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.

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

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]

E.O. 13526, section 1.4(c)

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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]

E.O. 13526, section 1.4(d)

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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

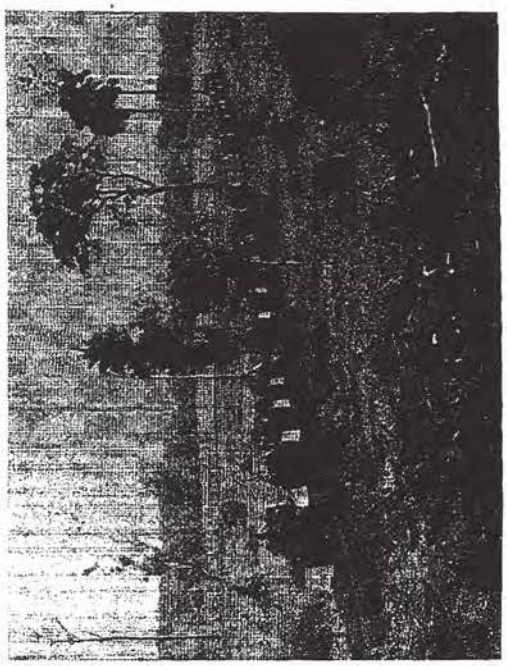
people. At that point, pressure from MACV to locate and overrun (or at least bomb) COSVN became considerable.[54]

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.

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

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.

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.[81]

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.[82]

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.[83]

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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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

CCP – Consolidated Cryptologic Program
CCU – COMINT Contingency Unit
CDAA – Circularly disposed antenna array

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

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.

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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:

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Withheld from public release Pub. L. 86-36

[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.

[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.

Wigglesworth, Donald. "Cuban Missile Crisis: A SIGINT Prespective." *Cryptologic Quarterly*, Spring 1994, Vol. 13, No. 1.

[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.)

Ziehm, Thomas P. *The National Security Agency and the EC-121 Shootdown*. U.S. Cryptologic History, Special Series, Crisis Collection, Vol. 3.

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]

Hogan, Douglas. "General and Special-Purpose Computers: A Historical Look and Some Lessons Learned." 1986.

Howe, George F. "The Narrative History of AFSA/NSA, Parts I–V."

——. "COMINT Production in the Korean War: The AFSA/NSA Contribution." n.d.

——. "Centralized COMINT Communications Centers: The Historical Record." 1956.

[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.

[redacted]

NSASAB. "Technology for Special Purpose Processors." 1978.

Page, Ryon A. "The Wired Rotor in U.S. Communications Security." 1980.

[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.

[redacted] "Consumer Liaison Units, 1949–1957." 1957.

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.

"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.

[redacted]

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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.

[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.

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.

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.

Sheehan, Neil. *A Bright Shining Lie: John Paul Vann and America in Vietnam.* NY: Random House, 1988.

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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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~~

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

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5UCO (AKA Secretape); 219

60th Signal Service Company, Ft. Lewis, WA; 40

466L system; 296, 308–311, 339, 364

6901st Special Communications Center – see Air Force Special Communications Center