OVERLOOKED, FORGOTTEN, MISUNDERSTOOD
The "Other" SIGINT in World War II

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Abstract

Fascination with ULTRA, the extraordinary World War II cryptologic intelligence, by historians and the public alike has eclipsed knowledge of and study of a second important cryptologic intelligence source. Whereas ULTRA provided senior Allied leaders with deep insight into enemy strategic thinking and plans, tactical cryptologic intelligence often gave combat commanders the vital information needed to win actual battles. Tactical cryptologic intelligence is less known and studied partly because it is in the shadow of ULTRA. In addition, fewer sources about the practice of tactical cryptologic intelligence have survived, and those readily available are fragmented and anecdotal. Tactical cryptologic intelligence merits further research and analysis if we are to have a fuller understanding of cryptology in practice and intelligence in the world war.

When the subject of cryptology in World War II is raised, most everybody's first thought is ULTRA, the Allied exploitation of the German ENIGMA machine and other machine-generated cryptography. The topic almost automatically brings to mind exciting stories relating how Allied analytic successes against Axis cryptographic systems enabled good strategic decisions and facilitated victory by the Allied powers in World War II.

Declassification of the "ULTRA secret" in the early 1970s revealed an important but previously-unknown aspect of World War II intelligence. The new revelations fascinated public and professional historians alike --- all now had to revise what they thought were concrete facts about decision-making in the world war. The professional and lay fascination with ULTRA has not dimmed in the decades since. (Winterbotham, 1974)

ULTRA is a prime example of signals intelligence (SIGINT), a secret but common practice of most governments and militaries. SIGINT is a process consisting of collection of target communications, i.e., eavesdropping, then solution of cryptographic systems, and translation. Since the discipline of cryptanalysis remains central to the process, in Great Britain and the United States, the agencies and processes involved are designated "cryptologic."

During World War II, ULTRA was a shared enterprise of Great Britain, the United States, Canada, Australia, and New Zealand. Decrypts of high-grade Axis cryptosystems were produced by specialized personnel at secret centers in each country, the most famous of which was Bletchley Park in the UK. The product was distributed to an extremely limited audience of the most senior civilian and military officials in the five countries. (Benson, 1980)

This aspect of World War II is fairly well known today, and most histories of the war published since the 1970s have included at least a mention of ULTRA, often much more. However, it is less well known that the allies had a second SIGINT/cryptologic effort, one that also had a significant effect on military operations, but it is little mentioned today. Tactical SIGINT.

From the earliest days of the war, the Allied nations supported their fighting forces with tactical SIGINT units that accompanied deployed troops wherever they might be dispatched. These self-contained units performed all functions in the SIGINT cycle: intercept, cryptanalysis and/or traffic analysis, translation, and distribution to the local commander. Whereas ULTRA product was distributed to a small number of senior officers, plus their senior intelligence staffers, and Army level (sometimes Corps level), tactical SIGINT usually went to corps-level commanders or below.

The Bletchley Park historian notes that after the landings in Normandy in June 1944, ULTRA remained a valuable source for senior officers needing a broader view of enemy intentions, but often tactical SIGINT was more important for daily combat operations. (Kenyon, 2019)

ULTRA contained insights into the enemy's strategic thinking, sometimes including operational plans, information appropriate for Allied senior commanders. While senior leaders could not share ULTRA with their subordinate commanders for security reasons, insights gained from ULTRA were reflected in the orders sent to subordinates from the top.

In fact, commanders operating near the front really did not need ULTRA. However valuable the texts to senior leaders, the decrypts generally did not apply to lower-echelon officers with more limited areas of responsibility. Division commanders primarily needed accurate information on enemy deployments and actions just beyond their horizon. This is what tactical SIGINT provided them.

Whereas ULTRA producers targeted high-grade cryptographic systems, such as the German ENIGMA machine or the Japanese Navy's JN-25, tactical SIGINT units worked against lower-level systems. Communications at or near the front lines frequently was encrypted, but usually in less difficult systems, "paper and pencil" ciphers that did not involve cumbersome machines or codebooks and could be used quickly. Trained cryptanalysts in a tactical unit usually could solve these systems without the heavy machine support needed for ULTA-level intercept.

Before the war, both Great Britain and the United States trained units in tactical intercept of enemy communications, intending them to provide direct combat support should war break out. This training was good, but did not reflect the reality the SIGINT units later encountered in actual combat. The British experience in North Africa against German tactical communications honed the talents of their combat SIGINT personnel, and UK veterans from the early days of the desert war shared the lessons from this direct experience with their American colleagues, once the United States entered the war.

As it deployed worldwide after 1942, the US Army established cryptologic headquarters in each theater of war to serve as a coordinating organization for tactical units operating in the war zones. In practice, tactical units served two masters: both theater SIGINT headquarters, and the intelligence staffs of the combat units to which they were assigned.

For the United States military, tactical SIGINT units were deployed at company strength. The usual practice in the field, however, was to split the company into multiple detachments that could be deployed individually in several areas within the combat zone assigned to a particular combat unit.

Tactical units were intended to operate in fast-changing situations, and would work in large trucks on which the container area had been converted for office work. The team would include intercept operators, cryptanalysts, and translators. Where possible, as in the campaign in Western Europe, tactical SIGINT companies would commandeer abandoned buildings for both operational use and housing.

Take, for example the Ardennes Offensive, commonly known as the Battle of the Bulge, in 1944. German units assembled and attacked under conditions of radio silence, thus preserving the element of surprise; neither ULTRA nor tactical SIGINT provided any warning. Once the attack was blunted, forcing German units to retreat, they became chatty on the radio. US and British tactical SIGINT teams exploited these communications, enabling Allied success in regaining lost ground. (SRH-112)

Tactical cryptologic teams often warned about impending air raids. Their analysis of enemy communications enabled them to identify specific enemy units facing theirs, detect unit replacements or movements, or hear activities that might portend offensive actions.

During World War II, US air forces were subordinate to the Army, and received their SIGINT support through Army channels. A number of tactical SIGINT units received specialized training in air communications, and were allocated to work against the other side's air forces; these specialized units had the designation "radio squadrons mobile."

The US Navy also deployed tactical SIGINT units during combat operations. The first such unit accompanied American aircraft carriers on a series of harassment raids against Japanese-held islands just days after the United States entered the war. The SIGINT units proved so valuable from this starting point, the Navy trained more personnel and assigned a unit to each task force, sometimes to individual components of naval task forces. As in the Army, Navy tactical SIGINT units were self-contained, including intercept operators, cryptanalysts, and translators, the full range of necessary skills in each team.

In the US Navy, the primary task for the tactical SIGINT units was force protection --- to alert the task force commander at the earliest possible moment after the Japanese had detected the US force's presence, and then to give warning about enemy aircraft dispatched against American ships during combat operations.

The Royal Navy also used tactical cryptologists for force protection. For example, teams of tactical cryptologists many times provided warnings that enabled the protection of supply convoys. (Kenyon, 2023)

Who were the tactical SIGINT personnel?

In the United States, Army and Navy recruitment personnel were instructed to identify those who did especially well on aptitude tests, particularly in mathematics, and shunt those recruits or volunteers to the cryptologic services. Recruitment personnel also did the same with those who claimed knowledge of foreign languages. The US Army trained soldiers in field cryptology at several Signal Corps military posts within the United States, and also gave specialized language training to the tactical personnel.

Recent publications have rightly emphasized the wartime role of women in SIGINT. However, the thousands of women SIGINT personnel worked only on ULTRA; there were no tactical "code girls." Tactical SIGINT units operated near the front; US and British policy in the war barred women from combat roles.

The five Allied countries that shared ULTRA also had by far the largest and most widely deployed tactical cryptologic units. But, they were not entirely alone in this endeavor.

More research remains to be done on German SIGINT in the world war, but it appears that the uncoordinated German SIGINT endeavor operated primarily from fixed sites. One exception was a company of the 56th Signals 4

Battalion, a highly-proficient tactical SIGINT unit that supported General Rommel in North Africa. The National Archives in the United States and Great Britain hold many German wartime SIGINT documents and interrogation reports of practitioners, primarily strategic cryptologists, but also including some at the strategic level; this is, in the author's opinion, an underutilized resource. (Kahn, 1978; Bennett, 1989)

Polish forces in exile fought alongside the British Army in Italy, and had a Polish tactical SIGINT unit in support. The unit had been raised, trained, and equipped by the British, but operated directly with their countrymen in combat. (Skillen, 1989)

Why are tactical cryptologic operations in the war so little-known?

In the first place, material on tactical operations has been overwhelmed by the rich, entertaining, and valuable ULTRA material. There seems to be an endless ULTRA treasury containing not only technical data on cryptography and cryptanalysis, but also attention-grabbing stories that provide new twists to familiar wartime episodes. Although intelligence from tactical SIGINT often was crucial in the military operations of the day, in retrospect the stories seem mundane and are no threat to the attention-getting ULTRA material.

Because tactical units operated in forward areas and were vulnerable to capture, they destroyed their operational records very soon after they were used. The reports were tactical in nature, so often were not preserved at the intelligence headquarters, either. Thus, little remains in terms of original documentation about the activities and successes (or failures) each unit had.

Much of the surviving information about tactical SIGINT is administrative. During the war itself, tactical SIGINT units sent monthly operational reports to the senior SIGINT office in their theater of operations, but these were mostly technical data, both about their personnel situation and statistics (about the amount of enemy traffic processed, etc.). At the end of the war, many of these units wrote histories of their activities, but this was generally make-work for personnel who did not have sufficient service time to be demobilized, and was often written from memory not documentation.

Both the monthly reports and wrap-up histories, amid the statistics, contain anecdotes about the work of the units, but they are fragmented and often lack context. These histories also often contain the pawkish and acerbic comments that famously characterized American GI humor in the war, along with plenty of complaints about the inequities of life at the front.

What are the sources about tactical SIGINT in World War II?

A good administrative history is George Howe's *American Signals Intelligence in North Africa and Western Europe*. Howe as a US Army historian wrote the Army's standard volume on World War II in North Africa, and later in his career joined the National Security Agency, and documented the SIGINT aspects of the story. (Howe, 1980)

In Britain, Hugh Skillen, a veteran of tactical cryptologic operations, for decades sought to document the wartime effort. He held conferences and published privately several anthologies of reminiscences from tactical SIGINT personnel (primarily British, but a few key Americans.) (Skillen, 1989)

The National Security Agency has made available many of the war's end summary reports from tactical cryptologic units. These are found within a larger collection of declassified documents known as SRHs (Special Research History).

Some participants in tactical SIGINT operations, such as Charles David, have written articles or portions of larger memoirs that shed light on day-to-day work in the field. Unfortunately, there is no central reference point for these writings. (David, 1996)

Many personal accounts of tactical SIGINT activities appear in a series of conference papers edited by Hugh Skillen, *The ENIGMA Symposium*, with editions for 1992 through 2003. Despite the title, the volumes deal with tactical SIGINT in all theaters of World War II.

The way forward in studying wartime tactical cryptology is, of course, to synthesize the official reports at the US and British national archives, incomplete though they may be. This material may be supplemented with individual accounts of practitioners and users: many universities and large local libraries have conducted oral history interviews with veterans, including cryptologists, and collected their private memoirs. An initial survey of the US Army Heritage and Education shows that their holdings include papers and interviews from senior officers who worked in cryptologic endeavors early in their careers, and can provide perspective on the tactical efforts.

It has been clear since the 1970s that the Allied success in the cryptologic aspects in all theaters of war in World War II was a key factor in the ultimate military victory. While most attention has been focused on ULTRA, more attention needs to be paid to tactical SIGINT as well. ULTRA kept Allied senior leaders exceptionally well informed in terms of grand strategy, but tactical SIGINT was also a necessary ingredient for victory at the frontline level, where lives were at risk and the success or failure of strategy was at stake.

This is a gap in knowledge that can and should be filled.

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