford*, the numbers did not add up. For instance, it cost $13.5 million to convert a *Liberty* ship into an *Oxford*-class vessel, but only $3.3 million to redo a *Valdez*-class MSTS ship.[142] DoD was strapped for cash for the Vietnam buildup, and this kind of floating SIGINT platform, logical in theory, fell victim to the budget axe.

Failing in the big plan, the Navy opted for a far cheaper option. The idea was to convert some trawler-type vessels at very minor cost and outfit them for general intelligence collection, including (but not limited to) SIGINT. Their primary purpose would be naval direct support, with a secondary national tasking mission from NSA. They would call the vessels AGER (Auxiliary General Environmental Research).

NSA opposed the program from the beginning. Some Agency seniors believed that it was an end run around NSA's authority to control SIGINT. Nonetheless, the Navy converted the first AGER in 1965, calling it the USS *Banner* (AGER-1). The long-range program was to have twelve such vessels. When, in late 1965, the Navy went forward with a request to convert two more *Banner*-class trawlers, NSA opposed it, and Cyrus Vance, the deputy secretary of defense, sent the proposal back to the cryptologic community to resolve the conflict.

NSA and the Navy fashioned a compromise in which the vessels would sail sometimes on solely direct support missions, sometimes on hybrid national tasking and direct support orders. It would be a wholly Navy owned, manned, and protected program. The ships were smaller and less capable than the *Oxford*- or *Valdez*-class vessels, and as for speed, could not even make ten knots. They would be almost defenseless, but up to that time SIGINT ships had never been bothered by hostile forces. The *Pueblo*, which put out on its first operational voyage in December 1967, was an AGER-type trawler.[143]

TRS communications were, in the early years, bothered by crowding of the HF spectrum. To solve this problem, the *Oxford*, in February of 1964, demonstrated for the first time the feasibility of bouncing microwave signals off the moon from a ship at sea. This technique had been used first in 1959 between two stationary locations, Hawaii and Washington, but the technical problems involved in doing it from the deck of a pitching ship were daunting. Although the problem was considered essentially insoluble, Commander William Carlin White of NSG managed to get the Naval Research Laboratory interested, and White, NRL, and NSA, all working together, gathered the equipment for a test. When the *Oxford* successfully communicated with the NSG site at Cheltenham, Maryland, a new era of naval communications was under way. Soon CNO-approved installation of this new gear (called TRSSCOM, or TRS Special Communication System) was programmed for the *Belmont* and *Liberty*, and plans were made to convert all TRSs to the so-called Moon Shot system.[144] E.O. 13526, section 1.4(c)

TRSs became very popular substitutes for dry land SIGINT real estate. With nationalism on the rise and the United States experiencing declining popularity in the Third World, it was often the only platform available. A TRS was sent to [redacted] TRSs were thrown into the Vietnam conflict, essentially as augmentation for existing fixed sites. An *Oxford*-class vessel, the *Liberty*, was deployed to the Mediterranean during the 1967 Arab-Israeli War. [redacted]

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In the flush of enthusiasm, the latent problems in the program remained hidden. Program flexibility led to scattershot deployments to areas where the technical database was nonexistent. Vessels were put against targets with exotic language requirements that the Navy could not meet. SIGINT crew training and expertise levels appeared to many NSAers to be declining in the face of so many short-fuse deployments to strange places. Command and control became convoluted, especially in war zones like Vietnam or the [redacted] and at times it appeared that no one really knew who had control of TRSs in certain areas. Occasionally a TRS would wind up doing non-SIGINT work like hoisting refugees aboard – this happened during the Cuban Missile Crisis, and was ordered, but not done, during [redacted] Further, TRSs had to compete, in essence, with even more rapid AFSS airborne assets. Often the airborne fleet won out because it could get there faster, and AFSS had better trained operators and linguists.[146]

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Finally, and fatally, floating SIGINT platforms proved to be not as secure as had been expected. The *Liberty* incident in 1967 (see p. 432) shocked a cryptologic community that had always assumed that American SIGINT platforms would be accorded the same courtesies that the U.S. gave to the Soviet SIGINT trawlers. The incident was repeated (with variants) the very next year when North Korea captured the *Pueblo*. NSA support for the program was already crumbling because of the dispute over the control of AGERs. With the *Pueblo*, it completely died.

The program was good in theory, and if the execution had been better, TRSs might still be around. It is still a good idea today, but the *Pueblo* incident probably killed it forever.

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THE END OF HF?

E.O. 13526, section 1.4(c)

The decade of the 1960s led NSA inexorably into above-HF signals, more and more difficult to intercept, more and more exotic to process once intercepted. Fixation on the [redacted] problem marked one very difficult and expensive avenue, which would require complex intercept and processing gear and unconventional collection locations or platforms. The trend toward above-HF communications, especially microwave, radio relay, and communications satellites, marked another knotty problem for the cryptologic community.

During World War II, the Soviet Union's communications were estimated to be approximately 50 percent HF and 50 percent landline. [redacted]

[redacted]

This pessimistic assessment of Soviet communications trends was not immediately borne out. [redacted]

[redacted]

Still, all long-range forecasts agreed with the above-mentioned 1968 Eachus Report. NSA had been worrying about this problem for some years, and the Agency was in the process, in the late 1960s, of designing and fielding systems that would accommodate the expected surge in above HF communications.

[redacted]

The 1957 launch of *Sputnik* created an immediate requirement to track Soviet ESVs (earth satellite vehicles). The thought that the USSR might have an ESV in orbit whose

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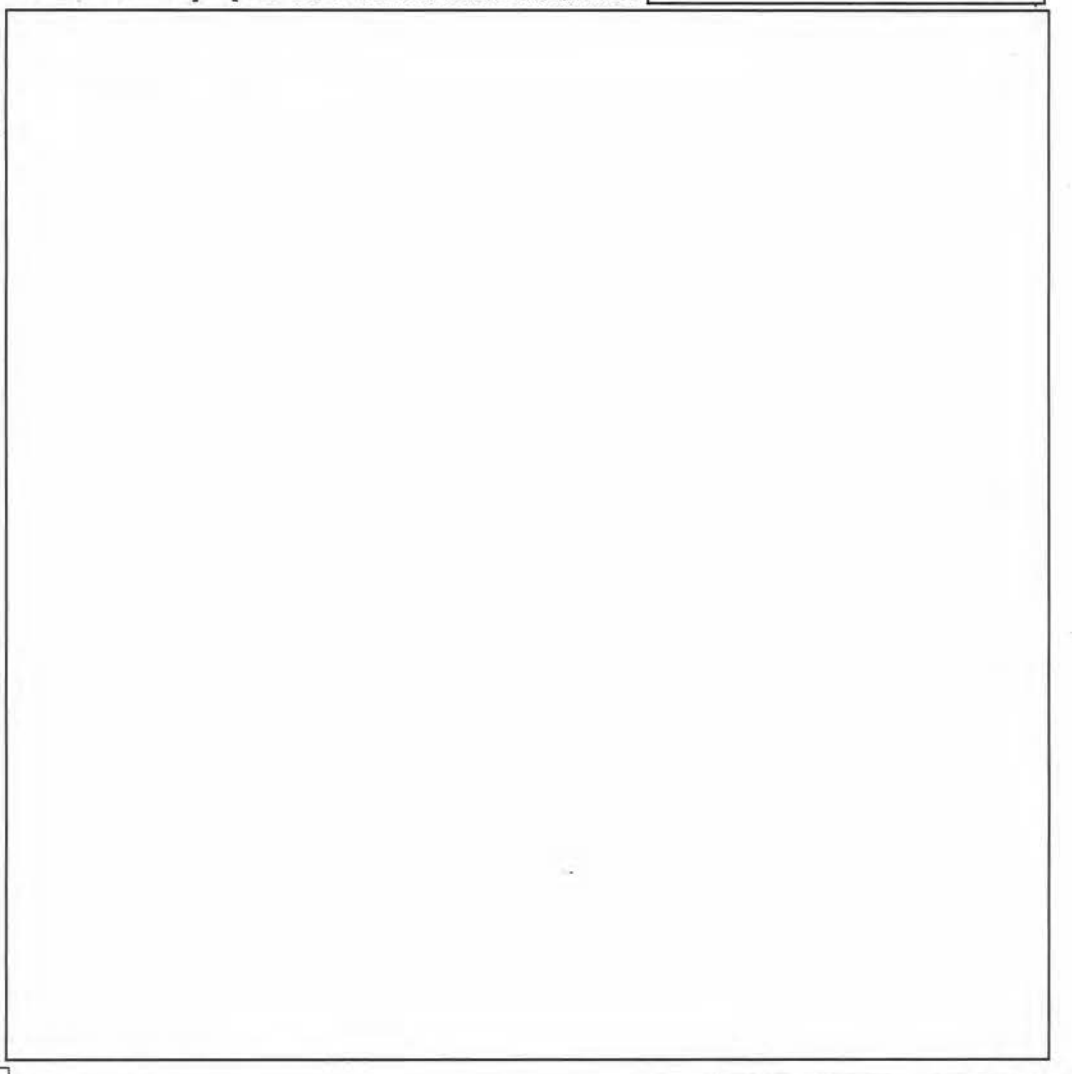
existence and purpose were unknown was intolerable.



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STONEHOUSE

E.O. 13526, section 1.4(c)(d)

The only site ever built specifically for space collection (as opposed to missile telemetry) was STONEHOUSE, collocated with the ASA HF intercept site at Asmara. Set on the high equatorial plateau of Ethiopia, it was originally manned primarily by ASA people, with a small complement of NSA civilians and contractors. It sported two huge dish antennas 150 feet in diameter. In 1972 ASA got out of the business, and the site was left permanently for NSA to operate.[151]

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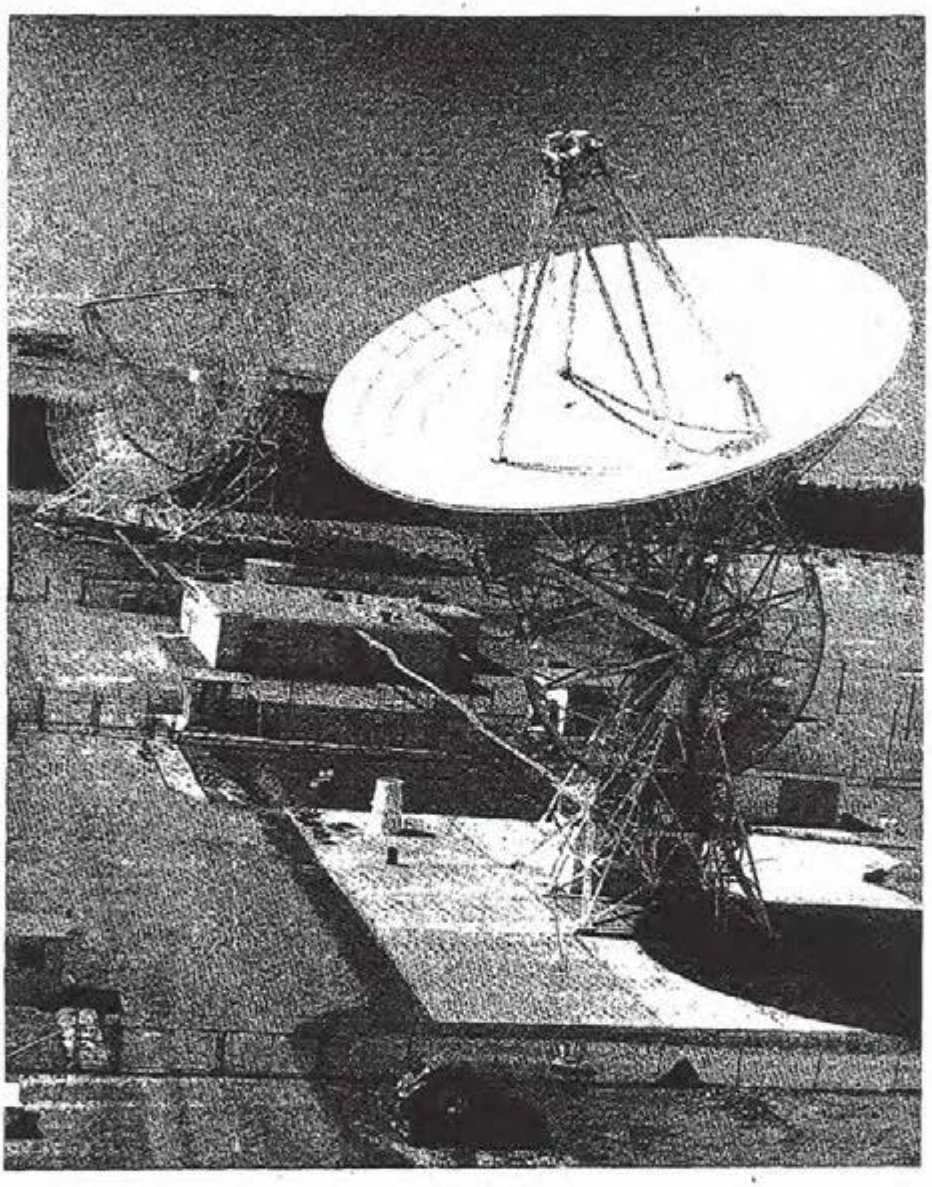

STONEHOUSE
Asmara, Ethiopia

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

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By the early 1960s the United States had established that ESVs were potentially very useful communications vehicles. On 31 August 1962, President Kennedy signed the Communications Satellite Act which sanctioned the Comsat Corporation to establish U.S. participation in a global network of communications satellites. Both Intelsat and Comsat were organized soon after to develop the systems to provide Comsat vehicles for international, as well as national, use. The feasibility of high-quality TV and voice transmission via satellite was proved during the Tokyo Olympics of 1964, and the first American Comsat, called Early Bird, was launched in April of 1965. It was so successful so fast that by 1966 the U.S. projected that Intelsat-assigned circuits would increase from 585 then to over 6,000 ten years later.[152]

The Soviets, too, understood the implications of Comsats. In 1966 they launched three satellites in elliptical orbit, which they called *Molniyas*, and began beaming multichannel and television signals to distant users. These early systems had sixty channels, but most were, in those early days, vacant.[58]

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But Army regulations required extensive support facilities for the troops, and the cost and visibility of the site quickly got out of hand. It died a sudden death at the hands of the budgeteers.[155]

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Overhead

Since the science fiction writings of Arthur C. Clarke in the 1930s and 1940s, it had been an American dream to place a reconnaissance satellite in orbit around the earth. At the end of World War II, General Curtis LeMay, then deputy chief of staff for Research and Development for the Army Air Corps, commissioned the Rand Corporation to do a study on the feasibility of just such a project. The Rand study, dubbed Project FEEDBACK, proceeded in secret for eight years. It was finally turned over to the Air Force in 1954, coincident with the Eisenhower administration's thorough examination of the strategic warning dilemma under the Killian Board (see p. 229).[156]

The Technological Capabilities Panel (TCP) on the Killian Board recommended that Eisenhower proceed with the highly compartmented U-2 project being developed by Lockheed. In addition, the Intelligence Committee of the TCP, chaired by renowned optics scientist Edwin Land, recommended that the United States begin to develop reconnaissance satellites. This also got Eisenhower's approval, and it proceeded along a parallel track.[159]

The Air Force immediately began developing an intelligence satellite program. The prime objective was photoreconnaissance, but the initial operational requirement, published in 1955, also contained provisions for an ELINT package.[160]

From the beginning, the program was beset by competing jurisdictions and security concerns. The Air Force, the Navy, and CIA (the latter by virtue of its domination of the U-2 program) all designed entries into this new intelligence sweepstakes. The prize for the most successful system was money and people, both on a very large scale. Overhead reconnaissance loomed as the biggest potential spender in the intelligence system.

Once the Soviets launched *Sputnik* in 1957, American attention focused on a competitor. Although the main objective would be reconnaissance, it would have been imprudent to be up front with this. So in 1958 Eisenhower decided that the Americans would publicize their satellite program as a purely peaceful program, with scientific objectives. The first program, called Discoverer, was pushed ahead as an overt "white" program. Reconnaissance would be a "black," covert program, with classified payloads attached initially to the Discoverer vehicles.[161]

The way Eisenhower created it, the new overhead program had a divided jurisdiction. The Air Force was to build and launch satellites, while CIA was to process the photography. The first processing center was actually set up by CIA to process photos from the U-2. Called NPIC (National Photographic Interpretation Center), it was established in the old Steuart Motor Car Building at 5th and K St., N.W., in downtown Washington. The CIA's Richard Bissell was in charge of the program, and Arthur Lundahl headed NPIC.[162]

Meanwhile, the Air Force had set up operations on the West Coast. In October 1955, the Air Force moved its satellite development project from Wright-Patterson AFB in Ohio to Inglewood, California, locus of their ballistic missile development. This was done in order to insure that both programs remained in synch and that they would not compete for boosters. To control satellite operations, the Air Force chose to collocate with its prime contractor in California.[163]

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The Air Force ELINT Programs

The first SIGINT packages were a product of SAC's desire to support the SIOP, or Single Integrated Operational Plan, the plan for nuclear war with the Sino-Soviet Bloc. For SAC to design penetration routes for its bombers, it had to know where the Soviet radars were and what they were capable of. At the time (the mid-1950s), ELINT was blissfully fragmented, and NSA was a COMINT agency. SAC proceeded with its program unchallenged.[164]

While all this was going on, [redacted] working in CIA's Office of ELINT, became concerned that the ELINT payloads might not be ready for the first launch of a photoreconnaissance satellite. [redacted] concluded that a small, interim, piggyback payload could be designed and ready for the first launch. Its only mission would be to detect threat radars. The interim program was called [redacted] and it became an end unto itself.[165]

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Discoverer experienced all sorts of disasters, as payload after payload plunged into the ocean, was fired into an unrecoverable orbit, or just exploded on launch. But when the first photoreconnaissance payload (Discoverer XIII) actually achieved its mission and was snagged on reentry by elated Navy frogmen in August of 1960, [redacted]

Program Management

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[redacted] remained an Air Force program, and SAC did the early signals processing. But in 1961 McNamara appointed Eugene Fubini to look into the proper relationships in the SIGINT satellite program. The Fubini committee concluded that the SIGINT satellites had to be a partnership. The satellite payloads and their booster systems remained an Air Force and NRO concern, but processing and reporting became an NSA responsibility. This decision led to a series of fragmented agreements between NSA, on the one hand, and the various satellite operators on the other, regarding the precise terms of NSA's participation in each program.[167]

One beneficial result of the Fubini study was the signing, in September 1961, of a formal agreement between NSA and SAC regarding the processing of ELINT from the Air Force program. Essentially, they agreed that a certain amount of parallel processing would be done – NSA to benefit the intelligence community, SAC to support the SIOP.[168]

In 1961, just before leaving office, Eisenhower set up a special compartmentation for overhead reconnaissance. Called Talent-Keyhole, or TK for short, it covered both the on-going U-2 program and the nascent satellites. CIA, which exercised general supervision of

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the programs, controlled the clearances. The plan listed a total of [redacted] TK billets, of which NSA would have exactly [redacted] (The Byeman compartment was set up two years later to handle technical aspects of the satellite programs.)[169]

The next year the two main players in the satellite reconnaissance game managed an accommodation. The CIA and Air Force agreed that a new multiagency program would be established, called the NRP (National Reconnaissance Program). The CIA component of the NRP would be headed by Richard Bissell, who had managed the U-2 program from its infancy. The Air Force component would be housed in a new organization directly responsible to the secretary, called SAFSS (Secretary of the Air Force Space Systems), with Joseph Charyk as its head. The same directive established a joint agency, the National Reconnaissance Office, or NRO.[170]

NSA was still a minor player. It had very few cleared people, and its only responsibility was to process and report ELINT data. Even though NSCID 6 gave it significant responsibilities in both ELINT and COMINT, NSA had no official role in the tasking of reconnaissance satellites.[171]

Satellite tasking was then handled by COMOR (Committee on Overhead Reconnaissance), a USIB subcommittee. COMOR was concerned at first only with PHOTINT, but as the ELINT packages broadened in function from purely a vulnerability assessment to wider intelligence applications, ELINT tasking came to be done by the SIGINT Working Group (SWG) of COMOR.[172]

SWG tasking tended to be very specific, and mission ground stations found it almost unworkable. NSA was used to having USIB set general collection priorities, which the NSA tasking messages would flesh out. One of the problems that bedeviled the overhead program for years was the lack of sufficiently flexible tasking documents.[173]

In 1962, reacting to this situation, NRO set up a Satellite Operations Center (SOC) in the Pentagon. NSA predictably saw this as another intrusion into its authority to task SIGINT collectors, and it soon was sending representatives to the SOC to represent its interests.[174]

Tasking continued to be handled by COMOR until Huntington Sheldon of CIA became chairman of the SIGINT Committee in 1967. Sheldon lobbied USIB to split apart SIGINT and PHOTINT satellite tasking and succeeded in getting COMOR divided into two pieces. A new USIB committee, COMIREX (Committee on Imagery Requirements and Exploitation) tasked satellites, while another committee, SORS (SIGINT Overhead Reconnaissance Subcommittee) tasked the ELINT and COMINT payloads.[175]

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The Advent of Overhead COMINT

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Although satellites were originally the domain of PHOTINT and ELINT, NSA was studying possible COMINT applications. A 1959 study by NSA analyst [redacted] concluded that it would be feasible to collect COMINT signals from the ELINT packages aboard Air Force satellites.[176]

Beginning in the early 1960s, experimental COMINT-targetted payloads piggybacked on the [redacted] systems. [redacted]

The [redacted] Payloads

In the early [redacted] days engineers designed a specialized payload that would do ionospheric mapping [redacted] They realized during the development phase that the payload could be injected into an orbit different from the mother payload. Since the objective was independent of satellite electronic defense, there was no special reason for it to stay with the main payload. This led to the development of a separate program, [redacted]

[redacted]

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Program C

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The Navy's share of the satellite pie was called Program C. (Program A was Air Force and Program B was CIA.) But, though it was last in the alphabet, it had the first successful launch of an ELINT payload on 22 June 1960. Moreover, the Navy designed a unique program that outlasted all the others.[180]

The program was actually conceived early in 1958 by Naval Research Laboratory engineers. They designed a program to receive [redacted] and transmit this intercept in real time to Navy ground sites [redacted] These ground sites were self-contained units called ESV huts, mounted on vans that could be moved around quickly. The huts would be located primarily at NSG field sites, but because of geography it might be necessary to use sites owned by other organizations.[181] Most sites acted as "dumb" terminals, receiving and recording the signals. Recordings were shipped to NSA for analysis.[182]

This early program, which was solely under the auspices of the Navy, was called DYNO, and was referred to in unclassified terms as GRAB. It was the first to document the extremely rich radar signals environment in the Soviet Union. But to some extent it was a targetting anomaly. The Navy was collecting signals of interest to all services and the CIA, but the program was not doing ocean surveillance. In 1962 the program was subsumed within the overall satellite collection system as Program C, and it was renamed POPPY.[183]

In 1966, overhead photos of Soviet ABM installations showed considerable progress toward site construction, [redacted] This became a matter of grave concern to the President's Scientific Advisory Committee, and a study group was appointed. If ABM systems were not the highest priority target up to that point, the committee made them such. A series of [redacted] payloads was developed and launched rapid-fire to respond to the concern.[184]

Program C was also affected. [redacted]

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RUNWAY

As for the control issue, that was solved [redacted] by moving tasking control to NSA. [redacted] NSA set up a new facility called SSSC (SIGINT Satellite System Control) to provide technical support and tasking guidance to the program. Some non-NSA USIB members were less than pleased because SSSC amounted

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to a de facto delegation of tasking control to NSA. The direction was irreversible, however, and by 1972, representatives from the SOC in the Pentagon had moved to SSSC.[188]

The program was not popular downtown, and it came under repeated attack. When this happened, Admiral Gayler himself indicated that he wanted to attend the NRP Executive Committee meetings to defend the program. At his very first meeting, Gayler went on the attack, not just defending the money that had been put into the system to date, but demanding more money to launch more satellites and to buy more processing equipment.

RAINFALL

The RUNWAY program was encountering such ferocious opposition in Washington partly because CIA already had a competitor. The CIA project had been initiated by Albert "Bud" Wheelon, who had come to CIA during the early years of the Kennedy administration. A brilliant and aggressive administrator, as well as a top-notch scientist, Wheelon had been newly installed as John McCone's director of science and technology when he read about the Syncom II geosynchronous satellite. from Soviet missile tests was the number one U.S. intelligence priority, Wheelon wondered if a geosynchronous satellite could be placed in an orbit that would continuously look down on Tyuratam and Sary Shagan. Wheelon pressed his idea with McCone, who approved for a pilot study.[190]

The project was fraught with tremendous risk. It would be hideously expensive, the most costly intelligence system ever mounted. An immense antenna would be required – a scientist calculated that it would have to be at least seventy-five feet in diameter, the largest such object ever unfurled in space. The Department of Defense, wanting CIA out of the satellite business anyway, opposed it from the beginning.[191]

Albert "Bud" Wheelon

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CIA cleared no one at NSA. Thus, CIA knew about NSA's nascent plans for RUNWAY, but NSA did not know about CIA's plans for a similarly disposed geosynchronous satellite system, [redacted]. This situation changed in the late summer of 1965, because General Marshall Carter migrated from the position of deputy DCI to director of NSA. When he arrived, he arranged to clear a handful of NSA people and sent them to CIA to learn about the RAINFALL program.[192]

The road proved rocky in the extreme. CIA wanted no NSA partipation at all, and in the early months did a great deal to shut NSA out. But a breakthrough of sorts occurred in December of 1965, when [redacted] to clear the air. Through these high-level contacts, the two organizations began joint planning.[193]

NSA immediately suggested that COMINT become an ancillary mission. After a period of hesitation, CIA accepted the proposal and gave NSA the job of collecting what COMINT they could from a bird whose job was TELINT, not COMINT. Through the Director's Advisory Group for ELINT and Reconnaissance (DAGER), headed by Charles Tevis, NSA negotiated the details of their participation in the RAINFALL program. NSA got a COMINT processing subsystem and an ELINT subsystem [redacted] and when the money for those systems was cut from the budget, NSA allocated CCP funds. DAGER was also instrumental [redacted] Eventually NSA provided all the COMINT staff and about half of the TELINT crew.[195]

SIGINT satellites were the wave of the future, and they offered breathtaking new opportunities for access to the Soviet Union. [redacted] But it also offered a significant new battleground for the control of intelligence resources. CIA-Air Force conflicts over the control of imagery became well known to the American public through the publication of such books as William Burrows's *Deep Black*. Far more obscure, but just as fierce, was the competition between NSA and others (especially CIA) over the ownership and control of SIGINT payloads. It eventually settled down to a series of compromises based on the areas of respective technical competence. But the early years, when these compromises were still in the future, were not easy.

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NSA'S FOREIGN RELATIONS

> They [Third Parties] should not be used for economy reasons to supplant vital U.S. capabilities. However, rapport with Third Parties should be developed as insurance against the loss of U.S. bases in the future.
>
> Eaton Committee, 1968

With the cryptologic budget being cut back in practically every area except Southeast Asia, NSA in the mid-1960s gave a serious relook at what the Third Parties could do for the U.S. Every budget exercise resulted in an increased determination to bring foreign countries more fully into the process. By the late 1960s the budgeteers demanded that

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The Eaton panel in 1968 (see p. 479) backed NSA's contention and stated that Third Party collection should complement U.S. collection.[196]

General Carter, fresh from his stint at CIA, placed Third Party relationships on center stage, and he was reputedly the first NSA director to permit Third Party representatives into the NSA complex. But Carter's attention to foreign relationships brought NSA up against CIA's long-standing prerogatives in this area. Although NSA began to take a more active hand in several of the relationships, the disputes were not resolved during the decade, and resolution was put off until the late 1970s.[197]

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Germany

The Reinhard Gehlen organization (the BND) was one of NSA's most lucrative Third Party sources during the 1960s. But there were serious problems within the organization itself which limited its utility and caused the Agency to keep it at arm's length. Most of the problems revolved around security.

Basically the BND, like almost all West German governmental organizations, was penetrated and publicized. The problems began in 1952, when a leftist journalist named Sefton Delmer published a highly critical article in the *London Daily Mail* entitled "Hitler's General Now Spies for Dollars." Delmer appeared to get much of his material from one Otto John, who had headed the West German equivalent of the FBI until his defection to East Germany. John was, in 1952, engaged in a bitter bureaucratic struggle with Gehlen over the control of intelligence.[200]

Things just went from bad to worse. In 1953 one Hans Joachim Geyer, a member of the Gehlen organization, fled to East Germany with the names of Gehlen agents. Within hours more than 300 Gehlen agents had been rounded up, and East Germany exposed the "spy ring" in a resonating press conference. Geyer had been passing classified documents to the KGB for several years, although it appears that he was not involved in SIGINT.[201]

But the coup de grâce was not administered until 1961, with the exposure of Heinz Felfe. A rising star in the BND, Felfe had worked for the KGB since the early 1950s and had passed thousands of documents. He worked in counterintelligence, not SIGINT, but his

access was very wide, and nothing in the BND was really safe. The exposure of Felfe in November 1961 led to a prolonged and highly public spy scandal, during which it was revealed that the BND had been thoroughly compromised by the East Bloc. At the same time Gehlen himself was involved in a public row with Franz Josef Strauss, the minister of defense. His inflexibility in dealing with outsiders, and his lack of appetite to rid the BND of East Bloc agents, ended his effectiveness. Gehlen continued to head BND until 1968, but withdrew more and more from active management.[202]

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This did not stop NSA-CIA competition. However, it did lessen the points of friction and charted the way for a gradual CIA withdrawal from the day-to-day intricacies of Third Party SIGINT exchanges. As Third Party SIGINT became more important and more time-sensitive, this was a natural and evolutionary step.

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NSA and CIA in the Third Party World

By the end of the 1960s, the control of Third Party SIGINT relationships had become quite muddled.

NSA and GCHQ

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As for the American-British relationship, the two SIGINT operations had become virtually inseparable by 1970.

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Chapter 10
SIGINT in Crisis, 1967–1969

After the relatively placid decade of the 1950s, the 1960s produced a series of international paroxysms unmatched in post-World War II history. Although cryptology was involved in virtually all the events, four crises in late decade had particular impact on the cryptologic business. The Arab-Israeli War of 1967 was a defining moment in cryptologic contributions to the intelligence picture. The Soviet invasion of Czechoslovakia in August 1968, and the accompanying crisis concerning Romania, helped shape SIGINT production and reporting in later years. The other two events, the capture of the *Pueblo* in 1968 and the shootdown of the naval EC-121 in 1969, were uniquely cryptologic in their origins and implications, and they changed the way NSA and the cryptologic community have done business from that day to this.

SIGINT AND THE SECOND ARAB-ISRAELI WAR

The Suez Crisis of 1956 and the Lebanon Crisis of 1958 had turned NSA's attention to the Middle East and had begun the buildup of American cryptologic capabilities in the region. This involvement was to grow steadily as NSA sought to keep track of the situation and the intentions of the Arab governments.

On the Arab side, the late 1950s marked the height of pan-Arab sentiment. In 1958 Egypt's Nasser had convinced Syria to join Egypt in forming the United Arab Republic (UAR). But the idea never worked. Syrians chafed under heavy-handed Egyptian bureaucratic regimentation. In 1961 Nasser, believing that state socialism was the only true path, nationalized virtually all manufacturing, banking, and utilities. He also reduced to 100 acres the amount of land that a farmer could own, and he put a ceiling on the amount of money that a citizen could earn. This was too much for the Syrians, and two months later a military coup in Damascus ended the Syrian involvement in the union. Nasser, hoping that another Arab state would take Syria's place, obstinately kept the name (UAR), but none did.[1]

Three years later a new transnational organization emerged. The Palestine Liberation Organization (PLO) was formally established at a conference in Jerusalem in 1964 with Ahmed Shukeiri as its head. It formed a conventional army composed of Palestinians and their Arab sympathizers throughout the Middle East. The real power, however, developed around a guerrilla movement called al-Fatah, headed by Yasir Arafat.[2]

A low-intensity Fatah-Israeli conflict developed almost immediately. It was punctuated by cross-border raids and terrorist bombings, and each incident led to reprisals

which created the foundation for the next incident. At the same time, the ambitious Nasser was becoming enmeshed in a civil war in Yemen in which the other proxy was Saudi Arabia. This created strains in the Arab world and accentuated the division between the so-called Nasserists and the more conservative Arab governments like Saudi Arabia and the Arabian desert sheikdoms.

By early 1967 the Middle East was clearly about to boil over. Terrorism was at a high level, and Nasser seemed spoiling for a fight. Then on 14 May NSA detected UAR air defense forces going on full alert. Three days later, on 17 May, Nasser demanded the withdrawal of UN forces from Gaza, and UN troops immediately began evacuating what was obviously to become a war zone. On 23 May Nasser took the warlike step of blockading the Straits of Tiran, and he announced that Israeli commercial shipping, whether in Israeli or foreign bottoms, would be stopped.[3]

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The Cryptologic Posture

By 1967 the American cryptologic posture in the Middle East had improved dramatically. From a single station on Cyprus only recently taken over from CIA in 1956, the cryptologic community had collection sites in [redacted] Crete, [redacted], and Cyprus, as well as collection from Asmara, Vint Hill, and Cheltenham. Navy and Air Force airborne collection platforms flew regularly in the eastern Mediterranean, [redacted]

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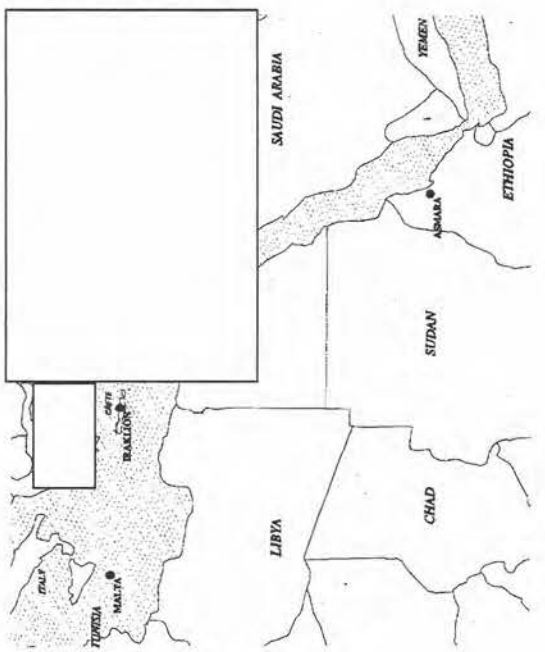

The Middle East in 1967

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Prior to Nasser's eviction of UN forces from Sinai, there was no consensus in the U.S. on the likelihood of war. A National Intelligence Estimate published in April assessed that there was no near-term likelihood of war in the region. In May, State/INR assessed Egyptian military activities as defensive. Thomas Hughes, the top State Department intelligence analyst, based much of his estimate

Walter Rostow, President Johnson's national security advisor, was hopeful that things could still be resolved by negotiation, and he noted that the Soviet Union did not seem to want to get directly involved.[5]

However, the cryptologic community had begun a series of SIGINT alerts as early as November 1966.

NSA expanded the alert to include the entire Middle East. This was quickly elevated to a SIGINT Readiness Bravo when Nasser closed the Straits of Tiran on 23 May. A Bravo was as high as the SIGINT readiness system could proceed short of war.[6] By the accounts of all involved, it was no longer a question of *if*, but *when*.[7]

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To further bolster collection in the eastern Mediterranean, NSA decided on 23 May (the day Nasser blockaded the Gulf of Aqaba) to deploy a TRS. [redacted] and realizing that even combined Air Force and Navy airborne collection could not produce round-the-clock coverage, NSA diverted the USS *Liberty* to an eastern Mediterranean cruise. The *Liberty* was selected because of its superior cruising speed (18 knots, best of all the TRSs), its multichannel collection suite, and its availability. (It had just begun a cruise and was fitted out for an extended voyage.)

Meanwhile, SIGINT indicators of impending war poured in. [redacted] The intelligence community had other sources of information, but none was as timely or authoritative during an expanding crisis such as existed in May of1967.[10] In many ways the war preparations of 1967 resembled Japanese war preparations in 1941, [redacted]

The entire Middle East was on the brink when, at 0745 Middle Eastern time on 5 June, Israel launched a preemptive strike on Egyptian air forces. In what became one of the classic offensive attacks in the annals of warfare, the Israelis destroyed virtually the entire UAR air force on the ground. Within a few hours, 309 out of 340 combat aircraft were in smoking ruins, including all 30 of its long-range TU-16 bombers. Unaware of how bad things were, Syria and Jordan jumped into the fray by launching attacks on Israel. But they were too late. No longer having to worry about the Egyptian air force, the Jewish state turned its attention to Syrian and Jordanian forces on its borders and to the Egyptian divisions massed in the Sinai. Having no protection in a desert environment, the ground forces were exposed and largely destroyed in three days. In all, 417 Arab aircraft were destroyed, 393 on the ground; only 26 Israeli aircraft were lost.[11]

The White House first learned of the war from press sources. When the Situation Room called NSA for confirmation, they heard nothing for a time, but by mid-morning SIGINT reports were beginning to flood the wires. The Arabs and Israelis were making charges and countercharges, and the president wanted to know who fired the first shots. [redacted] reports were sufficient for presidential advisor Clark Clifford to make an initial determination that the Israelis attacked first. This judgment was to be confirmed many times over when all the evidence was sifted through.

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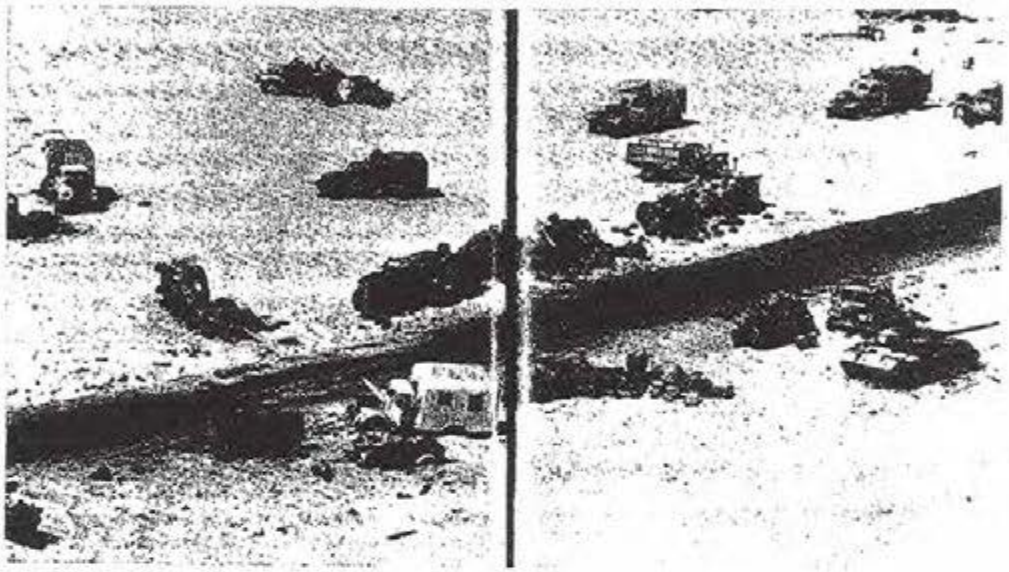

War in the desert. Shattered Egyptian tanks smolder in the Sinai desert.

Amid the conflagration in the desert, the Johnson administration kept its eyes on the Soviet Union. What would the Soviets do?

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To White House analysts, it appeared that the Soviets were willing to fully support Arab governments with equipment but were not willing to send troops. The Arab governments misread the Soviet attitude, Nasser jumped into war without understanding that he would have to go it alone. Once the war began, the Egyptians and Syrians expected intervention – what they got was an emergency shipment of equipment to replace that which the Israelis had destroyed. The arms deliveries began almost immediately

On 6 June, the Egyptians and Syrians claimed that U.S. and British forces had provided air cover for the attacking Israelis. This sensational charge, repeated and believed throughout the Arab world, was apparently intended to provoke Soviet intervention, an event that could have produced a dangerous American-Soviet confrontation. But Kosygin rejected the claim outright.

Nasser was furious, but he did not succeed in egging the USSR closer to involvement. That same day, Kosygin contacted Washington on the hotline and pledged to work toward peace. As the succeeding days unfolded and Israel pressed toward the Suez Canal, Kosygin's talks with the Johnson administration over the hotline became more testy, but direct negotiations played a key role in American and Soviet abilities to avoid military involvement.[16]

Fighting finally terminated on the tenth.

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The U.S. and the USSR had narrowly avoided involvement in the Middle East War,

Missing from the postmortems were the usual breast-beatings about why intelligence failed to warn. In 1967 it did not fail.

American intelligence generally downplayed the possibility of an Arab attack; the best possibility, and the one which actually played out, was an Israeli preemptive strike like the dash to the Suez in 1956.[20]

The 1967 war was the closest that the United States and the Soviet Union came to war between the Cuban Missile Crisis and the end of the Cold War.

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The Attack on the *Liberty*

E.O. 13526, section 1.4(c)

The *Liberty*, NSA's choice as the TRS deployment to the Middle East, was a reconditioned World War II *Victory* ship, converted to an AGTR in 1964. The vessel already had five cruises under its belt. It had 20 intercept positions, 6 officers, a SIGINT crew of 125 and an overall complement of 172 men. With TRSSCOM, ship-to-shore radiotelephone circuits, and two receive terminals for fleet broadcasts, the *Liberty* was one of the best equipped ships in the TRS inventory. The Navy approved NSA's request, and the *Liberty*, off the west coast of Africa, steamed for Rota, where it took aboard an additional 9 linguists, including 3 NSA civilians, and more keying material for its communications circuits. On the second of June, it set off for the eastern Mediterranean.[21]

The *Liberty*'s sailing order specified that it was to stay at least 12.5 miles off the coast of the UAR and 6.5 miles from Israel. When war broke out on 5 June, the Sixth Fleet, to which the *Liberty* had been temporarily attached, was directed to remain at least 100 miles

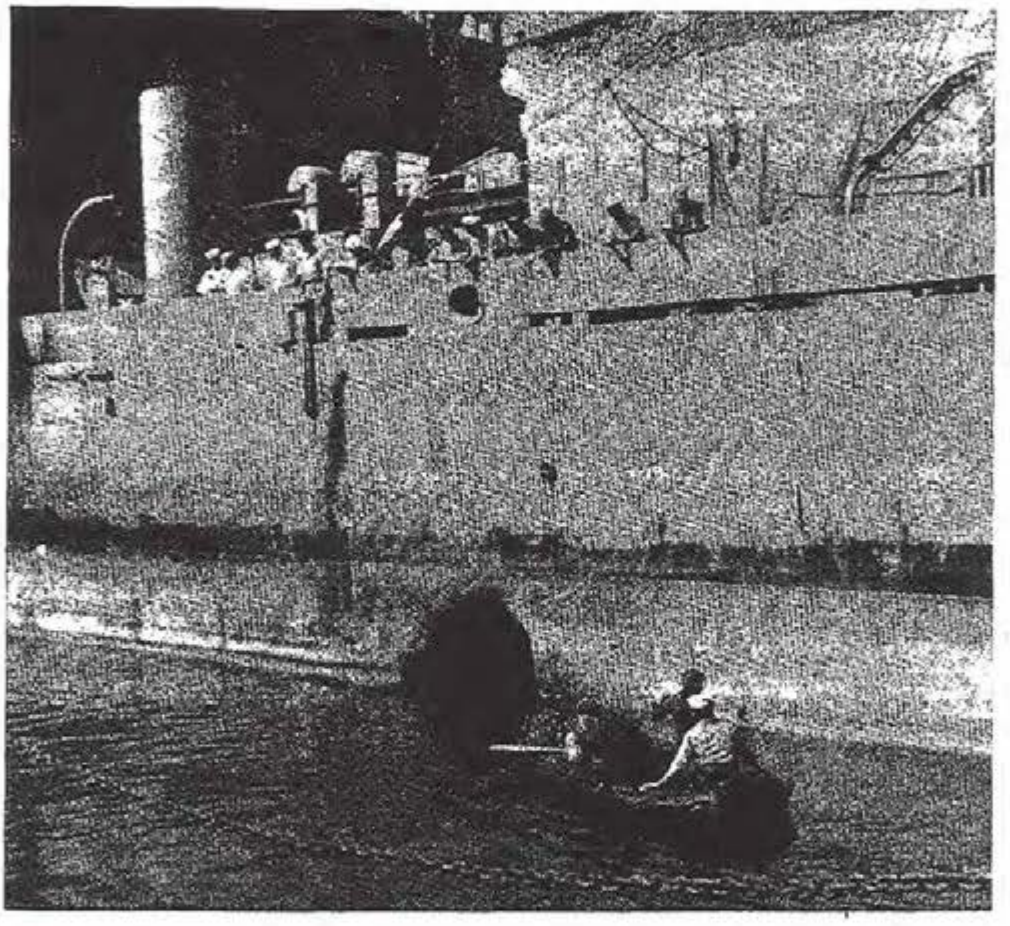
off the coasts of Lebanon, Syria, Israel, and the UAR, but the *Liberty*'s instructions were not changed. When it arrived in its operating area late on 7 June, Captain McGonagle, the vessel's commander, still had written instructions that brought the *Liberty* close into the coast.[22]

Nasser's charge on 6 June that the U.S. and Britain were providing air cover for the Israelis, and the possibility that the Soviets might intervene, brought new orders to the Sixth Fleet to stand off at least 200 miles from the eastern Mediterranean littoral. The next day the JCS decided to pull the *Liberty*, the only U.S. naval vessel still in the far eastern Mediterranean, back to at least 20 nautical miles from the UAR and 15 from Israel. Later that day JCS changed again, this time to 100 nautical miles from both countries.[23]

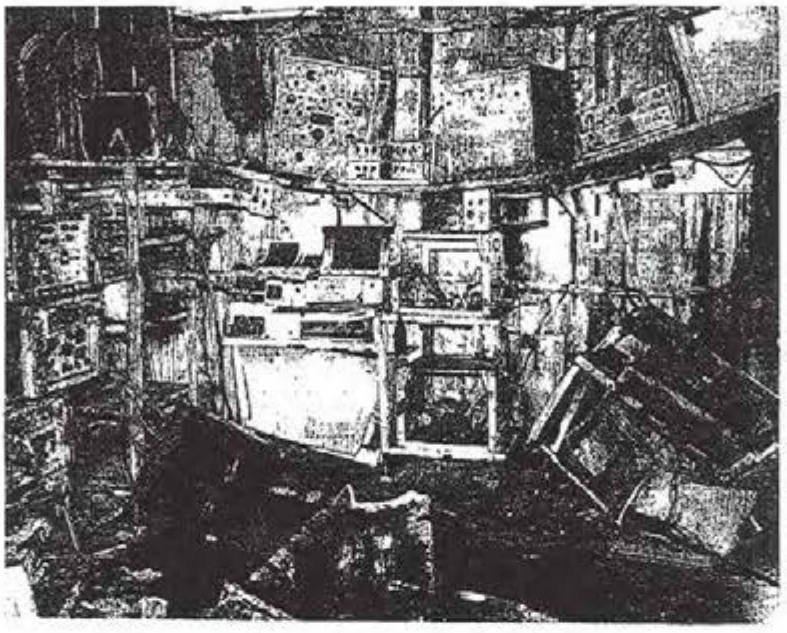
The first JCS message never reached the *Liberty* – an Army communications center misrouted it to a naval communications station in the Pacific. When, an hour later, the Joint Reconnaissance Center of the JCS decided to pull the *Liberty* back to 100 nautical miles, a series of communications fiascos occurred which stretched on into the night. Message misroutings, delays occasioned by the press of other business, refusals by the Navy to transmit based on a verbal order, all combined to delay the message receipt until after the attack. It was a repeat of the warning message to Pearl Harbor on 7 December 1941, and there was blame aplenty.[24]

The *Liberty* was reconnoitered by several unidentified aircraft during the morning hours of 8 June. That afternoon it was about twenty-five nautical miles north of the Egyptian city of Al Arish when, at about 1400 local, two French-built Israeli Dassault fighters veered toward the ship and began strafing it with cannon and rockets. The attack put some 821 rounds into the hull and superstructure, wounded McGonagle, and killed 8 crewmembers. The *Liberty* managed to get off a desperate message to Sixth Fleet before the power to the radio equipment went out, and Admiral Martin, the Sixth Fleet commander, launched 4 armed A-4 Skyhawks for air cover. Since his flagship was 450 nautical miles away from the *Liberty*, however, the aircraft did not arrive before 3 Israeli torpedo boats launched 2 torpedoes at about 1430. The torpedoes tore through the SIGINT spaces, killing 25 men and putting a hole in the hull 39 feet across. As the crew of the *Liberty* scrambled to keep the vessel afloat, one more crewmember was killed by machine-gun fire from 1 of the torpedo boats.[25]

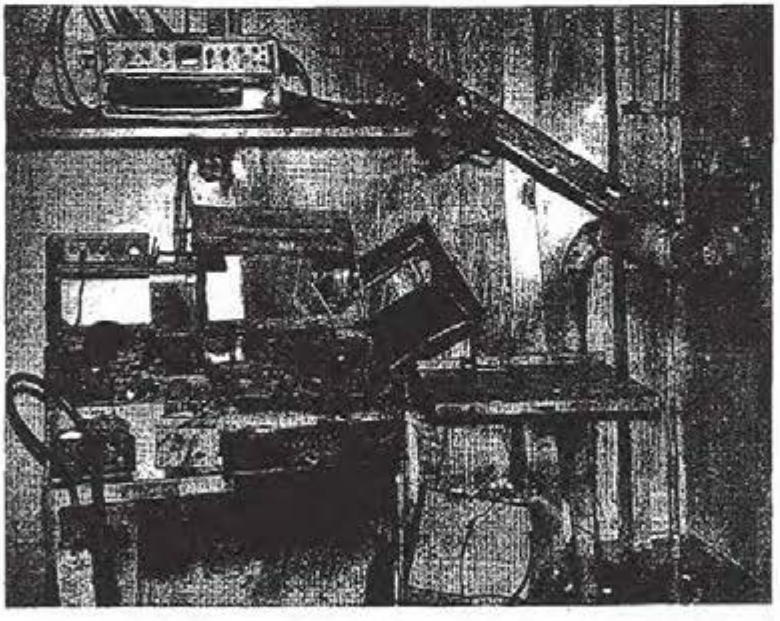
Once the torpedo boats departed, McGonagle directed his vessel to Malta. Sixth Fleet escorts reached the *Liberty* sixteen hours after the attack and trailed the vessel, picking up classified and cryptographic keying material escaping from the hole in the hull. The *Liberty* limped into Malta on 14 June after a heroic struggle to stay afloat that eventually earned McGonagle the Medal of Honor. In all, thirty-four crewmembers were killed, including one NSA civilian Arabic linguist, Allen Blue. The men lost their lives in a war



The *Liberty* at Malta after the attack



The *Liberty* SIGINT compartment



Another view

in which the U.S. was not a combatant because of errors in a military communications system that, by 1967, could no longer do the job.

At NSA, word of the attack reached Director Marshall Carter at 0915 Washington time. The telephone began ringing almost at once, as word of the attack spread through Washington. While Carter was directing intercept coverage reallocation, Secretary of Defense McNamara called him (at 1015) to ask for details on the vessel and the voyage so that he could make a statement to the press. Deputy Director Louis Tordella took charge of devising a cover story. Carter diverted many of the queries to NSG. At one point during the day the director got a call from the Joint Reconnaissance Center suggesting that the vessel be sunk. Carter replied that this was the worst thing they could do – heaps of classified documents and equipment would end up in shallow water. He was right, and McGonagle's heroic piloting of his vessel to moorage in Malta saved what could have become a much worse situation.[26]

Lyndon Johnson got word at 0949. At the time the U.S. still did not know the identity of the attackers, but the White House soon found out through a Defense Attaché Office message from Tel Aviv that the Israeli navy had admitted the error. This presented the president with a very touchy dilemma. Because of Arab charges that the U.S. had assisted the Israelis, the Sixth Fleet was standing far away from the conflict in the central Mediterranean. Yet here, unannounced, was an American naval vessel only a few miles off the coast of Israel, in the middle of a war zone. Johnson's first concern was about Soviet reaction. He had Walt Rostow send a message to Kosygin stating that the Israelis had apparently fired on a U.S. ship in error and that the Sixth Fleet was sending ships and planes to investigate (he repeated it twice). Kosygin replied that he had passed the message to Nasser.[27]

Meantime, the Pentagon had released a statement about the attack, indicating that the *Liberty*'s mission was to "assure communications between U.S. Government posts in the Middle East and to assist in relaying information concerning the evacuation of American dependents and other American citizens from countries in the Middle East."[28] This was the cover story that NSA had devised under hurried circumstances. It didn't work, but like the U-2 incident in 1960, no cover story would have worked in the situation. The press very quickly sniffed out the truth, which was attributed to an anonymous military officer that the *Liberty* was a "spy ship." According to this source, "Russia does the same thing. We moved in close to monitor the communications of both Egypt and Israel. We have to. We must be informed of what's going on in a matter of minutes."[29] The assertion was denied by official sources, but the true mission of the *Liberty* was never in doubt again. (The vessel did not, in fact, have an Israeli mission, because linguists were too scarce.)

How did the the incident happen? Was it a deliberate attack by Israel, as has been alleged countless times by many people? (Even General Carter believed it to have been deliberate.) If it was an accident, how could the Israelis have possibly misidentified the

ship? The *Liberty* was flying an American flag, was clearly marked on the hull "AGTR-5," and when the first flag was shot down by the attacking fighters, McGonagle hoisted the largest flag he had aboard, a holiday ensign seven by thirteen feet. This enormous flag was flying above the *Liberty* when the torpedo boats executed their attack.[30]

E.O. 13526, section 1.4(d)

The idea that the attack was deliberate turned out to be wrong. Although there was no SIGINT bearing directly on the attack, there was a [redacted] report shortly after the incident dealing with the aftermath. It reported air/ground conversations between a ground controller at Hatsor and two Israeli helicopters which reconnoitered the *Liberty* as it was turning toward Malta. Hatsor first identified the vessel as Egyptian, but later became unsure, and requested that the helicopter crews "verify the first man that you [bring up] as to what nationality he is." A few minutes later Hatsor instructed: "Pay attention: if they speak [B-val Arabic] and are Egyptians take them to Al Arish. If they speak English and are not Egyptians, take them to Lydda . . . the first thing is for you to clarify what nationality they are." Two minutes later Hatsor asked, "Did it clearly signal an American flag?" And a minute later, "Requesting that you make another pass and check again whether it is really an American flag."

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One can imagine the panic at Israeli naval headquarters at the time. They had apparently attacked a vessel of their closest ally.

Based on this report, Rostow told Johnson that the Israelis appeared to be confused about the nationality of the vessel, and he suggested that there might have been some breakdown within the Israeli military which resulted in the attack.[31]

The official Israeli court of inquiry concluded on 21 July that it had in fact been an identification error. When the *Liberty* was first discovered by an Israeli spotter plane on the morning of the eighth, it was unidentified but possibly hostile, and a red marker was placed on the map in the naval war room. Later in the morning, the identification was tentatively changed to friendly (American), and a green marker replaced the red one. But the Israeli navy then went a period of time without a location, and someone, instead of retaining the green marker with a question mark, pulled it off the map entirely.[32]

The shift changed at 1100 Israeli time, and the new shift knew nothing about the American vessel, which was no longer designated on the map. What they did know was that Israeli army units in the Sinai coastal town of Al Arish were reporting artillery bombardment from an unknown source. (It later turned out to be the explosion of an ammunition dump.) The Israelis began searching the sea for a possible hostile ship, and they found the *Liberty*. The crew of the vessel that did the identification claimed that its radar showed the ship to be heading at twenty-eight knots toward Suez (an impossible speed for the *Liberty* – an error by the radar operator), and Israeli naval control ordered an air attack. Two Mirage fighters on their way home from an air patrol over the Suez Canal were diverted to the spot where the supposed hostile was. After a quick pass, the pilots

claimed that the ship was not displaying a flag (another error) and were ordered to execute an attack.

The torpedo boats arrived in the area at 1418. A low-flying aircraft had just radioed to its controller that he had seen a marking "CPR-5" on the hull. The naval controller told the torpedo boats to attempt a better identification, but the captain of one of the boats claimed that when he requested identification, the ship requested him to identify himself first. Based on identification aids available on board, it appeared to him to be the Egyptian supply vessel *El-Kasir*, and with this information in hand Israeli naval control again ordered an attack. After the first torpedo hit the boat, the markings "CTR-5" were observed on the hull. Control immediately terminated the attack, just before the torpedo boats were about to launch additional torpedoes that would have sunk the *Liberty*. An Israeli helicopter flying over the ship after the attack finally noticed an American flag, and the Israeli navy realized what it had done.[33]

An Israeli court of inquiry, whose findings were kept secret at the time (but which were uncovered and published by two Israeli journalists in 1984), condemned the confusion, incompetence, and interservice rivalry that contributed to the attack. There was no finding of a deliberate attack, but there was plenty of blame for all the Israelis associated with the incident.

The Johnson administration was properly outraged. The State Department, in a scathing statement highly unusual for diplomats, called the attack "quite literally incomprehensible. As a minimum, the attack must be condemned as an act of military recklessness reflecting wanton disregard for human life." But Clark Clifford, who was appointed by the president to render a final judgment, called it an identification error. Clifford relied heavily on COMINT reports showing Israeli confusion about the identification; these would have been difficult to fake. Going into it with a preconceived notion that the Israelis must have known, he concluded that what was involved was "a flagrant act of gross negligence . . . " rather than a deliberate act.[34]

This did not, of course, quiet the press. Journalists, both reputable and disreputable, supported the "deliberate attack" theory, and the legend arose, without basis in fact, that the Israelis wanted to blind American SIGINT sensors to their communications, both to keep them from finding out that Israel actually started the war and to keep secret a plan to launch an attack on Syria. (As was stated already, the vessel was not targeting Israeli communications and had no Hebrew linguists on board.) All these charges were repeated and embellished by James M. Ennes, a lieutenant aboard the *Liberty* who published a book on the subject in 1980. Most of the crew still believes that the attack was deliberate.[35]

Many of the journalists properly questioned the position of the vessel at the time. Clifford, too, made a special point of this. The *Liberty* was clearly not where it should have been. The original plan was formulated before war broke out. Once the eastern Mediterranean became a battleground, it was decided to hold the *Liberty* out of the area,

but the messages never reached McGonagle. The U.S. communications system was approaching breakdown; war sufficed to push it over the edge.

The crew, on the other hand, performed magnificently, and they and their vessel deserved better. NSA wanted to refurbish the ship and use it again, but the price tag of over $10 million was too high. The *Liberty* was decommissioned a year after the attack, and in 1973 it was cut up for scrap in Baltimore's Curtis Bay Shipyard.[38] An abashed Israeli government paid $13 million in compensation for the loss of life and damage to the vessel.

The attack on the *Liberty* should not be viewed as a bizarre, or even an especially unusual, identification error. Even in peacetime such errors are made all too frequently – the Soviet shootdown of KAL 007 and the American shootdown of an Iranian airliner are good examples. When a country is at war, the possibility of error is compounded by haste and fear. Losses to friendly fire always represent a substantial percentage of the casualties. And the Israeli agreement to compensate should not be taken as proof of guilty knowledge, but rather as an attempt to retain the friendship of a benefactor wronged.

THE *PUEBLO*

> Any way you look at it this incident is a loser. We cannot come out even. We must cut our losses.
>
> Clark Clifford, 29 January 1968

Nineteen sixty-eight was a bad year for the United States. It started with the Tet offensive in Vietnam and saw the assassinations of Robert Kennedy and Martin Luther King and the Soviet invasion of Czechoslovakia. As disaster piled on disaster, the only people truly happy were the media.

The very first disaster, however, was, for American cryptology, the worst. On 23 January North Korea captured a small SIGINT trawler from the TRS program called the *Pueblo*. It was everyone's worst nightmare, surpassing in damage anything that had ever happened to the cryptologic community.

Set-up

After a long lull following the Korean armistice, North Korea had become more aggressive. A clarion call of sorts sounded from the convention of the Korean Worker's Party in Pyongyang in October 1966, at which Kim Il-sung announced a campaign of hostile acts aimed at the "liberation" of South Korea and unification of South and North. This was followed by a dramatic rise in North Korean infiltration, terrorist incidents, and firefights along the demilitarized zone (DMZ). Between 1966 and 1967 incidents increased tenfold. On 21 January 1968 a group of thirty-one North Korean infiltrators attacked the South Korean presidential palace in hopes of assassinating President Park Chung-hee.

This infamous Blue House incident raised tensions along the DMZ to their highest point since the armistice.[37]

Into this not very auspicious situation intruded the latest in a series of TRS vessels. The *Pueblo* was first constructed in 1944 as an Army freight and supply vessel, and it was used to haul materials to South Pacific islands during the latter days of World War II. Decommissioned in 1954, it had sat in mothballs at Clatskanie, Oregon.

In 1966 the *Pueblo* rejoined the Navy, this time as a TRS. It was recommissioned at the Puget Sound Naval Shipyard in Bremerton, Washington, and became the smallest version of the SIGINT ship, an AGER. The *Pueblo* carried just six positions and could make twelve to thirteen knots at top speed. Its new captain, Lieutenant Commander Lloyd M. Bucher, reported to take command in January 1967, while it was still undergoing refitting.[38]

The captain and his crew were mismatched from the start. Bucher resented being jerked out of submarines to the surface navy. He knew nothing of electronic espionage and apparently learned little in his courtesy stop at NSA. His autobiographical account of the visit revealed considerable distaste for the mission and the people involved in it. Once on board, he found it difficult to get along with his executive officer, Lieutenant Edward Murphy. Moreover, he resented the operational control that Lieutenant Stephen Harris, the NSG-provided chief of the cryptologic spaces, had. To Bucher, not being in full control of his ship was intolerable.[39]

E.O. 13526, section 1.4(c)

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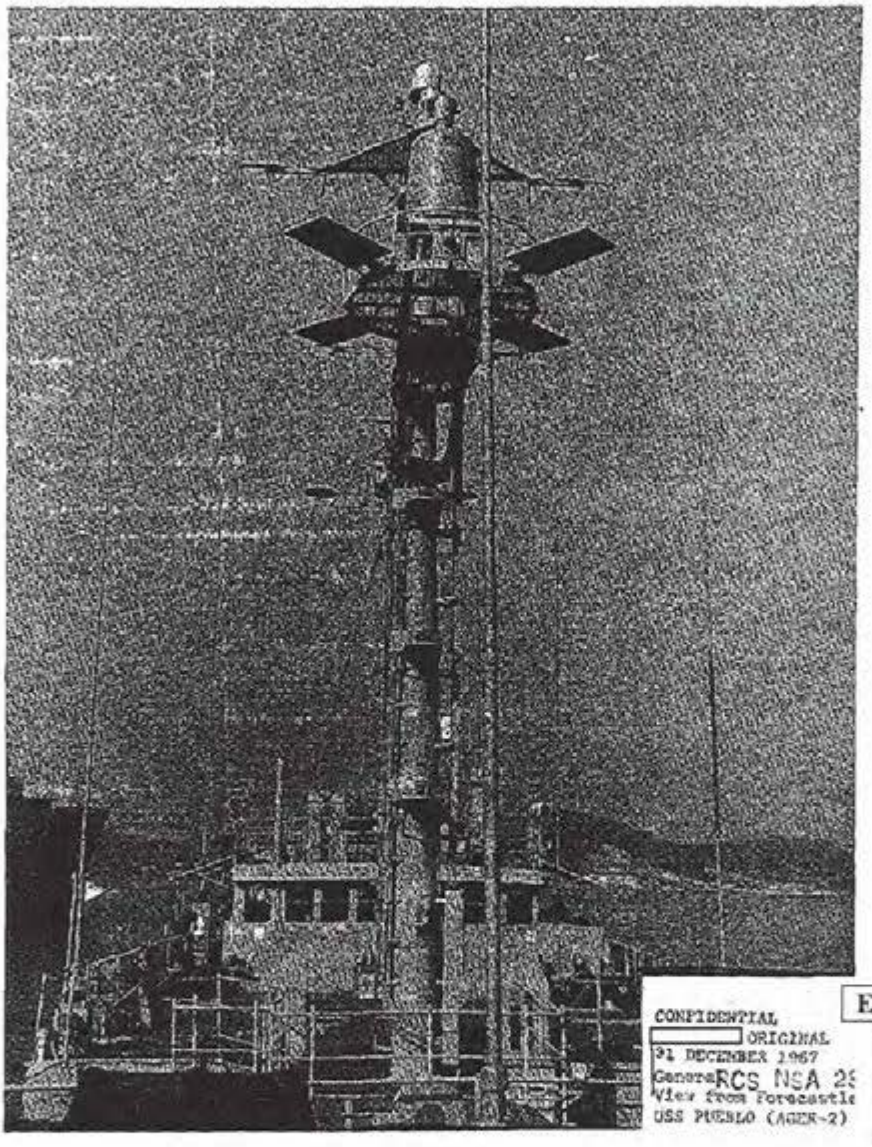
The cryptologic crew was ill prepared for duty. Harris had a good background, including Russian language training and assignment on several NSG afloat detachments. But only two enlisted members had ever been to sea. The two Marine linguists who put aboard at Kami Seya (USN-39) were very green at Korean, and during the capture they could not understand the North Korean voice transmissions discussing the impending fate of their vessel. NSG had placed a vessel in harm's way without an advisory warning capability.[40]

The way the AGER program was set up, NSA had little influence on the mission. The Navy tasked the vessels, and NSA provided technical support and suggested secondary tasking. Risk assessment for the voyage flowed through Navy channels up to DIA, which rendered the final judgment. By 1968 there were literally hundreds of missions worldwide every month, and there is no evidence that anyone put much thought into the *Pueblo*'s first mission. The Navy assessed the risk as minimal, and DIA rubber-stamped it. The mission raised a few eyebrows at the 303 Committee (the organization that reviewed the monthly reconnaissance schedule), but the risk was not changed and the mission profile was not modified.[41] Since the risk assessment process occurred over the year-end holidays, it probably received less scrutiny than was normal.

Lloyd Bucher (emerging from a hearing, with Stephen Harris, after repatriation in 1969)



E.O. 13526, section 1.4(c)

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The *Pueblo*, before its voyage

In fact, it should have raised some eyebrows. The North Koreans had of late shown unusual sensitivity to coastal vessels. Just twelve days before they took the *Pueblo*, the small North Korean navy had chased 300 ROK fishing boats south of the Northern Limit Line (NLL – a geographical extension of the 38th Parallel into the Sea of Japan), capturing two and capsizing a third. On the 20th North Korea summed up its grievances about coastal vessels to the UN Command, claiming that the other side was dispatching "spy boats disguised as fishing boats and villainous spies together with fleets of South Korean fishing boats."[42]

Even prior to this, however, NSA had dispatched a message to the Joint Reconnaissance Center discussing the recent increased North Korean sensitivity in relation to the upcoming voyage of the *Pueblo*. JRC simply sent the message to CINCPAC, which paid no mind.[43]

On 16 January, after putting out from Sasebo six days earlier, the *Pueblo* arrived at the northernmost point of its mission area and began slowly working its way south toward the port city of Wonsan. It had firm instructions to stay at least thirteen nautical miles off the coast, and there is no evidence to suggest that this order was ever violated. The crew was not having a happy trip, though. The seas had been rough almost every day since they had departed from San Diego in November, and the mission, which consisted of some very basic SIGINT sampling, had been dull and unproductive in the extreme.[44]

Capture

On the 20th, and again on the 22d, the *Pueblo* saw North Korean vessels that were close enough to note its position. Bucher was sure that he had been identified and broke mandatory radio silence to report this. At about noon on the 23d, a subchaser pulled up, and after requesting that the *Pueblo* identify itself, the subchaser reported back to his controller. Clearly, the North Koreans were by then certain that it was a surveillance ship of some kind, and after some minutes, during which time it was possible that Wonsan control radioed instructions, the subchaser requested the *Pueblo* to heave to. The *Pueblo* turned to flee, and the subchaser gave chase, joined by three torpedo boats.

The *Pueblo* radio room sent news of the incident to Kami Seya at Flash precedence. The *Pueblo* and the pursuing torpedo boats continued to play a game of tag, and for a time Bucher was successful in evading capture. But finally the subchaser got between the *Pueblo* and open ocean and opened fire. Almost simultaneously the torpedo boats opened up, and at this point Bucher very tardily ordered emergency destruction to begin. (One of the NCOs in the cryptologic spaces had already disobeyed an earlier Bucher order and had begun destroying things.) Finally Warrant Officer Lacy overrode a Bucher order and directed the ship to stop dead. The chase was over.[45]

~~(TSC)~~ Disposition of North Korean naval units and *Pueblo* during attack and seizure, 23 January 1968.

Map of the capture

As the *Pueblo* limped slowly toward Wonsan, escorted by the North Korean vessels, the crew was below decks desperately trying to get rid of all the classified material. It was a futile effort. This ship had far more classified material than it should have had, and it was not equipped to destroy in an emergency even that which it was authorized. Lack of adequate equipment, confined spaces which prevented use of the most effective destruction techniques, and an inexperienced crew that had never practiced emergency destruction aboard the *Pueblo* combined to virtually nullify their efforts. When the ship was finally boarded, most of the material was still lying on the deck.[46]

The boarding took place at 1445, almost three hours after the first North Korean vessel had been sighted. One crew member had been killed during a volley, and several, including Bucher, had been wounded. The radioman had succeeded in apprising Kami Seya of their predicament, and he kept the station updated until he had to go off the air to destroy crypto material. The *Pueblo* reached Wonsan at about 1900, after the harbor lights were already winking in the stillness. The crew was offloaded and placed in a captivity that would last almost a year.[47]

Aftermath

In Kami Seya, things were anything but still. The unit had been on the line with the *Pueblo* for the better part of three hours, and it was frantically passing reports to Commander, Naval Forces Japan. But the initial reports failed to generate the appropriate concern there. Not until after hearing the phrase "we are being boarded" did the organization get itself mobilized. Mobilization, however, proved difficult. The quickest remedy would have been a flight of 5th Air Force fighters. But owing to the low risk assessment, no fighters were on alert, and it would have taken two to three hours to ready something. Adding flight time from Okinawa (where the aircraft were based), they could not have reached Wonsan before dark. Fifth Air Force F-4s in Korea were on SIOP alert and could not be rearmed in time. The carrier *Enterprise* was steaming south in the Sea of Japan on its way to Subic Bay when it got the distress call. But the *Enterprise* F-4s were armed with air-to-air missiles, and the time required to rearm and fly to Wonsan was too much. The *Enterprise* turned around and steamed toward Korea to rendezvous with other vessels headed for the same place, but none of them would be there in time. No help was available, and the U.S. military had to sit and watch.[48]

The middle of the day in Japan was the middle of the night in Washington. Critic reports began arriving at NSA and the White House at about midnight. The senior operations officer called in Major General John Morrison, the assistant director for production, who hurried in to look at the traffic. Morrison called General Carter, who began directing the NSA response.[49]

At the White House, Walt Rostow, the national security advisor, came in first. After hasty calls to NSA and Hawaii to get more information, Rostow notified the president early in the morning. E.O. 13526, section 1.4(c)(d)

Carter mobilized every SIGINT resource he could get his hands on, and assembled every scrap of paper that pertained. He called an Alpha Alert

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So within the cryptologic community, everyone was scrambling. But to the rest of the world Carter put up a stone wall. It was a Navy mission, and he directed that most of the questions be diverted to naval authorities and the Joint Chiefs of Staff. Rather than spread his cryptologic authority to encompass the *Pueblo*, Carter found it useful in this case to put the pressure on the Navy.[50]

Now that the damage had been done, Carter wanted to assess what the damage was. Regarding COMINT, NSA's initial assessment was equivocal. Assuming that most COMINT documents had been destroyed before capture, NSA focused on the information that the crew might reveal under interrogation. It was potentially serious, but as yet unknowable. Regarding the COMSEC loss, however, NSA's conclusions, expressed initially only a day after the loss, were unmistakable: "The probable compromise of four major U.S. COMSEC equipments, including three of our modern electronic crypto-equipments, is a major intelligence coup without parallel in modern history." This was right on target as far as was known then, but the full extent of the loss was not known until the mid-1980s, as will be discussed below.[51]

At the White House, the *Pueblo* capture was one of those transcending crises that occupied the president. Before the end of the month, Lyndon Johnson had participated in at least thirteen full-dress meetings on the subject, and Robert McNamara, Clark Clifford (McNamara's designated replacement; 23 January was his first day on the job), Secretary of State Dean Rusk, and Earl Wheeler (chairman of the JCS) were all fully engaged until 30 January at which time the Tet Offensive cornered their attention.

The first meeting was the Tuesday lunch on 23 January. Discussions focused on where the *Pueblo* was when captured and what the United States could do about it. Inasmuch as it was too late to take the ship back, the group ran through several warlike options such as capturing a North Korean ship, hitting the North Koreans with U.S. forces, and augmenting U.S. forces in the Korean area. At this meeting the president articulated a feeling that came to dominate his thoughts – that the Soviet Union might be behind this and that it could be a "second front" designed to distract the U.S. from South Vietnam. There was no evidence to support this, just speculation.[52]

Later that day Johnson phoned the Soviet Union on the hotline to complain about it. He demanded Soviet intercession with North Korea, to which the Soviets replied that it

was not their problem. Proof of Soviet involvement was lacking then and is still lacking today.[53]

Twenty-four January was the day which shaped the administration's response. In a series of marathon meetings which had come to define the White House in crisis, the "kitchen cabinet"

1. dealt with the problem of the ship's position. Not all the SIGINT evidence was in yet, but there was enough to show that the North Koreans themselves knew the *Pueblo* was outside their territorial limits. This was confirmed through both intercepted voice and radar tracking which located the *Pueblo* approximately fifteen nautical miles offshore. The president decided to go on the air to reveal this information and to bring the evidence to the United Nations;

2. determined, without evidence, that the capture was somehow related to Vietnam. All in attendance agreed that the Soviets must have known about it in advance. (Later that day CIA registered the only dissent.);

3. tentatively decided to move additional military aircraft into Korea, as well as station the *Enterprise* task force off the coast; decided to activate selected military reserve units for the crisis.[54]

That same day FBIS intercepted a Korean Central News Agency broadcast purporting to contain a "confession" by Bucher alleging, among other things, that the *Pueblo* had made a "criminal intrusion" into North Korean territorial waters. That very afternoon the Pentagon issued a rebuttal, stating that "the *Pueblo*'s position as determined by the radar track of the North Koreans themselves . . . " put the ship outside North Korean waters. NSA was not consulted on this release of SIGINT. Carter was livid, but he was powerless to alter the administration's determination to publish SIGINT refutations of North Korean charges.[55]

Simultaneously, the administration was working on a presentation to the UN, to be made by Ambassador Arthur Goldberg. As nothing appeared sufficient to head off this even more explicit release of SIGINT, Carter sent a team to New York to work with Goldberg and his staff on the statement. By cooperating closely, NSA had an opportunity to read Goldberg's statement before he went before the Security Council on the 26th.

Goldberg presented both North Korean voice and manual Morse radar tracking to prove that the *Pueblo* was in international waters and that the North Koreans had known it at the time. E.O. 13526, section 1.4(c)(d) (In 1983, when the U.S. released SIGINT on the KAL 007 shootdown, the SIGINT relationship with the Japanese was exposed by a blundering White House press secretary. The Japanese government was not pleased.)

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Over the next several days, the White House continued to wrestle with all the ramifications of the *Pueblo* incident. One of the most difficult problems was that of protection of reconnaissance vehicles. The group concluded that it was impractical, given the number of such missions every year. The TRS *Banner* was sent to Korea as part of the *Enterprise* task force, and when it patrolled the North Korean coast, it was under heavy escort. But this was more a matter of showing resolve than of collecting intelligence, and the president recognized that it would be impossible to provide this sort of service to every ship and airplane engaged in peripheral reconnaissance. In an interview given to Hugh Sidey of *Time* magazine and Jack Horner of the *Washington Star* on 26 January Johnson made this point:

> The Soviet Union and the United States have many such ships at sea and conduct literally thousands of flights to collect intelligence by aircraft. Neither currently provide [*sic*] protection. If they did so, they would require navies and air forces enormously greater than their present forces.[57]

During the various interviews and press conferences, the Johnson administration made a fairly clean breast of the peripheral reconnaissance program. During a meeting with the National Alliance of Businessmen on the 27th, Clark Clifford explained that the United States had both SIGINT and photographic satellites in orbit, and the photo satellites "can see a tennis ball on a tennis court." Regarding SIGINT collectors such as the *Pueblo*, he said, "We have communication ships and very sophisticated electronic equipment to intercept their communications. The Soviets have a number of ships. And so do we . . . The public has a bad idea about spying. However, we must do it."[58]

The North Koreans continued to make propaganda hay. Several members of the *Pueblo* crew were forced to make "confessions" similar to Bucher's which laid out the SIGINT effort against North Korea and specifically implicated NSA in the effort. SIGINT tasking documents were displayed on North Korean television, complete with the then-current SIGINT codewords, Trine and Savin. (This resulted in another codeword change, and the codewords adopted in 1968 have been used ever since.) In the end, there was little left to publicize that the North Koreans had not already displayed to a curious world.[59]

The *Pueblo* incident also became stage to one of the biggest battles ever between NSA and the JCS. As a result of a number of developments in Southeast Asia, NSA and JCS staffers had crafted a compromise on the provision of SIGINT support to field commanders. Called MJCS 506-67, it set out new ground rules for deployment and operational control of tactical SIGINT units. When it was decided, in the middle of the *Pueblo* crisis, to deploy an AFSS Emergency Reaction Unit to South Korea, the JCS thought that operational control would automatically transfer to Fifth Air Force. Not so, said Carter. These resources simply augmented existing AFSS assets and were in a direct service, not a direct support, role. Therefore, operational control would continue with NSA. The JCS viewed

this as a betrayal of the compromise reached in negotiating the new document, and they ultimately prevailed. Operational control passed to Fifth Air Force on 19 February.

Assessments

Before the administration became caught up in a response to the Tet offensive in Vietnam, Johnson appointed a committee headed by George Ball to investigate the *Pueblo* incident. Ball and his committee concluded on 7 February that

1. the *Pueblo* had indeed been in international waters;

2. the mission had been a necessary one;

3. there had been no way of predicting the outcome, which might have been a spur-of-the-moment decision by the North Koreans. "It was assumed on the principle of mutual tolerance that, so long as we paralleled the Soviet practice, our vessels would remain relatively free from danger. . . . ";

4. such missions should be continued, albeit with improved protection. Off the North Korean coast it would be necessary to provide escort vessels within a reasonable distance – aircraft on strip alert somewhere was not sufficient. Moreover, the design, armament, and equipment of the AGER-class vessels should be improved, and adequate destruction devices should be available. The rules of engagement should not bind the skipper to radio silence nor prohibit the use of defensive weapons until defense was impossible.[60]

In February Congress got involved. At least three different sets of inquiries were performed, including one by William Fulbright in the Senate Foreign Relations Committee. (Fulbright was acquiring an insatiable appetite for matters cryptologic, as would be revealed at the hearings on the Tonkin Gulf Resolution in August; see p. 522.)

But by far the most intrusive was a subcommittee of the House Armed Services Committee, chaired by Otis Pike. On 10 March General Carter testified at length about the *Pueblo* in executive session. Two days later Pike released some of Carter's information at a press conference, and Carter was furious. He had cultivated good relations with Congress and had occasionally provided sensitive information to members of certain committees when he thought it necessary.[61] Pike's release set a very bad precedent and may have influenced NSA's response to that same congressman's far more extensive investigation of the intelligence community in 1975 – the so-called Pike Committee investigation. (At that time someone on the committee leaked the final committee report

to the press, even though the House had voted to suppress it because it contained classified information, specifically cryptologic.)

Assessments within NSA began almost immediately. Once the Agency had made its initial damage assessment (see above), Carter appointed a committee to do a more complete job. Through the spring and summer, the assessment became more refined, but a full accounting would have to await crew debriefing. To this end the United States put on all the diplomatic pressure it could to secure the crew's release. In the end, however, the government had to sign a phony "confession" and apology at Panmunjom in order to get the crew back. They walked across the bridge at the truce village to freedom on 23 December, just in time for Christmas.

The complete mishandling of the crew debriefing was emblematic of the entire *Pueblo* incident. Viewing it as an internal matter, the Navy kept NSA uninformed of arrangements for the debriefing and insisted that NSG represent the cryptologic community. NSA viewed the assessment of cryptologic damage as their business, and finally got the Joint Chiefs to intercede with the Navy so that NSA could take its proper role.

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The debriefing process itself was typified by heavy friction between NSA's team and the Navy authorities on the scene. The Navy even refused to allow NSA's team chief, [redacted] to communicate with Carter except through him, and [redacted] had to resort to extraordinary methods to get his cables back to the Agency. [redacted] reported that ". . . we are encumbered by a totally uneducated admiral who has neither the rudimentary knowledge of SIGINT, or for that matter, general intelligence, and who is in the position to edit our reports to the intelligence community." In response, Carter sent a bubbly message to Admiral Moorer, the CNO, complimenting the effectiveness of the debriefing team and the support received in San Diego (the debriefing site). Passed on to the Navy in San Diego, this message opened doors for

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[redacted]

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[redacted] Sometimes the heavy-handed approach was not the smart way to go.[82]

[redacted]

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NSA had always designed crypto devices under the assumption that the enemy would eventually capture the machine. In order to read any communications, it would also be necessary to get the keying material. This, said NSA, was the salvation of the *Pueblo* story. Assuming that the North Koreans turned over the material to the Soviets, they could be in position to read traffic through several crypto periods in late 1967 and early 1968, but nothing more. This was bad enough, but NSA's design principles had staved off further disaster.[66]

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Was the *Pueblo* capture planned? Were the Soviets behind it? No direct evidence has ever been found regarding either charge. NSA's Robert Newton, who made the most intensive and incisive study of the incident, believes that it was planned. However, it could easily have been an extension of the on-going North Korean campaign to rid their waters of South Korean fishing boats, and there is evidence to suggest this. There is no evidence regarding Soviet foreknowledge, although their subsequent use of the captured materials is almost certain.

It was a bad situation made worse by negligence. The crew was poorly trained, and its linguists could not even render advisory support to protect the vessel from capture. The Navy loaded it down with far too much classified material and equipment, some of it even beyond the clearance level of those aboard. The crew never practiced emergency destruction, which was next to impossible anyway given the inadequate destruction systems then available on board. There was evidence of poor coordination between captain and cryptologic crew.

Following the capture, the Navy and NSA engaged in an unseemly jurisdictional battle over the debriefing process. On the Navy side, there was a lack of understanding of NSA's role.

Self-defense was only one of the problems besetting the TRS program. All the vessels had been recommissioned; most of them dated from World War II. They were becoming expensive to operate, and 1968 was to be the year in which NSA hoped to obtain money to refurbish and continue the program. Even while the *Pueblo* was being captured, NSA was working on an internal study of the future of the AGER portion of the TRS system. NSA felt that little was wrong with the AGERs that could not be fixed by a little redefinition of command relationships. But the Navy, strapped for cash to continue its presence in Southeast Asia, as well as elsewhere in the world, favored diverting the money to combat vessels.

Both CIA and NSA put forth intelligence requirements supporting program continuation, particularly for Cuba, Southeast Asia, and the Mediterranean. But the Navy noted the difficulty and expense of protection. After a limbo period, during which each budget decision went against TRS, Deputy Secretary of Defense David Packard cancelled the program in October 1969. The last of the ships, the *Belmont*, was decommissioned just three months later.[71] Surely the *Pueblo* and *Liberty* incidents were on his mind to the end.

CZECHOSLOVAKIA

> As the U.S. tried to figure out whether or not the Soviets would invade Czechoslovakia in 1968, these [SIGINT] reports quite simply muddied the water and [challenged] even the most experienced all-source analyst searching for meaning and patterns in a mountain of material. The conversations reported were relevant. There were just too many.
>
> Angelo Codevilla, *Informing Statecraft: Intelligence for a New Century*

The Soviet invasion of Czechoslovakia in August 1968 stands in history as one of the masterstrokes of the assertion of imperial control. It was masterful because of its speed, its surprise, and its brute force. It was hidden as part of a series of military exercises which,

like a tornado out of control, turned suddenly and savagely to stamp out a generation of new political leaders. And it allegedly took the West entirely by surprise.

Viewed from a distance and as a whole, this analysis generally holds up. But viewed from up close, the generalizations begin to break down. They are simplistic and not entirely accurate. The reality is more complex.

The Prague Spring

It began in October 1967. The old Communist order under Antonin Novotny was beginning to crumble. At home he had overcentralized the economic system, and in foreign policy his support of the Arab cause during the 1967 war grated on younger and more liberal colleagues. And he had dealt not very skillfully with the subsurface conflict between the Czechs and Slovaks. For all these sins Novotny confronted considerable unrest.[72]

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Internal dissent erupted on the night of 31 October when a routine protest of the lack of electricity for their dormitories by students from the Technical College overflowed in a melee between students and police. The pot continued to bubble during November and December.

Novotny desperately clung to his position as first secretary of the Czechoslovak Communist Party until 4 January when the party leadership banded together to vote him out. In his place they installed an obscure Slovak nationalist, Alexander Dubcek, first secretary of the Slovak Communist Party. Dubcek was known as a good Communist, and at first the Soviet leadership seemed to regard it as a routine and perhaps overdue unhorsing of a used-up Communist functionary. But Dubcek turned out to be anything but a routine Communist. Under his leadership, the Czechoslovak government quickly turned to market reforms and political liberalization which included press freedom and budding capitalism. Newspaper reporters began calling it the "Prague Spring."

On 4 May according to press reports, Dubcek and his principal lieutenants made a hurried trip to Moscow. It was in fact a showdown with the Soviet Communist Party over the Prague Spring reforms and the general direction of Czech communism. The official communique spoke of a "comradely atmosphere," which one writer said "is Communist shorthand for cold disagreement."[75] This was followed by a series of secret meetings in the Kremlin, almost certainly on the Czech "crisis."

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Field reports (primarily from the ASA unit at Rothwesten) indicated that the Soviet troops were in a very high state of alert. But CIA, wading through the huge volume of reports, assessed the readiness as being related to a field exercise. This calmed the White House somewhat, and Walt Rostow told the president that Warsaw Pact forces did not appear ready to invade. In fact, it was very difficult to determine what the Soviets would do.

This menacing troop buildup continued through the month, until there were some nine line divisions and three army headquarters just to the north and east of Czechoslovakia. continued to track troop movements. (But the press also tracked the troop movements.) The situation in Czechoslovakia was tense; many believed that the Warsaw Pact would invade immediately.[78]

On 24 May a joint communique was released announcing that Warsaw Pact exercises would take place in Poland and Czechoslovakia in June.

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The exercise, called Sumava, played out from 18 to 30 June. Its scenario involved a three-prong invasion of Czechoslovakia, with Czech forces representing NATO as the sole defenders. Invading forces were Soviet, Polish, East German, and Hungarian, and the exercise served as a dress rehearsal for the real invasion in August. At the termination, Warsaw Pact forces did not return to their bases – they ominously stayed in place until mid-July.[80]

Meanwhile, Dubcek and the Czech leaders played a dangerous game with the Kremlin. Dubcek refused to retreat from liberalization measures and declined to attend a 14 July meeting at the Kremlin to discuss the situation. The meeting was held without him. With Soviet troops still on Czech soil, it took a great deal of courage not to back down.[81]

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Czechoslovakia, 1968

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

On 23 July the Soviets announced yet another large-scale exercise, to be held along the Czech border and in western Russia, Byelorussia, and Latvia. The announced purpose was to work out rear services procedures. On 30 July they announced that the exercise would be extended into Poland and East Germany. It did not include Czech troops.[82]

Dubcek and Brezhnev in Bratislava, 4 Aug 1968, only two weeks before the invasion

On 1 August Dubcek and his lieutenants attended an unprecedented face-to-face meeting with Soviet Communist Party secretary Leonid Brezhnev and the Politburo leaders in the Slovakian town of Cierna nad Tisou. The proceedings are thought to have been acrimonious, but Dubcek did emerge from it with a "Declaration of Bratislava," a general statement of socialist principles which papered over the disagreements and preserved a measure of public agreement.[83]

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On 20 July the control authority moved to Legnica, in Poland, and stayed there through the invasion preparations. During the last week of July, GSFG and NGF (Northern Group of Forces) units moved to new positions closer to Czechoslovakia.

On 10 August Moscow announced the beginning of a communications exercise.

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[redacted]

On 18 August, the same date that the command post exercise concluded, [redacted]

The welter of indicators was even more difficult to sort out in the United States. NSA was not making predictions or even doing a very good job of wrapping up the field site reporting. Since the White House had, in mid-decade, arranged for the input of SIGINT directly to the Situation Room, huge volumes of raw SIGINT flowed in, but it was basically unmodulated from Fort Meade. As luck would have it, though, NSA's David McManis, the deputy chief of the Situation Room, was looking at the indicators and had established an easy dialogue with Walt Rostow, the national security advisor. He and Rostow privately agreed that an invasion was likely, although they did not have enough information to predict the date.

On 19 August McManis noted to Rostow that the invasion that they both thought would happen appeared to be imminent. [redacted] The next day would be time for Johnson's Tuesday Lunch with his key national security advisors. At the lunch, Rostow broached the subject of Czechoslovakia; it appeared to him that something was about to happen. In his planning notes for the president, Rostow noted: "You may wish to encourage the group to speculate about basic Soviet strategy in U.S.-Soviet relations at this stage, including the relationship to possible moves against Czechoslovakia. . . ."

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[redacted] According to Rostow, "We judged the Central Committee meeting as ominous, not hopeful," at the Tuesday Lunch. Richard Helms (DCI at the time) felt that the Soviets had decided to move.[91]

Later that day, Anatoly Dobrynin, the Soviet ambassador to the U.S., called to say he would like to see the president that evening. The timing was almost unprecedented – the president knew immediately that the subject must be Czechoslovakia, and it must mean invasion.[92]

At about midnight, 20 August, Warsaw Pact forces, poised on the border, rumbled across. Some fifteen to sixteen Soviet divisions, augmented (for public relations purposes, no doubt) by three Polish divisions and smaller numbers of Hungarians and Bulgarians, attacked in three major spearheads. The largest contingent raced in from the north, along the East German border, toward the key cities of Prague and Pilzen, while smaller groups came in from the Soviet Union (Carpathian Military District) and north from Hungary. At the same time, airborne forces launched from bases in the Soviet Union (primarily Vitebsk and Panevezhis) to key nodes in Czechoslovakia.[93]

[redacted] It was sudden, massive, and effective. They rolled over the almost defenseless Czech forces virtually unopposed.[95]

Once in Prague, Soviet troops arrested Dubcek and his liberal supporters in the National Assembly. There was little resistance from the population, but the invaders, who

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had been told to expect a jubilant reception, were taken aback by the deep hostility of the Czech citizenry.[96]

No Soviet forces went on alert, and later postmortems called into question the validity of using alert status as an indicator of hostilities. It was of a pattern with the tactical situation, which was evidently designed to be disguised as exercise activity.[97]

The alert was probably precautionary – since the end of the Cold War the deputy commander of the Warsaw Pact invasion forces has written that the Soviets were confident NATO would not interfere, and they did not feel extreme measures were necessary.[98]

Following the invasion, a great national debate ensued about the Czech "surprise." Journalists were unanimous in condemning the failure of intelligence to warn. *U.S. News and World Report* reported that Johnson learned of the invasion from Dobrynin. Tad Szulc, in his history of Czechoslovakia since World War II, said that intelligence abounded, but "the recipients of all this intelligence input seemed unable or unwilling to interpret it adequately," and he noted that NATO did not go on alert all summer. Historian Walter Laqueur wrote that the West learned about the invasion from a radio broadcast in Prague. He claimed that "technical intelligence [read SIGINT] had the information, but did not get it to decision makers in time."[100]

They were all right, and they were all wrong. As with all intelligence analysis, success or failure depended on how you defined the two terms.

Strategic warning was impeccable.

when 20 August came, and Pact forces were poised on the border, the United States knew it.

One modern-day analyst has proposed that had DIA possessed the warning indicator system in 1968 that it later developed, it would almost certainly have published a warning report by 19 August. The case for this is good – Warsaw Pact force posture, reported was clearly at the highest level ever achieved; higher even than in May and July of the same year. The failure to publish a specific warning report was due to the fact that the system for doing it had not yet evolved.[101]

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~~TOP SECRET UMBRA~~

The president knew as much as was knowable by the afternoon of 20 August and was not, contrary to press reports, surprised by what Dobrynin had to tell him. What good would it have done to alert NATO forces? NATO could do nothing anyway. Better to stay cool and look surprised.

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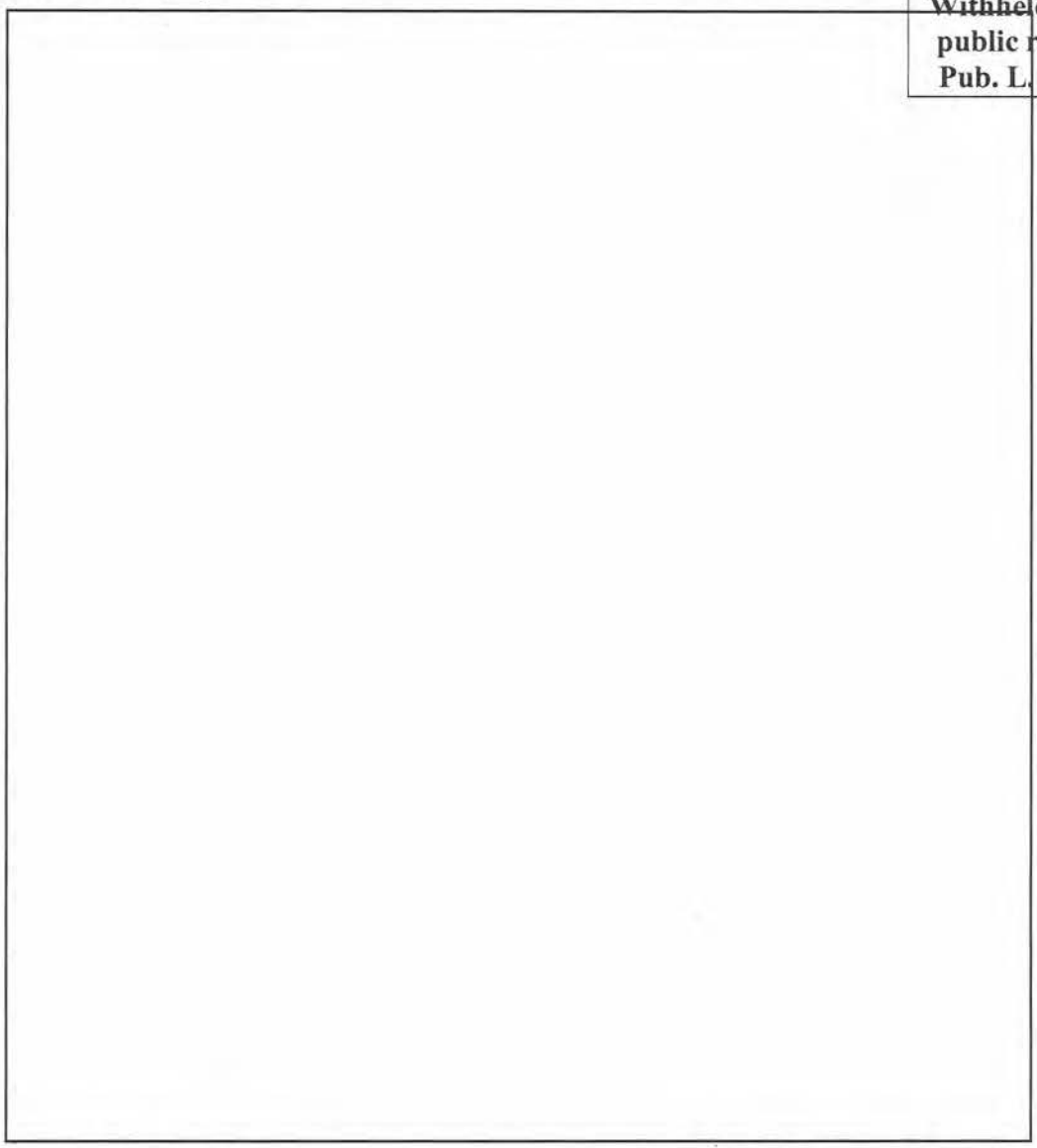

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Romania – The Invasion That Never Happened

On the last two days of August, [redacted] reports began to arrive at the White House concerning a possible Soviet move into Romania to bring the errant Communist regime of Ceaucescu back into line. [redacted]

As it happened, the White House had been concerned about this possibility as early as the 23rd. Romania had pursued an independent foreign policy since 1964, and during the Czech crisis had pointedly supported Dubcek (alone within the Soviet Bloc). Soviet troop movements in areas peripheral to Romania could be interpreted as threatening to that country, too. Rostow contacted NSA; the Agency replied that it did not look like an invasion to them, and the White House calmed. [redacted] Just to be on the safe side, however, President Johnson issued a public warning to the USSR on the first week of September. Romanian diplomats thanked the president for his support, and the crisis seemed to subside.[104]

Rumors continued, but NSA stepped in again. In October the Agency again wrapped up recent activity, and it concluded that the Soviets were not about to move on Romania.[105]

[redacted]

In contrast to its performance on the Czech crisis, the cryptologic community was widely praised for its role on Romania. The difference appeared to be the active participation of NSA, which headed off speculation at every turn. Romania was the invasion that did not happen, and NSA's calming influence was noted at the White House.

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THE SHOOTDOWN OF THE EC-121

The SIGINT crises of the decade came to a tragic end in 1969. The North Korean shootdown of a Navy EC-121, with the loss of all thirty-one men aboard, was one of those

transcending events that precipitated drastic changes in the crisis structure at NSA Headquarters. The effects are still felt today.

North Korea and the Aerial Reconnaissance Program

By taking the *Pueblo* in January 1968, Kim Il-sung's North Korea had once more branded itself as an international outlaw. As the United States redoubled its efforts to protect its peripheral reconnaissance missions, North Korea continued its pattern of infiltration and subversion. In November 1968, a group of 120 well-armed commando infiltrators landed by sea on the east coast of South Korea and infiltrated villages in the area. It required 40,000 ROK militia and police nearly 2 months and the loss of 63 lives to clean out the group.[107]

The situation on the ground was not necessarily mirrored in the air. Over the years there had been five incidents involving North Korean and American aircraft. Only two, involving RB-47 aircraft in 1955 and 1964, affected the peripheral reconnaissance program. In neither case was the aircraft shot down, so in reality North Korea had never shot down a reconnaissance mission, although they had tried twice. Considering the unsettled situation around the DMZ, and the hostility demonstrated by the Soviets and Chinese to this sort of electronic spying, this was not considered to be a very high number of incidents.[108]

To see Soviet fighters in reaction to a peripheral reconnaissance mission was normal; often the Soviets would send fighters out in relays to pace the aircraft, staying between it and the Soviet coastline. By the mid-1960s, however, JRC had decided that the Asian Communist nations fell into a different category. When one of them launched a fighter in reaction, which was rare, they meant business. Because of this, two new conditions had been inserted into the White Wolf plan. Condition 3, which would be called any time a hostile fighter was seen headed over water within 100 nautical miles of the mission, required a heightened state of alert aboard the aircraft and diversion to a fallback orbit farther off the coast. If the fighter came within 50 nautical miles, this would be changed to Condition 5, which required an automatic abort. Since the institution of these new conditions, the U.S. had lost no missions to the PRC, North Korea, or North Vietnam.[109]

Navy and Air Force SIGINT reconnaissance missions were almost daily occurrences off the North Korean coast. One of the most frequent visitors to the area were the EC-121 aircraft, nicknamed BEGGAR SHADOW, from the VQ-1 squadron in Atsugi, Japan. A large, slow, lumbering Lockheed aircraft designed to haul passengers, the EC-121 had become the easiest target in the Navy inventory. But it was bigger than its sister collector, the EA-3B, [redacted] For this reason it was still the aircraft of choice for fleet support.[110]

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And fleet support was the mission. BEGGAR SHADOW aircraft were Seventh Fleet assets. They were tasked and technically supported by [redacted] (Kami Seya). NSA submitted secondary tasking, but the Navy jealously guarded operational control, and NSA's tasking often had little effect on the mission.[111]

The week before the mission, General Charles Bonesteel, commander of U.S. Forces in Korea, warned of unusually vehement language and surly protests by the North Koreans at Panmunjom. The warning was sent to the VQ-1 squadron, which was advised to be extra cautious. But the North Koreans appeared to suffer through profound mood swings at the Armistice Commission meetings, and neither Seventh Fleet nor CINCPAC changed the risk category of 3 (hostile action unlikely). Conditions 3 and 5 appeared to cover any potential problems, anyway.[112]

Despite the relative venerability of the White Wolf warning program and its apparent good effect (there had been very few incidents since it had been instituted in the early 1960s), VQ-1 aircraft were only loosely cobbled to the system. According to a senior NSA official involved with White Wolf, the Navy was an "unenthusiastic" player in White Wolf. Unlike the Air Force reconnaissance aircraft, the EC-121 had no secure method of contact with the ground. For warning, they relied on SAC HF broadcasts labeled "Sky King," which could not be acknowledged. Thus the ground station personnel issuing a condition did not know if a transmission had been received, or what the situation was aboard the aircraft. Moreover, the key Navy units involved in the mission (including [redacted] at Kami Seya) were not on distribution for reports issued by AFSS sites watching the mission.

The Mission

The doomed aircraft departed Atsugi at 0700L with a double load of thirty-one crewmembers – the excess members were in training status. It was to fly across the Sea of Japan to a point off the northern coast of North Korea, do two and a half orbits, and land at Osan Air Force Base in Korea. The EC-121 was reflected by both Soviet and North Korean radars, [redacted]

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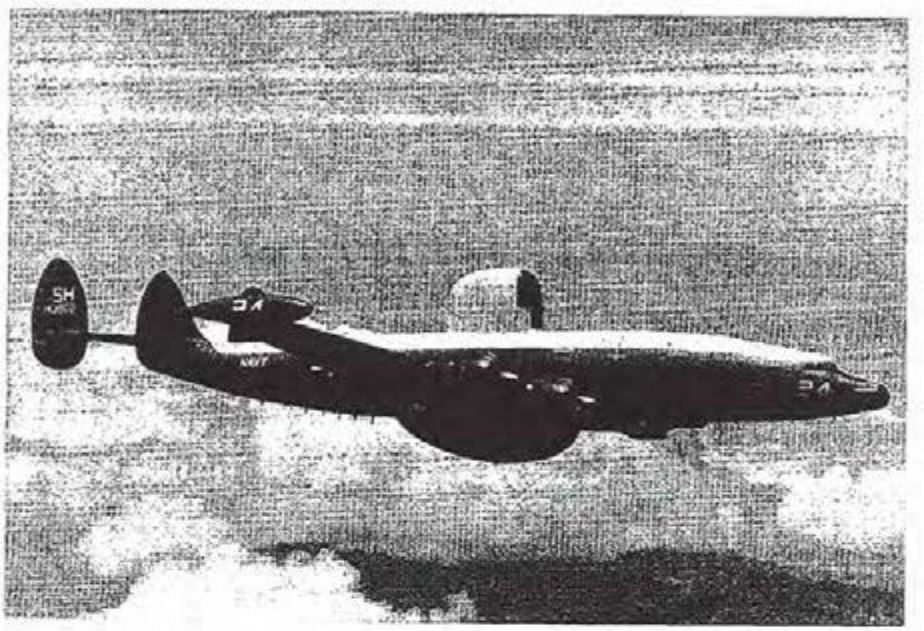

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The tracks of BEGGAR SHADOW, 15 April 1969

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At about 1330, as the mission was nearing the topmost portion of its last orbit, two North Korean MIG-21s scrambled from the training school at Hoemun. The fighters had been there for about two weeks – it was unprecedented for MIG-21s to be at Hoemun, and their purpose there was never explained. As was customary, Osan waited for a second plot before issuing a Condition 3. They did not get one for eight minutes, at which time the fighters were reflected at about fifty-five nautical miles from the mission and closing fast. One of them peeled off to make a defensive patrol, but the other bore on straight for the mission. At 1340 Osan issued a Condition 5, as the second MIG-21 was by this time reflected as well under fifty nautical miles from the mission. Only four minutes later [redacted] the two aircraft merging. The shootdown probably came at 1347, while the mission was about eighty nautical miles from the coast. The tracks separated at 1349, and Soviet facilities ceased reflecting the mission two minutes later. The MIG-21 was headed home by that time.[114]

AFSS reporters at Osan were concerned. The North Korean reaction was virtually unprecedented, and Soviet radar tracking was ominous. They were in close touch with 314 Air Division in Korea, and at 1345, two minutes prior to the shootdown, Brigadier General Arthur Holderness, 314 AD commander, directed that F-102s be launched in case of trouble. But, incredibly (considering the *Pueblo* incident the previous year), the Navy had not requested strip alerts, so no fighters were actually airborne until shortly after the hour. The analysts [redacted] spent the ensuing forty-five minutes replotting the mission and communicating with [redacted] in Misawa and 5th Air Force in Japan trying to see if anyone else had any information. The feeling was that the aircraft must have "hit the deck" to evade the MIG-21.[115]

At the same time, Kami Seya was completely in the dark. They were making communications checks, but they were getting nothing in reply. [redacted] had issued a Spot Report, but [redacted] was not on distribution. The VQ-1 squadron was monitoring the SAC HF broadcasts, so they knew something was amiss, and they were making repeated calls to the air control facility at Fuchu asking for information.[116]

Finally, at 1444, almost an hour after the shootdown, [redacted] issued a Critic. Still, no one knew for sure what had happened until FBIS monitored a 1600 North Korean broadcast claiming to have shot down a "spy plane." By then the aircraft was half an hour overdue at Osan.[117]

Fifth Air Force aircraft swarmed to the spot, but debris was not spotted until the next day by a naval P-3. Eventually two bodies were recovered, along with some debris. Although Soviet vessels participated in the search and rescue (SAR) operations, compromise of classified material was never a significant issue, as it had been with the *Pueblo*.[118]

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While [redacted] was trying to figure out if they had a shootdown or not, the Current SIGINT Operations Center at NSA had called Major General John Morrison, the assistant director for production. Morrison began coordinating the NSA response, but found it almost impossible. A Group had a crisis response center (the CSOC) with analysts and reporters [redacted] But B Group had nothing equivalent to it, and analysts had to be called to duty in the middle of the night. By 0330 Local, CSOC had fashioned a follow-up to the Critic, [redacted] Morrison wore out his shoes walking between the A and B Group areas to try to get a coordinated response. The follow-up finally went out at 0500, but not before a thoroughly frustrated Morrison had vowed to consolidate his crisis and warning facilities into a single organization.[119]

John Morrison

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The Crisis

NSA's disorganized response was reflected at the White House. At the Situation Room, David McManis was trying to piece together the details, and he was on the phone with several different NSA divisions. He finally found it necessary to drive to NSA and get together the materials that he would need to brief the president.[120]

The shootdown plunged the new Nixon administration into its first international crisis. During the campaign Nixon had criticized the Johnson administration's handling of the *Pueblo* capture, and he had vowed to demonstrate that the Republicans were made of sterner stuff. Henry Kissinger, the new national security advisor, prepared a list of options which included a B-52 strike (according to journalist Seymour Hersh), and bellicosity nearly carried the day. But in the end the solid opposition of the secretaries of state and defense (Rogers and Laird) and the DCI (Helms) won out.[121]

Instead, the administration launched a diplomatic offensive. The cornerstone of this offensive was a presidential press conference on 18 April. There, Nixon, using data supplied by NSA, stated that intercepts of Soviet and North Korean radar reflections proved that the aircraft had been in international waters. This second presidential release of SIGINT information in fifteen months (the first went out during the *Pueblo* crisis) occasioned a very detailed damage assessment study at NSA. In the end, John Morrison's DDO team could find no evidence of drastic changes to either North Korean or Soviet communications.[122] Whatever changes were needed by both countries had probably already been made after *Pueblo*. And exploitation of Soviet air defense communications had been a matter of public record since the release of tracking information on the 1958 RC-130 shootdown. By 1969 this exploitation was no longer a secret to anyone who could read the newspapers.

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The administration decided ultimately on a military show of force in the Sea of Japan, a move almost identical to that which Johnson had made in January 1968. A massive flotilla was assembled under the name Task Force 71. It included three carrier task groups and 250 aircraft, [redacted] On 24 April AFSS flew a special RC-130 mission off the North Korean coast, heavily defended by American military might. By then, however, NSA had concluded that North Korea had crawled back into its leathery shell and was no longer an immediate threat. Moreover, there was no evidence that the Soviets or Chinese Communists were in any way involved in the incident.[123]

A *Washington Post* story on 17 April called into question the value of the peripheral reconnaissance program. It was a good question, and it got a thorough airing in the Pike Subcommittee, which was still investigating the *Pueblo* capture. House Armed Services Committee chairman Mendel Rivers simply added the EC-121 shootdown to the list of things that Pike was tasked to look into.[124]

While General Carroll of DIA came out four-square in favor of the reconnaissance program, John Morrison was not so categorical. Morrison, an Air Force general, could see the value of the Air Force program, which appeared to him to be better managed, used more capable aircraft, participated more fully in PARPRO (the Peacetime Aerial Reconnaissance Program) – and were, hence, safer – and were more fully under national control. The Navy program, Morrison thought, suffered from a lack of all these attributes. NSA was getting only minimal value and had no control at all. Morrison stood his ground before Carroll and the Navy on the issue. He commissioned an internal NSA study of the situation, which basically backed up his gut feeling. It was the second serious run-in between NSA and the Navy on peripheral reconnaissance.

The *Post* reporter, who seemed to have impeccable sources, also cited the extended delay in reporting the incident from the field. General Wheeler (chairman of the JCS) also raised questions, and NSA was called to answer. An internal investigation completely exonerated [redacted] focusing on its performance of advisory warning functions (on which

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it did a credible job) rather than on the delay in issuing the Critic.[125] This approach seemed to quiet external criticism, but any good field reporter knew that the Critic should have been issued as soon as there was any considerable doubt as to the fate of the mission. The investigation begged the real question.

The Pike Committee expressed disquiet about the real value of such airborne reconnaissance in view of the cost in dollars and lives over the years. Some of the committee's concern may have stemmed from NSA's unwillingness to defend the Navy's programs. Pike recommended that the full Armed Services Committee take a more active role in monitoring the programs.[126] E.O. 13526, section 1.4(c)

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The committee was also very critical of interservice disconnnects. The members cited failure of the VQ-1 squadron [redacted] to receive any information from the Air Force about the mission until they received the Critic, and they noted that this time delay contributed to delays in launching the search and rescue effort. They were incredulous over the failure of the Navy to ask the Air Force for fighter strip alerts, especially so soon after the *Pueblo* incident.[127]

The rivalry between the Navy and NSA was not defused until General Carter stepped down as director. The new director, Admiral Noel Gayler, had the contacts within the Navy to build bridges, and as the new director he took NSA's case directly to Admiral John Hyland, CINCPACFLT commander. Gayler wanted closer NSA involvement with Navy SIGINT reconnaissance, and the authority to task missions. He eventually got part of what he wanted – NSA began tasking a few VQ-1 flights in the Pacific area.[128]

The 1960s absolutely overflowed with SIGINT crises. After the Arab-Israeli War of 1967 and the *Pueblo* capture of 1968, John Morrison proposed to General Carter that NSA establish a single national SIGINT watch center. The proposal was still hanging fire four months later when the EC-121 went down. Morrison pressed Carter for a decision, and on 17 July 1969 he got one. In the twilight of his term, Carter concurred with the establishment of a National SIGINT Operations Center (NSOC). Morrison himself was charged with putting it together.[129]

As for the EC-121s, their time was almost over. A Navy Board of Inquiry, looking at the shootdown, noted the cumbrous nature of the aircraft (maximum speed 220 knots) and low headroom (maximum altitude 10–20,000 feet), and the board recommended that something better be procured. The replacement was the EP-3E Orion, which gradually took over all EC-121 orbits. The EC-121s were moved back to safer orbits until they could be mercifully retired.[130]

Was the shootdown a deliberate act? Conspiracy theories usually require wild flights of imagination, but in this case it was the only explanation that made sense. Like the *Pueblo* capture, it seemed to follow no known North Korean procedure, and it did not appear to have simply been a routine operation gone haywire. Instead, it appeared to be a carefully preplanned event, from the placing of two MIG-21s at a training base that had

never seen them before, to the flight pattern of the aircraft that allowed for little misinterpretation of intent. The shootdown happened to occur on Kim Il-sung's birthday, which led to speculation that it was a planned birthday present. Of course, the North Koreans had to hope that the JRC reconnaissance schedule conformed with Kim's birthday, which makes this part of the theory rather tenuous.

It was likely just another of North Korea's xenophobic strikes. This time a U.S. reconnaissance aircraft was in the way.

SECURITY AND THE WORK FORCE IN THE 1960s

Success on the cryptologic front did not translate into the security field. A succession of security problems in the early 1960s, begun in the summer of 1960 with the infamous Martin and Mitchell defection (see pg. 280), rocked the NSA community. For the first four years of the decade, it must have seemed like the sky was falling.

Dunlap

The House Un-American Activities Committee investigation into the Martin and Mitchell affair ended in 1962 when a final report was issued. Legislation to give the director additional powers to dismiss personnel, which resulted from the committee recommendations, was still dragging through Congress when in July 1963 an Army sergeant named Jack Dunlap committed suicide. A month later his wife showed up at NSA with a pile of classified documents which, NSA's security organization discovered, Dunlap had been selling to the KGB.

Sergeant First Class Jack E. Dunlap had first come to NSA as the driver for Major General Garrison B. Coverdale, the chief of staff, in 1958. Dunlap had up to that time served a rather uneventful career in the Army, which included service in Korea as an infantryman. While overseas he had worked as a technician and messenger for ASA, which got him close to the security business. But Dunlap was afflicted with serious character flaws. He liked money, lots of it, and when he had it, he spent it on yachts, fast cars, and faster women. Once at NSA, he discovered how to get it. Sometime in

Jack Dunlap

May or June 1960, Dunlap walked into the Soviet embassy in downtown Washington and offered to sell classified documents. He claimed he could get his hands on them.[131]

Dunlap smuggled classified documents out of NSA literally under his shirt. He did not work in a technical area, had no knowledge of cryptology, and probably did not steal documents in any organized fashion. But he knew that the documents were worth money. He was in and about Coverdale's office and just scooped up whatever became available. The FBI and NSA security people were never able to determine with any certainty just what Dunlap had sold.[132]

Twice the Army alerted Dunlap for overseas assignments. This represented a serious threat to his lifestyle, which by that time included two Cadillacs, a Jaguar, a thirty-foot yacht, a world-class hydroplane, and a blonde mistress. The first time, Dunlap evaded the assignment by pleading a bad back. The second time, he informed the Army that he intended to resign, and he applied for a civilian position at NSA.[133]

He did not get very far. His initial polygraph turned up evidence of petty thievery, immoral living, and living beyond his means, and his second try did not go any better. NSA initiated an investigation and withdrew his access to classified material. The investigation began in May, and the FBI interrogated him on 17 July. Apparently convinced that he was about to be exposed, Dunlap committed suicide six days later by inhaling carbon monoxide. Later in the summer his wife turned up with the classified documents that were still in the Dunlap residence.[134]

The Dunlap affair brought further unfavorable publicity to NSA, but it did represent a success of sorts. Had the polygraph not been in place, Dunlap might have have been hired in some capacity and would have continued his espionage. The incident renewed discussions about requiring military assignees at NSA to take the polygraph, but the armed services staunchly opposed it, and successive directors (Blake and Carter) made little headway. The custom of excluding the military from the polygraph did not finally end until 1985.

Much criticism attended the revelation of Dunlap's lifestyle, which had gone unreported by coworkers. Further, the affair spotlighted the ease with which employees could spirit classified documents out of the Agency. The impact was the initiation of exhaustive exit inspections, which continued for thirty years (until 1993), and a continuing focus on employee lifestyle, a point that was hammered home to NSA employees again and again during security awareness sessions. Although Dunlap is deceased, his ghost has lived ever after in the halls of Fort Meade.

Hamilton

The same day that Dunlap committed suicide, the Soviet newspaper *Izvestia* published an article about NSA attributed to one Victor Norris Hamilton, a former NSA analyst. The third security crisis of the young decade had burst on the Agency.

Hamilton, whose family name was originally "Hindali," was Lebanese by birth. He met and married an American working for Point Four (a foreign aid program) in Libya in 1953, and emigrated with her to the United States. Hamilton's fluency in Arabic attracted the attention of NSA, and he was recruited for employment in 1957.[135]

He remained at NSA for only two years. In early 1959 Hamilton began evidencing psychological problems, and he was sent to the medical staff for an evaluation. He was diagnosed as paranoid schizophrenic, but refused hospitalization, and he was medically terminated in June. He visited Morocco briefly but returned dissatisfied. He applied for employment at CIA, but there was no billet available for him. NSA tried to get him committed for psychiatric evaluation, working through his wife, but this failed. In 1960 he wrote a letter to the House Armed Services Committee claiming that an agent had offered him money to do business with the Soviet Union. The matter was turned over to the FBI, which tried unsuccessfully to interview him. He worked briefly as a teacher in Iraq but was discharged, and he dropped out of sight from May 1961 until the *Izvestia* article appeared.

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Hamilton brought more opprobrium to a besieged NSA security organization. Yet in his case, as in Dunlap's, it could be argued that the system worked. His initial hiring was, in retrospect, inopportune, but the internal screening system weeded him out before he progressed into more responsible positions. The severe embarrassment of the publicity surrounding the *Izvestia* article had less impact on NSA's posture than was predicted at the time.

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In March of 1974 the State Department reported to NSA that Hamilton was being detained in a Soviet psychiatric hospital. A Jewish émigré made a positive identification of Hamilton based on a photograph, and NSA closed the case in June.[138]

The Hamilton and Dunlap cases heightened the sense of urgency in Congress about NSA personnel policies. When in 1964 Congress enacted PL 88-290, giving the director more authority to hire and fire NSA people, the legislation owed much to the three security cases that immediately preceded it.

David Kahn and *The Codebreakers*

The wave of publicity surrounding the Martin and Mitchell case interested a *Newsday* reporter named David Kahn. Kahn already had an active lifelong interest in cryptology sparked by his youthful reading of Fletcher Pratt's book *Secret and Urgent*. Subsequent to the Martin and Mitchell exposé, he wrote an article for the *New York Times Magazine* on the influence of cryptology on current events, and this spawned a publishing contract with MacMillan. *The Codebreakers*, a monumental work on the history of cryptology, was published in 1967 to a good deal of fanfare. It was, and has remained, the definitive work on the subject in the open press.

The publication was not a welcome development at Fort Meade. When NSA learned of the forthcoming book, it obtained a copy of the manuscript from the publisher. Without a reasonable hope of cooperation from either Kahn or MacMillan, the Agency reviewed the manuscript and marked a few passages for modification or deletion. To NSA's surprise, Kahn, then in Paris, reviewed the changes and agreed with virtually all of them. The material NSA wanted removed related to UKUSA collaboration and was not central to Kahn's thesis.[139]

Although Kahn was reasonably cooperative, many other journalists were not. Press leaks relating to American cryptologic efforts became more troublesome over the decade, as the interest of the American public in NSA increased. Beginning as early as 1961, for instance, the *New York Times* quoted the presidential press secretary about the launch of Soviet manned space vehicles which referenced "listening posts" in the Middle East intercepting traffic between the launch site and downrange tracking stations. The next year *Newsweek* published references to satellite intercept of Soviet microwave transmissions. In 1966 the *New York Times* published a series of articles on SIGINT collection at the U.S. embassy in Moscow and on satellite intercept of Politburo-level limousine car phones.[140] A year earlier a press photo of McGeorge Bundy with President Johnson contained a copy of the CIA Daily Bulletin with a clearly visible "Top Secret Dinar" (the then-current Category III COMINT codeword) stamp affixed. This produced

numerous press references to a "codeword so secret the very existence is classified." All the reporters seemed to know that the codeword referred to SIGINT, even at that relatively early date. The anonymity that NSA had enjoyed in the 1950s was slowly disintegrating.[141]

Cryptology is Legalized

The legal existence of a COMINT effort, rendered precarious by the Federal Communications Act of 1934, was finally established in 1968. The Omnibus Crime Control and Safe Streets Act of 1968 dealt specifically with the issue. While prohibiting all wiretapping and electronic surveillance by persons other than law enforcement authorities (and even then under restriction), it stated that

> Nothing contained in this chapter or in section 605 of the Communications Act of 1934 . . . shall limit the constitutional power of the President to take such measures as he deems necessary to . . . obtain foreign intelligence information deemed essential to the security of the United States. . . .[142]

It did so just in time; the Watergate period and the attendant Church and Pike Committee hearings called into question all that was illegal about espionage, and much that was legal, too. The 1968 legislation provided a much-needed defense for NSA and the cryptologic community.

AMERICAN CRYPTOLOGY AT THE END OF THE DECADE

> It is important that you recognize the systematic character of the cryptologic enterprise; that its integrity must be maintained because the challenge with which it is confronted cannot be met if that system is debilitated, fragmented, or destroyed.
>
> General Marshall S. Carter on the occasion of his retirement, 1 August 1969

By the end of the 1960s, cryptology had become big business. SIGINT product reports had become common paperwork in the White House and at every level down from that. NSA sent representatives to nineteen organizations, ranging from enormous military commands like CINCPAC to [redacted] A study of strategic warning done in 1967 called COMINT "the workhorse of warning intelligence; no other source can match its continuity, timeliness, and span of coverage."[143]

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The cryptologic community was at its height in terms of personnel numbers. NSA employed about 18,000 people [ ] percent of them military), while the SCAs had [ ] The total, about [ ] men and women, was a strength that had never been reached before and has not been attained since.[144]

Relationships with the Military

Paradoxically, the relationship between NSA and the military commands had never been at such a low ebb. Strains in tailoring SIGINT support had developed during the Vietnam War. A series of situation-specific compromises had papered over the differences, while leaving the underlying issues unresolved.

At mid-war, 1966 and 1967, NSA and the JCS had tried to hack out a comprehensive agreement concerning the use and control of SIGINT resources. The resulting document, called MJCS 506-67, left DIRNSA in overall control of all SIGINT assets but provided that under certain circumstances certain types of assets would be delegated to the tactical commander. The memo carefully defined the procedures for doing this, and for the first time the role of the cryptologic support group was defined and standardized.[145]

The trick was in universal interpretation and smooth implementation. The first try, during the *Pueblo* situation, collapsed in howling controversy, and it colored relationships for several years to come. Although the agreement was employed more successfully in later years, difficulties persisted.

In 1967, the same year that MJCS 506-67 was published, the Army convened a board under Brigadier General Harris W. Hollis to "examine cryptologic and related activities." At the root of this study were deep-seated differences between NSA and the Army over the management of cryptologic assets. The Hollis Board recommended a series of steps which would have both pulled ASA resources away from DIRNSA control on the one hand, and on the other, given ASA a more favored seat at the cryptologic table.

Hollis made a pitch to transfer ASA direct support resources from the CCP to the Army general-purpose program. This proposed move would have fragmented cryptologic resources while divorcing the Army from the CCP system. NSA opposed it, while recognizing the tendency to fully fund big-site resources and programs at the expense of tactical assets. Hollis also recommended that ASA be given operational control of tactical SIGINT resources at all times – the Army deferred this.[146]

Distressed at the increasing concentration of resources at Fort Meade, the Hollis Board made a number of proposals that would have strengthened in-theater ASA processing. This move to improve SCA theater assets amounted to an attempt to halt the tide. The waves of cryptologic centralization continued to wash inexorably over the valiant Hollis Board, and nothing came of the attempt.[147]

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Finally, Hollis proposed that the Army become more involved in centralized cryptologic activities, by taking a role in futuristic projects like [redacted] and by increasing its manning at Fort Meade. While pointing out that ASA had already been given a piece of [redacted] (a logistics piece, but nonetheless a piece), NSA noted deepening trends in the opposite direction. Army policy led in the direction of diversification, especially at the officer level, rather than toward the cryptologic specialization that was required for greater ASA participation in the centralized cryptologic system.[148] It was an ominous trend which led ASA in a tactical direction and which eventually caused it to virtually abdicate its unique SIGINT expertise, established so laboriously by Friedman and others in the 1930s.

The debate over SIGINT control intensified in 1969 when JCS promulgated a new policy document for electronic warfare, called MOP-95. Electronic warfare (EW) had always been outside the purview of SIGINT, but MOP-95 broadened the definition of EW to include a new category called Electronic Warfare Support Measures. The new category sounded just like SIGINT, but without the codewords or centralized control. General Carter attacked the new JCS document, to no avail. The armed services continued to develop EW capabilities, in league with the SCAs, which were happy to participate in a new effort divorced from NSA control.[149]

During the summer of 1969, as General Carter's term as director wound toward its end, the Joint Chiefs were considering a direct assault on NSCID 6. The objective was to expand JCS authority over cryptologic assets, at the expense of DIRNSA. Carter found out about the draft, and in a phone call to General Wheeler (chairman of the JCS) he called it an "absolute monstrosity." The revision of NSCID 6 was going through coordination when it was halted by Admiral Johnson, director of the Joint Staff, to await the appearance of Admiral Gayler at Fort Meade.[150]

Marshall Carter Retires

Weary of conflict with the services and debilitated by medical problems, General Carter retired in August of 1969. But before he did so he loosed one final blast. In a letter to Secretary of Defense Melvin Laird the day before his retirement ceremony, he characterized the state of cryptologic management as "diluted."

> Despite the vigor, ingenuity, enterprise, and growing competence of the national cryptologic establishment which emerged almost seventeen years ago, subsequent administrative and organizational arrangements . . . have diluted the original concept and clouded the original goals. More and more common tasks have been assigned outside the cryptologic community, with a corresponding loss of efficiency and economy.[151]

He excoriated the legal hairsplitting that had been employed to shave cryptologic resources from the central system, to call a duck something other than a duck in order to free it from NSA's control. He was pessimistic about the future.

Carter was asked to hold invitations to his retirement ceremony at the Pentagon to 150. He invited only 3 people and zipped through the ceremony in ten minutes. The Pentagon was as happy to see the last of Marshall Carter as Carter was to leave the wars.[152]

Gayler Takes the Helm

With Carter on the way out, the Department of Defense decided to experiment with a new kind of director. Instead of appointing an intelligence specialist on his final military assignment, DoD nominated an admiral with an operational background and ambitions to go higher.

Lt Gen Carter shows incoming DIRNSA VADM Gayler his office.

Noel Gayler was untainted by the intelligence business. The son of a Navy captain, he had gone into naval aviation soon after his graduation from Annapolis in 1935. Gayler had served as a flyer in the Pacific in World War II, following which he had had many years of both operational and staff experience with the line Navy. He had been only the third naval officer ever to fly a jet aircraft, and when he was nominated to fill Carter's job, he still held the record for the longest flight from an aircraft carrier. He was a known protégé of Elmo Zumwalt, the new and reformist CNO.[153]

Gayler was the most unusual director in NSA's history from many aspects. Personally, he was dynamic, mercurial, and high-strung. Gordon Sommers, a senior civilian at USAFSS, described Gayler's management style as all Navy.

> Gayler came from a Navy background, and his perception of command and control was the captain on the bridge of the ship with a speaker tube down to the boiler room yelling orders to throw more coal on the fire, and everybody down to the lowest level threw more coal on the fire.[154]

His impatience with briefers was legendary, and he was known to throw things when especially agitated. He seemed to strike out in all different directions at once, and he moved with dizzying speed from one topic to another. Short, stocky and athletic, he resembled a fireplug in constant motion.

Gayler was put in the job to repair the damaged NSA-JCS relationship. He understood that he was to open up channels of communication, that he was to talk to the operational officials on the Joint Staff and get things moving again. One of his first moves was to create a permanent NSA representative to the Pentagon, accredited to the JCS, the military departments, and the office of the secretary of defense.[155]

He was immediately confronted with the JCS staff papers, forwarded to him by Vice Admiral Johnson. The papers were more than just critical – they amounted to an indictment. In his reply to Johnson, he said that the basic directives (i.e., NSCID 6) seemed to be sound and that "any difficulties have been occasioned by the attitudes of personnel involved" (a clear reference to his predecessor and his antagonists). He believed that he could patch things up through personal diplomacy, and he began calling people at the Pentagon. Within weeks he had defused the situation.[156]

Although he did put NSA back on speaking terms with the military, it is hard to see how he accomplished it. His personal relationship with most of the Joint Chiefs was cold to the point of hostility. But Gayler was politically astute, and he moved easily in Washington's power elite despite his mannerisms. When he departed, he was rewarded with the plum assignment of CINCPAC and got his fourth star, the first NSA director ever so elevated.

The Eaton Committee

By 1967 the SIGINT budget passed $1 billion, and manpower stood at nearly 100,000. Officials at the Bureau of the Budget were already taking a close look at the CCP when General Carter sent over his CCP proposal for FY69, which added another $200 million to an already high figure. The CCP monitor, William Mitchell, went through the roof. He took the Carter budget to Charles Schultz, director of the Bureau of the Budget, and convinced Schultz that cryptology had to be "investigated." Schultz, who had worked in ASA earlier in his life and probably thought he had special insight, sent an unstaffed memo to the president proposing a national-level cryptologic review.[157]

Richard Helms, the DCI, found out about this invasion of his turf, and he called White House staffer Bromley Smith. Walter Rostow and Clark Clifford put a stop to the Schultz memo, but this did not solve the cryptologic budget problem. Ultimately Robert McNamara, whose empire included NSA, convinced the president that Helms himself should be charged with the job. The DCI was to appoint a high-level committee to investigate cryptology. The objective was to reduce the CCP, and it was to be a review to end all reviews.[158]

Helms appointed a very high-powered group. Lawyer Frederick Eaton was chair, and the members were General Lauris Norstad (former SACEUR), Ambassador Livingston Merchant, and Dr. Eugene Fubini, the DDR&E and long-time nemesis of Marshall Carter. A more influential foursome could hardly have been found for the job.[159]

The Eaton Committee suffered from the hostility of almost every organization with any stake in the problem. Helms himself had been cool to the idea when it was first proposed. Regarding NSA and SIGINT satellites, for instance, he stated that NSA's relationship with the NRO was a matter for him and McNamara to sort out, and it should not be discussed by a committee. He opposed any investigation of Third Party matters as intruding onto CIA turf. He demanded that the committee not interfere with CIA's independent SIGINT effort: "Relations between NSA and CIA on covert SIGINT collection activities have been the subject of exhaustive discussion and review and present working arrangements appear to me to be satisfactory."[160]

Helms suggested that the committee occupy itself with considerations of ELINT management and reduction or consolidation of SIGINT field sites in vulnerable overseas areas. But DIA and the services opposed any look at ELINT, and NSA viewed the idea of reducing field sites with suspicion.[161]

The appointment of Fubini to the committee was, to Carter, the last straw. He determined to have nothing to do with the effort, and his appointees to the committee staff (Walter Deeley and Gerald Burke) defended NSA interests at every turn. The investigative effort was so fragmented by staff bickering and external hostility that Eaton was able to accomplish little. It was hardly a review to end all reviews.[162]

The conclusions of the Eaton Committee, especially in the area of COMINT, tended to support NSA objectives. Eaton was a centralizer, and he proposed that NSA obtain more control over the cryptologic process. In his view, parts of the SCA staffs should be integrated with the director's staff. The committee recognized the central dilemma of resource control which was bedeviling SIGINT, and it viewed askance service attempts to flake off various parts of the process through inventive definitions of EW and increased control of cryptologic field sites. Service complaints about lack of SIGINT support should not be used as a lever to fragment the cryptologic effort: "The tendency on the part of the military, unilaterally, to remove essential resources, both men and equipment, from the approved Consolidated Cryptologic Program is detrimental to the entire effort and should be resisted."[163]

Regarding ELINT, however, the panel proceeded in the opposite direction. Stating that "over the past ten years, it has become apparent that the decision to place ELINT as a whole within the COMINT structure has not proved workable," the committee recommended that ELINT remain decentralized. NSA's proper role was to exert technical control, to collect and process signals of national strategic importance (like Anti-Ballistic Missile [ABM] radars), and to maintain a central database for the intelligence committee.

On overseas basing, the committee simply repeated shopworn platitudes about the need to reduce bases without hurting the effort. Eaton and company seemed to understand that overseas real estate must sometimes be retained in a less-than-productive status to preserve options against future targets. The Eaton members also felt that the SIGINT targets would increasingly become high-tech problems which required huge amounts of money, [redacted] and the overhead SIGINT satellite program. The committee cautioned against rushing in too fast, but recognized that increasing amounts of money would have to be funneled into those efforts at the expense of conventional collection.[164]

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On the critical issue of assessing the effort against [redacted] the committee admitted that it had not been able to gather enough information to make a recommendation. There were telltale signs that NSA had decided not to unburden itself of its most closely guarded secrets to a group which it did not trust and that Eaton recognized a stone wall when he saw one.[165]

The only Eaton recommendation that had any long-range impact on intelligence was one which strayed beyond the borders of cryptology. The committee recommended that the DCI exert stronger direction over the overall intelligence program by creating a National Intelligence Resources Board (NIRB). This emphasis on centralized direction harmonized with the philosophical bent of the committee, and at CIA it fell on fertile ground.[166]

The Eachus Committee

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Following the failure of the Eaton Committee to resolve the central problem of the worth of the effort against Soviet cipher systems, the NIRB prepared to take on the problem. But in the fall of 1968, before the NIRB could get moving, NSA itself established a panel for the [redacted] effort. The Eachus Committee was headed by Dr. Joseph Eachus of MIT, a former Navy cryptanalyst during World War II and one of the leading civilian authorities on the Soviet cipher system problem. Eachus was known to NSA and was a trusted friend. Carter placed his bets on a friendly assessment.

Joseph J. Eachus

In contrast to the Eaton fiasco, NSA revealed all to Eachus. The Eachus report was the most thorough assessment of the NSA position on Soviet enciphered systems ever done.

Eachus enumerated the systems that were defying attack – the prospects for many of them were dim. But he assessed prospects on other systems as good, as a result of a confluence of factors. [redacted]

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[redacted]

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Although Deputy Director Louis Tordella tried to justify the expense [redacted] Eachus's role was to validate the effort and urge that it be pursued with increased intensity.

The Creation of NSOC

Although the EC-121 shootdown pushed the NSOC cart over the crest of the hill, more than three years were to elapse before an organization actually took shape. NSOC's creation was delayed so long because of internal bureaucratic wrangling and logistics problems.

The first problem was space. Initial planning assumed that NSOC would physically move into spaces contiguous to CSOC, but it became clear fairly early that such a large organization would require its own spaces. Room could be made when the communications center (Tcom) moved to a new location on the third floor of Ops 1, but NSOC would have to wait for Tcom to move out. The second-floor spaces were to be available in 1971, but the calendar for the Tcom move kept slipping, and ultimately the area was not freed up until a year later. Meantime, the formation of NSOC was on hold.[169]

The second problem revolved around what NSOC was to look like. In his initial NSOC concept paper, Major General John Morrison (the ADDO) described NSOC as a center that "would provide NSA with a single facility from which to conduct the production and dissemination of current SIGINT information. . . ." It would track ongoing events, but it would also produce reports and direct activities. It would comprise A Group's CSOC, B and G Group's crisis centers, elements of K1 associated with tasking mobile SIGINT elements, P04 elements involved in reconnaissance missions, and the Command Center. Shift operations would be headed by the SNOO (Senior NSA Operations Officer). Manning would come from CSOC's [redacted] workers, [redacted] people from P04, [redacted] from the Command Center, and unspecified numbers from B, G, and W Groups. Its communications would be primarily via Opscomms ([redacted] of them, a huge number at the time). Morrison named Air Force colonel [redacted] to head the planning effort. [redacted] fresh from Europe, knew exactly how the operation at Zweibrucken functioned, and could get his hands on the people who had made it successful.[170]

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The operating concept that Morrison envisioned was basically CSOC with other Agency elements grafted on. At the time CSOC controlled European field site reporting. It could direct reporting and could issue its own reports (although as time went on that function became almost the exclusive domain of the day shop). The day effort put out periodic summaries and wrap-ups, while events more than seventy-two hours old were turned over to A7, the term analysis shop. CSOC still lived in the days of the Teletype Model 28 Opscomm terminal, and analysts got their traffic delivered in paper copy from the Opscomms that resided in a separate room. Even so, things moved very fast in CSOC –

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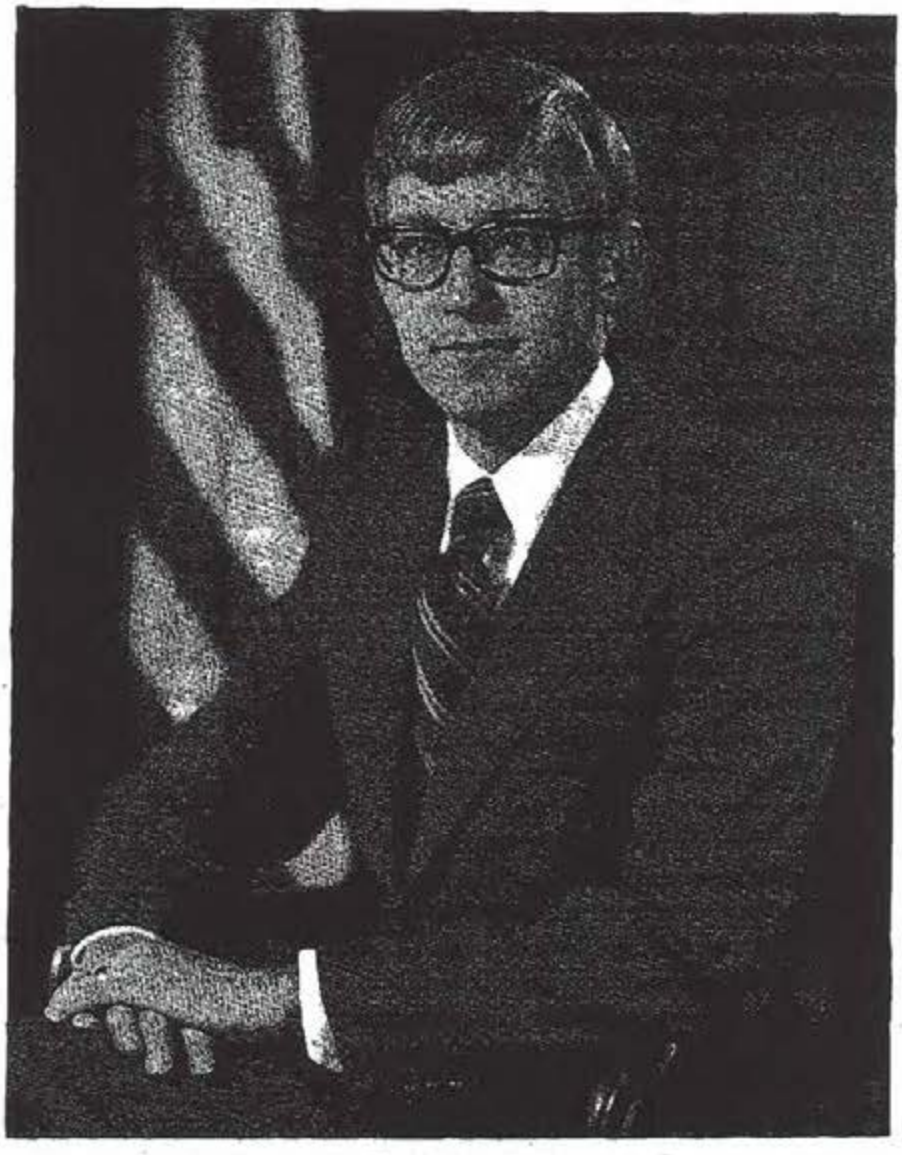
it was closer to near-real-time than any other organization in the Agency. Morrison clearly modeled NSOC after CSOC.[171]

And that was where the trouble began. CSOC might have been ahead of the competition, but it just wasn't the model that non-A Group organizations wanted to use. Morrison's concept paper raised a storm of controversy. Frank Raven, chief of G Group, agreed to place a desk in NSOC, but insisted that G Group operations were much too diverse to be amenable to centralization, and the G Group desk would be a watch desk only, with no production functions attached. [redacted] of B Group took basically the same tack, and he agreed to relocate certain B functions only to lessen the physical distance between B Group and other Agency elements. W Group agreed to establish a desk in the new organization, but its focus was still in DEFSMAC, and the NSOC effort was perfunctory. [redacted], responding for K1, adamantly opposed absorption of any portion of the K1 mission (managing mobile collectors) by NSOC.[172]

Morrison forged ahead anyway. In 1972 he appointed a planning group dominated by people with A Group experience, and he named a full-time NSOC staff headed by Richard "Dick" Lord, the former head of CSOC. Although key members of B and G Groups assisted Lord, the organization kept the A Group flavor. NSOC was being called "A Group and the Dwarfs."[173]

The new NSOC edict was finally fashioned in the summer of 1972. By charter, NSOC was to "act as an authoritative and responsive interface on current SIGINT product and service both between SIGINT users and producers and between various producer organizations." It would also function as the NSA command center, and the senior officer, now called the SOO (Senior Operations Officer) would have true command responsibilities for the entire SIGINT system. In that capacity he or she represented the director.[174]

Operationally, it resembled CSOC and its predecessor, the Air Force center at Zweibrucken. It monitored ongoing events and could take a variety of actions, including redirecting coverage and steering field reporting. Its original charter included the authority to do its own independent reporting, but this function was never exercised. NSOC did not become another Zweibrucken, except in the area of reconnaissance reaction reporting. But it did become the focal point for the release of all Agency electrical product reports. Finally, it did the daily director's brief and supervised the worldwide CSG system.[175]



Richard "Dick" Lord
Named by Morrison to put NSOC together, he later became NSA's deputy director.

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The NSOC that went operational in December 1972 (though the official ribbon-cutting did not occur till the following February) was in a state of technological transition. During the CSOC days, Walter Deeley, who had been Colonel [redacted] deputy in A8 (CSOC), had been working toward what he called the "paperless environment." He planned to electrically connect the field Opscomms with a computer so that KLIEGLIGHTs could be processed and distributed automatically to CSOC floor analysts. A revolutionary concept at the time, Deeley pushed it with a dedicated singlemindedness. A Group selected the Univac 494 as the mainframe because of its communications handling capabilities. Software to manage the KLIEGLIGHT system was called TIDE. The concept was in only a partial state of existence when NSOC was created, but it soon became the dominant concept within NSA. It made near-real-time truly feasible.[176]

Withheld under statutory authority of the Central Intelligence Agency Act of 1949 (50 U.S.C., section 403g)

SIGINT in the Nixon White House

The decade closed with a new president, Richard Nixon. It also opened with a new chief of the White House Situation Room. When [redacted] of CIA departed the Situation Room at the end of the Johnson administration, General Alexander Haig was appointed to the job. But Haig was clearly destined for greater things, and soon NSA's David McManis was given the job.[177]

The national security apparatus under the new administration was enmeshed in a rather strange structure. Henry Kissinger, a Harvard history professor, became the national security advisor, but he came to exercise power far beyond that. Kissinger was in effect Nixon's secretary of state (shoving aside the supine William Rogers), a DCI (moving into the turf of Richard Helms, whom Nixon distrusted) and still later, a de facto chief of staff for a president besieged by scandal and crime.

Like Walt Rostow in the Johnson administration, Kissinger became the funnel for intelligence to the president. When someone had to be called in, McManis phoned Kissinger, who lived only a short distance from the White House in Rock Creek Park. He was, according to all contemporary accounts, a brilliant man, but not as experienced in SIGINT matters as Rostow had been. Moreover, he was inclined to shield the president from the details of intelligence, where Rostow shared all. Thus when SIGINT did get to the Oval Office, it was generally subsumed into a mishmash of sources and not separated out and highlighted as it had been under Johnson. Nixon did not himself get involved in the details of intelligence, leaving those details to Kissinger.[178]

Henry Kissinger, May 1969,
in his office in the basement of the West Wing

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To some extent this was an inevitable development. Johnson's handling of SIGINT had been unique, and it was not to be repeated. Journalists like Seymour Hersh have claimed, on what appears to have been good authority, that intelligence, and especially SIGINT, was being misused for political purposes. This has been confirmed to some degree by SIGINTers who had contact with the White House. It fell into a pattern that was to emerge during the second Nixon term – the Watergate pattern. It was not good for SIGINT, and it was deadly for the presidency.[179]

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4. "A Brief Review of SIGINT and its Prospects," June 1963, in CCH Series VI.EE.1.11; Series VIII.16.

5. NIE 30-67; Lyndon Baines Johnson Presidential Library, Austin, Texas, National Security Files, in CCH Series XVI.

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~~TOP SECRET UMBRA~~

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Southeast Asia

~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY~~
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Chapter 11
NSA in Vietnam: Building the Effort – The Early Years

> Cochinchina is burning, the French and British are finished here, and we ought to clear out of Southeast Asia.
>
> Lt Col Peter A. Dewey (OSS) writing from Saigon, 1945

Much has been said about the American decision to become involved in Southeast Asia. The decision to intervene was hotly debated and controversial from the first. Intervention resulted ultimately in the nation's most humiliating military debacle (although by no means its first defeat). So many things went wrong that the failures obscured the successes, but successes there were. From both the military and the cryptologic standpoint, it was a learning experience.

VIETNAM – THE COUNTRY

Actually, three countries were involved: Laos, Cambodia, and Vietnam. (Vietnam's political geography is complex, involving as it does three separate areas: Cochinchina (presently known as Cochin China) in the south, Annam in the center, and Tonkin in the north.) But Laos was landlocked and primitive – it hardly counted – and Cambodia was little more than a "Sideshow to War" (to use British writer William Shawcross's phrase). Vietnam became the main show, the country where American lives and national prestige were put on the line.

Vietnam (meaning, literally, "South Viet") had been settled by a Sino-Tibetan group called the Viet, who had been pushed by Mongolian population pressures farther and farther south. They finally wound up in the Red River valley, a broad and fertile plain suitable for wet rice cultivation. As they migrated ever farther south, however, they were hemmed in by mountains, which cascaded, like boiling water, into the South China Sea. The Viets picked their way along the coast, inhabiting isolated valleys, until they finally arrived at the broad Mekong delta. There were no mountains on the delta, and they quickly converted it to rice-growing. As a result, Vietnam became long and thin in the center, averaging no more than fifty miles wide along the Central Highlands, with two large plains attached to each end. It has been compared in shape to a pole across the back of a farmer, with a basket of rice on each end.

Vietnam was a meeting place of disparate cultures – primarily Indian and Chinese. The Vietnamese warred fiercely with the armies of their neighbors, and they acquired a reputation for recalcitrance and military prowess. Chinese sovereignty over the region, strong during the Han dynasty (about a century before Christ), was reduced over time to a

more or less nominal one. This was the situation when the French arrived in the mid-nineteenth century. France established a tenuous hold on the country - solid in Cochinchina, less sure in Annam, very loose in Tonkin.

The French overwhelmed the Vietnamese with technology but had little chance to stay permanently. After all, the Chinese, who lived next door, had never completely subjugated the restive Vietnamese. French efforts were, in the long run, doomed by distance and the stubbornness of the Vietnamese.[1]

French colonial rule came to an effective end during World War II. The Japanese retained a French colonial government, but it was only a puppet, and in 1945, faced with defeat, the Japanese extinguished even this shred of French dignity. The Japanese defeat left Vietnam without a government.

What emerged was a government of sorts, effective only in the Red River Valley to the north, under a communist named Ho Chi Minh. The remnants of the Japanese war machine transferred formal power to Ho's organization, the Vietminh, on 18 August. On 2 September Ho declared the independence of Vietnam. The United States, mostly through OSS, maintained distant contact with the Vietminh during the war. The opportunistic Ho, apparently hoping for substantial American aid, even adopted phraseology from the American Declaration of Independence when he declared Vietnam a sovereign country.

Ho Chi Minh in Paris, 1946

Occupied with larger matters, Allied leaders were not exactly consumed with worry over Vietnam. Roosevelt believed that colonial rule was finished everywhere, and that included Southeast Asia. But what to do with the former French properties was a more difficult question. He toyed with the idea of giving it back to the French under a trusteeship arrangement with independence guaranteed at a future date. He also offered it to Chiang Kai-shek, who did not want it. (He had enough trouble at home.) FDR died without resolving the issue, and Harry Truman had it on his plate.

At the State Department, a stealthy battle was going on between the Asianists, who were promoting independence for all Asian countries, and the Europeanists, who did not want a dispute over the colonies to jeopardize postwar relations with Britain and France. The Europeanists won, and the United States informed France in May 1945 that the U.S. recognized French claims to Indochina. It was decided that British forces would occupy the south of Vietnam, while Chinese forces under Chiang would occupy the north, until France could get some forces together to reoccupy its former colonies.

French troops eventually regained a tenuous hold over much of Vietnam, especially the southern portion. Meanwhile, negotiations continued with Ho, who, it will be remembered, had already proclaimed independence and had effectively occupied much of the north. But negotiations broke down in 1946, and outright warfare began. This period of conflict culminated in the French defeat at Dien Bien Phu in 1954.

Having successfully ejected this latest occupying power from Vietnam, all that remained for the Vietnamese was to formalize a separation. Divorce court was held in Geneva. It resulted in an independent and neutralist Cambodia and Laos and in a Vietnam divided at the waist. The part north of the 17th parallel, effectively controlled by the Communist forces under Ho, would become the Democratic Republic of Vietnam, while the portion below the 17th parallel would establish its own government. At some point the two would theoretically meet to hold elections of national reconciliation and reunite into a single nation.

The United States had by this time become deeply involved in Vietnam's troubles. American aid to the French mounted each year, and by the fall of Dien Bien Phu it came to about 80 percent of French expenditures for the conflict. There were behind-the-scenes talks of American air strikes to bolster the French position at the base, but at the last minute Eisenhower decided not to go ahead. At the peace conference, the Americans, frightened of communist encroachment, did everything they could to hem in Ho's government.

The Americans Enter the Fray

Once the war was over, the United States effectively assumed responsibility for the mess. When Ngo Dinh Diem, the new president in the south, refused to go ahead with elections for fear of losing them, he had full American support. By early 1956 the U.S. had

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assumed responsibility for arming and training Diem's army. According to historian George Herring,

> The United States inherited from France an army of more than 250,000 men, poorly organized, trained, and equipped, lacking in national spirit, suffering from low morale, and deficient in officers and trained specialists . . . [2]

A military assistance group in Saigon steadily expanded in surreptitious ways beyond the Geneva-imposed limit of 342 people, until it reached almost 700.

[redacted]

Then in 1960 CIA informed NSA that they had inked a Third Party SIGINT agreement with the government of Vietnam. The Diem government maintained three fixed sites and was willing to trade raw intercept for cash and equipment.

[redacted]

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Laos and the Beginnings of Direct American Involvement

When Kennedy arrived in the White House, Laos, rather than Vietnam, seemed like the crisis to watch. The 1954 Geneva settlement had initiated a period of tenuous teetering between pro-Western and pro-communist sympathies, with a neutralist group holding the balance of power. Eisenhower had tried to keep a pro-American party in power through lavish subsidies, but in 1960 a series of coups pushed the government first toward the East, then the West. The outgoing Eisenhower administration succeeded in convincing Kennedy that American interest demanded a favorable outcome.[7]

Wanting to appear firm, Kennedy had 500 Marines airlifted to the Thai side of the Mekong, which formed the border with Laos, while the carrier *Midway* moved into the Gulf of Siam.[8]

But the Bay of Pigs fiasco brought Kennedy up short. If American military power could not secure a favorable outcome 90 miles from its shores, what might happen in an obscure, landlocked Asian nation more than 12,000 miles from Washington? The Pentagon estimated that at least 300,000 troops would be needed to maintain the pro-Western government. So in late April Kennedy opted for a negotiated settlement and agreed to U.S. participation in yet another Geneva conference.[9] A precarious coalition government emerged from the Geneva talks, but none of the three major factions was happy, and within a year the cease-fire was violated by the Pathet Lao. Once again Kennedy mounted a show of force, dispatching 5,000 Marines and infantrymen and two air squadrons to Thailand. Again a coalition government was formed, but its long-term chances for success were not bright.[10]

The 1954 Geneva accords made it extraordinarily difficult to operate in South Vietnam. The Military Advisory Assistance Group (MAAG) staff was already bloated and obviously in violation of the agreements, Thailand was the obvious choice. But the Thai, with a long tradition of independence (alone in Southeast Asia, they had never been a European colony), were skittish, and negotiations dragged on inconclusively for years. Then the Laotian crisis served to pry open a crack in the door to Thailand,

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[redacted]

In 1965 ASA began building a major intercept site at Udorn, a Thai town in the far north, near the Mekong River. Called Ramasun Station, it became the location for an FLR-9 antenna, and at the height of the Vietnam War, it housed over 1,000 ASA and AFSS cryptologists.[14]

Hanoi Decides to Intervene in the South

In 1954 Hanoi had decided to work on the infrastructure in the north and to put off attempted unification to a later date. But by 1959 the leadership decided that it must expand in the south or else its southern cadres would wither and die. In the spring of 1959, the leadership authorized resumption of armed struggle in the south, a decision that was ratified by a Party meeting in September 1960.

At approximately the same time, Hanoi created a new group, MR 559 (so-named because it was created in May 1959), within the General Directorate of Rear Services (GDRS), to control infiltration into the south. Beginning with only 500 people, it eventually expanded into a network of 40,000–50,000 military and civilian workers. It was organized into sixteen units called Binh Trams, battalion-size units in geographical areas, each controlling the infiltration network through its region. This evolved into the Ho Chi Minh Trail, which provided the wherewithal for revolution and invasion.[15]

[redacted]

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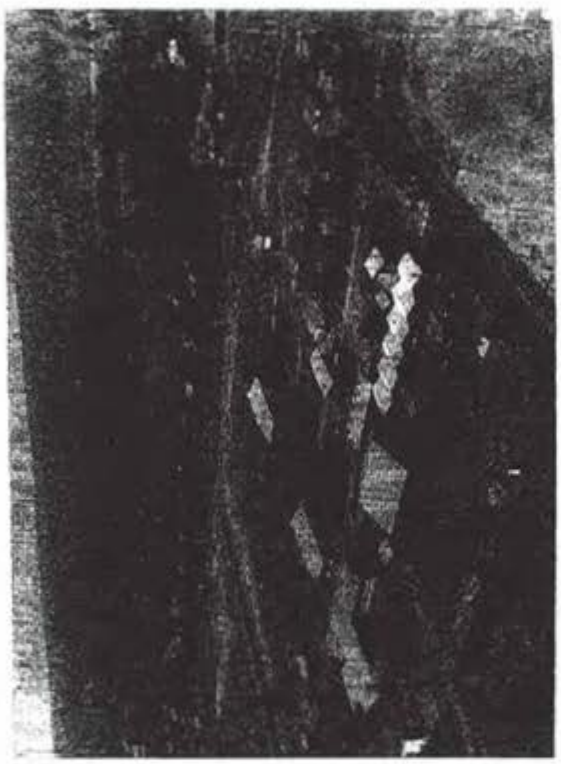

Ratmanov Studios, 1968. Consisting of tarmac and vans, there were few permanent buildings and as yet no FLR 8.

[redacted] COMINT CONTROL SYSTEM RESTRICTED
NOT RELEASABLE TO FOREIGN NATIONALS

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NSA Expands Cryptologic Involvement

The nascent Kennedy administration adopted an initially cautious line toward Vietnam. The U.S. government had troops in the South, but they were still called "advisors," and the numbers were limited. At the time, the only SIGINT involvement was the very limited CIA relationship with the South Vietnamese SIGINT service. There were no American cryptologists in the country

But as the number of American "advisors" expanded, so did the cryptologic presence. In early 1961 the chief of the MAAG in Saigon advised Maxwell Taylor (chairman of the JCS) during one of his trips through Saigon that the ARVN (Army of the Republic of Vietnam) had no SIGINT capability. This touched off a debate back in the United States about the advisability of expanding in Vietnam.[18]

At NSA, Admiral Frost directed a complete evaluation of SIGINT in Southeast Asia, and from that came a new plan to expand the cryptologic presence. Essentially, two plans were written. The first was called SABERTOOTH, and it involved noncodeword assistance to the SIGINT services of Vietnam. The second, called WHITEBIRCH, would involve the establishment of a mobile ASA intercept unit with Morse, voice, and HFDF positions. NSA was skeptical of the voice positions because ASA had few qualified Vietnamese linguists, but the Agency approved the plan despite the reservations.[19]

The new NSA plan also envisioned a beefed-up collection posture. In addition to expanding the cryptologic presence in Bangkok, ASA would introduce people directly into Vietnam for the first time. The burden of field processing would fall most heavily on the sites in the Philippines. It also called for an "Evaluation Center" in Saigon to integrate SIGINT with other intelligence for the chief of the MAAG. When General Paul Harkins showed up in February 1962 to become the first COMUSMACV (Commander, U.S. Military Assistance Command Vietnam), this became the Current Intelligence and Planning Branch, J2, and was housed in the MACV building, originally located in downtown Saigon.[20]

Before Harkins arrived, NSA interests had been served by a TDY arrangement. In April 1962, however, the first permanent NSA representative, , was on board. His arrival was accompanied by vigorous protests by the Army. Secretary of the Army Zuckert sent a scorching letter to Assistant Secretary of Defense John Rubel protesting the assignment. "This action," he said, "would result in removing these SIGINT resources from the control of military commanders in the area. . . . Generally, responsiveness to intelligence requirements of CINCPAC and COMUSMACV would be dependent

E.O. 13526, section 1.4(c)(d)

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upon the decisions of a national level agency, far removed from their areas of responsibility. . . ." He proposed that all SIGINT assets in the area be placed under the operational control of MACV. It was the opening shot of a war within a war, the struggle to control SIGINT assets in Southeast Asia.[21]

E.O. 13526, section 1.4(d)

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In April 1961 USIB took two giant steps toward direct involvement. One was a decision to approve the new, expanded Third Party relationship with Vietnam, to be run by ASA, [redacted] inasmuch as it was at the noncodeword level and involved a limited amount of [redacted] targets. It went beyond the arrangement already operated by the CIA and involved ASA advisors to train the Vietnamese. In return, USIB expected Vietnamese approval to establish American intercept facilities.[22]

The second step was to approve an Army COMINT unit in Vietnam in support of counterinsurgency planning. The National Security Council then required that the results obtained by that unit be shared with the South Vietnamese to the extent needed to launch rapid attacks on the Viet Cong.[23]

The Buildup of Cryptologic Assets

The first ASA troops began arriving in May 1961. They were under cover, wore civilian clothes, and were prohibited from carrying military identification cards. They found spaces in an RVNAF hangar on Tan Son Nhut Air Base and lived downtown at the Majestic Hotel. Working areas were set up inside the hangar by piling boxes of C-rations seven feet high to make rooms. A few of the officers had desks, but the analysts worked at tables constructed of plywood and scrap lumber. Since there were few chairs, the tables were hoisted four feet off the ground so analysts could stand. Needless to say, there was no air conditioning, and the troops sweltered in the tropical heat.[24]

The unit was called the 3rd Radio Research Unit (3rd RRU). Operationally it was called USM-9J, subordinate to USM-9 in the Philippines. The original processing mission consisted mainly of traffic collected by the South Vietnamese SIGINT service, which was at the time composed of only about 100 officers and men. They had two collection sites, at Saigon and Da Nang, and soon established a third site at Can Tho in the Delta. They were operating with equipment left over by the French or provided by CIA. Among the assets that they had inherited from the French were three DF stations and all the equipment, which happened to be of World War II vintage. In 1961 CIA gave them six AN/PRD-1 mobile HFDF sets. When 3rd RRU began processing, the main input was the DF bearings from the South Vietnamese.[25]

Meanwhile, ASA advisors conducted classes in DF, traffic analysis, and intercept for the Vietnamese under the SABERTOOTH program. They were supposed to hold the classification to noncodeword, but the line between SIGINT and non-SIGINT was very shaky, and it was crossed regularly.[26]

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The focus of the operation, though, was DF. ASA set up an HFDF net, called WHITEBIRCH. Because of availability, the AN/TRD-4 was the equipment of choice. Three sets were mounted in vans and positioned at Nha Trang, Can Tho, and Bien Hoa, with control in Saigon. The Third RRU was also receiving bearings from an ASA site in Ubon, Thailand, [redacted] sites in Vietnam, and [redacted] ARVN operated its own three stations at Pleiku, Da Nang, and Ban Me Thuot, and the results were supposed to provide direct support to the South Vietnamese Army.[27]

The WHITEBIRCH net was a failure. It had the lowest fix rate in the Pacific, and it was constantly short of manpower. This dismal state of affairs was due primarily to the circumstances surrounding its mission. In the dense and humid tropical jungles, the ground wave faded to imperceptibility in only a few miles. The sky wave came down at such a steep angle that the existing DF equipment (the ancient TRD-4s) could not cope with it. Moreover, the skip zone between ground and sky waves was almost ninety miles, meaning that most of the ASA sites were located in a skip zone. When inadequate maintenance and unreliable communications were added to the woes of WHITEBIRCH, it was clear that the system would not do the job.[28]

Frustrated, ASA turned to the mobile PRD-1s now owned by the ARVN. These were effective, but only if the DF set was within five to fifteen miles of its target. To be that close to a VC transmitter was often a dangerous proposition, but they tried it anyway. On 31 December 1961, they found out how dangerous it was. An ARVN DF operation returning to Saigon from the DF site at Ha Tien (on the southern coast) was ambushed by VC. Nine ARVN soldiers were killed, along with Sp4 James T. Davis, the ASA advisor. Davis was later called by President Johnson the first American soldier to die in Vietnam. The 3rd RRU compound was named Davis Station, thus adding to the immortality of the unfortunate Davis.[29] ASA had come to a full stop on the DF problem, and until they solved it, the amount of direct SIGINT assistance that they could provide to the ARVN forces was limited.

The next group of SIGINTers to arrive in Vietnam were the Marines, who sent a training detachment from Fleet Marine Force in Hawaii. They originally set up next to the ARVN SIGINT operation in Pleiku, and as such were completely cut off from direct contact with other U.S. SIGINT units. This proved unsatisfactory, even for training.[30]

In 1962, the cryptologic community decided to move its main base of operation to Phu Bai. A large ASA site was constructed, and it became the center of SIGINT operations for Vietnam. The Marines decided to move in with ASA, but the Air Force Security Service was more standoffish. Da Nang was the center of air operations, and AFSS located its principal site there to support the Seventh Air Force.

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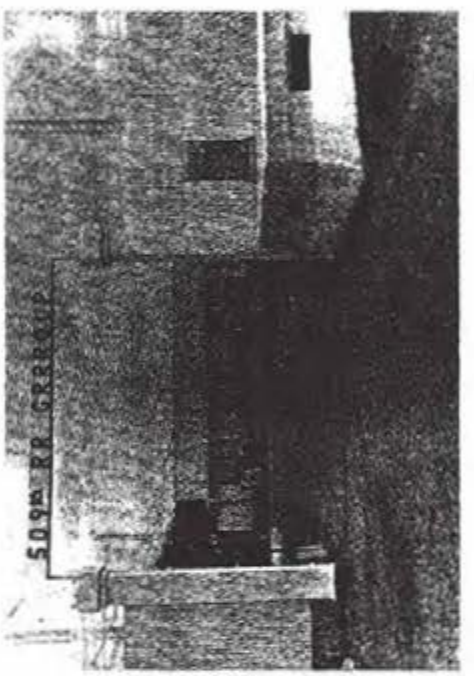

Entrance to the WHITEBEECH compound

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E.O. 13526, section 1.4(c)(d)

At the time, the Vietnamese problem was entirely manual Morse. Rumors of VC voice swirled about, and in February 1963 [redacted] intercepted some voice traffic emanating from a low-level [redacted] net in Vietnam. ASA tried but, right up until the Tonkin Gulf incident of 1964, had not intercepted any.[31]

As cryptologic resources expanded, the question of operational control occupied increasing attention both in Saigon and in Washington. The Army continued to insist that MACV should control all cryptologic resources in theater. During Admiral Frost's tenure as DIRNSA, a compromise of sorts was worked out. When the first ASA resources arrived in country, Admiral Frost delegated operational control to ASA and recognized the further delegation of control to the commander of the MAAG (later MACV). This gave MACV a handhold but kept the strings ultimately tied to DIRNSA.[32]

In 1963 General Wheeler (chairman of the Joint Chiefs) negotiated directly with General Blake. They arrived at a new compromise whereby NSA would continue to control major, fixed sites like Phu Bai, while operational control of ASA's direct support units (DSUs) would be delegated to ASA, and thence to the supported Army commander. This was actually more restrictive than the original decision, and it was made more onerous by the edict that when MACV wanted additional units under its control it would have to submit the request through the lengthy and cumbersome chain of command which ran through Hawaii.[33]

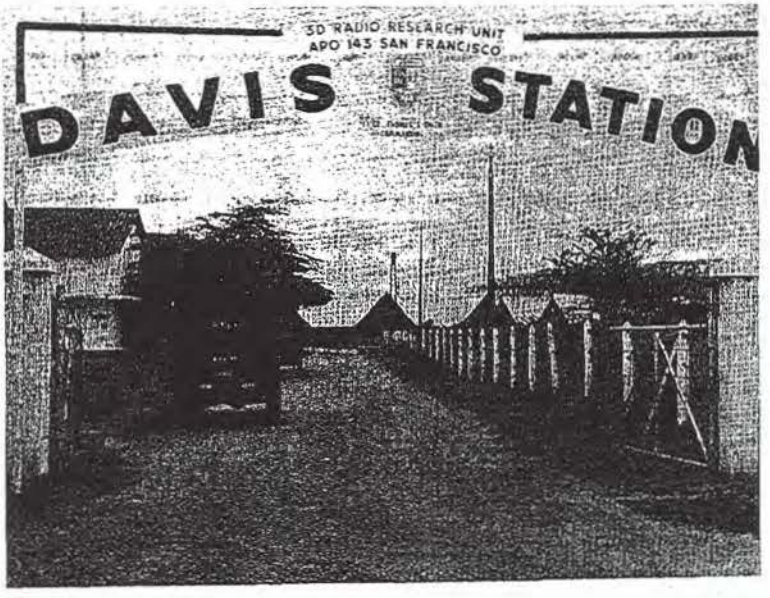
DF Goes Airborne

The ambush of Davis and the ARVN DF team in December 1961 brought about a scramble for a better system. The safest thing would be to put the mobile DF sets on airplanes. This technique had been tried as early as World War I, and the French had employed ARDF aircraft in their struggle with the Vietminh, with good results. But the technical barriers were serious. The problem was in the interference of ground and sky waves. Aircraft were up high enough to receive both, and the accuracy of the bearing was degraded because, while the on-board system tried to read the direction of the signal from the ground wave, the aircraft itself acted as a huge antenna for the sky wave, which arrived from a different direction.[34]

An ASA engineer, Herbert S. Hovey Jr., went to work on the problem and was joined by a team from the Army's laboratory at Ft. Monmouth, New Jersey. Knowing of the French ARDF effort but not knowing what technique they used, Hovey experimented with different techniques and various aircraft. He tried rotary-wing options, but found that the rotor blades created too much turbulence. Hovey finally settled on the U-6A, a single-engine fixed-wing aircraft widely available in Vietnam. Instead of using the almost universal (in DF arrangements) loop antenna, he used antennas fixed on the leading

Herbert S. Hovey (second from right) and an early U-6 ARDF-configured aircraft

A 3rd RRU AN/PRD-1 short-range DF set



Entrance to Davis Station, Saigon

edge of each wing, about forty feet apart, with the receiver in the center. This turned the aircraft itself into a large HF antenna. The aircraft had to be pointed directly at the signal, thus creating an aural null on the pilot's gyrocompass. To create the aural null, the pilot fishtailed the aircraft back and forth, going into and out of the maximum signal strength. He would then fly at the signal from three different angles, the three lines of bearing thus constituting a fix. This peculiar flying technique solved the problem.[35]

ASA sent the first DF-equipped U-6 to Vietnam in March 1962. It was an instant success. In May 1962 the ARVN successfully struck a VC unit based on ARDF fixes.[36] In December of that year, when an ASA ARDF fix located a VC radio transmitter in the northern Delta, American advisors under General Harkins used the intelligence to plan an assault on what they thought would be a communist unit of no more than 120 men. The ARVN 7th Infantry Division was employed in the action and swooped into the area by helicopter early on the morning of 3 January 1963. Instead, they ran into a unit of more than three times that many, which stood and fought. The resulting battle of Ap Bac was a turning point in the war for both the VC (which found that it could confront and defeat a main ARVN force) and for the Americans, who concluded that they would have to become more directly involved. The battle was initiated based on an ARDF fix.[37]

The value of ARDF was quickly recognized. It became the most important advance in the employment of SIGINT for tactical applications in the war and the principal targetting tool for MACV. NSA boxed up this valuable technique within its own sphere of control by declaring that the ARDF aircraft were simply outstations of the WHITEBIRCH net, which was already a CCP resource. ARDF was to become the battleground on which the JCS and NSA fought for ultimate control of SIGINT in Southeast Asia. It was easily the most divisive issue in the entire intelligence community.[38]

INTO THE MIRE

> The troops will march in; the bands will play; the crowds will cheer; . . . and in four days everyone will have forgotten. Then we will be told we have to send in more troops. It's like taking a drink. The effect wears off, and you have to take another.
>
> John F. Kennedy, 1961

While all this was going on, the Kennedy administration was assessing its chances in Southeast Asia. The first thing Kennedy did was to gather information, using the time-honored technique of a fact-finding team. In the spring of 1961 he sent Walt Rostow and his personal military advisor, Maxwell Taylor, to Saigon. They came back very pessimistic. The Diem regime was crumbling and would require a large infusion of American troops and material. They recommended that some 8,000 American "advisors" be sent to Vietnam under the cloak of providing "flood relief." Averell Harriman, the long-time advisor to Democratic presidents, and Chester Bowles, a senior diplomat, both doubted that the corrupt and repressive Diem regime could be adequately shored up, and he urged Kennedy to call a new Geneva conference and negotiate a settlement. But Kennedy had just emerged from the disgraceful Bay of Pigs incident and was in no mood to be perceived by either the Soviets or the American public as a "negotiator."[39]

But he also rejected the Taylor-Rostow proposal as transparent. Instead, he compromised, increasing the size of the aid mission but failing to increase it enough to make a big difference. All the while he was disturbed by the narrowness and inflexibility of the Diem regime. To have a happy ending in Vietnam, it would be necessary to obtain a more reasonable and competent government.[40]

E.O. 13526, section 1.4(c)

[redacted] the Crisis in Third Party Relations

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[redacted]

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USIB decided to back away from SIGINT collaboration with the ARVN, and USM-626 (the former USM-9J in Saigon) was instructed to stop providing certain technical data. At the same time, NSA made plans to move most SIGINT operations to Phu Bai and to make it a U.S.-only site.[43]

The USIB decision, prompted by NSA, created an uproar in the field. Harkins protested and was backed up by Huntington Sheldon, the CIA official who watched over SIGINT for the intelligence community. Moreover, General Khanh, the RVNAF chief of staff, refused to authorize a solely American operation at Phu Bai, thus holding the super-SIGINT site at Phu Bai hostage to a continued close SIGINT relationship. In the end, Khanh, Harkins, and Sheldon won. Admiral Frost issued a revised and liberalized interpretation of the USIB edict, and the Americans exited the controversy with as much grace as possible.[44]

The Diem Coup

Riven by internal dissent, the Diem regime was tottering by 1963. The regime was controlled by Diem and his corrupt family, and no reform appeared possible. The last straw was a Buddhist revolt against the strongly Catholic Diem regime. The uprising began in May 1963 and became marked by self-immolations by Buddhist monks. When confronted by such opposition, no regime could last.[45]

Even Diem knew it and began exploring a negotiated settlement with the north. To the Kennedy administration, this looked like a way out. The JCS prepared a plan for a phased military withdrawal beginning later in 1963. The first 1,000 troops were actually withdrawn before the plan came to a halt.[46]

But negotiations were never begun. In early November the generals in Saigon rose against Diem, with the knowledge, if not the active connivance, of the American embassy. Diem and his brother Nhu were captured and, in a twist which was not in the original script, executed, apparently on the orders of General "Big" Minh. Minh took over the government, beginning a series of revolving door regimes, each weaker and less popular than the previous one. The JCS withdrawal plans were shelved. Later in the month Kennedy was dead, and a new president had to look again at the morass in Vietnam.[47]

The Cryptologic Expansion of 1964

With withdrawal plans on hold, the new DIRNSA, General Blake, directed a relook at the American cryptologic posture in Southeast Asia. Blake decided to accept Phu Bai as the super-site for Vietnam, with major resource additions there and at other sites in the Philippines and Vietnam. Collection from Thailand would also increase, and Udorn was selected as the Thailand super-site. In early summer, with Maxwell Taylor (the new ambassador in Saigon) lining up behind it, Blake took the plan to Fubini. They agreed that most resources for the new effort would be transferred from existing SIGINT problems (primarily Soviet), except for some assets already targetted on Southeast Asia that would be moved to the mainland from Okinawa and Japan.[48]

SIGINT resources would also be needed for a major new operation, under the general rubric of OPLAN (Operation Plan) 34A. This was a JCS plan to support South Vietnamese infiltration and unconventional warfare operations. The SIGINT support for OPLAN 34A, called KIT KAT, would come mainly from vans flown in [redacted] and the Philippines and located at Phu Bai. A new SIGINT Support Group in Saigon would provide MACV with direct support to OPLAN 34A.[49]

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Communications still represented a sore point. SIGINT exited Vietnam through an Army communications center in Saigon that was known for its cramped quarters and ancient equipment. Worse, it was an HF shot to the Philippines, and in the heavy tropical atmosphere HF was even less reliable than usual. Reliability ranged from 30–75 percent, an unacceptable figure.[50]

DCA came up with a solution. A submarine cable was installed between Nha Trang and the Philippines, and by the mid-60s all cryptologic communications were being routed through the cable (dubbed "Wetwash"). Circuit reliability leaped upward.[51]

This development had a major impact on SIGINT operations in Vietnam. The submarine cable could take higher circuit speeds, and it was possible to ship much more SIGINT back and forth. This led to the feasibility of sending encrypted traffic back to a central processing center – at first in the Pacific (Clark AB and JSPC in Okinawa) and later all the way back to NSA. It changed the way SIGINT was done in the theater, but it also increased the suspicion of tactical commanders who preferred to rely on their own people from ASA rather than on some unseen computer far away.

AFSS Comes to Vietnam

The Air Force Security Service did not actually start its Southeast Asian operations in Vietnam. Like the Army, it arrived in Thailand in early 1961 to provide SIGINT support for the Laotian crisis. [redacted] RC-47 ROSE BOWL [redacted]

[redacted]

E.O. 13526, section 1.4(c)

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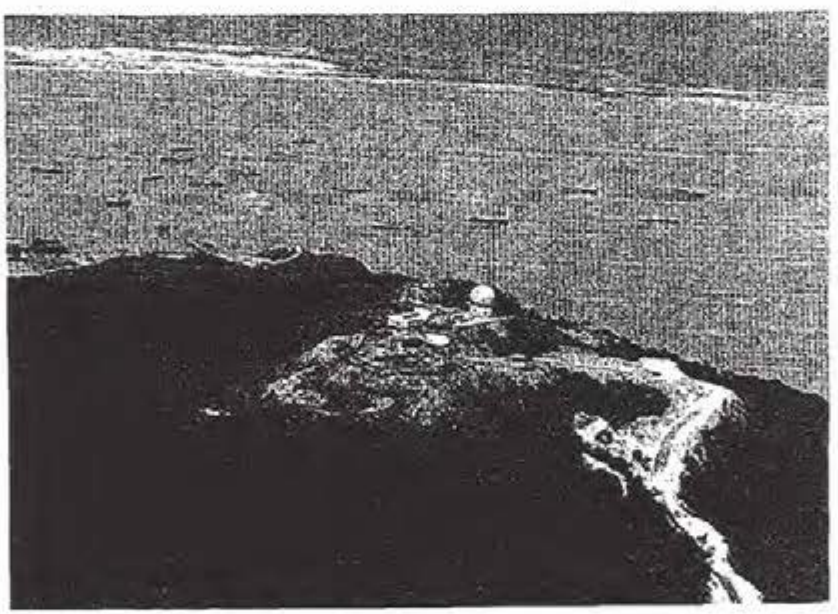
[redacted] The processing was done on the ground in spaces occupied by the tiny AFSS intercept unit that had been there since the summer of 1960. Spaces were so cramped that at one point a Russian linguist wound up transcribing his intercepted tapes in the shower room. But like the Laotian crisis itself, the SIGINT support operation lost steam, and by spring NSA had cancelled the deployment.[32]

Vietnam was a ground war, and the U.S. Air Force did not get involved in a big way until 1964. The Air Force did, however, set up a tactical air control system beginning in January 1962. The unit was located atop Monkey Mountain near Da Nang, which would give American radars the longest possible reach.

Along with the Air Force contingent of 350 people came an AFSS CCU (COMINT Contingency Unit), consisting of two H-1 vans airlifted from Clark Air Base and a mobile AFSSO, also in a van. A smaller intercept and SSO effort was located at Tan Son Nhut, but the hearability was bad, and the intercept unit was soon relocated to Da Nang. The next year AFSS reorganized its Southeast Asian assets, designating Tan Son Nhut as the headquarters, with subordinates at Da Nang, Bangkok, and Ubon.[33]



Monkey Mountain

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

~~TOP SECRET UMBRA~~

Da Nang remained the only AFSS unit of any size in the war zone. By 1964 USAFSS had two Da Nang sites, one atop Monkey Mountain and one at the air base below. Security Service successfully resisted an NSA master plan to move the unit to Phu Bai, arguing that hearability was better at Da Nang and that they should be closer to the supported commander.[54]

E.O. 13526, section 1.4(c)

In March of the same year, the ACRP returned to Southeast Asia. It arrived on the heels of reports that PRC–North Vietnamese military relations were becoming closer.

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NSA initiated ACRP collection to follow this activity, and a new program, called QUEEN BEE CHARLIE, based at Yokota AFB in Japan, began flying missions out of Don Muang. In July a follow-on operation, QUEEN BEE DELTA, consisting of two RC-130s, began flying missions over Thailand every other day. Initially processing was done at Don Muang, but plans were being drawn up to transfer the entire effort to Da Nang. That same year, the Navy began flying EC-121 and EA3B collectors in the Gulf of Tonkin.[55]

Air Force ARDF trailed ASA into Southeast Asia. In 1962 AFSS tried out HFDF programs using two different platforms, a B-26 and a C-47. The ARDF effort had the strong personal support of General LeMay, then the Air Force chief of staff. From the beginning, however, the program was engulfed in controversy.

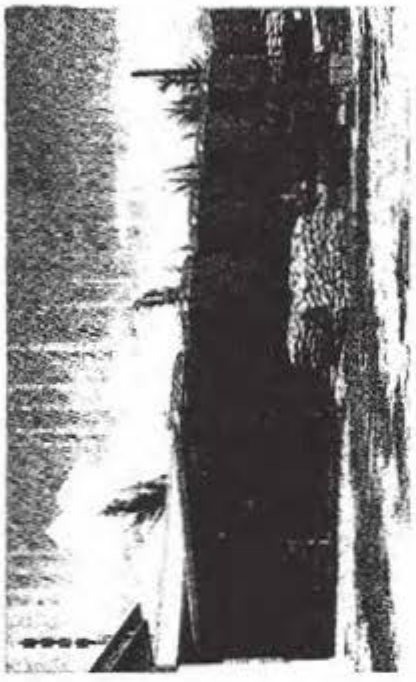
The first problem was control. The Air Force wanted the ARDF program to be purely tactical, unattached to NSA, operating in a noncodeword environment. NSA, however, insisted that it come under the direct control of USM-626, as outstations of the WHITEBIRCH net. The program was thus placed under double ignominy – within the cryptologic system and under the thumb of the Army.

Moreover, the Air Force insistence that it be noncodeword resulted in non-SI-indoctrinated people being assigned to it. USM-626 was at first prohibited from passing technical data to support the AFSS effort. This was soon straightened out, and all the Air Force people were SI cleared, but it was a bad start for a program.

Finally, the system did not work. It used larger aircraft but did not do well against low-power signals. The Air Force Security Service left the theater to do more research.[56]

The next year AFSS was back, this time with a second ARDF system produced under a Navy contract and installed on an Air Force plane under Project HAWKEYE. It was more sophisticated than the Army system, using computers and larger, more capable aircraft. But it, too, did not work, and at the end of the year ASA continued to have the only effective ARDF system in Southeast Asia.[57]

The small AFSS effort in Vietnam betokened the lack of an air war. They were not engaged in war – they were just waiting in case an air war happened. They hadn't long to wait.



USA-58 operations vans, 1964.
This complex was located on the plains at the foot of Monkey Mountain.

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THE CRISIS IN THE GULF

> Well, I am the guy who rose from the ashes, and twenty years later telling you I saw it, and there were no boats.
>
> Adm. James B. Stockdale, Navy pilot, concerning the 4 August attack

In the many years of conflict in Vietnam, no single incident stands out as more controversial than the 4 August 1964 incident in the Gulf of Tonkin. In it, two American destroyers patrolling in international waters were supposedly shot at by North Vietnamese gunboats. In retaliation, an angry president launched the first air raids on the North, and a few days later Congress passed the Tonkin Gulf Resolution, giving Lyndon Johnson a free hand to deal with North Vietnam in whatever manner he felt best suited the situation. For America, it was the beginning of an apparently irrevocable descent into the maelstrom.

The Desoto Patrols

E.O. 13526, section 1.4(c)

The attack on the destroyers originated with the Desoto patrols. These were begun in 1962 as patrolling operations along the Chinese coast. There were three objectives: intelligence collection, realistic training, and assertion of freedom of the seas. Naval Security Group detachments on board pursued the collection of [redacted] ELINT and naval COMINT. However, to naval authorities the mission of freedom of the seas clearly stood first, and training second; intelligence was the third priority. By December, the patrols had been extended to the coasts of Korea and North Vietnam.[58] The rationale was to support special operations under OPLAN 34A.

OPLAN 34A stemmed from CIA covert operations which had been going on since the early 1960s under various names. Most of these involved the nighttime coastal insertion of ARVN commando forces, whose mission was sabotage. By early 1964 the Army had taken over most of the operations, under OPLAN 34A. The Desoto patrols were extended to North Vietnam primarily to provide SIGINT support to the commando raids.[59] In addition to NSG afloat detachments on board Desoto craft, the Army was tasked with SIGINT support from positions at Phu Bai.[60]

The operations got off to a very bumpy start in February 1964, but they eventually smoothed out. Although there was considerable behind-the-curtains controversy about their effectiveness, the raids were having at least harassment value by July 1964. The tiny North Vietnamese navy was beginning to pay them close attention.[61]

North Vietnam could mount only a modest defensive threat. Their first-line combatants were twenty-four *Swatow* motor gunboats acquired from the Chinese over a

period of years. More threatening, however, were twelve Soviet-built motor torpedo boats delivered to Haiphong in late 1961, capable of fifty-two-knot speeds. These, in addition to a few minesweepers, subchaser and district patrol craft, represented the North Vietnamese navy.[62]

The 2 August *Maddox* Patrol

The increasing harassment value of OPLAN 34A was certain to make the North Vietnamese more belligerent. On 1 August NSA went on record as warning the Navy that their own Desoto patrols might be in danger of attack.[63] A day earlier, the destroyer *Maddox* had begun a patrol in the Gulf of Tonkin.[64]

On 2 August the North Vietnamese decided to attack the *Maddox*. During the morning hours, two SIGINT units, a Navy intercept unit in the Philippines (USN-27) and a Marine detachment collocated with ASA at Phu Bai (USN-414T), reported that North Vietnam's naval headquarters had directed preparations for attack. This series of reports was flashed to Captain Herrick, the task force commander on board the *Maddox*, as the morning wore on. The information was sufficiently unsettling that Herrick questioned the day's patrol, considering it to be an "unacceptable risk."[65]

Just after noon, USN-27 intercepted a message from one of the coastal control authority at Port Wallut to one of the *Swatows*: "Use high speed to go together with the enemy following to launch torpedoes." USN-27 issued a Critic on this inflammatory declaration, and Herrick had it in hand almost an hour before the attack was launched. It was preceded and followed by other North Vietnamese messages leaving no doubt that they were headed for a major engagement. It could, of course, have referred to the 34A operations that had been going on earlier, but Herrick knew nothing of those operations. He had to assume that the North Vietnamese meant him – and he was right.[66]

At about 1600 local, three PT boats launched a high-speed attack on the *Maddox*. Herrick replied with surface fire, and within half an hour the torpedo boats withdrew. About that time air cover showed up, commanded by Admiral (then Commander) Stockdale from the carrier *Ticonderoga*. Stockdale's crew shot up the fleeing torpedo boats, sinking one and putting another out of action.[67]

Meanwhile, the two SIGINT stations continued to monitor North Vietnamese communications, keeping Herrick informed of what was happening on the other side. The patrol made for the mouth of the Gulf and withdrew. Back at Fort Meade, NSA declared a SIGINT Readiness Bravo.[68]

There was no doubt of the attack. Not only was it launched in broad daylight, but it was preceded and followed by communications (intercepted by the Navy and Marines)

Track of the *Maddox*, 31 July–2 August 1964

Captain John J. Herrick, commander of Destroyer Div 192, with Captain Herbert L. Ogier, commander of the *Maddox*

making the entire attack procedure and objectives crystal clear. SIGINT gave impeccable warning, and Herrick came to rely on it almost implicitly.

The Johnson administration chose not to reply militarily to the attack. But at the White House the mood was grim, and there was a feeling that they could not let another such attack pass unnoticed.

The 4 August Patrol

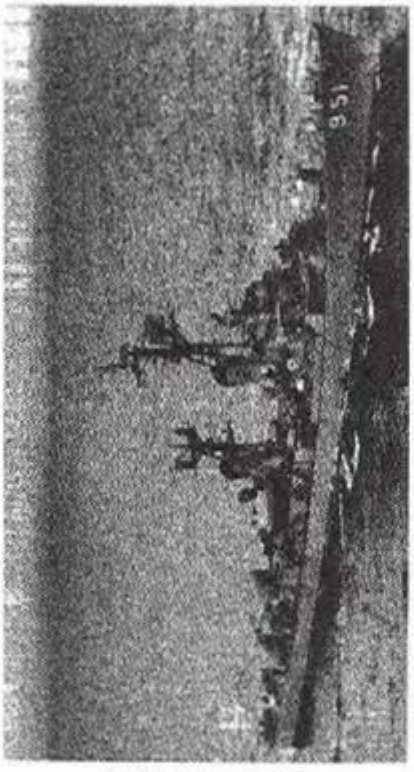
After assessing the 2 August attack, the administration decided to keep the *Maddox* in the Gulf at least through the 7th to assert freedom of the seas and to add a second destroyer, the *Turner Joy*, which had been part of the *Ticonderoga* task force. With two vessels, Herrick headed back to the Gulf on the 3rd.[69]

After spending the day near the coast of North Vietnam, Herrick withdrew both vessels to the central Gulf of Tonkin for the night. Through intercepts of Vietnamese radar transmissions, he knew that he was being silently shadowed by at least one North Vietnamese PT boat. Moreover, this tended to be confirmed by reporting from San Miguel that one of the *Swatows* involved in the previous day's activity (T-142) had been ordered by a naval authority to "shadow closely." During the night a 34A task force shelled a radar station and a security post, fleeing to Da Nang at daylight.[70]

Herrick believed his vessels were in imminent danger, but the next morning he was nonetheless ordered back to the area of the previous two days' patrol. The *Maddox* and *Turner Joy* loitered in the general area where the 2 August attack had taken place. At about 1700 they turned back toward the central Gulf to spend the night.[71]

At about the same time that Herrick was ordering his two-vessel task force back to the central Gulf, the Marine detachment at Phu Bai issued a Critic on an intercepted message from Haiphong ordering three of the boats involved in the 2 August attack to make ready for military operations that night. To Herrick this was very ominous, since he had been shadowed by a North Vietnamese vessel or vessels the night before. Based on this and follow-up messages from Phu Bai, he sent a message stating that he believed that the Vietnamese were preparing to attack.[72]

At 2041, the *Maddox* appeared to pick up radar contacts on North Vietnamese PT boats. For the next four hours, the *Maddox* and *Turner Joy* zigzagged through the central Gulf, apparently pursued and attacked by unknown and unseen vessels. The crews of the two vessels claimed to have had radar and sonar contacts, torpedo wakes, gun flashes, and searchlights, and fired repeatedly at whatever seemed to be attacking them. When air cover showed up from the *Ticonderoga* task force (led by Stockdale), the pilots could not see any boats, but it was an unusually murky night with very low overcast and poor visibility.[73]



The American destroyer *Turner Joy*

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After the engagement, San Miguel reported that T-142 claimed to have shot down two "enemy planes" and that "We sacrificed two comrades but are brave and recognize our obligations."[74]

Back in Washington, the events in the Gulf grabbed everyone's attention. The initial indication that something was afoot was the Critic and follow-up from Phu Bai. These were called over to DIA from NSA just after 8 A.M. By 0900 copies of the reports were distributed to McNamara and Wheeler, and McNamara called the president at 0912. This kicked off a long train of actions that spanned the entire day.[75]

Thus forewarned, the president had no trouble believing that an attack had actually taken place once he received the first news at 1100. McNamara convened a meeting to discuss possible retaliation. At a lunch with Rusk, McNamara, Vance, McGeorge Bundy, and John McCone, Johnson authorized an aerial strike on North Vietnamese targets. But soon thereafter, the White House was looking at a message from Herrick casting doubts about the attack. Adverse weather conditions and "overeager sonarmen" may have accounted for many of the alleged contacts. Based on this, Admiral Sharp in Hawaii (CINCPAC) phoned McNamara to recommend that the air strike be delayed until they received more definitive information. At that time a retaliatory air strike, scheduled for 0700 Vietnam time, was only three hours away.[76]

Soon after, Sharp received the new information about the supposed shooting down of enemy aircraft and the sacrifice of two vessels. Sharp, Admiral Moorer (CNO), and Johnson all became convinced that an attack had taken place, and Johnson authorized Pierce Arrow (the bombing attack on North Vietnam) to proceed. It was delayed almost three hours, though, and came very close to preceding Johnson's televised address to the nation announcing the Gulf incident and the American response.[77]

The sequence of events at the White House was driven largely by SIGINT. The reliance on SIGINT even went to the extent of overruling the commander on the scene. It was obvious to the president and his advisors that there really had been an attack – they had the North Vietnamese messages to prove it.

But to the analysts working the problem at NSA, things did not appear to be so obvious. The preplanning messages could, after all, have been referring to reactions to the Desoto patrols. Or the entire series of messages might have been old traffic referring to the attack on the 2nd. NSA sent out frantic requests to the units involved (Phu Bai and San Miguel) to forward their raw traffic. NSA also requested verification from SIGINT intercept operators on the *Maddox* and *Turner Joy*. The ships' operators had nothing – their intercept capability (all VHF voice) was completely blocked by the ships' radios during the period of the incident. As for the mainland intercept, it took hours to obtain, and the first NSA follow-up was issued without the benefit of the messages intercepted in the field.[78]

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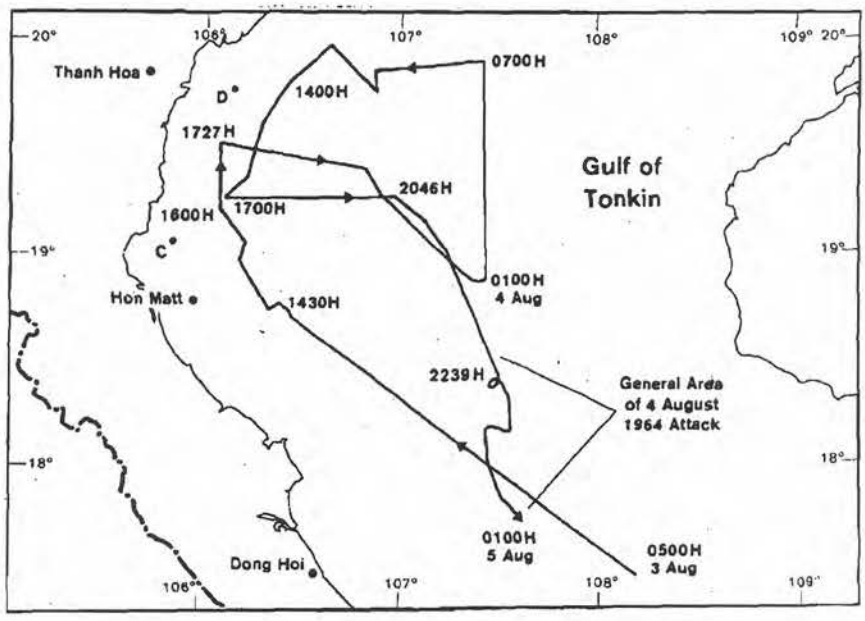
HANDLE VIA TALENT KEYHOLE/COMINT CONTROL SYSTEMS JOINTLY
NOT RELEASABLE TO FOREIGN NATIONALS



Track of the *Maddox* and *Turner Joy*, 3–5 Aug 1964

TOP SECRET UMBRA

TOP SECRET UMBRA

The first NSA report indicated that the vessels supposedly planning for operations on the night of the 4th apparently did not participate in the events regarding the *Maddox* and *Turner Joy*. A subsequent wrap-up on 6 August homed in on the 2 August attack (easy to substantiate), conveniently avoiding the direct issue regarding the 4 August incident.[79]

The NSA analyst who looked at the traffic believed that the whole thing was a mistake. The messages almost certainly referred to other activity – the 2 August attack and the Desoto patrols. The White House had started a war on the basis of unconfirmed (and later-to-be-determined probably invalid) information.[80]

There had been no dissembling in the White House. The messages looked valid, and Lyndon Johnson had come to be a believer in SIGINT. When he ordered the attacks, he was sure he was right. He wasn't, and it was not until NSA analysts laboriously pieced together the SIGINT information over a period of days that it became obvious how big a mistake had been made. The Johnson administration defended its actions in public for years, but the reality eventually sank in. Even the president was heard to say in later years, "Hell, those dumb stupid sailors were just shooting at flying fish."[81]

Some months previously, William Bundy (deputy secretary of defense) concluded that Johnson would need some sort of congressional endorsement for the expanding American role in Vietnam. He felt that a declaration of war was too blunt an instrument, and its chances in Congress were slim. What was needed, he believed, was a joint resolution, similar to that which Congress had given to Eisenhower during the Quemoy and Matsu crisis in 1955. Bundy drafted a resolution that gave the president the right to commit forces to the defense of any nation in Southeast Asia menaced by communism.[82]

The resolution was ready by June 1964, and the Pentagon had already identified some ninety-four targets in North Vietnam, in case the president should direct military retaliation. Everything was ready but was put on hold. Some sort of provocation would be needed. The Tonkin Gulf crisis was just such a provocation. The administration hustled the resolution through Congress with only two dissenting votes. It was shepherded through the Senate by the chairman of the Foreign Relations Committee, William Fulbright.[83]

The Tonkin Gulf Resolution did not become a political issue until three years had passed. In July 1967, with antiwar passions heating, a reporter for the *Arkansas Gazette* quoted a former radarman on the *Maddox* as saying that North Vietnamese vessels had not been in the Gulf that night and that he believed his radar contacts had actually been reflections of the *Turner Joy*. This article came to Fulbright's attention. This appeared to wipe out the rationale for the resolution, and Fulbright, who was being gradually converted to the antiwar cause, felt that he had been hoodwinked, perhaps deliberately, by the White House in 1964. He began gathering the relevant material, including SIGINT reports obtained from the Department of Defense. When he felt he had enough, he convened a hearing on the Gulf crisis.[84]

The hearings, held in February 1968, made the Gulf of Tonkin Resolution infamous and converted it into a weapon in the hands of the antiwar activists. During the proceedings, Fulbright managed to cast considerable doubt that the 4 August attack ever took place. Inconclusive radar and sonar hits, mysterious weather conditions, the lack of a single verifiable ship sighting – all were used to beat down the Johnson administration's contention that the retaliatory action and the resolution itself were justified.

But the central contention of the hearings became the SIGINT. When Fulbright brought McNamara to the stand, the secretary of defense kept referring to "intelligence reports of a highly classified and unimpeachable nature. . . ." He meant, of course, the SIGINT reports that, first, indicated that the *Swatow*s should prepare for nighttime operations, and, second, contained the after-action reports alleging that aircraft were shot down and the loss of the two boats. The committee kept pressing McNamara and eventually dragged out of him virtually the full texts of the messages involved. McNamara resisted, but it was very hard to defend his actions without resorting again and again to his most convincing pieces of evidence.[85]

These public disclosures damaged the SIGINT source – all the messages had been from decrypted North Vietnamese naval codes which were still in use in 1968. But it did not sell the case to the disbelieving committee, despite McNamara's contention that "No one within the Department of Defense has reviewed all of this information without arriving at the unqualified conclusion that a determined attack was made on the *Maddox* and *Turner Joy* in the Tonkin Gulf on the night of 4 August 1964."[86]

In fact, not all DoD people were sold on this contention. NSA, for one, had failed to fully support the administration's position. It had confirmed the 2 August attack but had never confirmed the 4 August engagement. The Agency had concluded that the two *Swatow*s instructed to make ready for action that night had never participated in the action with the *Maddox* and *Turner Joy*. The after-action reports could have referred to the 2 August engagement.

But it didn't really matter. The administration had decided that expansion of American involvement in Vietnam would be necessary. Had the 4 August incident not occurred, something else would have. Another expansion of the war occurred the following February, following the mortaring of an American installation at Pleiku. McGeorge Bundy said at the time, "Pleikus are like street cars. If you miss one, another will come along." He could have been talking about the Gulf of Tonkin crisis.

Withheld from public release Pub. L. 86-36

Notes

1. Histories of Vietnam and Southeast Asia abound. Three of the better ones, which were used in compiling this history, are Joseph Buttinger, *Vietnam: A Political History* (New York: Frederick A. Praeger, 1968); Stanley Karnow, *Vietnam: A History* (New York: Penguin Books, 1983); and George Herring, *America's Longest War: The United States and Vietnam, 1950–1975* (Philadelphia: Temple University Press, 1986).

2. Herring, 58.

3. Historical Study of U.S. Cryptologic Activities in Southeast Asia, 1960–1963, 1964, CCH Gerhard collection; William D. Gerhard, *In the Shadow of War*, Cryptologic History Series – Southeast Asia (Ft. Meade: NSA, 1969).

4. CCH SeriesVI.HH.12.10.

5. VI.H.H.12.10.

6. Ibid.; oral interview with [redacted], 23 January 1986, by Robert D. Farley and Tom Johnson, NSA OH 4-86.

7. Herring, Kennedy Library papers.

8. Beschloss, *The Crisis Years*.

9. Herring, Beschloss.

10. Beschloss.

11. Gerhard Collection.

12. William D. Gerhard, *In the Shadow of War*.

13. NSA Retired Records, 28515, 84-245; Gerhard, *In the Shadow of War;* oral interview with [redacted], 23 December 1992, by Charles Baker and Tom Johnson, NSA OH 08-92.

14. NSA Retired Records, 28515, 84-245; Thomas N. Thompson, Jesse E. Miller, and William D. Gerhard, *SIGINT Applications in U.S. Air Operations*, Cryptologic History Series, Southeast Asia, Part I: Collecting the Enemy's Signals (Ft. Meade: NSA, 1972).

15. CCH Series VI.H.H.23.2–23.5.

16. Ibid.

17.Ibid.; VI.H.H.12.10; [redacted], "NSA in Vietnam: Proud and Bitter Memories," *Cryptolog*, Oct. 1975, 3–6; [redacted] interview: Gerhard Collection; *Essential Matters: A History of the Cryptographic Branch of the People's Army of Viet-Nam, 1945–1975*, United States Cryptologic History, Special Series, Number 5, translated by David W. Gaddy (Ft. Meade: NSA, 1994), 98–111.

18. Herring; MSgt William E. Fleischauer, "History of Project 78," in ASA annual history, 1959, available at Hq INSCOM.

19. CCH Series VI.H.H.12.10.

20. Gerhard Collection.

21. Ibid.; CCH Series VI.H.H.6.22.

22. CCH Series VI.HH.6.22.; VI.HH.12.10; Gerhard Collection; Gerhard, *In the Shadow of War*.

Withheld from public release Pub. L. 86-36

23. Ibid.

24. *CCH* Series VI.H.H.18.9.

25. [redacted], "Deployment of the First ASA Unit to Vietnam," *Cryptologic Quarterly*, Fall/Winter 1991, 77–93.

26. CCH Series VI.HH.1.10.

27. Gerhard Collection.

28. Gerhard, *In the Shadow of War.*

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29. CCH Series VI.HH.15.12; Gerhard Collection.

30. James Gilbert, "The Beginnings of Airborne Radio Direction-Finding" in U.S. Army Intelligence and Security Command, Historical Monographs, 1983 Series Vol. 1.

31. Gerhard Collection; CCH Series VI.HH.12.10.

32. Gerhard, *In the Shadow of War*; CCH Series VI.HH.12.10.

33. CCH Series VI.HH.15.1.

34. Ibid.

35. Interview with David Gaddy, February 1993; Jules Roy, *La Bataille de Dien Bien Phu* (Paris: Rene Julliard, 1963); Gilbert.

36. Gilbert; Gerhard, *In the Shadow of War.*

37. CCH Series VI.HH.12.10.

38. Neil Sheehan, *A Bright Shining Lie: John Paul Vann and America in Vietnam* (New York: Random House, 1988), 201 ff.

39. CCH Series VI.HH.12.10; Gerhard Collection.

40. Herring.

41. VI.HH.12.19; [redacted] interview; Gen. Pham Van Nhon, Manuscript history of DGTS, available in CCH.

42. Nhon, Manuscript history of DGTS; [redacted] interview.

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43. CCH Series VI.HH.12.10.

44. Ibid.

45. Gerhard collection; CCH Series VI. HH.12.10.

46. Karnow.

47. Herring.

48. Karnow, Herring.

49. Gerhard, *In the Shadow of War;* Brown; "The CCP"; Gerhard collection.

50. Gerhard, *In the Shadow of War.*

51. CCH Series VI.HH.12.10.

52. Morrison interview.

53. CCH Series VI.HH.1.40.

54. Gerhard, *In the Shadow of War;* Gerhard Collection.

55. Thompson, et al., *SIGINT Applications.*

56. Gerhard, *In the Shadow of War.*

57. Gerhard Collection.

58. Ibid.

59. Edward J. Marolda and Oscar P.Fitzgerald, *The United States Navy and the Vietnam Conflict, Vol. II: From Military Assistance to Combat, 1959–1965* (Washington: Naval Historical Center, 1986).

60. Ibid.

61. Gerhard, *In the Shadow of War*, Gerhard Collection; Marolda.

62. Ibid.

63. Ibid.

64. CCH Series VI.HH.24.10.

65. Marolda.

66. Marolda; CCH Series VIII.13.

67. CCH Series CIII. 13.

68. Marolda.

69. Marolda; CCH Series VI.HH.24.10.

70. Marolda.

71. Ibid.

72. Ibid.

73. Marolda; CCH Series VI.HH.24.10.; VIII.13.

74. Marolda.

75. CCH Series VIII.13.

76. Ibid.

77. Marolda.

78. Marolda; CCH Series VIII.13.

79. CCH Series VIII.13; oral interview with [redacted], 22 Dec 1987, by Robert Farley and Tom Johnson, NSA OH 33-87.

80. CCH Series VIII.13.

81. [redacted] interview.

82. Karnow, 374.

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83. Karnow.

84. Ibid.

85. David Wise, "Remember the Maddox!", *Esquire*, April 1968; NSA oral history with Lt Gen Gordon Blake, by William Gerhard and Renee Jones, 5 June 1972, unnumbered.

86. CCH Series VIII:13, contains a full text of the hearings.

87. U.S. Congress, Senate, Committee on Foreign Relations, The Gulf of Tonkin, the 1964 Incidents, Hearings, 90th Cong, 2nd sess., with Hon. Robert S. McNamara, Secretary of Defense, on 20 Feb.1968, in CCH Series VIII.13.

Chapter 12
From Tonkin to Tet – The Heart of the War

THE PRESIDENT EXPANDS THE WAR

Retaliation during the Gulf of Tonkin crisis was a one-shot affair, but it indicated that the administration was edging toward more active involvement. It did not, of course, dissuade the North Vietnamese. In November the Viet Cong (VC) mortared the air base at Bien Hoa, only two days before the U.S. elections. Johnson regarded this as a bald affront. Then, on Christmas Eve, they bombed an American officers' billet in downtown Saigon in broad daylight, killing two and wounding sixty-three. This further hardened American attitudes and made direct intervention the following year more likely.[1]

Late in 1964, SIGINT began noting a strange communications pattern for the North Vietnamese 325th Infantry Division. The division headquarters at Dong Hoi opened communications with entities that controlled the infiltration routes into South Vietnam. Sometime thereafter, SIGINT (together with ARDF fixes) showed the 325th moving south, first into Quang Tri Province (just below the DMZ) and later all the way to the Central Highlands. It was the first move of a regular NVA division into the South, and it pointed to a new and considerably more dangerous phase of the war. No longer were the ARVN facing an insurgent Viet Cong movement – they were up against North Vietnamese regulars.[2] The 325th was in South Vietnam to prepare for the rainy season offensive, and it would create a bloody hell for the unlucky ARVN units in its path.

The president now knew what the American people did not – that North Vietnamese regulars were in the South. All that remained was for another provocation to take place. He had not long to wait. On 6 February 1965, the Viet Cong rocketed the American and South Vietnamese facilities at Pleiku, killing 8 Americans and wounding 108, bringing newspaper headlines and extensive television coverage. At the time, press coverage had the effect of pushing the administration into retaliation. (A few years later it would have the opposite effect.) Twelve hours later American A-4 Skyhawks and F-8 Crusaders were launched from the 7th Fleet against Dong Hoi (whence the 325th and other units had staged on their way south).

Twenty-one days later President Johnson institutionalized the pattern of isolated retaliation by starting daily bombings of the North and the Ho Chi Minh Trail in Laos. The operation, called Rolling Thunder, was planned to last eight weeks, but in April Earl Wheeler, JCS chairman, informed the president that it had had no effect at all on the North. So Johnson directed that it continue until it had an effect.[3]

The attack on Pleiku almost shouted out the vulnerability of American troops and equipment. With the initiation of Rolling Thunder, U.S. aircraft were at Da Nang almost

constantly, and they required protection. The U.S. commander, General William C. Westmoreland, asked Johnson for a defensive force, and the president obliged. On 8 March the first Marines splashed ashore at Da Nang, beginning the American deployment of ground combat troops to the theater.[4]

The commitment of ground forces, once begun, became an inexorable upward spiral. In May, Westmoreland asked for a total of 185,000 by the end of the year, and 100,000 in 1966. Johnson sent Secretary of Defense McNamara to Saigon to find out what was happening. The secretary returned with a gloomy assessment – Westmoreland was actually understating the need, and the U.S. would need an additional 200,000 in 1966.[5]

Operation Starlight and the Ia Drang Campaign

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SIGINT was still small-time in Vietnam, but it was growing. In August 1965, with new American troops swarming ashore almost every day, ASA SIGINT and ARDF located a new enemy communications terminal near the Marine base at Chu Lai. In Saigon, the NSA representative, [redacted], took the item to Brigadier General Joseph A. McChristian, the J2, who passed it to Lieutenant General Lewis Walt, who commanded the Marines in Vietnam. Walt discussed it directly with his SIGINT people at Phu Bai and became convinced of its validity. He began planning a major entrapping operation. The VC forces, who had hoped to surprise the Marines, became themselves surprised and overcome in the operation, called Starlight. Starlight was a turning point in the direct employment of SIGINT and ARDF in operational planning.[6]

Ia Drang, the first significant campaign by a large force of NVA regulars, began as an attempt by the NVA 325th Division to cut Vietnam in half in the Central Highlands. In the process, the 325th attacked a Special Forces camp at Plei Me, about twenty-five miles south of Pleiku. ARVN forces attempted to rescue the troops trapped inside but were ambushed by two NVA regiments of the 325th, the 32nd, and 33rd, with heavy casualties.[7]

Following the engagement, the NVA retreated up the Ia Drang Valley, with the First Cavalry (Airmobile) in pursuit. Owing to the recent success in Starlight, the American forces had five ARDF aircraft in support. Moreover, for the first time the ARDF crew had the capability to pass fixes directly to the ASA Direct Support Unit (DSU) supporting the ground forces. ARDF fixes followed the 325th elements retreating up the valley until they were cornered at the Chu Pong Massif. The 1st Cavalry, employing helicopters in pursuit for the first time, and supported by B-52 air strikes, devastated the NVA. The two regiments suffered up to 60 percent casualties and were no longer an effective fighting force. The remnants retreated into Cambodia. During the action, the 33rd was so concerned about the Americans appearing to know their location that they concluded that they had spies in their ranks.[8]

The SIGINT Deployment

To support American ground forces, ASA built Phu Bai into the largest ASA field site in the world, almost 100 positions. Together with the 3rd RRU in Saigon and the 9th in the Philippines, ASA had substantial fixed site assets.[9]

The fixed sites were augmented by SIGINT tactical assets. ASA tactical units began to arrive with each incoming Army organization. Each unit normally had five manual Morse positions along with short-range DF and VHF intercept equipment.[10]

NSA's concept of direct support was that, since the problem was centrally controlled from Hanoi, the SIGINT effort should remain centralized. NSA continued to exercise overall control from Fort Meade. In Vietnam, collection management authority (CMA) was divided into three areas, roughly corresponding to the division of American forces. USM-626 at Tan Son Nhut was CMA for the southern part of the country, USM-808 at Phu Bai for the northern portion, and USM-604 at Pleiku for the central area.[11]

Following its relocation to Phu Bai, the Marine SIGINT detachment became the DSU in support of the III MAF (Marine Amphibious Force) in the north. Eventually the Marines established DSUs like the Army and wound up with the same sort of a decentralized SIGINT support arrangement, with small detachments composed of only a few positions each collocating with combat units. Lacking their own ARDF assets, the Marines received ASA ARDF support.[12]

Air Force Security Service SIGINT collection from Vietnam itself was more limited. The unit at Da Nang expanded quickly once Rolling Thunder began, but it never equalled the huge ASA contingent. This was not true, however, of the ACRP effort. USAFSS had a contingent of four RC-130s at Da Nang, which expanded to six in 1967, by the device of raiding airborne assets in Europe and Japan.[13]

Beginning in 1967, a new ACRP program began flying in Southeast Asia. This program consisted of the far larger and more capable RC-135s belonging to a new unit at Kadena AFB, Okinawa, the 6990th SS (Security Squadron). With SAC front-end crews and USAFSS collectors, the RC-135s flew very long (often in excess of seventeen-hour) missions into the Gulf of Tonkin. The RC-130s continued to fly out of Da Nang until the end of the year, when the Kadena unit took over the entire mission.[14]

Operational control arrangements continued to cause friction. NSA opposed fragmentation, while the Army insisted that field commanders should directly control all cryptologic assets supporting them. This became a critical issue when Army units began independent operations.

In mid-1965 a new arrangement was hammered out between Rear Admiral Schulz of NSA and Brigadier General Eddy, deputy commander of ASA. Under this Schulz-Eddy agreement, when DSUs were in active support of an ongoing tactical operation the field

commander would control them. When they were back in garrison, control would revert to ASA's designated field site (either Saigon, Pleiku, or Phu Bai). NSA continued to control all fixed field sites, to the loud disapproval of MACV.[15]

The second control issue to arise in 1965 concerned the air problem. Brigadier General Rocle "Rocky" Triantafellu, the deputy chief of staff for intelligence at 7th Air Force, proposed that an organization be established in Saigon which would produce a daily recap of the status of North Vietnamese air and air defense systems. But what Triantafellu wanted and what NSA was prepared to deliver were very different. Triantafellu had in mind an Air Force Security Service organization, all blue-suiters working for 7th Air Force. NSA countered by proposing an NSA unit, manned only partly by uniformed Air Force people. This nasty scrap continued until NSA won in March 1966. The resulting organization, called the SIGINT Support Group (SSG), consisted primarily of Air Force people, but was under NRV control.[16]

The very next year, MACV itself got into a struggle with NSA over the positioning of cryptologic assets. In this case, MACV requested that a SIGINT processing center be established in Vietnam, to bring processing closer to the fighting. By 1967, however, MACV was swimming against the tide. NSA had moved processing back to Okinawa (JSPC) and Fort Meade and was not about to change directions. SIGINT centralization was "in," and MACV did not get its processing center.[17]

ARDF and the Two-Front War

In the beginning, ARDF was the exclusive domain of the Army. Starlight and the Ia Drang campaign had demonstrated the benefits of close ARDF support, and ASA expanded its assets rapidly. By the end of the year, there were four aviation companies in Saigon, Da Nang, Nha Trang, and Can Tho. The first two supported I FFV (First Field Force Vietnam) in the north, while the second supported II FFV. ARDF had clearly become a coveted asset.[18]

In 1966 the ARDF picture became suddenly complicated. The Air Force deployed a new ARDF program, called PHYLLIS ANN. The Air Force considered ARDF to be an EW asset, and even in the test phase in 1962 had refused to submit to any sort of central control from the SIGINT system. The Air Force eventually conceded to bring its ARDF testing under cryptologic control, with USAFSS back-end operators and ASA technical support. (At the time, an ASA unit, USM-626 at Tan Son Nhut, was the tasking and technical support authority for Vietnam, and this made the pill doubly bitter.) But since the equipment was unsatisfactory technically, the issue of command and control became moot with the departure of the test aircraft.[19]

PHYLLIS ANN EC-47 ARGF aircraft

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DOCID: 523682 REF ID:A523682

PHYLLIS ANN was different. The equipment, mounted in C-47s, was good – just as accurate as the ASA systems, but because of technical factors, the C-47s (now called EC-47s) could shoot more DF shots in an hour than the Army aircraft. The Air Force Security Service activated the 6994th SS on 15 April 1966, at Tan Son Nhut, to man the ARDF positions. Soon they had detachments at Da Nang, Nha Trang, and Pleiku. A total of forty-seven EC-47s were deployed to the theater.[20]

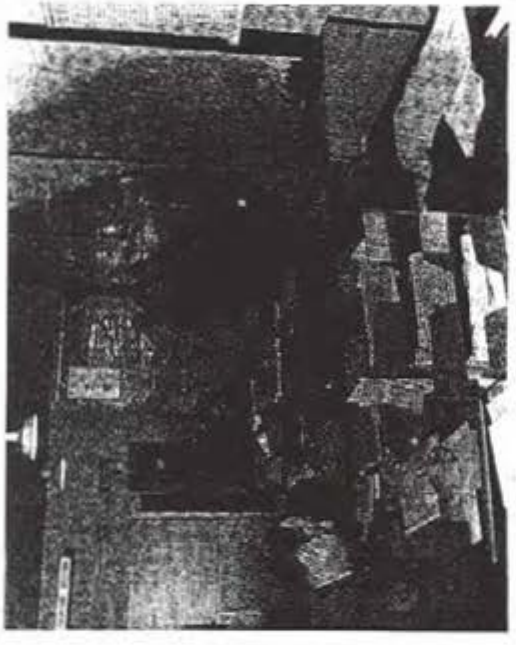
When PHYLLIS ANN aircraft arrived in theater, the issue of control and tasking of ARDF assets erupted into a three-cornered donnybrook. Seventh Air Force continued to regard them as EW assets and demanded complete tasking control. Westmoreland was equally insistent that all ARDF assets should be tasked centrally (i.e., by MACV). NSA was willing to see central tasking in theater, but insisted that ARDF was a cryptologic asset whose ultimate owner was itself. In the Agency's opinion, it had simply delegated temporary operational control to the commanding general of ASA in 1961.[21]

By June of 1966, MACV had won the fight for in-theater control. EC-47s would be tasked by a central ARDF tasking center called the ACC (ARDF Coordination Center), collocated with Westmoreland's J2 in Saigon. Seventh Air Force continued the struggle throughout the war, but it could not get support from even PACAF (Pacific Air Force) for its position.[22]

The struggle for control went all the way to the deputy secretary of defense. In 1966, Cyrus Vance ruled that ARDF was an EW asset and would be controlled by Westmoreland through his J2. The victory was only temporary, however. Two years later, Deputy Secretary Paul Nitze reversed Vance, holding that ARDF was actually a cryptologic technique and that it would be placed in the CCP. In the meantime, the ARDF controversy had spawned a compromise document, MJCS 506-67, an effort to cut the SIGINT Gordian knot (see p. 475).[23]

Search and Destroy

Westmoreland's strategy was to get American troops out of a defensive posture and out into the countryside on search and destroy missions. This placed a premium on unit mobility. The SIGINT support for these sweep operations consisted basically of ASA tactical units with small numbers of Morse positions, supplemented by low-level voice and short-range DF. To this mix was added the ARDF fixes flashed from aircraft to the ASA units on the ground and intercept from major SIGINT stations like Pleiku and Phu Bai. This pattern, initiated in 1965 during the Ia Drang campaign, became the dominant system in 1966 and 1967, during the height of tactical operations.



The ARDF control center in Saigon.
Shown in 1968, it was a joint Army-Air Force facility.

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

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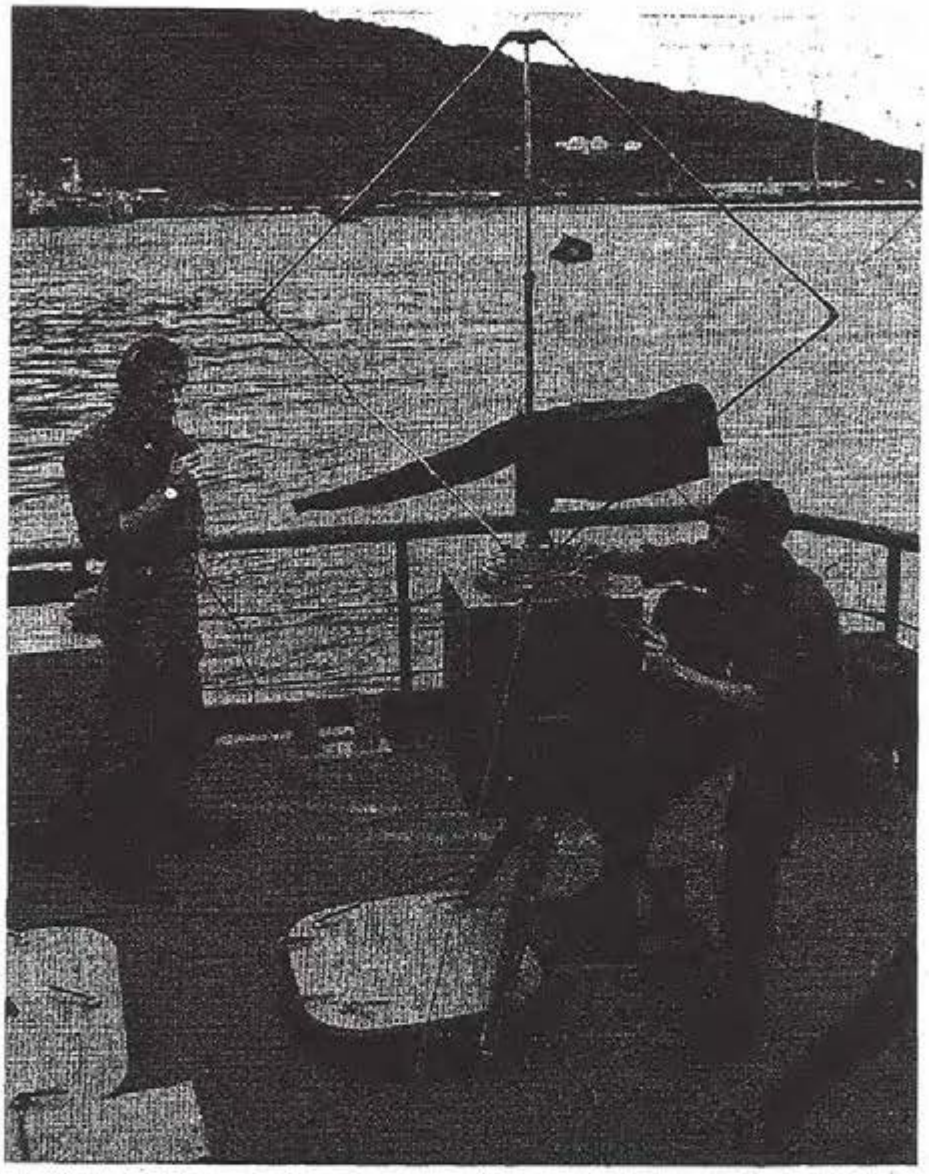
ASA tactical SIGINT units provided direct support for a bewildering number of military operations during 1966. They came in all flavors: Masher/White Wing, Paul Revere, Nathan Hale, John Paul Jones, Geronimo, Attleboro, and many more. One was like the next.

An example was Paul Revere II, an operation in the Central Highlands in July and August. SIGINT support consisted largely of ARDF fixes from aircraft that were, for the first time, allocated, based, and flown in a direct reporting, close support role from the command post of the supported commander.[24] The historical debate over the effectiveness of Westmoreland's strategy should not obscure the significant contributions of SIGINT. Some of the tactical operations were initiated based on SIGINT information, and most were prosecuted using updated SIGINT.

A second type was the riverine operation. Used primarily in the Mekong Delta and other low, marshy areas of the country, it was basically a waterborne search and destroy mission. But the difficult terrain, and lack of large-unit VC operations, made riverine operations frustrating and largely ineffective. This went as well for the SIGINT support. Working with the Navy and Marines, ASA would deploy low-level voice intercept (LLVI) and short-range direction finding (SRDF) teams on boats. Because of a lack of good linguists, the LLVI teams were generally ineffective. The SRDF operations proved to be no more successful on water than on dry land. Bearings were divergent and frequently produced no intersection at all.[25]

Army Security Agency was willing to go wherever it was necessary to collect and support. Sometimes units would be choppered to the tops of mountains. One such operation placed an intercept team on top of Black Widow Mountain, an aptly named peak in a remote corner of Tay Ninh Province at the Cambodian border. This was VC territory, and it turned out to be one of ASA's most dangerous operations. As if enemy operations were not enough, the weather was atrocious – winds as high as eighty knots, heavy rain, low ceilings (which prevented helicopters from landing most of the time), and high humidity that would destroy intercept equipment in short order. But after only a four-day test cut short by hostile fire, NSA concluded that it was the only way to get Cambodian [redacted] VHF air/ground communications aside from leaving a TRS in the South China Sea. Since TRSs were on the way out, Black Widow Mountain was on the way in. So in May 1968 the ASA team was back, this time supposedly permanently. E.O. 13526, section 1.4(c)

The second time around the team lasted two weeks. At that point, a VC attack killed one ASA operator and wounded another, and caused numerous casualties to the collocated Special Forces unit. The operation was withdrawn by helicopter at the first break in the weather.[26]



A riverine operation with an AN/PRD-1 SRDF set

E.O. 13526, section 1.4(c)

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However, the value of operations like Black Widow Mountain spawned an effort to locate intercept equipment on mountain tops and to remote the signal to a safer location. That way, only the equipment would be exposed. The effort, called EXPLORER, was developed at NSA in only three months, with [redacted], Donald Oliver, and [redacted] being the key players. The first EXPLORER operation lasted for almost a year before it was destroyed. But during its lifespan it was highly effective. In ideal conditions ASA could intercept the traffic from the EXPLORER system, forward it to NSA for decryption, and have the decrypted text back in country in some four hours.[27]

Black Widow Mountain

Another successful technique was wiretap. NSA developed various wiretap systems, but they were uniformly dangerous to install. American or ARVN soldiers had to penetrate VC territory (especially risky in Laos, where most of the landlines were), find the landline, attach the tap to the line, and get out of the way. The VC would periodically sweep the line, and early wiretap systems required the Americans or ARVN to stay in the vicinity and, when a sweep came by, hurriedly detach the tap and get back into the bush. Later versions did not require a stay-behind person. Some taps looked like Vietnamese insulators and thus would not be viewed as possible taps. Still later, the U.S. developed poles that could be dropped by helicopter into the jungle near a landline.[28]

Predictions

The highest intelligence art form is prediction. One of the most intensive activities in the war was the attempt to predict VC and NVA offensives – when, where, and how many.

[redacted]

E.O. 13526, section 1.4(c)

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

But in 1964, concurrent with increased NVA involvement in the south, ASA began to intercept Morse communications pertaining to VC military operations. As the Morse nets expanded, NSA began to recover the VC/NVA military structure through traffic analysis. The Agency identified the formation of five new organizations: MR TTH (Military Region Tri-Thien-Hue), NVA 3rd Division, B3 Front, Headquarters Southern Subregion, and VC 9th Division. The Binh Gia campaign at the end of 1964 showed the first extensive use of Morse to set up and coordinate a local campaign.[30]

From then on, through painstaking traffic analysis and DF, the cryptologic community was able to discover communications patterns that indicated attacks. By 1967 it had become an art form, and many NSA seniors contend that past a point (probably in 1965 or 1966), the SIGINT system predicted every major VC or NVA offensive. This included date, point of attack, and units involved.

Indicators varied from battle to battle but almost always included the activation of a "watch net," contingency communications which indicated that the headquarters would soon deploy to a different location. Concurrently, a forward element would be activated, and would establish communications with the headquarters, which, until it moved, would become the rear element. It became important to locate the forward element and to track the movement of the headquarters. At a point in the operation, it would disappear from communications. When it reappeared, it would be in the area of the battle, and it would then be critical to locate it, usually through ARDF. E.O. 13526, section 1.4(c)

Other indicators would usually be present, including the use of unusual cipher systems, changes in message volume, the appearance of operational planning messages [redacted], indications of increased intelligence collection, and heightened logistics activity. Plain text and the decryption of low-level ciphers were important, but most of the work was done solely through a combination of ARDF and traffic analysis. Greatly aiding this effort was the fact that the VC and NVA used the same callsign book throughout the war. The U.S. had the book completely recovered and used this to identify the units involved.[31]

Infiltration

A second resounding SIGINT success was in tracking North Vietnamese infiltration on the Ho Chi Minh Trail. Until the fall of 1967, this was done through a combination of photography, SIGINT (primarily traffic analysis), prisoner interrogations, and the like. It was a complex problem, which admitted of no easy answers. The U.S. did not, in fact, have a good handle on infiltration.

Then, in October 1967 RC-130 intercept operators began picking up LVHF voice [redacted] passing logistics information. The messages emanated from Vinh,

E.O. 13526, section 1.4(c)

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a key logistics center on the Trail, just above the DMZ. Most of the messages pertained to [redacted] which NSA decided must represent groups of infiltrators on the Trail.

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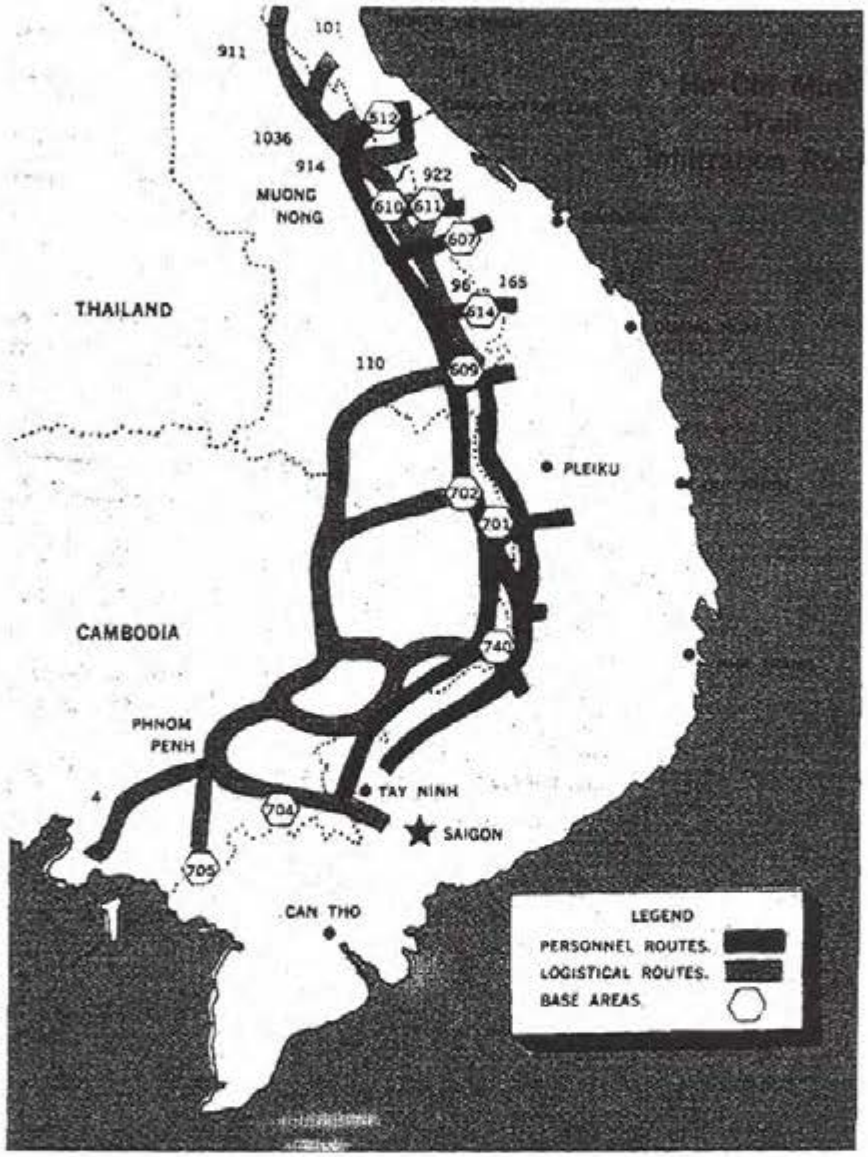
NSA eventually broke out the entire Trail group system and was able to determine with fair accuracy virtually every group moving onto the Trail, where it was headed, and when it would probably arrive. Some of the groups proved to be specialists like medics, while others were simply combat soldiers, augmentees for an offensive or replacements for casualties. Late in the war, infiltration numbers were assigned to integral units rather than individuals. The surprising bonanza came to be called the "Vinh Window."[32]

The Vinh Window was very big news. MACV now knew where the biggest strategic push would come based on projected augmentees to a given frontal area or military region. The White House thought it had unlocked the key to the magic door, and David McManis, NSA's representative to the White House Situation Room, spent much of his time explaining the intricacies of trail groups. CIA cast aside much of its methodology of determining infiltration numbers and simply accepted the SIGINT numbers as virtually the final answer.[33]

In Asia, the ACRP program was swept up in a tidal wave of requirements relating to the Vinh Window. The RC-135 unit which had only recently formed at Kadena was pressed into premature service. The RC-130 program, which was eliminated in favor of the RC-135s by the end of the year, was replaced in the fall of 1968 by a new program called COMFY LEVI, RC-130s with roll-on SIGINT suites for the back end. The Air Force Security Service received authority to transcribe the most critical tapes in the aircraft and downlink the information to the Security Service unit at Da Nang in midflight. Untranscribed voice tapes began to pile up at Kadena, as demands overwhelmed resources.[34]

The significance of the Vinh Window could not be overemphasized. Every intelligence agency adopted its own interpretation of the figures, and infiltration estimates varied to some degree depending on what agency one listened to. CIA's counts were probably the most accurate, but were not the only ones reaching the White House. The National Indications Center, in a 1968 study of the phenomenon, stated that "... the SIGINT material which is now available is not only of value for estimating the strengths of Communist forces in South Vietnam, but also is a significant factor in assessing their future plans and intentions."[35]



The Ho Chi Minh Trail

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The Dancers

E.O. 13526, section 1.4(c)(d)

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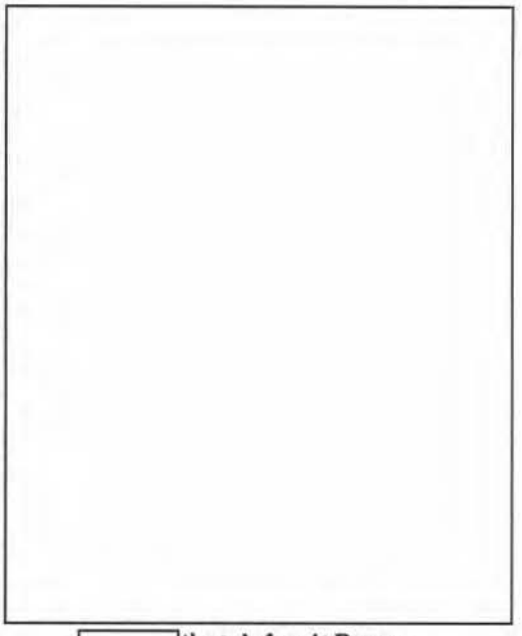
The cryptologic community in Southeast Asia had been overwhelmed with Vietnamese voice long before the Vinh Window. The problem began in late 1964, when the first voice intercepts began to flood the SIGINT system. What had been entirely a Morse problem suddenly had a new dimension to it.

The services had very few Vietnamese linguists, and those they had were little better than school trained. In 1964 USAFSS requested authority to establish native-born South Vietnamese as linguists to transcribe voice tapes to be collected at Da Nang in support of 34A operations. After studying the problem, NSA concurred with a Vietnamese transcription operation, but established it, not at Da Nang, but in Saigon. The DANCER project (as it was called) was established in January 1965, using 3rd RRU SABERTOOTH spaces, with three South Vietnamese linguists.[36]



[ ] the only female Dancer

By May 1965, USAFSS was processing Vietnamese voice off [ ] nets being collected by the ACRP program at Da Nang. The program in Saigon was not productive, partly because ASA could hear no Vietnamese voice from that location. Since Da Nang was the ground processing point for ACRP intercept, it was decided to move the DANCER program north – ultimately it wound up at both Da Nang and Phu Bai (selected because NSA believed [ ] communications could be heard from that location). DANCER recruits came from the SABERTOOTH program and were vetted by General Nhon's South Vietnamese SIGINT organization.[37]

Originally employed to transcribe voice tapes, DANCERs eventually became qualified in a wide variety of skills. They proved to be skilled at various traffic analytic recoveries, and they were soon an absolutely essential asset to any SIGINT operation in South Vietnam. By 1966, ASA units were intercepting LLVI communications and needed DANCERs to go to the field with them. This effort became Project SHORTHAND. Because the U.S. had run through the supply of linguists available from the South Vietnamese SIGINT Service, ASA, under SHORTHAND, obtained authority to recruit from other sources within the South Vietnamese government.[38]

E.O. 13526, section 1.4(c)(d)

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

The SIGINT Role in the American War

During the period of maximum American involvement on the ground, SIGINT developed from an arcane art form to a day-to-day bulletin on enemy dispositions. Most commanders interviewed after the fact estimated that SIGINT comprised anywhere from 40 to 90 percent of their intelligence, depending on the availability of POWs. Every sizeable unit deployment had its ASA Direct Support Unit (DSU), which gave it access to ARDF and a pipeline into the national SIGINT system. Many commanders used the information for daily battle planning.[39]

A properly employed DSU thus became an essential resource. But it had warts. As in Korea, the LLVI effort was sometimes fruitless because of the difficulty of getting good linguistic support; an insufficiently trained linguist was sometimes worse than no linguist at all. South Vietnamese linguists under the DANCER and SHORTHAND programs were spread very thin and were often not available.

Moreover, short-range DF proved a dubious asset, especially in the Delta, where there were fewer targets. To the extent that DF was successful, it was generally ARDF.

ARDF sometimes overwhelmed other intelligence sources. Tactical commanders used it for daily targetting, and it became the primary source for targetting information in the entire war. Used effectively, it was irreplaceable. But sometimes a commander would blast a patch of jungle just because a transmitter had been heard there. The VC and NVA eventually became skilled at remoting their transmitters, just because of such American tendencies. There was still no substitute for understanding the source.

And much of the difficulty that the SIGINTers found themselves in stemmed from an unappreciative audience. Very few commanders had any training in SIGINT. In the 1950s it had been kept closeted, a strategic resource suitable only for following such esoteric problems as Soviet nuclear weapons development. Now that it was "coming out of the closet," a generation of officers received OJT under fire.

Some did well; some not so well. For every example of the proper use of tactical SIGINT, there was the opposite instance, where the source was either not believed or not used properly. No intelligence source was so technically complex or so difficult for the layman to understand. The lessons from the "American War" (1964–1968) were still being absorbed more than twenty years later.

The Air War

The air war began with the daily bombing of the North in March 1965. Like the ground war, the air war was a messy business organizationally. It involved three different air elements.

Seventh Air Force was the largest component. It had six tactical fighter wings and a tactical reconnaissance wing spread around Southeast Asia. Headquartered at Tan Son Nhut, 7th AF had a Control and Reporting Post on a hilltop called Monkey Mountain, near Da Nang. This was where command and control of tactical missions were executed, and this was where Air Force Security Service chose to set up shop.[40]

In the Gulf was Task Force 77, a carrier task force belonging to 7th Fleet. The Navy launched Rolling Thunder missions from the carrier decks, and it had its own control authority, called Red Crown.[41]

The First Marine Air Wing, under III MAF, operated out of airfields in northern South Vietnam. Although used almost exclusively for close air support in South Vietnam, they also flew some missions over the North.[42]

Finally there was SAC. The Strategic Air Command launched B-52 strikes over both North and South Vietnam, flying out of Andersen Air Force Base, Guam; U-Tapao, Thailand; and Kadena, Okinawa.[43]

In response, the North Vietnamese, with a third-rate air force and practically no technological sophistication, had fashioned a competent if not overwhelming defense. Proceeding from the visual observer stage in the late 1950s, North Vietnam had introduced Soviet radar systems, and by the mid-1960s it had some 150 radar sites and 40 radar reporting stations. The North Vietnamese navy also had radar sites along the coast, primarily to keep track of enemy ships. They had a small group of MIG-17s and MIG-21s which they carefully husbanded. They also introduced hundreds of AAA sites across the country and in late 1965 began installing SA-2 sites. American air strikes by no means went unimpeded.[44]

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Fashioning the SIGINT Warning System – HAMMOCK

Following the Gulf of Tonkin crisis, 7th AF (then called 2nd Air Division) requested SIGINT support for air missions north of the DMZ. Security Service began planning an

expansion of its unit at Da Nang (6924th SS, or USA-32) to provide some sort of Tactical Report (TACREP) service.[46]

What developed initially was a system called HAMMOCK, which became operational in December 1965. HAMMOCK consisted of five manual Morse intercept positions at USA-32, copying North Vietnamese air defense communications which reflected MIG activity. USA-32 could pass warning information to 7th AF when, and only when, the tracking fell within the theoretical range of American radar. (There did not actually have to be a radar located at the hypothetical point; the postulated existence of such a radar was enough.) The information was supposed to be validated at the Tactical Air Control Center (TACC) at Tan Son Nhut, which would convert the SIGINT plot to a geographical coordinate and then send it on to the Control and Reporting Post (CRP) at Monkey Mountain. The CRP could warn the aircraft in jeopardy and would also pass the information via KW-26-secured circuit to Red Crown in the Gulf.

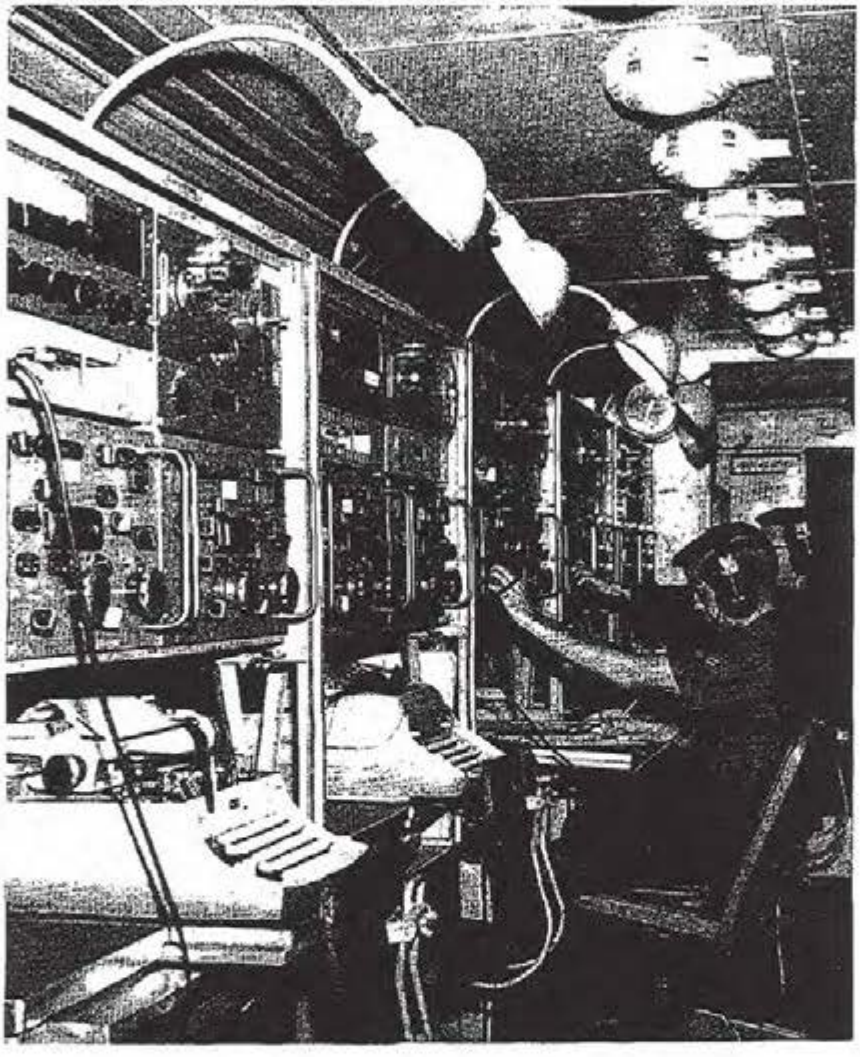
If communications were down, USA-32 could go directly to a Security Service detachment at the CRP, where the information was converted from the grid system and passed to an uncleared CRP controller. This was much faster, but everyone was nervous about security because there were so many uncleared people in the facility.[47]

Needless to say, this convoluted system was less than satisfactory. It relied, in the first instance, on manual Morse tracking passed within the North Vietnamese air defense system, which introduced a delay of several minutes. It was burdened by so many communications relays and authorization authorities that it had little chance to get anywhere in time. HAMMOCK plots generally reached someone who could warn a fighter pilot anywhere from twelve to thirty minutes after the fact. The average time of receipt to Red Crown was nineteen minutes. The Navy was profoundly unimpressed and chose to rely on its on-board cryptologic detachments. The Navy operators had little experience with North Vietnamese air defense systems, but at least they could warn within a few minutes of real time.[48]

Despite this, HAMMOCK was better than nothing. On 27 April 1966, the U.S. got its first confirmed MIG shootdown based on warning information provided by HAMMOCK. But the requirement to check everything with the TACC in Tan Son Nhut got the Air Force Security Service in the middle of a jurisdictional dispute between 7th AF and its subordinate CRP on Monkey Mountain. It was not the right way to run a war.[49]

The ultimate answer was not manual Morse tracking, anyway – it was intercept of VHF air/ground communications by the RC-130 QUEEN BEE DELTA aircraft flying in the Gulf of Tonkin. The ACRP often had the information that pilots needed to avoid being shot down, or to do some shooting down themselves. Security restrictions, however, prevented its use.

The cropper came in April 1965, when two F-105s were shot down by MIGs. The orbiting ACRP had had information that would have been useful, and it was obviously



Voice intercept operators at work, USA-32

imperative that a system be devised to incorporate their intelligence.

Pacific Security Region (the region headquarters for the Air Force Security Service) had devised a brevity code that could be used by the ACRP back-end crew to warn pilots in imminent danger, but it did not withstand COMSEC scrutiny. The only solution appeared to be a secure link between the ACRP and USA-32. A device called a URC-53 already existed. Priority was so high that the installation and use of the URC-53 at Da Nang was approved the same day it was requested, and the circuit was installed and operational within a month.[50]

But this was still not fast enough. General Moore, commander of 7th AF, proposed putting his own controllers on the QUEEN BEE aircraft, clearing them, and having them pass MIG alerts directly to Rolling Thunder aircraft, using the callsign of another aircraft in the Gulf (COLLEGE EYE, an EC-121) as cover. Reversing the normal procedure, Morse tracking would be passed uplink from Da Nang to the ACRP, where it would be integrated with the voice data. Moore's weapons controllers were flown to Bangkok (whence QUEEN BEE flights then originated), and three days later the ACRP issued its first MIG alert.[51]

Then Moore tried to get control of the ACRPs themselves. He felt this was necessary to insure that there was always an ACRP aloft during Rolling Thunder missions. Here Moore ran into a buzzsaw. The aircraft he wanted control of were national assets. NSA successfully opposed 7th AF on this issue. Even PACAF refused to back 7th AF, stating at one point that there had never been an instance when the ACRP had failed to respond to a 7th AF request.[52]

The autumn of 1965 brought a new threat – the appearance of SA-2 surface-to-air missiles (SAMs) in North Vietnam. The North Vietnamese began employing SAMs against high-flying, nonmaneuverable targets like B-52s, while using AAA for the lower-flying Rolling Thunder aircraft. To counter SAMs, 7th AF introduced a procedure in which SAM activations acquired by the ACRP aircraft (now renamed SILVER DAWN) would be passed to 7th AF (through USA-32), which would direct Iron Hand (SAM suppression missions) against the offending SAM.

At this point Security Service ran into an Air Force mind-set regarding the use of intelligence that proved to be destructive of its own interests. Air Force doctrine was to launch suppression only if the SAM site had been documented by photography, and 7th AF refused to launch Iron Hand in cases where this had not been done.[53]

The Border Violation Incident

On 8 May 1966, a flight of RB-66s escorted by F4Cs strayed over the border into Communist China and was attacked by four MIG-17s. One of the MIGs was shot down in the engagement, which occasioned an impassioned diplomatic protest from the PRC. The communists released photos of the downed MIG well north of the international barrier.[54]

The off-course Americans should have been warned. None, unfortunately, reached the American pilots. The Navy EC-121 that was supposed to act as a communications relay had aborted, and the warnings from Monkey Mountain went off into the ether.[55]

This incident led to a full-scale Pentagon investigation of command and control procedures in Southeast Asia. The "Pearl Harbor question" kept coming up – why, if SIGINT was available, wasn't it used? The proceedings, headed by Marine brigadier general Robert G. Owens Jr. were marred by mutual recriminations between the SIGINTers, who were sure of their facts, and the operations people, who were determined to defend their pilots. This claim was rejected by the full panel. In the end, Secretary of Defense McNamara reported to the president that "this account, derived from communications intelligence, is unequivocal. A thorough review of intercepted North Vietnamese messages reveals no significant discrepancies. . . . I am convinced that our aircraft penetrated Chinese airspace before they were attacked by the MIGs."[56]

The Owens report laid bare the inadequacies of command and control and the disjointed way that SIGINT was introduced into the operational system. Owens demanded, and got, a thorough reorganization of the system in Vietnam. Authority to control operations was summarily removed from 7th AF in Saigon and placed where it should have been all along, on Monkey Mountain. The Tactical Air Control Center (TACC) at Tan Son Nhut was cloned on the mountain and called TACC/NS (North Sector). The control facility on the mountain was upgraded from a CRP to a CRC (Control and Reporting Center) and was given two subordinate CRPs at Udorn and

The Owens report also recommended that 7th AF have operational control over the ACRPs. This occasioned another huge fracas between the Air Force and NSA. The Agency won again, partly because it could certify that the ACRPs were already as responsive to 7th AF as they would be under that organization's direct control.[58]

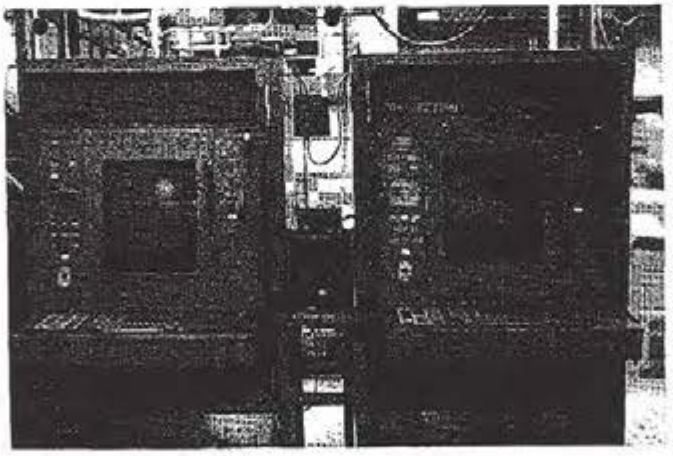
During the Owens deliberations, it became clear that factors other than operational control affected ACRP capabilities. The biggest problem was fighter CAP (Combat Air Patrol). Many ACRP missions were scrubbed because of lack of fighter CAP, or had to abort in midmission because the fighters went home early. Following the Owens report, JCS approved unescorted missions in the gulf at night (because of known North Vietnamese reluctance to fly at night). As time went on, the rules were relaxed even more.[59]

The reforms permitted SIGINT to focus its input at one geographical point – Monkey Mountain. This shortened the chain of organizations through which a warning had to pass and simplified the task of the SIGINTers in Southeast Asia. It did not, however, provide a direct link-up between SIGINT and the operations people. That necessary step would not come for another five years.

IRON HORSE

In 1967 the SIGINT system improved the speed of its support to air operations by a quantum leap. The creaky manual system, HAMMOCK, was replaced by *IRON HORSE*, a flashy new automated system which could deliver information in seconds rather than minutes. Designed by NSA, IRON HORSE simply linked the electronic output of an AG-22 intercept position, through a computer, to a radar scope. Instead of using a plot-tell system for calling aircraft positions to the TACC or CRC, the computer would convert the grid plot to a geographical coordinate and display it on a radar scope. An Air Force Security Service analyst carefully selected the plots that were sent to 7th AF. Those that were passed went into the BUIC II air defense computer at TACC/NS and were integrated with radar plots from the U.S. system. Plots from SIGINT that went to the CRC, Task Force 77, and the Marines had a unique signature that identified them as not derived from American radar. USAFSS put a team of SIGINT experts in the collocated TACC and called it the Support Coordination Advisory Team (SCAT) – in effect, a CSG to help 7th AF interpret the data. SCAT integrated manual Morse data as well as VHF reflections from the ACRP, the Navy's EC-121, and a variety of other sensors.[60]

IRON HORSE decreased throughput time from twelve to thirty minutes to anywhere from eight seconds to three minutes.[61] It was state-of-the-art and about as fast as Morse tracking could be displayed.



IRON HORSE consoles, USA-32

BIG LOOK

The introduction of SAMs into Vietnam complicated the air warning picture. Special airborne warning systems to detect the SAM-associated Fan Song radars were thwarted when the North Vietnamese introduced the tactic of putting the Fan Songs on lower power except when they went into a track and destroy mode. Navy engineers devised a counter for this, a system that could intercept and DF very low power signals. They mounted these systems on EC-121 airframes allocated to VQ-1 for fleet support. The ELINT crews came from the home squadron [redacted], while the four voice intercept operators were supplied by USN-27 at San Miguel, Philippines.[62]

E.O. 13526, section 1.4(c)

BIG LOOK was supplemented by WEE LOOK, an EA-3B fleet support aircraft outfitted with ELINT positions. WEE LOOK was also used for threat emitter warning. Although the EA3B was designed to operate from carriers, WEE LOOK did not because of aircraft weight. Like BIG LOOK, it launched from land bases.[63]

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Weather and SAR Warnings

One obscure but vital SIGINT contribution was weather. Early in the war, 7th AF flew weather reconnaissance missions prior to operational launches, but it was an Operational Security (OPSEC) nightmare. Weather reconnaissance was the surest indicator that the North Vietnamese could have that a strike was imminent.

In 1965 NRV proposed to 7th AF that USA-32 at Da Nang begin furnishing "special weather" information intercepted on North Vietnamese nets. Da Nang initiated a two-week test and within a month had become the sole source of COMINT-derived weather information on North Vietnam. Special weather was relayed to Task Force 77 as well as 7th AF, and an Air Force historian, with pardonable exaggeration, called this perhaps the "premier contribution" of SIGINT in Southeast Asia.[64]

When the Air Force and Navy began losing pilots over Vietnam, SIGINT was once more called in. A special program was designed for reporting indications (through VC or NVA communications) of downed pilot locations and capture attempts. The reports, called SONGBIRDs, were actually TACREPs, which went out at the noncodeword level to a wide group of organizations. Security Service averaged about ten SONGBIRD reports per month. There was very little feedback on SONGBIRD effectiveness, although one historian estimated that, because of the time required to translate the Vietnamese voice transmissions, most SONGBIRDs did not arrive in time.[65]

PURPLE DRAGON

> President Johnson . . . expressed concerns over the number of aircraft being lost on Rolling Thunder missions. Between January and September 1966, a total of 228 fixed-wing combat and support aircraft had been lost during missions against North Vietnam. The question in Washington was, did the enemy have prior warning of U.S. raids against North Vietnam? . . . The answer was yes, they did.
>
> Stephen J. Kelley in *PURPLE DRAGON: The Origin and Development of the United States OPSEC Program*

On Christmas Day 1969, a team of the First Infantry Division, on a sweep in Binh Duong Province near Saigon (part of Operation Touchdown), stumbled on an NVA COMINT unit. They captured twelve of the eighteen people assigned along with some 2,000 documents and the unit's intercept equipment. It was the COMINT "find" of the war.

NSA sent in a TAREX team to evaluate what the soldiers had found. The result confirmed an earlier, and generally ignored, Agency assessment – that the NVA employed 4,000 to 5,000 COMINTers and that this was their chief source of intelligence. Their intercept effort was targetted at ARVN and American communications, from which they could do fairly sophisticated traffic analysis, DF, and even some cryptanalysis. Brevity codes were especially vulnerable. But their main target was unenciphered tactical voice, and the easiest pickings were from the U.S. Air Force.[66]

It was obvious from studying the Touchdown material that NVA COMINTers were a source, probably *the* source, of predictive information on SAC Arc Light (B-52) strikes. But the Defense Department knew that already.[67]

E.O. 13526, section 1.4(c)

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The story had begun in 1965. NSA had uncovered a communications net supporting Chinese forces in Vietnam. [redacted] analysts noticed that some of the messages contained an unusual Morse character – a barred echo. They remembered that [redacted] used this character to flag uncommonly urgent messages. On a hunch, the division chief, [redacted] suggested that they might compare barred echo messages with Rolling Thunder operations. The result was a direct hit. The barred echo message appeared almost every time a Rolling Thunder mission was flown over the northeast quadrant of North Vietnam. The PRC appeared to be obtaining predictive alerts on 80–90 percent of the missions in the northeast quadrant.[68]

At about the same time, NSA found that ground control stations [redacted] were alerting air defense forces [redacted] as much as twenty-four hours in advance of SAC photo drone missions, called (at the time) Blue Springs. As a result, approximately 70 percent of the drones were being lost to hostile fire. A check of existing traffic showed

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that [redacted] had been issuing alerts on SAC reconnaissance missions as early as mid-1965, and on Arc Light strikes, by late 1965.[69]

NSA released its report in May 1966. The effect was immediate and dramatic. Within days, NSA analysts found themselves standing in the Pentagon briefing four-star generals. In August, after pulling together the full story (including indications of foreknowledge of SAC operations), General Marshall Carter briefed the JCS and, later in the month, the PFIAB.[70]

As a result, DIA was tasked to find the problems and correct them. The director, General Carroll, named Rear Admiral Donald M. (Mac) Showers to head the effort. Showers put together an interagency committee which included NSA, the JCS staff, and the SCAs. The group was divided into two subcommittees, counterintelligence and communications security.[71]

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The counterintelligence group quickly concluded that the problem was enemy infiltration, but they could come up with no good way to stem the outflow of information. The COMSEC committee concluded that communications were the problem and that they were probably closer to the truth. But in addition, the COMSEC group came up with a methodology for investigating the problem and plugging the holes.[72]

The COMSEC committee adopted a multidisciplinary methodology for looking at the problem in which all facets, including communications, would be studied. NSA had been working on the methodology for several years, and the Navy had already tried it with some success in surveying maritime operations in the Gulf of Tonkin (called Market Time).[73]

The committee also borrowed from a COMSEC study of Arc Light operations done in 1965, called the Guam Area Study. Although the Guam study looked at the communications of all three services, it concluded that most of the insecurities came from SAC communications. Traffic analysis of encrypted messages yielded much pre-operations information, including probable launch times. They also discovered voluminous plaintext voice by logistics people an hour before the launch. Finally, they

found that prestrike weather flights twenty hours before launch were dead giveaways (as they had been in World War II). In July 1966, Admiral Sharp (CINCPAC) ordered a broader COMSEC study of the problem, encompassing operations throughout the Pacific.[74]

The PURPLE DRAGON Task Force

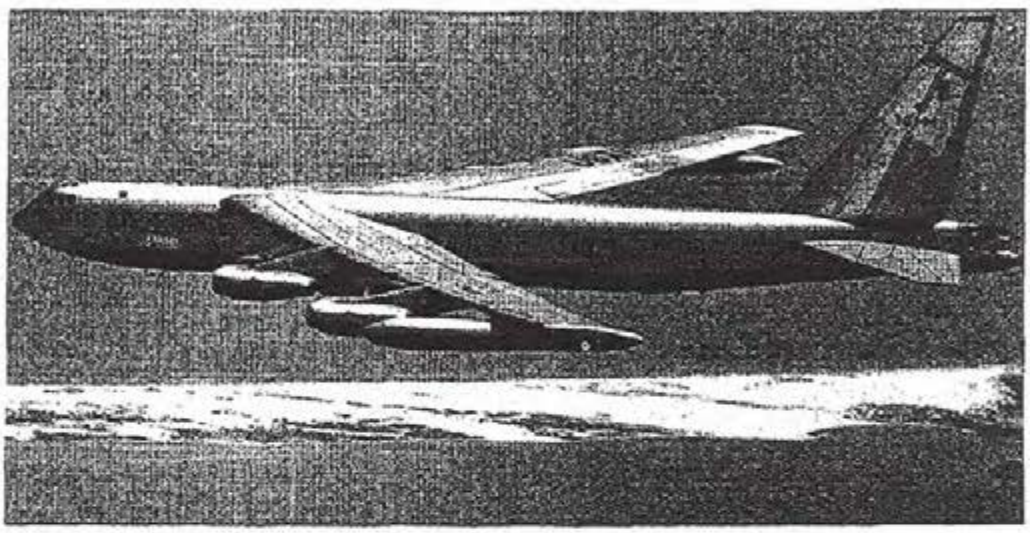
The CINCPAC and DIA studies joined in September. Sharp agreed to adopt the broader DIA multidisciplinary approach, and he named his J3 to head the effort. The new study, called PURPLE DRAGON, would encompass Rolling Thunder, Arc Light, and Blue Springs. Teams of experts would be dispatched throughout the theater. They would first interview all people involved in the three operations. They would then observe the operations, following that up with observations of support activities, including logistics and intelligence. They would build a database for their information and would build three profiles: operations, communications, and counterintelligence. An NSA person, Robert Fisher, served on the CINCPAC PURPLE DRAGON staff, and there was heavy infusion from the SCAs, primarily for COMSEC monitoring.[75]

The first PURPLE DRAGON study concluded in April 1967. It had a big impact on operations in Southeast Asia, none more significant than Blue Springs. They discovered that the major leak was the encrypted single sideband messages from Bien Hoa to Da Nang prior to every mission. Using traffic analysis of that link alone, the team was able to predict eighteen of the twenty-four missions. As an almost direct result of introducing communications security on the link, drone recovery increased from 35 percent to 70 percent by November 1977.[76]

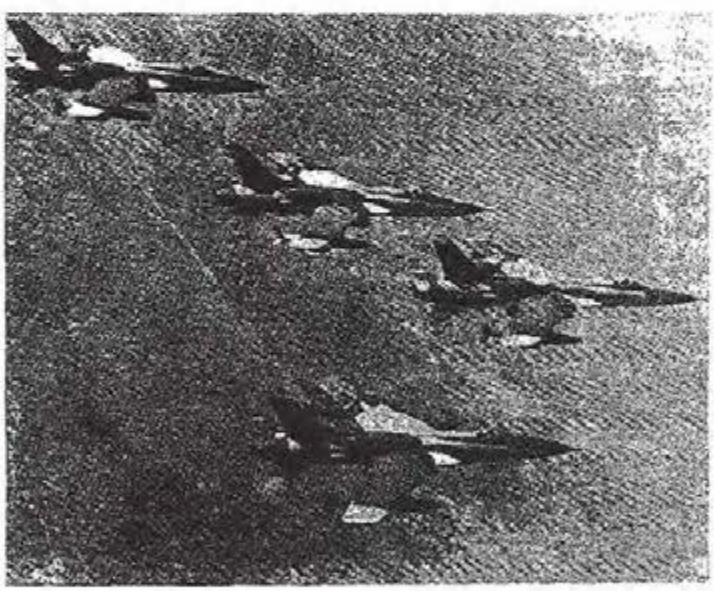
Arc Light was much more complex and harder to solve. One of the main culprits proved to be the information fed to the Manila and Saigon air control centers. This information was released all over Southeast Asia as NOTAMs (Notice to Airmen) giving flight routes, altitude reservations, and the estimated time of arrival at Point Juliette, the aerial refueling spot, hours in advance of the mission. SAC tightened up by curtailing much of the information in the NOTAMs and by delaying that which was passed until a time closer to takeoff.[77]

MACV had been passing warnings to villagers in the targetted area. This procedure was modified by simply declaring certain areas as free fire zones and discontinuing the advance notification program.[78]

Of the three, Rolling Thunder was the most difficult to plug. PURPLE DRAGON investigators found that many of the enemy's sources of warning consisted of tactical information obtained after the planes were launched. They determined that between 80 and 90 percent of the missions were being alerted, with an average warning time of thirty minutes for Navy missions off the carriers and forty-five minutes for Air Force missions



B-52



Air Force F-105 fighter-bombers on a Rolling Thunder mission

from airfields in South Vietnam. EB-66s accompanied many of the missions (those expecting hostile fire in particular), and those aircraft used distinctive callsigns. Rolling Thunder frag (read "operations") orders were distributed to 120 different organizations, and those in turn often issued information that could be tied to the takeoff of bombing missions. MACV cut down on the number of organizations getting gratuitous copies of the operations orders, and the Air Force changed callsigns for some of their operations.[79]

Much of what needed to be done simply could not be because of outside factors. MACV never did alter stereotyped operations (such as takeoff times, refueling points, and ingress routes) sufficiently to confuse the North Vietnamese. Tanker operations remained highly stereotyped throughout the war and in fact represented the most vulnerable aspect of Rolling Thunder.[80]

The Permanent Staff

Following the initial blush of success, Admiral Sharp made a permanent place on his staff for the PURPLE DRAGON operation. He placed it in the J3 (operations) directorate, and NSA assigned a permanent representative (once again, Robert Fisher).[81]

There was obviously a need to educate people about the concept and about the methodology and specific information that PURPLE DRAGON uncovered. This generated the first worldwide OPSEC conference, hosted by DIA at Arlington Hall Station in May 1968. Following the conference, General Wheeler directed that all Unified and Specified commands establish OPSEC organizations. He also created an OPSEC organization on the Joint Staff. Meanwhile, OPSEC conferences continued annually and helped to focus activity for the U&S commands. Cryptology continued to be a major player, and in 1988 NSA was given the job of worldwide OPSEC training under the newly published NSDD (National Security Decision Directive) 298.[82]

The OPSEC concept in use in the defense department of the 1990s was largely an outgrowth of the PURPLE DRAGON study. It was a significant factor in prosecuting the air war in Vietnam, although neither it, nor anything else the United States tried in Vietnam, was a panacea. The CINCPAC OPSEC team would periodically resurvey operations in Southeast Asia, and they found that, as the U.S. tightened up procedures, the North Vietnamese would find another leak, and their warning time would float back up to where it had been. Like cryptology in general, OPSEC proved to be a constant struggle to stay ahead.[83]

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3. Goldman, 404; Karnow, 415.
4. Karnow, 415–18.
5. Karnow, 420–22.
6. CCH Series VI.HH.15.1.
7. Karnow, 479–80; CCH Series VI.HH.15.1 & 2.
8. CCH Series VI.HH.15.1 & 2.
9. CCH Series VI.HH.15.1.
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13. Thomas N. Thompson, [redacted] and William D. Gerhard, *SIGINT Applications in U.S. Air Operations, Part I: Collecting the Enemy's Signals*, Cryptologic History Series, Southeast Asia (Ft. Meade: NSA, 1972).
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16. Thompson et al., *SIGINT Applications . . .*, VI.HH.11.3.
17. CCH Series VI.HH.12.1.
18. CCH Series VI.HH.12.2.
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20. CCH Series VI.HH.15.12.2; ESC oral interview with [redacted], San Antonio, Tx, 1 Aug 1986.
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39. CCH Series VI.HH.15.1.

40. Thompson, et al., *SIGINT Applications. . . .*

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Chapter 13
The Withdrawal

THE TET OFFENSIVE

> Americans do not like long, inconclusive wars – and this is going to be a long, inconclusive war. Thus we are sure to win in the end.
>
> Pham Van Dong, North Vietnam's chief negotiator at the Paris peace talks

In Vietnamese history there are many Tets. Like the American Christmas, the lunar New Year holiday is celebrated every year – one of the big events in the timeless cycle of Southeast Asian civilization.

In American history there is only one Tet. It has become a synonym for defeat and withdrawal, the beginning of the great unraveling of American power in the region. Like many symbols, the characterization is desperately inaccurate in the military and cryptologic senses, but generally true from the political perspective. That is why Tet 1968 symbolizes the deep fissures about Vietnam within American society.

The Planning

It has become generally recognized that the communist strategy in Tet was to mount a sudden, massive assault, forcing the Americans to recognize the instability of their alliance with the South Vietnamese government and to realize the difficulty of ejecting the communists from their own country. It was to drive home to the Americans the long-range impossibility of surmounting a determined adversary on his own soil. Some say that it was a one-shot affair, but the weight of evidence is against it. Although the North Vietnamese leaders did call for a popular uprising against the Thieu government, there was no sense that, if it failed, they had come to the end. They would simply continue the struggle. Just as there would be lunar new years into the trackless future, there would be other times and other Tets.

The tactic of Tet was to divert American attention to border areas, while building for a major assault on the urban populations. To do this, the North Vietnamese would have to mount a major dry season offensive. By attacking in outlying provinces, Giap, the Vietnamese general, sought to make them magnets for American units, then hit the unguarded cities. He aimed for surprise, but he was confronted with the extreme difficulty of readying so many people for such a herculean task without alerting the enemy.

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The Beginnings

The winter-spring offensive began, it is now believed, in September 1967 with a surprise attack on a small Marine fire base located on a barren hill south of the DMZ near the town of Con Thien. Westmoreland was delighted that the North Vietnamese appeared at last to be mounting major unit-level assaults. To defend Con Thien, he called in B-52 strikes, artillery, tactical air bombardment – anything at hand. Con Thien held.[1]

The next attack was planned for Dak To, a provincial town northwest of Pleiku in the Central Highlands. But this time it was not a surprise. On 20 October the ASA station at Pleiku picked up indications that the B3 Front had sent a detached element toward Dak To, and two other NVA divisional organizations appeared to be concentrating in the Dak To area. Three days later [redacted] referred to "combat reconnaissance," an almost certain indicator of offensive action. Dak To was immediately reinforced. Aerial bombing in the area of an ARDF fix brought secondary explosions, and American units air-assaulted a hill near the town, encountering heavy enemy resistance. The resulting battle was one of the biggest of the war. It came to involve nine American battalions, an airborne brigade, and over 2,000 air sorties. Roughly 1,600 NVA troops were killed by ground action, and 500 more by aerial bombardment.[2]

SIGINT picked up other indicators of major developments. In Nam Bo, the southern part of the country, changes to signal plans, accompanied by military reorganizations, long-distance unit moves, and the use of tactical signal plans appeared to presage some larger, undefined development.[3]

The SIGINT indicators were accompanied by similar indications in captured documents and rallier interrogations. Something was afoot, and U.S. military authorities in Saigon had divined it by early January 1968. On the 7th, Westmoreland cabled the White House that

> We think that the enemy made a major decision in September 1967 to launch an all-out effort to alter the course of the war . . . the Winter-Spring campaign which began in late October is offensive in nature and exhibits a disregard for casualties heretofore unseen. It calls for continuous military offensives by large and small units, and concurrent political efforts to stir up popular revolt against the GVN [Government of South Vietnam].[4]

But then, in one of the most infamous miscalculations in American military history, Westmoreland focused his attention on the border areas. There, he believed, was where the major blow would fall, with attacks in the cities serving primarily as a diversion to military assaults on the exposed periphery.

His assessment was supported by SIGINT indicators of a major buildup in the Central Highlands (witness the assault on Dak To and the significant NVA concentrations still in that area) and far to the north, in Quang Tri Province. One of his area commanders, General Fredrick Weyand, did predict on 10 January that the main assault would come in the urban areas. Weyand was in charge of III CTZ (III Corp Tactical Zone), which included Saigon, so his warnings seemed to have something to do with his own responsibilities. Westmoreland did not disagree with him; indeed, he made major changes in his defensive and offensive deployments to support Weyand's defense of the Saigon area. Still, Westmoreland continued to be concerned primarily about the north and west.[5]

Khe Sanh

The largest diversion was at Khe Sanh. Located on the Khe Sanh Plateau in Quang Tri, the northernmost province of South Vietnam, Khe Sanh was a key point if one were to defend the area immediately south of the DMZ. Located astride major transportation links in the interior, some distance from the coast, it bore a superficial resemblance to Dien Bien Phu.

Beginning in November 1967, SIGINT began tracking the concentration of NVA units in the Khe Sanh area. Two divisions began moving from the North into South Vietnam, the first time two NVA divisions had ever moved simultaneously. This caught everyone's attention and clearly pointed to Khe Sanh as the major battleground for the upcoming offensive. Everyone believed it, most of all Westmoreland. He began building up forces at Khe Sanh in anticipation. Westmoreland believed that Khe Sanh was to be the Dien Bien Phu of the American war, but this time the result would be reversed.[6]

The assault on Khe Sanh began on 21 January and did not end until April. It was defended by the Marines, assisted by a small Marine SIGINT detachment ranging from fourteen to twenty-four men. The Marine detachment had HF Morse, LLVI, short-range direction finding (SRDF), and access to the entire SIGINT system. This included ARDF support from the Air Force (EC-47s from two different programs) and links to the NSG detachment at Da Nang. Technical support was provided from USM-808 at Pleiku, which was collection management authority for the northern area. In addition, the ARVN had a small SIGINT detachment at Khe Sanh which was duplicating what the Marines were doing. When this was discovered, the American and ARVN SIGINT units were physically combined, and the ARVN were employed as linguists to transcribe tapes.[7]

The amalgamation was successful, and Khe Sanh became one of the greatest SIGINT success stories ever. The ground unit intercepted NVA artillery firing orders in time for the Marines to get under cover. They also collected ground assault orders, and one participant estimated that SIGINT predicted some 90 percent of all ground assaults during the siege.[8]

Hovering ARDF aircraft passed fixes on NVA units, and artillery fire from Khe Sanh was mostly directed from this source. Under good conditions, the elapsed time between obtaining a fix and "shells-in-the-air" was about ten minutes. At one point ARDF located Hanoi's forward command element for the Khe Sanh action, and tactical air strikes virtually obliterated it. COMINT was either the sole source of targetting information (30 percent of the time) or was married with other sources to produce what 7th AF intelligence chief, Major General George Keegan, characterized as the "best target database in the history [of the war]."[9]

Khe Sanh cost the North Vietnamese about 10,000 killed, as opposed to 500 Marines dead.[10] The level of effort at Khe Sanh, the time period it encompassed, and the casualties the North Vietnamese were willing to endure indicate that it was a military objective that stood on its own. Otherwise, Giap would have broken off the encounter far earlier.

NSA and the Impending Storm

By mid-January, NSA analysts were becoming concerned by NVA communications trends. This agitation began to show up in items in the Southeast Asia SIGINT Summary. One after another, the indications of a major assault bobbed to the surface. Never before had the indicators been so ubiquitous and unmistakable. A storm was about to break over South Vietnam.[11]

Then on 25 January, NSA published a baldly predictive report. Titled "Coordinated Vietnamese Communist Offensive Evidenced in South Vietnam," it began in unambiguous language:

> During the past week, SIGINT has provided evidence of a coordinated attack to occur in the near future in several areas of South Vietnam. While the bulk of SIGINT evidence indicates the most critical areas to be in the northern half of the country, there is some additional evidence that Communist units in Nam Bo may also be involved. The major target areas of enemy offensive operations include the Western Highlands, the coastal provinces of Military Region (MR) 5, and the Khe Sanh and Hue areas.

Details were most profuse in the northern areas, while Nam Bo got relatively short shrift. This appears to have been because SIGINT was more voluminous in the north, rather than an attempt to steer the reader toward the idea that the north would be the major objective. American SIGINT attention had always been focused on the northern provinces, where the largest concentration of American troops was. Moreover, like the party organization itself, communist communications structures in the south had always been looser and less susceptible to intercept and analysis.[12]

The report was succeeded by a series of follow-ups providing additional details as they unfolded. The reports grabbed a lot of attention at MACV, and by all accounts, deeply influenced Westmoreland's counterassault strategy. He continued to beef up American

units in the north and the Central Highlands. He also cabled the White House to recommend cancellation of the Tet truce which was scheduled to take effect for the duration of the holidays. He got a reduction in the number of days, but the truce itself was in effect when the offensive began. According to political scientist James Wirtz, the failure of the Johnson administration to cancel the truce in the face of overwhelming evidence that a conflagration was imminent was one of the major miscalculations of the war.[13]

SIGINT product reports began referring to "N-day" and "G-hour," never-before-seen terms which seemed to refer to attacks of unprecedented magnitude. On 28 January, an NSA product report detailed the N-day for the Central Highlands – it was 0300 (local) on 30 January. The commonality of terms throughout the country clearly pointed to massive, coordinated attacks. (This was the first of the NSA report series to be addressed to the White House.)

MACV was ready, but the ARVN were not. They took the Tet holidays quite seriously, and when the blow fell, were generally in a holiday mood and a holiday deployment. The White House, too, seemed unprepared for what was about to happen. There was no mood of crisis at 1600 Pennsylvania Avenue.[14]

The Storm

The difficulty of coordinating such an unprecedented offensive proved insurmountable for the NVA. Some units in the Central Highlands attacked a day early, on 29 January. Pleiku and Kontum City, as well as smaller provincial towns, were assaulted in the early morning hours, and the attackers were not finally thrown back until four days had passed.[15]

The blow fell on the rest of the country twenty-four hours later. The coastal areas were hammered with coordinated attacks on 30 January. The major provincial capital of Nha Trang was occupied by the NVA for several days before being ejected with heavy losses. Quang Tri City was also attacked, but the most devastating blow fell on Hue. On 30 January, ARDF showed major NVA units clustering outside the city, and the next day the forces stormed into the city. American Marines finally completed the retaking of Hue on 24 February after a bloody struggle that left more than 2,000 NVA dead. The North Vietnamese captured and executed many of the leading politicians in the city, a tactic which caused them so much ill will that they pointedly avoided it in 1975. More than 3,000 civilian corpses were exhumed after the battle. It was one of the sorriest episodes of the war.[16]

In the III Corps area (including the Saigon environs), attacks opened on 31 January. The largest assaults were against Saigon and the Bien Hoa-Long Binh complex, but attacks also included Tay Ninh City, An Loc, and many others. Vietnamese Communist forces entered Cholon (the old Chinese quarter) from the west, and a sapper battalion

assaulted the presidential palace and the American embassy. Though costly and unsuccessful, these attacks produced camera footage that horrified a nation and undoubtedly produced the turning point in American attitudes that Giap was after.[17]

The Assessments

The postmortems began even before the last NVA troops were routed from Hue and Saigon. CIA put together a study group, at PFIAB request, which included representatives from NSA and all the other Washington area agencies. Maxwell Taylor, the new PFIAB chair, requested that the DCI "ascertain to what extent, if any, our intelligence services and those of our allies were at fault in failing to alert our military and political leaders of the impending large-scale attack on the cities and towns of South Vietnam."[18]

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The resulting study stated that E.O. 13526, section 1.4(c)

> . . . communications intelligence was able to provide clear warning that attacks, probably on a larger scale than ever before, were in the offing. Considerable numbers of [redacted] enemy messages were read. These messages appeared in many areas of South Vietnam. They included references to impending attacks, more widespread and numerous than seen before. Moreover, they indicated a sense of urgency, along with an emphasis on thorough planning and secrecy not previously seen in such communications. . . . The indicators, however, were not sufficient to predict the exact timing of the attack.[19]

Aside from the last statement (invalidated by the N-day, G-hour warning that NSA issued on 28 January), the DCI assessment seemed pretty accurate. COMINT did indeed serve as the main predictive element in the intelligence puzzle preceding Tet. The sense of foreboding that cryptologists felt throughout January 1968 was transferred to MACV and Westmoreland's staff.

That was about as good a prediction as could have been advanced. There was no precedent for the scope and ferocity of Tet, because it was a unique event in the war. But the military authorities in Saigon were as ready as they could have been under the circumstances.

The sense of urgency did not appear to have penetrated the White House. This was unusual in Lyndon Johnson's administration. He and his staff were avid consumers of intelligence in general and SIGINT in particular. But they did not seem to have been ready.

What SIGINT was criticized for was not the fault of the cryptologists. Owing to the concentration of SIGINT resources on the central and northern parts of the country, and to the historical ineffectiveness of SIGINT in the south, the product reporting drew the customer toward the northern and border areas. There were fewer SIGINT indicators in the south, and SIGINT cannot report what it does not hear.

What occurred was a phenomenon that became famous after the Battle of the Bulge in World War II. SIGINT had only part of the picture, and intelligence analysts relied too heavily on the single source. In hindsight, it is clear that too little attempt was made to flesh out the rest of the picture through rallier interrogations, captured documents, and the like. SIGINT became the victim of its own success. The lesson was a moral in all-source analysis.

In a far greater sense, however, it did not really matter. Westmoreland was ready for the major attacks, and he successfully countered them. The NVA lost 30,000 dead, an immense military blow from which it recovered very slowly. The structure of the VC insurgency in the south was shattered forever.

The White House, however, had the job of countering the political blows. It did a poor job of it, and the sense of panic and disorganization was palpable.

THE WAR IS VIETNAMIZED

> In the previous administration, we Americanized the war; in this administration, we are Vietnamizing the search for peace....
>
> Richard Nixon, 1969

The President Pulls Out

Following Tet, the Pentagon decided that the time to win the war was now or never. General Wheeler, chairman of the JCS, sent Johnson a request for 206,000 more troops. This demand created a crisis within the Johnson administration's inner circle. It would require the call-up of reserves and would place the American people on an all or nothing track in Southeast Asia.[20]

Clark Clifford, the new secretary of defense, suggested that he form a group which had become known as the "Wise Men," long-time advisors to Democratic presidents. Reporting in March, ten out of the fourteen recommended against an increase in troop strength, and many felt it was time to begin a gradual disengagement.[21]

The Wheeler troop demands, and the resulting debates within the Johnson administration, leaked to the press. The story played all through March, and toward the end of the month Robert Kennedy announced his candidacy for president. Johnson announced that he would go on television March 31 to make an announcement.[22]

In a historic speech delivered to television viewers from the Oval Office, Johnson announced a halt to the bombing above the 20th parallel and the beginning of formal negotiations with the North Vietnamese. Long-time Democratic stalwart Averell

Harriman was named to head the negotiating team. And in a surprise announcement at the end of the speech, the president stated that he would not run again in 1968.[23]

For Americans, the war was only half over from a chronological standpoint, and more American soldiers were killed after Tet than before it. But the 31 March speech began a new phase. The United States was beginning a military withdrawal and would henceforth rely on negotiations to reach a peace accord.[24]

Vietnamization

Almost immediately, the JCS set to work on a plan to gradually turn over military operations to the ARVN. When President Nixon took over, with the avowed goal of Vietnamizing the war, the JCS was already moving in that direction.

A formal plan to support Nixon's version of Vietnamization was first drafted in late 1969, following his Vietnamization speech. Called JCSM 42-70, it contained a cryptologic tab written by NSA in collaboration with the SCAs. It was coordinated with the Vietnamese SIGINT service (then called the SSTB, or Special Security Technical Branch), but it was never offered for the approval or disapproval of the South Vietnamese government.[25]

NSA planned to turn over much of the SIGINT mission to the SSTB. In order to do this, it would be necessary to both augment its numbers and increase its competence. It had a long-range goal: "The RVNAF eventually will be capable of providing COMINT in satisfaction of its military requirements generated by the ground war in RVN."[26]

At the time, SSTB consisted of about 1,000 people, three fixed sites (Saigon, Can Tho, and Da Nang), a small ARDF effort using U-6s, and a four-station DF net. It had no ELINT mission. It had plans for a major expansion of its tactical capability, modeled after the ASA DSU concept, but as yet only one of the ten planned units was in existence.[27]

Richard M. Nixon

In 1970, at the inception of the Vietnamization program, Admiral Gayler characterized the organization as "fairly effective" but in need of certain managerial and technical improvements. The ARDF effort was "considerably less than satisfactory" and the medium-range direction finding (MRDF) net was "not accurate." Still, he concluded that "it is considered feasible for RVNAF to be able within the next three years to cover all Vietnamese Communist communications. . . ." Gayler felt the job was difficult but doable.[28]

The South Vietnamese SIGINT system had been headed by General Pham Van Nhon since 1963. Nhon was considered by CIA to be a strong point, especially in the area of security. He ran a "tight ship," according to a CIA evaluation, and as a result, the SIGINT organization was a bulwark of security, especially when compared with the porous South Vietnamese government. Nhon reported directly to the J7 element of the ARVN Joint General Staff. COMINT was considered to be highly sensitive, and SIGINT matters would sometimes wind up in President Thieu's office.[29]

To support the Vietnamese military structure as NSA understood it in 1970, SSTB strength would have to climb from about 1,000 to approximately 1,500 bodies. It would add one fixed site at Pleiku, collocated with the ASA unit there. This would bring the SSTB fixed sites to a total of four: Saigon, Can Tho, Da Nang, and Pleiku. In places like Can Tho, SSTB operators would sit side by side with ASA operators in order to enhance training.[30]

NSA maintained overall control of Vietnamization and established the training plan. NSA instructors taught some of the higher-level training courses, but the execution of the plan was decentralized. ASA and AFSS both got major training responsibilities.[31]

ASA was given responsibility for training the SSTB ground COMINT effort, including the ten tactical units. A team of advisors was attached to each of the units, called DARR (Division) and CARR (Corps) Advisory Radio Research units.[32] Regarding ARDF, NSA decided to turn over twenty EC-47 ARDF aircraft to the ARVN. Thus, to AFSS would fall the responsibility for ARDF training.[33]

Vietnamese SIGINT communications security had to be improved. NSA initiated Project LACEBARK, which would upgrade crypto gear. The new COMINT network would internet the four fixed sites, EC-47 unit, and the tactical units.[34]

This was part of a larger project to upgrade South Vietnamese military communications in general. NSA intended to get rid of the obsolete Python tape system. The KL-7 off-line crypto equipment would be provided to RVNAF crypto nets. M-209s, of World War II vintage, affording minimal security, would be provided to the National Military Police, while NESTOR secure voice equipment would be provided to selected RVNAF combat units.[35]

E.O. 13526, section 1.4(d)

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Vietnamese operators in training

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

DOCID: 523682 REF ID:A523682

Nixon did not wait to see the results of the Vietnamization program. In March 1970 he announced a phased withdrawal of 150,000 U.S. troops over the course of the next year, despite the anguished protests of General Abrams, who had succeeded Westmoreland at MACV. The next year the president ordered the removal of another 100,000, and this continued until, by the beginning of the 1972 Easter Offensive, there were only 95,000 American troops in Vietnam, of whom only 6,000 were combat troops.[36]

This rapid withdrawal schedule was not reflected in the SIGINT plan. The 1970 cryptologic Vietnamization plan showed a phasedown from 8,500 cryptologic spaces in Vietnam in 1970, to 6,654 in 1973. The secretary of defense commented to the JCS that the cryptologic levels did not seem in concert with the president's ideas about the pace of Vietnamization. It became characteristic of the cryptologic posture that it trailed rather badly behind the removal of combat troops. This undoubtedly reflected the long lead time required to get SSTB up to speed, in people, equipment, and expertise. Despite Admiral Gayler's initial guarded optimism, NSA and the SCA's all expressed ambivalence about the long-range capability of SSTB to do the job.[37]

American Special Operations

The slowness of the cryptologists to depart was reflected in the continuing vitality of American SIGINT operations in the theater. One manifestation was SIGINT support for Task Force Alpha. E.O. 13526, section 1.4(c)

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Task Force Alpha, or TFA, was organized by 7th AF in the spring of 1968 and positioned at [redacted]. Its mission was to gather NVA infiltration data from such sources as IGLOO WHITE (the electronic sensor system in Laos) and SIGINT. A primary source was infiltration communications collected by the RC-135 in the Gulf of Tonkin. This information was downlinked in near-real-time to a special USAFSS unit collocated with TFA. This unit also had available SIGINT collected by EC-47s from the ARDF unit, as well as information from USM-7 at Ramasun Station.[38]

Task Force Alpha, with its unexcelled access to the key intelligence systems targetted on the Trail network, was very successful. In the summer of 1968 it even directed aerial bombardment of the Trail. Although this authority was pulled back to Tan Son Nhut at the end of the summer, the long-range effect on the cryptologic community in the theater was considerable. It began a shift of cryptologic operations into Thailand and an increased focus on using SIGINT to try to choke off infiltration, rather than on supporting American ground combat forces. It was in line with the direction that the war was going.[39]

Another special operation was COLLEGE EYE, an EC-121 that flew out of Korat, Thailand. COLLEGE EYE was an airborne radar station that was used to extend American radar coverage farther north. It was also used as a communications relay so that Monkey Mountain could still talk with its aircraft outside VHF communications range.[40]

Aboard the COLLEGE EYE aircraft were four SIGINT positions, codenamed RIVET GYM. Manned by USAFSS, the positions were used for COMINT tactical voice intercept. SIGINT was passed directly to the on-board controller, who correlated it with the information that he got off his radar scope. Thus he knew not only where the North Vietnamese fighters were, but what they were saying to their ground controller.[41]

In the Gulf, the Navy was going its own way on SIGINT. The larger vessels had small afloat detachments for direct SIGINT support. Among other things, they all copied North Vietnamese Air Defense nets, both radar tracking and VHF air/ground voice, to provide support to Task Force 77 air operations. At any given time there were four or five such detachments, each operating independently.[42]

In 1969 the detachments were internetted under a project called CHARGER HORSE. Through the net they began exchanging information. This allowed them to divide up the responsibility for air defense monitoring so that they weren't all copying the same nets, and to intercept lower level NVA air defense communications to reduce the lag time by several minutes. The information, which included both air defense tracking (considered sanitizable) and VHF voice (not sanitizable), was exchanged over the Naval Tactical Data System.

A second naval operation was called FACTOR, which was an attempt to use SIGINT to stop North Vietnamese maritime infiltration. It had a long history behind it.

FACTOR's story stretched back to 1962. In November of that year NSG first isolated a communications net that supported NVN maritime infiltration. The North Vietnamese called it Group 125, and its mission was to load war material aboard steel-hulled trawlers and run them down the coast to South Vietnam. The trawlers would stand off in international waters until they felt they were not being watched, then dart into the coast to unload the goods.

At the time the cryptologic community was simply following the operation in SIGINT; no attempt was being made to tip off any counterinfiltration operations. But the longer they listened, the less activity they intercepted, and by July 1966 they had completely lost continuity on Group 125 communications. NSA suspected that the vessels had been diverted to other operations, particularly escorting combat vessels to and from China.

After the 1968 bombing halt, Group 125 went back to maritime infiltration, and by November 1968 NSA had again isolated communications from a net that eventually proved to be continuity of Group 125. By 1970 maritime infiltration represented a significant problem, and NSA decided to see what it could do about designing a SIGINT tip-off system. A special position was designed under a new project, called FACTOR. The equipment maximized intercept of ground waves from the frequency range used by the trawlers, the equipment was sent to Cam Ranh Bay, and from there it was loaded aboard two P-3s being used for "Market Time," an interdiction operation.

Success was immediate, and the P-3s intercepted trawler communications on their first mission. NSA designed a tip-off system to flash the intercepts to Market Time operations. A CIA assessment later in the year waxed poetic about the success that Market Time was having, at least partly a result of improved SIGINT support.[43]

The Cambodian Incursion

In the long story of the Vietnam War, one military foray stands virtually alone in the extent and consequences of its failure. The Cambodian incursion was an unmitigated disaster.

The seeds of that failure were in the unstable political situation in Cambodia. The Cambodian leader, Prince Norodom Sihanouk, had lacked the political and military will to keep out NVA forces, which used the eastern section of his country virtually at will as a logistics and infiltration base. In March 1970, his chief lieutenant, General Lon Nol, and a coterie of his Army supporters overthrew him.[44]

While all this was going on, Richard Nixon was considering what to do about NVA domination of sanctuary areas in Cambodia. In February 1970 he authorized a secret bombing campaign which would target NVA base areas in Cambodia.[45] Although supposedly secret, the bombing became known to many American correspondents in Vietnam. In May a *New York Times* reporter, William Beecher, officially revealed it. Nixon's reaction was rage, and he directed that the source of the "leak" be discovered. He ordered wiretaps on suspected journalists and eventually on White House staff members. Thus began a pattern of White House paranoia which led eventually to Watergate. It started with Cambodia.

The pro-Western Lon Nol was no sooner in power than he launched his own campaign to evict the NVA and VC from Cambodian soil, and this was followed by a plea for aid from abroad.[46] The White House responded almost immediately, announcing in late April that the U.S. would provide military supplies and advisors to the new Cambodian government.[47]

On 30 April Nixon announced to a stunned American public that American troops had crossed the border into Cambodia in hot pursuit of NVA forces. The press denounced the move as a virtual renunciation of peace talks begun earlier by President Johnson. Demonstrations erupted, and on 4 May panicked National Guardsmen fired into a group of students at Kent State University.[48]

The incursion took three directions: one in the Central Highlands (Binh Tay, Peace in the West), another in the central border area around the Fishhook and the Parrot's Beak (Toan Thong, Total Victory), and the third in the Delta area (Cuu Long, Mekong River). American forces were heavily involved in the first two, but the only support rendered to ARVN in the Delta was riverine.[49]

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The SIGINT capability against Cambodia was good. [redacted] Collection was done from a disparate group of sites ranging from ASA sites at Ramasun Station and Pleiku to [redacted]. USM-7 at Ramasun was the principal in-theater processing site.[50]

Unfortunately, the planning for the incursion excluded the SIGINT system, allegedly for security reasons. The first word came to ASA lieutenant colonel James Freeze, commander of ASA's 303rd RRB at Long Binh. Freeze was tipped off on 28 April only two days before the operation began, by the G2 of II Field Force Vietnam (FFV).[51]

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This began a frantic few days of planning and assembling resources. Ultimately, an extensive network of ASA DSUs deployed, including sixteen intercept teams and various higher-level organizations. Low-level voice intercept was of greatest value, but Morse proved almost worthless. [redacted]. ASA instituted a complicated courier service which included helicopters to get the traffic back to Quan Loi, where it could be forwarded electrically to Bien Hoa. In June, ASA deployed a team (with the interesting title RATRACE) to Quan Loi to process the take and return it to the units in Cambodia. This eliminated the requirement to get the material back to Bien Hoa.[52]

The most famous (or infamous) event of the incursion was the attempt to "get COSVN." Long known as the Central Office, South Vietnam, COSVN served as the VC/NVA headquarters in the south. Situated just across the border from Tay Ninh province, its location was fixed daily by ARDF. It moved occasionally, usually to get out of the way of B-52 strikes (which, as we know, were predicted with great accuracy by the NVA intelligence people), and repeated air strikes over the years had never succeeded in doing any effective damage.[53]

Creighton Abrams wanted to "get COSVN." He had the ARDF fixes, and now he had the authorization to invade Cambodia. The timing seemed right. Whether the attack on COSVN was a primary objective of the incursion or an afterthought is no longer clear. But the press got hold of the COSVN story, and it became common knowledge to the American

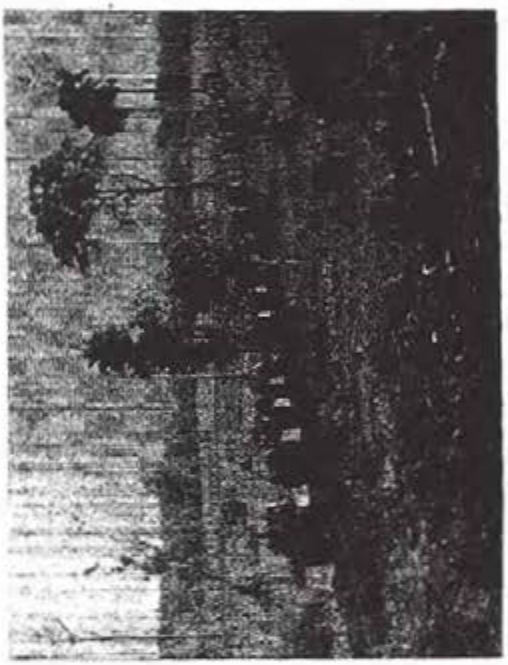
people. At that point, pressure from MACV to locate and overrun (or at least bomb) COSVN became considerable.[54]

SIGINT was mobilized. Ground positions placed COSVN communications on cast-iron coverage. ARDF flights over Tay Ninh and eastern Cambodia darkened the skies. But the military system moved too slowly. COSVN was able to evade every B-52 strike and every ground maneuver. Abrams complained that he could have gotten COSVN had he not been forced to use the slow-moving ARVN 5th Division instead of an American unit.[55]

But the fact was that MACV still did not fully understand the vagaries of SIGINT. SIGINT advisors explained again and again that they were only fixing an antenna and that the transmitter, to say nothing of the headquarters itself, could be miles away. Moreover, the military targetting system seemed inflexible – SIGINT reports that COSVN had pulled up stakes from location A and was now at location B were not enough to get a strike cancelled or diverted. American bombs tore up miles of jungle, and ARVN troops floundered through a trackless quagmire of Cambodia in pursuit of COSVN. They never caught up with the headquarters, which moved safely to central Cambodia ahead of the advancing Allies.[56]

The best they ever did was to capture supplies. In early May, an ARDF fix located a base area of COSVN known as "The City" because of the extensive logistics depot suspected to exist there. Acting on this intelligence, an ARVN unit struck the complex and captured a vast store of material. It was enough to set back NVA offensive plans for a definable period of time. But it wasn't COSVN.[57]

The incursion was a limited military success. American and ARVN troops proved capable of capturing any territory that they really wanted. But the long-range results were disastrous. The U.S./ARVN forces drove the NVA deep into Cambodia, where the NVA set up shop. By mid-May the major Cambodian provincial capital (and choke point on the Mekong) of Stung Treng fell, and within a month the NVA held every province in northeast Cambodia. Using this as a base of operations, their Khmer Rouge communist allies began an offensive against the Lon Nol government which ultimately led to the fall of Phnom Penh in April 1975, and began the great Pol Pot reign of terror. Few operations in American military history had such dismal consequences.



The 25th Infantry Division heads into Cambodia, May 1970.

~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY~~
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Lam Son 719

By early 1971 Creighton Abrams was becoming concerned about evidence pointing to a major NVA offensive during the 1972 dry season. The administration, as well, was concerned about the political consequences of a possible ARVN defeat so close to the November 1972 elections. Thus originated Lam Son 719, an attempt to invade Laos and disrupt the NVA logistics system that was being used to funnel record numbers of troops and supplies into South Vietnam.[58]

As the Americans had correctly judged NVA plans, so too the NVA intelligence system sniffed out the American and ARVN plans for a preemptive strike. As early as October 1971, NSA reported that NVA communications were showing a heightened concern for the area that the ARVN planned to invade. Through November and December, NSA reporting showed increased NVA defensive measures along the Trail. Moreover, SIGINT was showing increased infiltration into the areas targetted for invasion.[59]

Lam Son 719 was another disaster. The ARVN troops fought through to their major objective of Tchepone in Laos, but the going had been very tough and the troops were exhausted. Moreover, there was nothing remaining in Tchepone for them to take possession of. In the end they simply retreated. The retreat became a rout as large-scale NVA forces (shown by SIGINT to be massing for a counterattack) descended on unprotected elements of the retreating army.[60]

SIGINT showed once again how flexible the Trail system had become. As the NVA lost sections of the Trail, it simply diverted shipments to other sections not under ARVN control. In the end, Lam Son 719 scarcely interrupted the flow, and the NVA spring offensive of 1972 went off with hardly a hitch.

The Son Tay Raid

Son Tay, the infamous attempt to rescue American POWs, rescued no one. As a military operation, however, and as a way to set up SIGINT support, it was exemplary.

Planning for the 1970 raid began in April. The SIGINT system was brought into the picture in August, which gave it time to react (as opposed to the Cambodian incursion, which did not). As briefed to a handful of cryptologists who were initially cleared for the operation, it would involve a wave of helicopters flying at low level to the prison camp at Son Tay, twenty miles northwest of Hanoi. It would also involve the participation of a diversionary attack by a naval force in the Gulf, along with combat air patrols, fire suppression aircraft, and various logistics flights.[61]

Triple Canopy Jungle
under aerial fire during the Cambodian incursion

~~HANDLE VIA TALENT KEYHOLE COMINT CONTROL SYSTEMS JOINTLY~~
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Brigadier General Manor, the overall operation commander, requested that SIGINT give him the best ingress and egress routes from Takhli AB, Thailand (whence the raiders came), and apprise him of all NVA capabilities to interfere with the operation. The NSA representative to Manor's staff was Lieutenant Colonel [redacted], the chief of Pacific Air Defense Analysis Facility (PADAF) in Hawaii. PADAF's job was to do just that sort of analysis, and [redacted] people wrote a series of reports detailing to Manor the precise route that should be followed. Working with NSA analysts, [redacted] people concluded that if Manor used their suggested route and went in at night, the NVA would have no capability to interfere. [redacted] and his people were right, and the raiders entered and exited virtually undetected.[62]

[redacted] put together a complex network for SIGINT support. Working with people he could not clear for the project, he assembled RC-135 collection, COLLEGE EYE assets, and monitoring support from units all over the Pacific theater. He took extraordinary OPSEC measures. His biggest problem was that the RC-135 mission would have to fly at night, at a time when SIGINT reconnaissance missions never flew in the Gulf. He solved that by scheduling several nighttime missions in the weeks before the raid so that the North Vietnamese would get used to seeing them there.[63]

[redacted] himself flew to Da Nang to watch the operation unfold. He had an Opscomm link that began at Da Nang and was routed through NSA and ultimately to the Pentagon. On the other end of the link was Milton Zaslow, the NSA representative who kept the JCS apprised of the raid's progress as reflected in SIGINT.[64]

As the raid unfolded, it was being monitored by a select group in the National Military Command Center headed by the secretary of defense, chairman of the JCS, and certain three- and four-star officers. As Zaslow was briefing the group on NSA activity in support of the raid, an officer broke into the room and announced that General Manor had declared a MIG Alert. Everyone turned to Zaslow, who had just stated that there was no threat from MIGs.

Zaslow stood his ground. "No MIGs," he said. He spent a very uncomfortable five minutes as the assembled Pentagon generals stared at him, wondering how he could be so sure. Zaslow knew that intensive SIGINT analysis had identified all North Vietnamese night-qualified MIG pilots and at what airfield they were spending the night. Moreover, Zaslow's communications with [redacted] were the fastest at the Pentagon, and [redacted] was reporting no MIGs, based on continuous monitoring of those airfields. Zaslow stuck to his story. A few minutes later another courier burst into the room crying, "Cancel MIG alert." Zaslow had been vindicated, and everyone breathed easier.[65]

NSA's assessment was confirmed completely, and the SIGINT system worked as well as it ever had. No one ever found out for sure why the prisoners had been moved before the raid, but one HUMINT report said that about a month before the raid a Caucasian journalist had visited the camp and stated that the prisoners were moved immediately afterwards. Perhaps the North Vietnamese were "spooked" by the visit.[66]

The Easter Offensive

Lam Son 719 did little to slow down NVA plans for a great spring offensive in 1972. NSA infiltration figures from the Vinh Window showed an unprecedented flow of supplies and a massing of forces in the border areas such as had never before been seen. For the first time, intelligence showed NVA tank concentrations in the south, pointing to the employment of conventional forces in an attempt to overthrow the Thieu regime.[67]

As the classic SIGINT indicators mounted, NSA reporting became more and more specific about the timing and objectives. When, at the end of March, the offensive finally broke, it had been more than seven months in the offing. This only increased its fury. The NVA concentrated on the areas thought vulnerable prior to Tet 1968 – the Central Highlands, Quang Tri Province, and the border areas near Cambodia in MR3. There was no comparable assault on the cities, no appeal for mass revolution. This was a conventional attack with tanks and artillery. The ARVN barely held, but in the end it looked like another Pyrrhic victory for the NVA. They lost 50,000 troops, almost as many as did the United States during the entire war. The attack failed all around.[68]

Nonetheless, it appears to have fallen on an unprepared Nixon administration. Several knowledgeable historians claimed afterwards that it was an intelligence failure. George Herring was extreme, stating that "American intelligence completely misjudged the timing, magnitude, and location of the invasion." Seymour Hersh, who is usually right, wrote that the offensive was so long delayed that the White House was focused on other things, and that Nixon claimed that the Pentagon withheld information from them. There is no SIGINT evidence to support the "surprise" hypothesis – perhaps there is other evidence.[69]

TEABALL

One result of the Easter Offensive was the resumption of the air war. In early May 1972, Nixon ordered the bombing of Hanoi and Haiphong in an operation the Pentagon called Linebacker. Immediately, waves of B-52s roared over the North. It was the most intensive air bombardment of the war.[70]

But the operation proved costly. The North Vietnamese adopted a new defensive strategy. Eschewing SAMs (which had proved ineffective and fratricidal in the face of

American countermeasures), they launched pairs of MIGs. The MIG pilots would home in on one of the flights of B-52s, would execute a single high-speed pass, launch missiles, and turn tail for home. By the first of July, the U.S. had already lost eighteen aircraft to such tactics, with "only" twenty-four MIGs destroyed. The virtually one-to-one kill ratio had General Vogt, commander of 7th Air Force, looking for new tactics.[71]

It had long been the desire of the cryptologic community to pass MIG warnings directly to threatened pilots. The Air Force Security Service had set up a variety of operations over the years, but all the warnings had had to pass through the filter of TACC/NS, unless extraordinary circumstances intervened. Every request to pass warnings directly to operations people had encountered the implacability of the director of Air Force intelligence, General Keegan.

In 1967, Security Service had informally suggested a mechanism for passing warnings directly to operations, but Keegan would not hear of "raw SIGINT" going to a pilot. Two years later, the NSA representative to the Pentagon proposed a similar operation, only to have the idea die in staffing channels, once again a victim of turf protection. It appeared that direct warnings would never get through the bureaucratic thicket and that the Air Force would not get anything similar to what the Army already had from ARDF – tactical warnings passed directly to operations people.[72]

The Linebacker losses proved the undoing of the intelligence empire. In early July, General Vogt appealed to General Ryan, the Air Force chief of staff, for a new approach to the intelligence warning system. Ryan called Admiral Gayler, who already had the solution in his pocket. (It was the same solution that had died in staffing a year earlier.) He sent a team of SIGINT experts to Saigon, headed by Delmar Lang, who had been instrumental in devising a solution to a similar problem during the Korean War (see p. 49).

Lang knew that Vietnamese voice communications revealed the takeoff of the MIGs and that the North Vietnamese controller revealed which B-52 sortie would be targetted (the so-called "Queen for a Day," after a 1950s radio quiz show of the same name). He also knew that the SIGINT U-2, called the OLYMPIC TORCH, was intercepting those communications and that the intercept operators were sitting at the 6908 SS at Nakhon Phanom (NKP) AFB in Thailand. He recommended that the takeoff and targetting information be passed to a collocated 7th Air Force controller, who would alert the Air Force defensive patrol in the Gulf. When the MIGs arrived, theoretically the F-4s would be waiting for them.[73] He called the operation "TEABALL."

Vogt established a new Weapons Control Center (WCC) in a van at NKP, right next to the vans housing the downlink for the OLYMPIC TORCH operations. Security Service operators had a hotline from their intercept van to the WCC, where the information would be melded with other sources. In practice, SIGINT was virtually the only source of information, and AFSS linguists populated the WCC, sometimes passing information to

the pilots when weapons controllers were not available. It was the kind of direct involvement in the air war that the SIGINTers had wanted.[74]

The TEABALL operation got off to a slow start because of communications problems and lack of manning on the 7th AF side. But on 28 August, eighteen days after being declared operational, TEABALL got its first MIG kill. By the time Linebacker was cancelled on 15 October, American pilots had shot down nineteen MIGs while losing only five of their own. TEABALL was given credit for helping to vector U.S. pilots on thirteen of those nineteen kills.[75]

TEABALL became caught up in interservice rivalry. The Navy had its own control operation in the Gulf, a ground-controlled intercept (GCI) ship known as Red Crown (for its VHF callsign). Red Crown was supported by NSG afloat detachments, which claimed to be able to intercept MIG voice tracking on a more timely basis. Some of the MIG CAP operations got tangled up in jurisdictional disputes between the WCC and Red Crown, and it was not clear which could provide the more timely warning information. The dispute was untangled in a joint 7th Air Force – TF 77 meeting in mid-September, at which a compromise over control of fighter CAP in the Gulf was worked out. The WCC/TEABALL operation relinquished control authority in certain situations, but not in others.[76]

When, on 13 December 1972, Le Duc Tho, the North Vietnamese negotiator, walked out of the peace talks, Nixon turned to the B-52 operation again. This time the raids, under the name Linebacker II, were not confronted with MIGs, which had been chastened by the new American tactics. The North Vietnamese went back to using the less-than-effective SAMs. One B-52 was lost, but it has never been shown that it was a SAM kill. Lacking MIGs, TEABALL wasn't needed.[77]

Linebacker II was the most intensive aerial bombardment of the war. More than 36,000 tons of bombs were dropped, and though American pilots went to extraordinary lengths to avoid population centers, as many as 1,600 civilians may have died. Nixon and Kissinger claimed that it forced Le Duc Tho to return to the negotiating table. Soon thereafter the truce agreement was signed.[78]

The U.S. Moves out of Vietnam

The cryptologists were still very active in Vietnam. There had been some changing around of people and positions; as some cryptologic operations got bigger, others got smaller. One technique that prospered late in the war was remoting. After the early trials on Black Widow Mountain and others (see p. 536), NSA brought in permanent gear in a remoting system called EXPLORER. EXPLORER I, consisting of four VHF receivers, was placed on a hill near Phu Bai in June 1970. A year later it was destroyed to prevent capture and was succeeded by EXPLORER III, destroyed under similar circumstances.

TOP SECRET UMBRA
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EXPLORER II was located on a remote hilltop [redacted]. It was controlled by USM-604 at Pleiku and was withdrawn when U.S. forces left Vietnam in December 1972.[79]

The last such operation in Southeast Asia was called SARACEN. Established in late 1972, SARACEN provided unique VHF collection primarily on GDRS communications. The remote location, on a hill south of [redacted] was almost inaccessible except by helicopter, and the security situation remained precarious throughout its existence, sitting as it did virtually overlooking the Ho Chi Minh Trail. Its collection station was the AFSS site at NKP, which also collected GDRS communications from the OLYMPIC TORCH U-2, until U.S. cryptologists were withdrawn [redacted]

As diplomatic negotiations proceeded, the Nixon administration stepped up the pace of troop withdrawal. Status reports on cryptologic Vietnamization indicated that the SSTB was not yet ready to take on the load. The organization lacked people, needed more training in processing and reporting, and was short on good communications. NSA hurried the provision of communications and stepped up the training pace. NSA offered ten more EC-47 ARDF aircraft to help SSTB cope with the burden of supporting ARVN operations.[61]

In the fall of 1972, Nixon announced that American troops would be out of Vietnam by year's end. ASA operations were moved to Ramasun Station, while AFSS collection and processing were hastily removed from Da Nang to NKP, to be collocated with 7th Air Force command and control facilities. AFSS ARDF operations moved to Ubon and NKP, while the Army flight section transferred to [redacted]. The Dancer Vietnamese linguist operation moved to NKP, to provide assistance to 6908th linguists at the downlink end of the OLYMPIC TORCH.[62]

As with the negotiations in Korea prior to the 1953 armistice, NSA provided SIGINT support to the Kissinger-Le Duc Tho peace talks. [redacted] NSA [redacted] had been reading South Vietnamese diplomatic traffic throughout the war. The reactions of the Thieu government to the Paris peace talks were passed daily to the White House and influenced Kissinger's position on countless issues throughout.[63]

The cease-fire that took effect in February 1973 required that all U.S. military people be out of the country. The cryptologic withdrawal that had begun with the Vietnamization program proceeded very quickly, and by the implementation of the cease-fire the only American cryptologists left in the country were covert.

The Summing Up

Vietnam was a rude education for the American military. It was also an education for cryptologists.

Cryptologists had forgotten how to do direct tactical support in an effective manner. It took the cryptologic system most of the war to relearn the lessons of World War II and the Korean War. The cryptologic community paid a high price for dismantling its tactical support system.

Meanwhile, a skeptical military, by then unlettered in cryptology, tried to pry the SIGINT system into pieces and fragment the effort. The struggle for control of cryptologic assets lasted the entire war, and the effects remained for years afterward. The SIGINT system was kept generally intact (with some significant exceptions), but it was not the same one that entered the war.

No one truly knowledgeable of U.S. intelligence could quarrel with the value of SIGINT. It became the number one source of targetting information. An Air Force historian estimated that SIGINT provided 55 percent of all targetting information in Vietnam.[84]

It was the best method of predicting NVA offensives. Beginning with the VC offensive at Ap Bac in 1963 (made famous by Neil Sheehan's book *A Bright Shining Lie*, a biography of John Paul Vann), SIGINT tipped off virtually every VC or NVA offensive.[85]

It was the predominant source of information on infiltration. Especially after the opening of the Vinh Window in 1967, SIGINT overwhelmed all other sources of intelligence on the subject.

Its use, however, was very spotty. Some commanders, never having been exposed to it, did not know how to use it and either ignored it or misinterpreted it. Others, like Westmoreland, understood the source and used it to good effect.

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It was often misused, especially by intelligence people who did not understand it. ARDF fixes were especially prone to errant analysis. According to [redacted], the last NSA chief in Saigon,

> G2 and J2 briefings all over South Vietnam blossomed with graphs, charts, plotting systems, and mathematicians trying to find the magic relationship between message flow and the number of ARDF locations which, like the secret of the pyramids, could somehow shed divine light on the thinking of the Communists.[86]

Generally, the higher the echelon, the greater the dominance of SIGINT in the intelligence picture. Sometimes, like just before Tet 1968, the SIGINT signals drowned out other sources. Sometimes, as in the Gulf of Tonkin crisis, it was flat wrong.

What came out of the war was a better SIGINT system, more attuned to the needs of field commanders, better able to render support. On their side, military people began to appreciate how the information could be best employed, how it fit in with their war.

The fifteen years following the war represented, for the American military, a long slow road back to respectability and, eventually, dominance. As the military system went, so went cryptology. The ultimate payoff, Desert Shield and Desert Storm, was a model of what the new system was and how effective it had become.

The Turn of the Wheel

Though cryptologists did not know it at the time, the end of the first Nixon administration would mark the end of an era and the beginning of another. Behind them was a period of almost unbroken expansion. The cryptologic system peaked in 1969 and by 1972 had begun a retrenchment the outlines of which could be only dimly perceived.

The heyday of centralization, too, was over. The desperate in-fighting that marked the latter years of the war would contribute to a limited reversal of the engines of centralization. The wave was about to wash the other way.

Ahead was a period of "downsizing," intensified by the Watergate crisis. The scandal that led to the president's resignation in 1974 would tar the intelligence system. It would not begin to recover until the last days of the Carter administration in 1979.

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Notes

1. Karnow.

2. [redacted] Glenn, "Uncertain Origins," *Dragon Seeds*, Dec. 1972.

3. CCH Series VI.HH.9.6.

4. CCH Series VIII.19.

5. James J. Wirtz, *The Tet Offensive: Intelligence Failure in War*, Cornell Studies in Security Affairs (Ithaca: Cornell Univ. Press, 1991).

6. CCH Series VI.HH.9.3; Wirtz; Johnson Library, NSF.

7. CCH Series VI.HH.9.3.

8. Ibid.

9. Thomas N. Thompson, "A Special Historical Study of SIGINT Support to Air Operations in SEA, 1965–1971," San Antonio, Texas, USAFSS, November 1972.

10. Karnow.
11. CCH Series VIII.19.
12. Ibid; Johnson Library, NSF.
13. Wirtz.
14. Wirtz; S. D. Breckenridge, *The CIA and the U.S. Intelligence System* (Boulder: Westview Press, 1986).
15. CCH Series VIII.19.
16. CCH Series VIII.19.; Karnow.
17. CCH Series VIII.19.; Karnow.
18. CCH Series VIII.19.
19. Ibid.
20. Karnow.
21. Ibid.
22. Ibid.
23. Ibid.
24. Ibid.
25. CCH Series VI.HH.18.9.
26. CCH Series VI.HH.1.10.
27. CCH Series VI.HH.18.9.
28. Ibid.
29. Ibid.
30. CCH Series VI.HH.1.11.
31. Ibid.
32. CCH Series VI.HH.18.9.
33. CCH Series VI.HH.11.1.
34. CCH Series VI.HH.1.10.
35. Ibid.
36. Herring.
37. CCH Series VI.HH.1.10; 18.9.
38. Thompson, "Special Historical Study...."
39. Ibid.
40. Thompson, et al., *SIGINT Applications*....

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41. "A Historical Study of USAFSS SIGINT Support to the TEABALL Weapons Control Center," historical study available at AIA, Kelly AFB, Texas.

42. CCH Series VI.P.2.5.

43. CCH Series VI.HH.23.2–23.4.

44. Karnow.

45. Ibid.

46. [redacted] *Focus on Cambodia*, Cryptologic History Series, Southeast Asia (Ft. Meade: NSA, 1974).

47. Ibid.

48. Karnow.

49. [redacted]

50. [redacted] Gerhard, *In the Shadow of War*.

51. [redacted]

52. Ibid.

53. Ibid.

54. Ibid.

55. Ibid.

56. Ibid.

57. Ibid.

58. Karnow.

59. CCH, NDU collection, box 210.

60. Karnow; CCH Series VI.HH.23.2–23.5.

61. CCH Series VIII.21.

62. Ibid.

63. Ibid.

64. Ibid.

65. Zaslow interview.

66. Ibid.

67. CCH series VI.HH.9.2; 9.6.; [redacted] "Things that Go Clank in the Night," *Dragon Seeds*, Sept. 1972.

68. CCH Series VI.HH.9.2–9.6; Karnow.

69. Herring, 246; Seymour Hersh, *The Price of Power: Kissinger in the Nixon White House* (New York: Summit Books, 1983), 503–504.

70. Herring, Karnow.

71. "Historical Study of TEABALL. . . ."

72. Oral Interview with Doyle Larson, 15 March 1994, by Charles Baker and Tom Johnson, NSA OH 15-94.

73. "Historical Study of TEABALL . . . " ; Larson interview; Chancel T. French, *Deadly Advantage: Signals Intelligence in Combat*, V. II, Air University Research Report # AU-RRI-84-1 (Maxwell AFB: Air University Press, 1984).

74. Ibid.

75. "Historical Study of TEABALL . . . " ; Lang; Thompson, "A Historical Study of the Closure of the Pacific Security Region. . . ."

76. Thompson.

77. Karnow; Thompson.

78. Herring.

79. ACC 16512, CBRG 35; "A Historical Study of TEABALL."

80. ACC 16512, CBRG 35; Thompson.

81. CCH Series VI.HH.1.10.

82. CCH Series VI.HH.6.54; 12.11; Thompson.

83. CCH Series VI.HH.26.5.

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84. Ltr, Subj: Project Corona Harvest End-of-Tour Report, 1 August 1971.

85. [redacted] "NSA in Vietnam. . . ."

86. Ibid.

Glossary of Abbreviations

ABM – Antiballistic missile

ACC – ARDF Control Center

AC&W – Air Control and Warning

ACRP – Airborne Communications Reconnaissance Program (or Platform)

AFEWC – Air Force Electronic Warfare Center

AFSA – Air Force Security Agency

AFSAC – Armed Forces Security Advisory Committee

AFSAFE – AFSA Far East office

AFSCC – Air Force Special Communications Center

AFSS – Air Force Security Service (See USAFSS)

AGER – Auxiliary General Environmental Reserach

AMPS – Automated Message Processing System

ANCIB – Army-Navy Communications Intelligence Board

ANCICC – Army-Navy Communications Intelligence Coordinating Committee

ANEEG – Army-Navy Electronic Evaluation Group

ARDF – Airborne radio direction finding

ARVN – Army of the Republic of Vietnam

ASA – Army Security Agency

ASAE – ASA Europe

ASAEUR – ASA Europe

ASAPAC – ASA Pacific

AFSSO – Air Force Special Security Office (or Officer)

AFSSOP – Air Force Security Service Office of Production

ARVN – Army of the Republic of Vietnam

ATIC – Air Force Technical Intelligence Center

BIX – Binary Information Exchange

BRUSA – British-U.S.

CAP – Combat air patrol

CBNRC – Communications Branch, National Research Council

CCC – Critical Communications Committee

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CCP – Consolidated Cryptologic Program
CCU – COMINT Contingency Unit
CDAA – Circularly disposed antenna array

[redacted] Withheld from public release Pub. L. 86-36

CHICOM – Chinese Communist
CHINAT – Chinese Nationalist
CIA – Central Intelligence Agency
CIG – Central Intelligence Group
CINCEUR – Commander in Chief, Europe
CINCPAC – Commander in Chief, Pacific Command
CINCPACFLT – CINCPAC Fleet
CJO – Coordinator of Joint Operations
CMA – Collection Management Authority
CNO – Chief of Naval Operations
COMIREX – Committee on Imagery Requirements and Exploitation
COMOR – Committee on Overhead Reconnaissance
COMRADPAR – Combined Radio Printer Party
COMUSMACV – Commander Military Assistance Command Vietnam
COC – Collection Operations Center
CONAD – Continental Air Defense Command
COSVN – Central Office South Vietnam
CPC – COMINT Processing Center
CRC – Control and Reporting Center
CRD – Communications Research Division
CRP – Control and Reporting Post
CSG – Cryptologic Support Group
CSOC – Current SIGINT Operations Center
CTAK – Cipher Text Autokey
DCA – Defense Communications Agency
DCI – Director of Central Intelligence
DDI – Delivery Distribution Indicator
DDR&E – Deputy Director for Research and Engineering (DoD)

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DEFSMAC – Defense Special Missile and Astronautics Center
DF – Direction finding
DIA – Defense Intelligence Agency
DIRNSA – Director, NSA
DMZ – Demilitarized zone

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DSB – Defence Signals Branch
DSD – Defence Signals Division
DSU – Direct support unit
EAM – Electronic Accounting Machine
ERA – Electronic Research Associates
ESV – Earth satellite vehicle
EUCOM – European Command
EW– Electronic warfare
FANX – Friendship Annex
FBI – Federal Bureau of Investigation
FBIS – Foreign Broadcast Information Service
FCC– Federal Communications Commission
FFV – Field Force Vietnam
FMSAC – Foreign Missile and Space Analysis Center
FOIA – Freedom of Information Act
FRUMEL – Fleet Radio Unit, Melbourne
FRUPAC – Fleet Radio Unit, Pacific
GCI – Ground-controlled intercept
GDRS – General Directorate of Rear Services
GMAIC – Guided Missile and Astronautics Intelligence Committee
GSFG – Group of Soviet Forces, Germany
IAC – Intelligence Advisory Committee
IATS – Improved AG-22 Terminal System
IDA – Institutes for Defense Analyses
IDDF – Internal Data Distribution Facility
I FFV – First Field Force Vietnam

II FFV – Second Field Force Vietnam
IG – Inspector General
[redacted]
IRBM – Intermediate-range ballistic missile
ISS – Intelligence Support Staff
JCEC – Joint Communications Electronics Committee
JCIC – Joint Counter Intelligence Committee
JDA/E – Joint Development Activity/Europe
JMG – Joint Mechanization Group
JNACC – Joint Non-Morse Coordination Center
[redacted]
JSPC – Joint Sobe Processing Center
LLVI – Low-level voice intercept
LSIB – London Signals Intelligence Board
LSIC – London SIGINT Centre
MAAG – Military Advisory Assistance Group
MACV – Military Assistance Command Vietnam
MAF – Marine Amphibious Force
MGS – Mission Ground Station
MOU – Memorandum of Understanding
MPU – Main Processing Unit
MRBM – Medium-range ballistic missile
MRDF – Medium-range direction findings
MSTS – Military Sea Transport sErvice
MUSCO – Manual of U.S. COMINT Operations
MUSSO – Manual of U.S. SIGINT Operations
NBS – National Bureau of Standards
NCML – National Computing Machine Laboratory
NCS – National Cryptologic School
NEP – National ELINT Plan
NIPE – National Intelligence Programs Evaluations
NIRB – National Intelligence Resources Board

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NKP – Nakhon Phanom
NORAD – North American Air Defense Command
NPIC – National Photographic Interpretation Center
NRL – Naval Research Laboratory
NRO – National Reconnaissance Office
NRP – National Reconnaissance Program
NRV – NSA Representative Vietnam
NSAAL – NSA Alaska
NSAEUR – NSA Europe
NSAEUR/ISS – NSA Europe Intelligence Support Section
NSAEUR OG – NSA Europe Office Germany
NSAFE – NSA Far East
NSAPAC – NSA Pacific
NSAPAC NOG – NSA Pacific Operations Group
NSASAB – NSA Scientific Advisory Board
NSAUK – NSA Office United Kingdom
NSC – National Security Council
NSCID – National Security Council Intelligence Directive
NSG – Naval Security Group
NSOC – National SIGINT Operations Center
NSS – Naval Security Station
NTPC – National Technical Processing Center
NVA – North Vietnamese Army
NVN – North Vietnam or North Vietnamese
OASD – Office of the Assistant Secretary of Defense
OJT – On-the-job training
ONI – Office of Naval Intelligence
OPC – Office of Policy Coordination
OPCONCEN – Operations Center
OPSEC – Operational security
OSD – Office of the Secretary of Defense
OSO – Office of Special Operations

OSS – Office of Strategic Services
OTP – One-time pad
PACAF – Pacific Air Froce
PACEXFAC – Pacific Experimental Facility
PARPRO – Peacetime Aerial Reconnaissance Program
PFIAB – President's Foreign Intelligence Advisory Board
PIWO – Prod Intelligence Watch Office
PLO – Palestine Liberation Organization
PPBS – Planning, programming and budgeting system
PWO – Prod Watch Office
RAGFOR – Radio Analysis Group, Forward
RAM – Rapid analytic machine
RGM – Radio Group Mobile
ROK – Republic of Korea
RRB – Radio Research Battalion
RRU – Radio Research Unit
RSM – Radio Squadron Mobile
RVNAF – Republic of Vietnam Air Force
SAC – Strategic Air Command
SACEUR – Supreme Allied Commander, Europe
SAM – Surface-to-air missile
SAR – Search and rescue
SARC – Surveillance and Reporting Center
SCA – Service Cryptologic Agency
SCAT – Support Coordination Advisory Team
SCOCE – Subcommittee On Compromising Emanations
SEATO – Southeast Asia Treaty Organization
SIOP – Single Integrated Operational Plan
SMAC – Space and Missile Analysis Center
SMTIG – Soviet Missile Technical Intelligence Group
SNOO – Senior NSA Operations Officer
SOO – Senior Operations Officer

SPACOL – Space collection
SORS – SIGINT Overhead Reconnaissance Subcommittee
SRB – Special Research Branch
SRDF – Short-range direction finding
SSG – SIGINT Support Group
SSO – Special Security Office (or Officer)
SSSC – SIGINT Satellite System Control
SSSPB – Space Surveillance SIGINT Planning Board
SSTB – Special Security Technical Branch
STANCIB – State-Army-Navy Communications Intelligence Board
STANCICC – State-Army-Navy Communications Intelligence Coordinating Committee

[redacted]

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TACC – Tactical Air Control Center
TACREP – Tactical report
TAREX – Target Exploitation
TDS – Teletype Distribution System
TEBAC – Telemetry and Beacon Analysis Committee
TECHINS – Technical Instructions
TECSUM – Technical Summary
TF – Task force
TFA – Task Force Alpha

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[redacted]

TICOM – Target Intelligence Committee
TRO – Technical Research Office
TRS – Technical Research Ship
TRSSCOM – TRS Special Communications System
U&S – Unified and Specified (Command)
UKUSA – United Kingdom-USA
USAFSS – United States Air Force Security Service
USCIB – United States Communications Intelligence Committee
USCICC – United States Communications Intelligence Coordinating Committee
USCSB – United States Communications Security Board

USIA – United States Information Agency
USIB – United States Intelligence Board
VC – Viet Cong
VOA – Voice of America
WAVES – Women Accepted for Volunteer Emergency Service
WRC – Washington REGAL Center
ZICON – Zone of Interior Communications Net

Sources

Mostof this history was written from classified cryptologic records of one sort or another. The most useful document collections are as follows:

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1. The NSA Archives. This organization (currently E321) acts as the repository for retired NSA records. It is located in [redacted] at NSA-Ft. Meade. Retired records remain the property of the donating office until they are screened and formally archived, at which time they become the property of the Archives organization. Thus, the organization has two collections:

a. Retired records. Because these are still property of the originating office, a researcher needs written permission to access the documents. Retired records are identified by a five-digit number representing the box number, followed by a shelf location. An example is 43852, 73-252.

b. Archived records. Documents in this area may be accessed by any qualified researcher without the permission of the originating organization. The collection is indexed by key words, and trained archivists can search the collection for records responding to the query. Records are stored by Accession Number (ACC) and a location. An example would be ACC39471, HO3-0311-4.

2. The historical collection of the Center for Cryptologic History (CCH), E322. This collection of historical documents actually predates the archived collections, and it contains records going back to the earliest days of cryptology. Records in this collection generally duplicate those in the Archives, but they are maintained as a separate file for ease of access by historians. The CCH collection is organized in series as follows:

I. Pre-1915
II. 1915–1918 (World War I)
III. 1919—1939 (Interwar period)
IV. 1939–1945 (World War II)
V. 1946–1952 (pre-AFSA and AFSA period)
VI. 1952–present (NSA period)
VII. Special and miscellaneous collections
VIII. Crisis files
X. References
XI. Papers collected by NSA and pre-NSA officials
XII. Papers collected by NSA historians
XIV. COMSEC documents
XVI. Cryptologic papers from presidential libraries

Citations from this collection are by series number, followed by subseries designations, for instance, VI.A.1.9. Most of the CCH documents used for this history (not surprisingly) were from Series VI.

~~TOP SECRET UMBRA~~

In addition, the CCH maintains the formerly DIA Vietnam document collection. For Vietnam, the DIA collection (which came to NSA through the National Defense University in serpentine fashion and is thus called the NDU collection) combines with CCH's own collection of mainly cryptologic documents collected by William Gerhard in the 1970s to form perhaps the best collection of its kind in existence.

3. Oral histories. Compiled over a period of many years by various NSA organizations and individuals, the oral history effort has come to rest in the CCH, and the great preponderance of taped reminiscences were done by that organization and its predecessors. In addition, the CCH now has copies of most of the oral histories that were done before its time. Most are designated by an oral history number, e.g., NSA OH 12-86. All are held in the CCH unless otherwise indicated. Oral histories which proved especially useful in this study were these:

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Transcripts taken from videotaped discussions involving five NSA directors and their associates (1969-1970 taping), no number
[redacted] 29-94
[redacted] 25-94
[redacted] 31-87
Gordon A. Blake, 7-84
David G. Boak, 17-86
[redacted] 6-92
Howard Campaigne, 14-83
Ralph J. Canine, no number
Marshall S. Carter, 15-88
Herbert L. Conley, 1-84
Harold E. Daniels, 10-88 (videotape)
[redacted] 8-85
Robert E. Drake, 18-83.
[redacted] 4-83
John B. Eastman, 3-87
Henry R. Fenech, 8-81
Laurence H. Frost, by and held at JFK Library, Boston
Charles L. Gandy, 19-86
[redacted] 7-92
[redacted] 4-86
[redacted] 2-82
Oliver R. Kirby, 20-93
Doyle E. Larson, 15-94
David D. Lowman, 13-80
[redacted] 2-93
David Y. McManis, 34-86
[redacted] 8-92
[redacted] 33-87
John E. Morrison, Jr., 24-93
Helen O'Rourke, 11-81
Cecil J. Phillips and [redacted] 14-93
Cecil J. Phillips, 23-93

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[redacted] 1-93
Howard E. Rosenblum, 3-91
[redacted] no number
John W. Saadi, 29-87
[redacted]
Eugene Sheck, 26-82
Abraham Sinkov, 2-79 through 4-79
[redacted] 8-86
Kermit H. Speierman, 2-86
Earl E. Stone, 3-83
Louis W. Tordella, 8-90
Charles C. Tevis, 21-87
[redacted] 10-80
[redacted] 27-93
Milton Zaslow, 17-93

4. Internally published historical books and articles represented a significant source. The most valuable were as follows:

[redacted] "The Gulf of Tonkin Incident." *Cryptolog*, Feb–Mar (no year), 8–10. (Located in CCH Series VIII.13.)

Benson, Robert Louis, and Cecil James Phillips. *History of Venona*. Ft. Meade: NSA, 1995.

Boak, David G. *A History of U.S. Communications Security*. (The David G. Boak Lectures.) Ft. Meade: NSA, 1973.

Boucher, Melville J. "Talomatry and How it Grew." *Cryptologic Spectrum*, Fall 1971, Winter 1972.

Burns, Thomas L. *The Origins of the National Security Agency, 1940–1952*. U.S. Cryptologic History, Series V, Vol. 1., Ft. Meade: NSA, 1990.

Campaigne, Howard H. "Lightning." *NSA Technical Journal*, July 1959.

Davidson, Max L. "The CRITICOMM System." *Cryptologic Spectrum*, Spring 1975.

[redacted] "The National SIGINT Operations Center." *Cryptologic Spectrum*, Summer 1979.

[redacted] U.S. Cryptologic History Series - Special Series. Ft. Meade: NSA, n.d.

[redacted] "BRANFLAKE." *Cryptologic Quarterly*, Winter 1994, Vol. 13, No. 4.

[redacted] "Glimpses of a Man: The Life of Ralph J. Canine." *Cryptologic Quarterly*, Summer 1987, 31–39.

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William D. Gerhard served as the general editor for a mid-1970s project to write the cryptologic history of the Vietnam War. The following volumes were published (all of them by NSA in the Cryptologic History Series - Southeast Asia) before the project expired:

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

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[redacted] *Deadly Transmissions (COMSEC Monitoring and Analysis)*. 1970.

Gerhard, William D. *In the Shadow of War*. 1969.

[redacted] *Focus on Cambodia*. 1974

[redacted] and William D. Gerhard, *SIGINT Applications in U.S. Air Operations*. 1972.

Gerhard, William D., and Henry W. Millington. *Attack on a SIGINT Collector, the U.S.S.* Liberty. U.S. Cryptologic History Series, Crisis Collection. Ft. Meade: NSA, 1981.

[redacted] "NSA in Vietnam: Proud and Bitter Memories." *Cryptolog*, October 1975.

[redacted] Henry F. Schorreck, and Donald C.Wigglesworth. *A Reference Guide to the Selected Historical Documents Relating to the National Security Agency/Central Security Service, 1931–1985*. Ft. Meade: NSA, 1986.

Howe, George F. *Technical Research Ships, 1956-1969; An Historical Study*. U.S. Cryptologic History, Special Series, No. 2. Ft. Meade: NSA, n.d.

——. "A History of U.S. Civilians in Field COMINT Operations, 1953-1970." *Cryptologic Spectrum*, Summer 1973.

[redacted] "OPSEC as a Management Tool." *Cryptolog*, 1st issue, 1992.

[redacted] "Things That Go Clank in the Night." *Dragon Seeds*, September 1972.

[redacted] "Reflections on the Soviet Missile Threat of 1960." *Cryptologic Spectrum*, Summer 1981.

[redacted] *PURPLE DRAGON: The Origin and Development of the United States OPSEC Program*. U.S. Cryptologic History, Series VI, the NSA Period, Vol. 2. Ft. Meade: NSA, 1993.

Kirby, Oliver R. "The Origins of the Soviet Problem: A Personal View." *Cryptologic Quarterly*, Winter 1992, Vol. 11, No. 4.

[redacted] *NSA's Involvement in U.S. Foreign SIGINT Relationships through 1993*. U.S. Cryptologic History, Series VI, Vol. 4. Ft. Meade: NSA, 1995.

Moore, Elizabeth. *As We Were: An Informal History of Bad Aibling Station, 1936–1988*. Bad Aibling: Englemaier Druckner, 1988.

Newton, Robert E. *The Capture of the USS* Pueblo *and Its Effect on SIGINT Operations*. U.S. Cryptologic History, Special Series, Crisis Collection, Vol. 7. Ft. Meade: NSA, 1992.

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[redacted] "Deployment of the First ASA Unit to Vietnam." *Cryptologic Quarterly*, Fall/Winter 1991, Vol. 10, Nos. 3-4.

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[redacted] "Before BOURBON: American and British COMINT Efforts against Russia and the Soviet Union Before 1945." *Cryptologic Quarterly*, Fall/Winter 1993.

———. "Early BOURBON – 1945: The First Year of Allied Collaborative COMINT Effort against the Soviet Union." *Cryptologic Quarterly*, Spring 1994, Vol 13, No. 1.

———. "Middle BOURBON – 1946: The Second Year of Allied Collaborative Effort against the Soviet Union." *Cryptologic Quarterly*, Summer 1994, Vol. 13, No. 2.

———. "Old BOURBON – 1947: The Third Year of Allied Collaborative COMINT Effort against the Soviet Union." *Cryptologic Quarterly*, Fall 1994, Vol. 13, No.3.

[redacted]

[redacted] "Early History of the Soviet Missile Program (1945–1953)." *Cryptologic Spectrum*, Summer 1975.

[redacted] "The Great Conversation." *Cryptolog*, 1st issue 1992.

Snyder, Samuel S. "Influence of the U.S. Cryptologic Organizations on the Digital Computer Industry." *Cryptologic Spectrum*, Fall 1977.

———. "History of NSA General-Purpose Electronic Digital Computers." NSA Technical Literature Series. Ft. Meade: NSA, 1964.

[Wiley, Edward S.] *On Watch: Profiles from the National Security Agency's Past 40 Years* (Ft. Meade: NSA, 1986).

[redacted] "The Civilianization of Harrogate." *Cryptologic Spectrum*, Summer 1970.

[redacted] "AG-22/IATS: A View from the Bridge." *Cryptolog*, June 1977.

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[redacted]

Wagoner, H.D. *Space Surveillance SIGINT Program*. U.S. Cryptologic History, Special Series, No.3. Ft. Meade: NSA, 1980.

Wonus, Corley. "The TACKSMAN Project: A SIGINT Success Story." *Studies in Intelligence*, Fall 1991. (Also reprinted in *Cryptologic Quarterly*, Vol. 12, 1993.)

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5. Another collection is the vast array of informal, unpublished histories and summaries of historical events. Most of these are held in both the CCH collection and in the NSA Archives.

Bauer, Dr. Theodore W. "Historical Study: The Security Program of AFSA and NSA, 1949–1962." 1963.

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——. "Training in AFSA/NSA, 1949–1960." 1961.

Benson, Robert L. "A History of U.S. Communications Intelligence during World War II." Available in CCH.

[redacted] "The History of the NSA SIGINT Command Center and Its Predecessors, 1949–1969." 1970.

——. "The National Security Agency Scientific Advisory Board, 1952–1963." n.d.

——. "The Consolidated Cryptologic Program and Its Predecessors, 1957–1965." 1971.

——. "NSA's Participation in the Research and Development of the 466-L System, 1957–1964." 1968.

[redacted]

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

Enderlin, Arthur. "NSA's Telecommunications Problems, 1952–1968." 1969.

[Enderlin.] "Telecommunications Problems, 1968–1972." 1974.

[redacted]

Fitzgerald, Edward. "A History of U.S. Communications Security: Post-World War II." n.d.

[redacted] "The U.S. COMINT Effort during the Korean Conflict – June 1950–August 1953." 1954.

[redacted] "Collected Writings on NSA's R&D Effort."

[redacted] "The Early Structure of the National Security Agency, 1952–1960."

[redacted]

"Historical Study of NSA Telecommunications, Annual, 1973-1975."

[redacted]

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[redacted] "Radio Direction Finding in the U.S. Navy: The First Fifty Years." n.d.

[redacted] "History of HFDF in the Pacific Ocean Prior to the Advent of Bullseye." 1985.

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[redacted] "History of Menwith Hill Station." n.d.

[redacted] "The Soviet Land-Based Ballistic Missile Program, 1945–1972: A Historical Overview." n.d.

"Summary of Statutes Which Relate Specifically to NSA and the Cryptologic Activities of the Government."

[redacted] "DEFSMAC – A Community Asset (1964–1989)." n.d.

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Williams, Joseph L. "The National Security Agency's Gray Telephone System: Present and Future." 1982.

6. Certain documents are so important that they deserve separate mention, even though contained in the CCH and Archives collections above. Among them (in chronological order) are these :

"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]. CCH Series V.F.7.13.

"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, App. 1, Part 1: The National Security Agency." [The Hoover Commission report.] CCH Series VI.C.1.8.

"The Baker Panel Report and Associated Correspondence, 1957." CCH Series VI.X.1.9.

"Report of the Secretary's Ad Hoc Committee on COMINT/COMSEC, June 1958. [Robertson Report.] CCH Series VI.C.1.11.

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"Precis of the Bissell Report (Review of Selected NSA Cryptanalytic Efforts, 18 February 1965)." NSA/CSS Archives, ACC 290Z,199104.

"Report of the Eaton Committee, 1968." CCH Series VI.C.1.24.

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7. Service cryptologic organizations all have collected a certain amount of material:

a. Air Intelligence Agency, formerly Electronic Security Command, Air Force Intelligence Service, and U.S. Air Force Security Service, has the best collection of official histories. All are held at AIA headquarters at Kelly AFB, San Antonio; in addition, the CCH holds copies of many, if not most. Used in this study were the following:

"AFSS-NSA Relations, October 1952–September 1954, V. I." n.d.

"An Oral History Interview: The Electronic Security Command – Its Roots; Featuring the Founder of USAFSS//ESC, Lt Gen Richard P.Klocko (USAF, Ret.)" Hqs ESC, 20 October 1989.

"Analysis of AFSS Effort in the Korean Action." n.d.

Ferry, Richard R. "A Special Historical Study of the Organizational Development of United States Air Force Security Service from 1948–1963." 1963.

French, Maj Chancel T. "Deadly Advantage: Signals Intelligence in Combat." Vol. II, Air University Research Report#AU-RRI-84-1. Maxwell AFB: Air University Press, 1984. Available at both AIA and Air University.

[Harriger, Hop] "A Historical Study of the Air Force Security Service and Korea, June 1950–October 1952." 1952.

"A History of the USAFSS Airborne SIGINT Reconnaissance Program (ASRP), 1950–1977." 1977.

"Historical Data Report for the 6920 SG, 1 January 1953-30 June 1953." n.d.

"History of the USAF Security Service; Fiscal Year 1955." n.d.

"Historical Data Report for the 6901 SCG, 1956–1964."

"A Historical Study of USAFSS SIGINT Support to the TEABALL Weapons Control Center." 1974.

"Historical Resumé: Development and Expansion of USAFSS Capability in the Pacific Area, 1949." 1957.

"Historical Report: The Development of the U.S. ELINT Effort." n.d.

Holub, Mary V., Jo Ann Himes, Joyce M. Homs and Ssgt Kay B.Grice. "A Chronology of Significant Events in the History of Electronic Security Command, 1948–1988." 1990.

Larson Doyle E. ESC Oral History Collection interview, 1987.

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[redacted] "History of the United States Air Force Security Service Fiscal Years 1960–1961," Part IV, Systems Development. 1962.

———. "A Historical Study of the Iron Horse System; 1965–1973." 1974.

[redacted] Oral History, 1986.

"Review of Reactions to Reconnaissance Flights Since 31 October 1958." 1960.

Rush, Robert. "AFSCC Tasking: The Development of the Three-Echelon Reporting Concept, 1949-1952." n.d.

Sommers Gordon W. Oral History. 1990.

"A Special Historical Study of the Advisory Warning Program, July 1961–December 1964." 1965.

[redacted] "A Special Historical Study of SIGINT Support to Air Operations in SEA, 1964–1971." 1972.

———. " A Historical Study of the Closure of the Pacific Security Region and the Impact Upon USAFSS Operations in SEA." 1974.

USA-36 Unit History, January–June 1967.

Whitacre, SMsgt Frank. "A Historical Study of the Drawdown of USAFSS Operations in Southeast Asia (SEA)." 1974.

b. Compared with AIA, INSCOM has very little in the way of official histories, but its archives are more extensive. The most useful items found in the archives were the unit histories, especially those of [redacted] Also used were unit histories of both ASAEUR, ASAPAC and ASAFE, the regional headquarters for ASA, as well as various individual unit histories Official histories included the following:

Assistant Chief of Staff, G-2, "COMINT Operations of the Army Security Agency during the Korean Conflict, June 1950–December 1953." 1956.

Finnegan, John P. "The Structure of Army Intelligence: 1946–1965" and "Beginnings of ARDF." INSCOM Historical Monographs. 1983.

c. Naval Security Group has the smallest historical program. There is a collection of archived documents that has recently been transferred from Crane, Indiana, to the new National Archives building (Archives II) in College Park, MD. There is also a collection of NSG command histories stored at the Naval Historical Center in Washington, D.C., which was consulted. However, since NSG did not become a "command" until 1968, there are no command histories prior to that date. The command has not had a program of preparing operational histories since shortly after World War II, and there is thus nothing similar to what AIA has available. The only "history" unearthed was "U.S. Naval Communication Supplementary Activities in the Korean Conflict, June 1950–August 1953," contained in CCH Series V.M.3.1.

8. CIA has an active history program and a large collection of official (classified) histories on various aspects of its operations. These histories can be consulted only at the CIA history office in Rosslyn, Virginia, and then only with permission of the CIA Historian.

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In addition, there were three oral histories of interest:

Richard M. Bissell, Jr. (separate interviews in 1976 and 1984).

John A. McCone. 1989.

James R. Schlesinger. 1982.

9. Unclassified publications by outside scholars generally do not contain significant information about modern (post-1945) cryptologic history, but there are a number of exceptions. In addition, outside sources must be consulted to give context and meaning to cryptologic events. The following list contains a few of the more relevant and useful outside sources used in this study.

Ambrose, Stephen E. *Eisenhower: Soldier and President.* New York: Simon and Schuster, 1990.

Andrew, Christopher. "The Growth of the Australian Intelligence Community and the Anglo-American Connection." *Intelligence and National Security* 4:2 (April 1989) 213–256.

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

Bamford, James. *The Puzzle Palace. A Report on America's Most Secret Agency.* Boston: Houghton Mifflin, 1982.

DOCID: 523682 REF ID:A523682

Barker, Wayne G., and Rodney E. Coffman. *The Anatomy of Two Traitors: The Defection of Bernon F. Mitchell and William H. Martin.* Laguna Hills, CA: Aegean Park Press, 1981.

Ball, Desmond, and David Horner. "To Catch a Spy: Signals Intelligence and Counterespionage in Australia, 1944-1949." Pending publication from Canberra: Strategic and Defence Studies Centre, Australian National University.

Bechloss, Michael. *Mayday: Eisenhower, Khrushchev and the U-2 Affair.* New York: Harper and Row, 1986.

———. *The Crisis Years: Kennedy and Khrushchev,* 1960–1963. New York: Edward Burlingame Books, 1991.

Blair, Clay. *The Forgotten War: Americans in Korea, 1950–1953.* New York: Times Books, 1987.

Breckinridge, S. D. *The CIA and the U.S. Intelligence System.* Bould. Westview Press, 1986.

Brugioni, Dino. *Eyeball to Eyeball: The Inside Story of the Cuban Missile Crisis.* Edited by Robert F. McCort. New York: Random House, 1990.

Bucher, Lloyd M. (with Mark Rascovich). *Bucher: My Story.* Garden City, New York: Doubleday, 1970.

Burrows, William E. *Deep Black: Space Espionage and National Security.* New York: Random House, 1986.

Buttinger, Joseph. *Vietnam: A Political History.* New York: Frederick A. Praeger, 1968.

Cline, Ray S. *The CIA Under Reagan, Bush and Casey.* Washington: Acropolis Books, 1981.

Ennes, James M. Jr. *Assault on the* Liberty: *The True Story of the Israeli Attack on an American Intelligence Ship.* New York: Random House, 1979.

Goldschmidt, Arthur. *A Concise History of the Middle East.* Boulder, CO.: Westview Press, 1979.

Goodman, Hirsh, and Zeev Schiff. "The Attack on the *Liberty.*" *Atlantic Monthly,* September 1984.

Goulden, Joseph C. *Truth is the First Casualty: the Gulf of Tonkin Affair – Illusion and Reality.* Chicago: Rand McNally, 1969.

———. *Korea: The Untold Story of the War.* New York: Times Books, 1982.

Harris, George. *Troubled Alliance: Turkish-American Problems in Historical Perspective, 1945–1971.* Washington: American Enterprise Institute for Public Policy Research, 1972.

Hermes, Walter G. *Truce Tent and Fighting Front: United States Army in the Korean War.* Washington: Office of the Chief of Military History, United States Army, 1966.

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Herring, George. *America's Longest War: The United States and Vietnam, 1950–1975*. Philadelphia: Temple University Press,1986.

Hersh, Seymour. *The Price of Power: Kissinger in the Nixon White House*. New York: Summit Books, 1983.

Herzog, Chaim. *The Arab-Israeli Wars: War and Peace in the Middle East*. New York: Random House, 1982.

Kahn, David. *The Codebreakers: The Story of Secret Writing*. New York: MacMillan, 1967.

Karnow, Stanley. *Vietnam: A History*. New York: Penguin Books, 1983.

Kramer, Mark. "Tactical Nuclear Weapons, Soviet Command Authority, and the Cuban Missile Crisis." Cold War International History Project Bulletin, Fall 1993.

———. "Archival Research in Moscow, Progress and Pitfalls." Cold War International History Project Bulletin, Fall 1993.

Lamphere, R. J., and T. Schachtman. *The FBI-KGB War, a Special Agent's Story*. New York: Random House, 1986.

Laqueur, Walter. *A World of Secrets: The Uses and Limits of Intelligence*. New York: Basic Books, 1985.

Lewin, Ronald. *The American Magic: Codes, Ciphers and the Defeat of Japan*. New York: Farrar, Straus and Giroux, 1982.

Lewy, Gunter. *The Federal Loyalty - Security Program: The Need for Reform. Washington*: American Enterprise Institute for Public Policy Research, 1983.

Manne, Robert. *The Petrov Affair: Politics and Espionage*. Sydney: Pergamon, 1987.

Marolda, Edward J., and Oscar P. Fitzgerald. *The United States Navy in the Vietnam Conflict*: Vol. II, From Military Assistance to Combat, 1959–1965. Washington: Naval Historical Center, 1986.

Martin, David. *Wilderness of Mirrors*. New York: Ballantine Books, 1980.

McAuliffe, Mary S. (ed.) *CIA Documents on the Cuban Missile Crisis, 1962*. Washington: CIA, 1992.

Meilinger, Philip S. *Hoyt S. Vandenberg*: *The Life of a General*. Bloomington, Indiana: University of Indiana Press, 1989.

O'Neill, William. *American High: The Years of Confidence, 1945–1960*. New York: Free Press, 1986.

Palmer, Gregory. *The McNamara Strategy and the Vietnam War: Program Budgeting in the Pentagon, 1960–1968*. Westport, Conn.: Greenwood Press, 1978.

Powers, Thomas. *The Man Who Kept the Secrets: Richard Helms and the CIA*. New York: Alfred A. Knopf, 1979.

Radosh, Ronald, and Joyce Milton. *The Rosenberg File: A Search for the Truth.* New York: Holt, Rinehart and Winston, 1983.

Randell, Brian (ed.) *The Origins of Digital Computers: Selected Papers.* 2nd ed. New York: Springer-Verlag, 1975.

Ranelagh, John. *The Agency: The Rise and Decline of the CIA.* New York: Simon and Schuster, 1986.

Reese, Mary Ellen. *General Reinhard Gehlen: The CIA Connection.* Fairfax, Va.: George Mason University Press, 1990.

Richelson, Jeffrey T., and Desmond Ball. *The Ties That Bind.* Boston: Allen and Unwin, 1985.

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Shurkin, Joel. *Engines of the Mind: A History of the Computer.* New York: W. W. Norton and Company, 1984.

Szulc, Tad. *Czechoslovakia Since World War II.* New York: Viking Press, 1971.

Tahir-Kheli, Shirin. *The United States and Pakistan: The Evolution of an Influence Relationship.* Studies of Influence in Internal Relations; Alvin Z. Rubinstein (ed.). New York: Praeger,1982.

Thies, Wallace J., and James D. Harris. "An Alliance Unravels: The United States and ANZUS." *Naval War College Review*, Summer 1993.

Willenson, Kim. *The Bad War: An Oral History of the Vietnam War.* New York: New American Library, 1987.

Wirtz, James J. *The Tet Offensive: Intelligence Failure in War.* Cornell Studies in Security Affairs. Ithaca, New York: Cornell University Press, 1991.

Wise, David. "Remember the *Maddox*." *Esquire*, April 1968.

Wright, Peter (with Paul Greengrass). *Spycatcher: The Candid Autobiography of a Senior Intelligence Officer.* New York: Bantam Doubleday Dell Publishing Group, Inc., 1987.

10. Presidential libraries contain key documents and add insights into the cryptologic process at the executive level. All presidential libraries consulted contained highly relevant information. They were

Harry S. Truman Presidential Library, Independence, Missouri.
Dwight D. Eisenhower Presidential Library, Abilene, Kansas.
John F. Kennedy Presidential Library, Boston, Massachusetts.
Lyndon Baines Johnson Presidential Library, Austin, Texas.
The Nixon Library papers, which are presently stored at Archives II in College Park, were not consulted because the National Security Files have not yet been processed and made available for research.
Copies of key documents from the other libraries are available in CCH Series XVI.

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