

Musician Cryptologists: The Band of the USS *California* at Pearl Harbor and Beyond

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Abstract

Working from the basement of US Pacific Fleet Headquarters in Pearl Harbor from 1941, a small team of navy cryptanalysts and linguists known as the Combat Intelligence Unit (CIU) provided the US Pacific Fleet Command with timely details of the capabilities and intentions of the Japanese Imperial Navy (IJN) in the Pacific. A substantial portion of the CIU was comprised of 20 enlisted musicians of US Navy Unit Band 16, the band of the USS *California* (BB-44), who survived the sinking of their ship in the attack of December 7, 1941. The musicians were recruited to Combat Intelligence, retrained to perform tasks related to the deciphering of Japanese Naval Code JN-25b, and contributed to that unit's celebrated intelligence successes of 1942. As the war waged on, several musicians from Band 16 transferred to the Naval Communications Complex at Nebraska Avenue in Washington DC, and three eventually joined the National Security Agency (NSA) and served through the height of the Cold War.

1 Introduction

Band Unit 16 of the United States Navy, originally assigned to the battleship USS *California*, survived the attack on Pearl Harbor to become an important component in the effort that led to the breaking of the enciphered operational code of the Imperial Japanese Navy which provided the US Navy the opportunity to defeat the opposing fleet at the pivotal Battle of Midway. While USS *California*'s Band 16 has been widely mentioned in previous literature, these references have been limited in scope, constrained to their work in the Combat Intelligence Unit in early 1942. This research describes the career arc of the bandmen including their music training and shipboard

life, experiences during the Battle of Pearl Harbor, their recruitment to Combat Intelligence and the attack on JN-25b, and notably work in intelligence later in the second world war, into the Cold War and the shifting priorities of the United States intelligence effort.

2 US Navy Unit Band 16

The 21-member band, led by Bandmaster Lovine "Red" Luckenbach, trained together at the newly formed US Navy School of Music (USNSOM) in Washington DC. This institution was formed in 1935 at the Navy Yard in Washington DC, and by 1939 was turning out highly regarded units for ships and shore installations. Bands at the school received rigorous training through a two-year course of musicianship, including music theory, solfège, and ensemble preparation in a wide variety of musical styles. Bands were formed up as single entities in their second year at the school to train together, deploy together, and perform together for two-year tours. The largest ships in the fleet were assigned 21-piece bands, as were most admirals afloat, while ensembles of 17 and nine pieces were assigned to smaller warships and troop transports, respectively (Jones, 2002). Admission to the school was by audition, generally taken at the age of 18 or 19. Prospective sailor-musicians travelled to the Washington Navy Yard to perform this live audition, and if admitted would immediately begin a brief 2-week course of basic training in Virginia, followed by admission to the school's curriculum (Bolen, 1976; Harding, 1980; Luckenbach, 1978).

After graduating from the USNSOM in May of 1941, Band Unit 16 was sent to San Diego, where they, along with two other newly graduated bands destined for the Pearl Harbor Naval Air Station and USS *West Virginia*,

boarded the Seaplane tender *USS Curtiss* for the territory of Hawaii, Pearl Harbor, and their new homes (*Muster Roll of the San Diego Receiving Station*, 1941). Once received aboard the *California*, the band began a surprisingly varied life. Navy bands of the time were cross trained at the Navy Yard school in a variety of musical styles, and each musician was expected to at double on at least one other instrument, such as trombonists playing violin, clarinetists playing oboe and saxophone, and trumpet players doubling French horn. This versatility gave the band the flexibility to meet their daily duties at sea and in port. The band had to be prepared to perform ceremonial music at one moment, then play on the march, perform patriotic selections, give formal concerts, and perform the popular dance music of the day for entertainment of the sailors (Jones, 2002). Bandmaster Luckenbach, a Navy Musician since 1929, had completed several tours aboard the *USS Saratoga*, as well as the Bandmaster School, a separate course at the Washington Navy Yard for band leaders and conductors. His 1939 rating of Bandmaster and the equivalent rank of Chief Petty Officer gave Red Luckenbach a bunk with the other Chiefs aboard ship (Luckenbach, 1978). As Bandmaster he arranged and composed music for concert performance, including a dramatic original work “Julius Caesar” and a march he would later title “Pearl Harbor Survivors’ March” (Harding, 1988). He assembled star jazz soloists such as trumpet player Michael Palchefsy, whose Bunny Berigan-like sweet tone was well-admired, and jazz arranger Russell ‘Sig’ Shelley, a tenor saxophone player with the aural acumen to hear a Glenn Miller phonograph, then write out the parts for each player in a single sitting. With this talent, the band developed a reputation throughout the Pacific Fleet (Bolen, 1976).

2.1 Unit Band 16 Daily Life

Each morning Chief Luckenbach would meet with Executive Officer Earl E. Stone, future Director of the Armed Forces Security Agency (AFSA) (Maneck & Redacted, 2003) to determine the performance schedule for the band, such morning and evening colors from the fantail, ceremonial music for an Officer’s Dining-in, swing dance music before and after the evening movie on the quarterdeck, a string quartet for a visiting Admiral, and a noon concert while the men ate lunch (Luckenbach,

1978). This adaptability was demonstrated in the equipment manifest of navy band units like number 16, including full sets of 34 string and wind instruments, and 1100 sets of music for concert band, orchestra, and jazz band (Jones, 2002). The entertainment of the sailors and officers, with the resulting improvement of morale, meant that the band spent substantial time performing as a swing/ dance band, including a fleet-wide competition among the bands of the Pacific, the 1941 Battle of Music (Harding, 1980; Luckenbach, 1978).

The Battle of Music was a series of competitions spread over the fall and winter of 1941, with an elimination round held every two weeks in the Bloch Arena, a new recreation center on the Pearl harbor base. Each competition included four bands performing a series of four selections for the audience. The event was organized by Chief Luckenbach, as the senior Bandmaster in the Pacific Fleet (Luckenbach, 1978).



Image 1: Band of the *USS California* at the 1941 ‘Battle of Music’. Bloch Arena, Pearl Harbor Navy Yard, Territory of Hawaii (NSA Library, Chiles/Weber Collection)

Battle of Music rounds were scheduled for November 22 and December 6, with the finals set for December 20. The November contest was won by Navy Band Unit 22 of the *USS Arizona*, led by Bandmaster Frederick Kinney. The *Arizona* band attended the contest in the Bloch Arena on the night of December 6 to hear the bandmen of the *USS Tennessee*. Some attendees later recalled that the *Arizona* musicians played themselves that night, between rounds, though not as official contestants. The contest ended just after 1:00 am in the morning, when the crews left the arena

and headed for the liberty boats to take them back to their ships. It was the early hours of December 7, 1941.

3 The Battle of Pearl Harbor

The duty band of the *California*—one half of the ensemble—reported to the main deck aft at 7:30 am to perform, as they did each morning, the Star-Spangled Banner. By 7:50 am the group stood ready to play and watched the stern of the fleet flagship *USS Pennsylvania* for the signal to begin (Bolen, 1976).

Aboard the *California* Musician Second Class (Mus2c) Warren G. Harding, a trombonist from rural Indiana who was not on duty that morning, waited for his friend Mus2c Frank Wanat to catch the 7:30 am liberty boat for shore, where they were to meet friends of Harding's family for a traditional Hawaiian feast, or luau. Wanat, tired from the late night at Bloch Arena, was not ready in time, telling Harding they could catch the 8:30 am boat instead. Harding waited on the main deck in the beautiful tropical morning, admiring a graceful PBY flying boat taking off from the smooth waters. At 7:55, the band members heard aircraft of a different type approach. Harding first assumed that a movie was being filmed until the alarm rang out sending the ship the General Quarters (Harding, 1980). The bandsmen on deck left their instruments and headed below deck for various duty stations, including ammunition loading, first aid, and repair (Bolen, 1976).

Aboard the *Oklahoma*, moored outboard of *USS Maryland* along battleship row off Ford Island, the attack was swift and violent. Eight torpedoes opened the hull to too much water too quickly, and the great ship rolled over and capsized in 50 feet of water within ten minutes. Twelve members of the *Oklahoma* band did not survive (*Muster Rolls of USS Oklahoma, 1941*).

Fifteen minutes after the attack began, a Japanese Aichi D3A dive bomber descended on the *USS Arizona*, releasing a converted 15-inch naval shell over the number two turret. The shell penetrated the armor deck of the *Arizona*, detonating in a magazine, instantly dooming the ship and 1,177 sailors aboard. Manning battle stations mere yards from the explosion, all 21 members of Navy Unit Band 22 perished in that

moment. They would be remembered by their musician colleagues weeks later when, after the cancellation of the final round of the 1941 Battle of Music, the bands of the Pacific Fleet voted unanimously to award first prize to Unit Band 22, renaming it The Arizona Trophy. The cup resides now in the Pearl Harbor National Memorial.

Aboard the *California*, tuba and bass player Edgar Manley, a towering man, joined trombonist Harding four levels below the main deck, in a small room named 'Port Repair Four.' Here they sealed themselves in by dogging the watertight hatches fore and aft and waited. A torpedo hit near the bow twisted the ship's frame and brought the first signs of trouble as water began to seep in through the now wrenched door. Once the water reached their ankles, the men moved one room amidships, closing the hatches behind them, and waited. A second torpedo hit near the first, followed by a bomb at the midships hatch in the main deck. Harding plugged a headset into the communication system and asked for instructions. What he was told he chose not to repeat to the other men in the room. The man on the intercom informed Harding that the order had been given to abandon ship, but to preserve watertight integrity he was to remain at his station. "We will come back for you when we can," he was told. Manley had at this point passed out from exhaustion and the pain of two sprained ankles and was lying in a growing pool of oil and water now entering their new refuge. Working together, the men pulled Manley upright, and finally moved up through the ship to the main deck. Their sinking battleship was moored nearly 100 feet from the shore, the water thick with oil from the sunken vessels in the harbor. Swimming through this they made their way with other survivors to a hanger on Ford Island, where they received fresh clothing, a cup of tomato juice, and various weapons to defend against the anticipated island invasion (Bolen, 1976; Harding, 1988).

Bandmaster Luckenbach quickly went to work organizing the men of the *California* to save their ship. First he opened locked ammunition boxes near the anti-aircraft guns, then led firefighting crews to rescue those trapped by the midships bomb explosion, and finally helped haul 50 lb. 5-inch shells up a series of ladders from the magazine to the main

deck. Recalling the morning 30 years later, Red Luckenbach remembered taking a launch over to assist the *USS Arizona*, only to find the fires too hot to approach, and no sign of survivors. On reboarding the *California*, he removed his neckerchief to cover the face of a man he knew only as ‘Keys’, the mortally wounded shopkeeper of the ship’s store (Luckenbach, 1978).

Within a day, the *California* settled to the harbor bottom, her keel resting in the mud. With 102 total casualties, the ship fared better than many that day. However, once they were assembled again on shore, Red Luckenbach took a head count of his band, and found only nineteen of his twenty men. Musician Second Class Russell K. Shelly Jr, the 24-year-old saxophonist and celebrated arranger from Sellersville, PA, did not make it off the *California*. His duty station had been in the bow, near both torpedo impacts.(Harding, 1980; Luckenbach, 1978)

4 Combat Intelligence

Across the harbor, located in the basement of the Navy District 14 Administration Building, Commander Joseph Rochefort listened to the sounds of the attack, and felt a personal guilt. He was in command of the seven-month-old Combat Intelligence Unit (CIU) at Pearl Harbor, one of three communications intelligence stations operated by the United States Navy. Since arriving in Hawaii Joe Rochefort had been tasked with deciphering the presumably information-rich Flag Officers Code of the Imperial Japanese Navy (Carlson, 2011). This code had resisted penetration, though his unit had been effective using Traffic Analysis and Direction Finding through the massive radio antenna located at He’eia (Winton, 1993) to gather valuable information on Japanese naval movements. As he watched the battle unfold on December 7, Rochefort felt that he had failed in this duty. In hindsight, even if JN-25b had been his assigned decryption target, the *Kido Butai* force under Admiral Nagumo had maintained remarkable radio discipline for weeks and left very little to intercept. (Parker, 1994) But Commander Rochefort, like many in the navy and the nation following the attack, wanted to get into the fight.

4.1 Joseph Rochefort

Rochefort entered cryptology in late 1925. As navigation officer aboard an aging oil tanker, Rochefort would pass the time playing auction and contract bridge with his captain and gained a reputation as a master of crossword puzzles. Both skills were regarded as factors identifying aptitude in codes and ciphers, and he was soon assigned to the small group of Navy cryptologists in Washington DC. His mentors at the Washington Navy Yard included Lawrence Safford, a major figure in the field, and Agnes Meyer Driscoll, whose sharp mind and innovative thinking placed her at the center of the Navy’s efforts to break several ciphers during the interwar period. Rochefort next attended a multi-year Japanese language School at the US Embassy in Tokyo, where he interacted with his counterparts and soon-to-be enemies in the Japanese Navy (Carlson, 2011).

Shortly after the attack on Pearl Harbor, Rochefort and his men were re-tasked from the Flag Officer’s Code to breaking the primary Japanese Navy Operations Code designated JN-25b by the US Navy. By December 10, 1941, Navy Communications Intelligence in Washington DC and the new Commander-in-Chief of the Pacific Fleet had made this new effort a priority, and Rochefort and his team worked long hours to decipher, decode, and translate JN-25b (Wright, 1982).

4.2 The Dungeon

The small group in the damp, poorly ventilated basement, colloquially referred to as “The Dungeon,” needed additional staff to meet this new challenge, particularly as active war meant a massive increase in the frequency of intercepted messages in JN-25b (Showers, 1998). Rochefort turned to his talented administrative aid, Senior Chief Petty Officer (CPO) Durwood “Tex” Rorie. Tex Rorie was the quintessential Chief for Combat Intelligence, getting Rochefort’s men what they needed through his series of connections on Oahu. Rorie could often get the impossible and was now asked to find men to staff Combat Intelligence. He personally met each transport ship arriving into Pearl Harbor and was given free rein to have any enlisted men he wanted assigned to Rochefort’s command. Tex Rorie had a sense of what he was looking for: dedicated men capable of long hours of detailed

work, bright sailors capable of finding patterns within millions of seemingly identical data points, and men who could hold close vital secrets of the United States Navy (Carlson, 2011; Rorie, 1984).

4.3 Unit Band 16 to the CIU

Red Luckenbach and the musicians of band 16 had lost nearly everything in the attack. Beyond the devastating loss of their shipmates, their belongings, including many of their instruments, were entombed within the hull of the *USS California*, and with each capital ship of the fleet damaged or sunk there was no post or vessel in need of a band. Sent to the Fleet Receiving Station Pearl Harbor, they waited and wondered what the future might hold (Harding, 1980).

The musicians of Band 16 were in the Receiving Station when intrepid Chief Tex Rorie arrived on December 10, 1941 searching for additional manpower for Combat Intelligence. As Rorie recalls in his oral history from 1984, “I just walked out there and asked, ‘Any of you keep your damn mouth shut?’” A unanimous show of hands was followed with “We can get even with the Japs... and we can give you a job that will give you some satisfaction, [since] your instruments have blown up.” This air of mystery was enough, and Band 16 became a part of Rochefort’s operation in the CIU (Rorie, 1984).

An unforeseen stumbling block came from the FBI, who determined that several members of the band could not be cleared to work in this Top-Secret field. Rorie was told that men with the last names of Palchefsky, DeStwolinska, and Garbuschewski sounded too close to those of the enemy and would not be granted clearance. Chief Rorie brought the news to Red Luckenbach, who did not accept it. Rorie, a senior chief, was not used to being told no from a subordinate, but the men of Band 16, having been through years of training and the horrifying experience of December 7 together, would not be broken up. Rorie took the dilemma to his Commanding Officer, and Joe Rochefort, in a moment of decisive efficiency, told his CPO, “to hell with the FBI. Bring those guys in here.” (Carlson, 2011; Palchefsky, 2023) Musician Harding, in several published recollections starting with the *USS California*

Cruise Book and through his own 1988 memoir *Band of Secrecy*, notes that the Navy School of Music commander Lt. Charles Benter required all students to be second generation Americans and to pass an FBI background check, noting that FBI agents travelled to his hometown to interview friends and family as part of the Secret clearance Benter required. Harding believes this FBI clearance in the bandsmen’s personnel files allowed them to remain together in their new highly secret assignment (Harding, 1980; Harding, 1988). Documentation of such a USNSOM requirement remains elusive.

Luckenbach recalls the recruitment differently. Upon checking in to the receiving station around December 10 and not finding his band, he learned from the Fleet Pooling Officer that they had been transferred away. The Navy School of Music had specific rules governing Unit Bands, which by design could not be broken up for two years. A note to this effect from the Navy Bureau of Personnel was in the personnel file, or ‘jacket’, of each musician. With this in-hand, Luckenbach approached Senior Chief Rorie to demand that the entire band be accepted, as well as their Bandmaster. He accepted the complete roster of Unit Band 16 (Luckenbach, 1978). The retraining of this group was entrusted entirely to Chief Rorie, though in practice the bandsmen looked to Luckenbach as their effective leader. (Bolen, 1976; Harding, 1980; Rorie, 1984)

The band settled in quickly and were given vital if repetitive assignments. The JN-25b code consisted of a book of 50,000 5-digit groups, each with a meaning. A group might designate a ship, a location, or a letter (Budiansky, 2000). The crew of station NEGAT in Washington DC, including Lawrence Safford and Agnes Driscoll, had largely duplicated this book and sent a copy to Rochefort, who received it on December 15 (Carlson, 2011). But each JN-25b code group had a level of encryption: a five-digit number that was ‘false-added’ to each code group. False addition was simply adding the numbers together without carrying over any integers. An original code of 95832 might signify “Arrived port,” but encryption meant a randomly selected number, for example 32401, would be false added, thus the radio messenger would send out 27233. To accurately read a code group, one had to have the original book,

the encryption key designator given as column and line, and the encryption key book. Combat Intelligence had to find the answers using only one of these three (Holtwick, 1971). Built-in repetition in radio messages, such as “to your excellency” or “to the honorable” helped the team find patterns in swarms of 5-digit codes, as did the time delay of sending updated code books out to each post of the rapidly expanding Japanese Empire. A final challenge was that the messages, once decrypted and decoded, were in Japanese. With terrible news coming in daily from American bases at Wake Island, Guam, and the Philippines, the solutions had to be found quickly.

4.4 The Machine Room

In a cinderblock room created in one corner of the Pearl Harbor basement, Lt. Jack Holtwick ran a series of IBM tabulating and punch card machines, used to find repetition in the millions of code groups recovered by the Combat Intelligence Unit. The musicians were assigned to a specific machine that would generate hundreds of punch cards per day with the number groups from the radio intercepts, and to sort and count the cards as the machines processed them (Showers, 1998). The sorted cards could then be used to find commonly used code groups which in sufficient quantity could be cross-referenced to break the encryption. The sectioned off area of the dungeon with these noisy and pungent machines was referred to as ‘Holtwick’s Boiler Factory,’ and became the new home for many of Band 16 (Holmes, 1979).

4.5 Unit Band 16 Function in CIU

Chief Rorie was impressed by the bandsmen, who had been turned over to him for training by Commander Rochefort who told him, “100%, that’s your band” (Rorie, 1984). Mus2c Frank Wanat worked directly with Rochefort’s second-in-command Lt. Thomas Dyer, a gifted cryptanalyst, and became a ‘gifted cryppie’ himself (Ferguson & Foundation, 2001). Others were assigned to Lt. Jasper Holmes, a previously retired submariner who worked the plotting tables marking ship locations and liaised with his former colleagues at the Submarine Base. Others worked in Lt. Holtwick’s Machine Room, where IBM Tabulators sorted millions of punched cards with five-digit groups. Several of the bandsmen,

including trombonist Peter Panyon of Minnesota, worked to create these punch cards (Rorie, 1984). Panyon, speaking to a group from the National Cryptologic History Foundation in 2001, said “we had no idea what we were doing, or what the result would be. We just typed in the punch cards and sent them on to the next guy” (Ferguson & Foundation, 2001).

Chief Luckenbach and Mike Palchefskey worked closely with the IBM sorting and tabulating machines themselves. In Luckenbach’s case, the expertise he gained in Holtwick’s machine room led him to an officer’s commission and a post-war career with IBM, first in Seattle and then in Washington DC, where he was a civilian consultant to the Naval Security Group (Luckenbach, 1978) working in the 3810 Nebraska Avenue facility.

There is conflicting evidence regarding the degree to which the bandsmen of the *California* were involved in actual cryptanalysis at this point. Jasper Holmes in *Double Edged Secrets*, an early declassified account of WWII cryptology in the Pacific, records that the musicians were not only involved in cryptanalysis but that as a result, a link between musical and cryptanalytic ability was suggested, an idea often repeated by Chief Rorie (Holmes, 1979; Rorie, 1984). John Prados goes further, suggesting that other Navy bandsmen were sought out to fill similar roles due to the *California* Band’s success (Prados, 1995). Supporting this observation, Mus2c John Klaboe Engen of Unit Band 17, from the capsized *USS Oklahoma*, was later assigned to the Wahiawa radio intercept station, and finally given a Radioman rating and sent to a forward US Navy Airbase on the forward island of Roi. Both Palchefskey and Panyon noted working with and admiring Engen (Ferguson & Foundation, 2001). Recently, Mus2c Adone Calderone of the *USS West Virginia* related in his final years related a compelling story of Unit Band 17 serving in Communications Intelligence in Hawaii after the Pearl Harbor attack, while the band also maintained an active performing career at the Royal Hawaiian Hotel in Waikiki (Calderone, 2016). It is an interesting coincidence that the band of the *West Virginia* reported to their Executive Officer (XO) Captain (later Admiral) Roscoe Hillenkoetter, who would eventually become the first Director of the Central Intelligence Agency, in the same

manner Band 16 reported to the XO of the *California* Commander (later Admiral) Earl E. Stone, eventual head of the Armed Forces Security Agency which evolved into the National Security Agency (NSA). Musician Calderone references working in cryptography rather than cryptanalysis in Hawaii (Center, 2016) and contemporary muster rolls attach the surviving bandmen of the *West Virginia* to the Navy Yard, Pearl Harbor for the duration of the conflict (*Muster Roll of Pear Harbor Navy Yard, Territory of Hawaii*, 1941).

In a conflicting observation, Forrest Biard, an Ensign in the basement unit until he joined the *USS Enterprise* for sea duty in early 1942, addressed the cryptanalytic acumen of the bandmen directly, calling the evaluation of them as expert cryptanalysts “horse feathers,” while simultaneously praising the work of the band and describing them as “wonderful help,” and “we turned them into IBM Machine punchcard operators, and they were excellent at it, and they loved it” (Biard, 1992).

5 Operational Code JN-25b

Within weeks of joining Combat Intelligence, the code groups that had been backing up were processed: punched, sorted, and analyzed. Of the 50,000 base code groups in the JN-25b code, the cryptanalysts in Hawaii and Washington were able to break 10% to 15% of these by February 1942. By mid-April, enough of the code had been broken to allow for regular reading of the Imperial Japanese Navy (IJN) operational code, at least by Rochefort’s intuitive team. (Parker, 1993) The experienced cryptanalysts and linguists Rochefort, Thomas Dyer, Wesley ‘Ham’ Wright, Joseph Finnegan, and Alva ‘Red’ Laswell took the connections and patterns within the millions of five-digit groups and made leaps of intuition, coupled with long hours of diligent effort. The men of the unit worked on a 6-hour on, 6-hour off schedule, getting up from their desks or machines only once or twice per shift to get water. With the memories of the Pearl Harbor attack so vivid, and with the wreckage of battleship row still visible from the front lawn of the building where they worked, they were well-motivated (Carlson, 2011; Layton, 1983).

In early 1942, Commander Rochefort nearly lost his band to their former Admiral. Rear Admiral William S. Pye had commanded the Battleships of the Pacific Fleet at Pearl Harbor in late 1941, from his flagship *USS California*. Here he was well-aware and impressed by the musicianship of Unit Band 16, who provided both ceremonial and entertainment music for him at that time. With the rapid removal of Pacific Fleet commander Admiral Husband Kimmel following the attack of December 7 Admiral Pye was briefly tasked as Commander in Chief of the Pacific Fleet (CINCPAC) until the arrival of his replacement Admiral Chester Nimitz on December 31, 1941. As the Admiral known for ordering the end of the Wake Island relief effort, Pye was ordered away from the war zone and given command of the remaining older battleships in San Francisco Bay (Spector, 1989). From the mainland Admiral Pye had sent word that he needed his old band, Unit Band 16, to provide entertainment at his headquarters. A request from an Admiral, particularly the past Commander in Chief, for 20 enlisted men would normally be approved and executed in short order. But the bandmen in question were already integrated into Combat Intelligence. Commander Rochefort, through his liaison to the fleet Edwin Layton, informed Admiral Nimitz that such a transfer was not possible, as the musicians were better serving the war effort working on the JN-25b code than playing for the “Market Street Commandos,” a colloquial term for the Task Force on the west coast of the US. Nimitz finally agreed, and the band was permanently transferred Rochefort (Carlson, 2011; Palchefskey, 2023).

It was in April of 1942 that the unit made its most significant breakthrough. Traffic analysis made it clear that the IJN was planning an operation of unprecedented size, including the four combat effective aircraft carriers of the First Air Mobile Fleet, responsible for the Pearl Harbor attack in December (Prange et al., 1990). High-ranking members of the Communications section of the Office of the Chief of Naval Operations (designated OP-20-G) in Washington D.C. were convinced this was a move on the west coast of America, or perhaps the Panama Canal. But the analysts in Combat Intelligence had determined through reading the JN-25b code that the target was Midway Island, at the far end of the Hawaiian chain (Parker, 1993). The recovered messages provided

Admiral Chester Nimitz with precise data about the size, location, and timing of the coming attack. He would later tell Rochefort that he was within “Five miles, five degrees, and five minutes” of knowing exactly where the Japanese were. (Prange et al., 1990) With this information, Admiral Nimitz boldly moved the last remaining American aircraft carriers into place northwest of Midway and waited (Whitlock, 1995). Surely the greatest credit for the decisive victory that followed must be given to the brave sailors and airmen who fought it, and the Admirals who acted with trust and ‘calculated risk’. But it would not have been possible without Combat Intelligence who gave Admiral Nimitz just the information he needed, just when he needed it. The naval cryptologists of the Dungeon deserved credit for their accomplishments, but due to the secretive nature of the work, they could not tell others of the success (Harding, 1988).

The bandsmen had found a true calling. Even after Rochefort’s controversial departure from CIU in late 1942, they continued to work in the field. Tuba player and violinist Edgar Manely, bass clarinetist Horst Garbuschewski, and trombonist Peter Panyon transferred to the newly constructed barracks near the radio antenna at Wahiawa in 1943 and trained in signals reception (*Muster Rolls of Pear Harbor Navy Yard, Territory of Hawaii*, 1943). The Wahiawa facility, completed soon after the Pearl Harbor attack, centralized Radio Intercept efforts on Hawaii with an unobstructed antenna network among the pineapple fields in the wide valley in the center of Oahu (Layton et al., 1985). Here musical skills would be more directly employed, as they could perceive the subtle differences in the ‘fists’ of the Japanese radio operators, identifying their personal style at the telegraph in the same way they could identify the nuanced phrasing of a particular jazz soloist. (Ferguson & Foundation, 2001; Panyon, 2017)

6 Late War Developments

In October of 1942 Combat Intelligence was redesignated Fleet Radio Unit Pacific, or FRUPAC, and moved to a larger building on the Makalapa crater near both Fleet Admiral Nimitz’ headquarters and the other operations of the Joint Intelligence Center Pacific Ocean

Areas (JINCPOA), such as photographic reconnaissance (Showers, 1998).



Image 2: Fleet Radio Unit Pacific (FRUPAC), machine tabulators and reproducers. (Photo RADM J. N. Wenger)

By late 1943, the band began to separate for the first time since they met at the Navy School of Music in 1940. Two moved to the mainland to become naval aviators (Harding, 1988; *Muster Roll of Pear Harbor Navy Yard, Territory of Hawaii*, 1941). Joseph Bolen took the Navy offer to complete his college degree in Texas (Bolen, 1976). Tex Rorie was transferred to the radio unit on Bainbridge Island in Washington State before being transferred back to Hawaii and finally Washington D.C., where he continued working with the Communication Intelligence community including Thomas Dyer and John Harper at the Navy Communications Supplemental Activity Washington facility, CSAW, at 3801 Nebraska Avenue (Rorie, 1984).

7 Unit Band 16 into the Cold War

Peter Panyon, while serving in the Communications Supplemental Annex Washington in 1945, was asked if he studied any languages in school, to which Panyon responded no, but that his family conversed exclusively in Slovenian. This prompted his immediate enrollment in Russian language school in Colorado (Ferguson & Foundation, 2001). Panyon served in the Navy and NSA into the late 1970’s, with postings including the Antarctic during *Operation Deep Freeze* (Panyon, 2017). Michael Palchefsky, whose family spoke Polish at home, was similarly

admitted into Russian language school, with subsequent postings near Hamburg, Germany and Hokkaido, Japan (Palchefskey, 2023). Palchefskey credited his skill at transposing music in applying the process of transposition to code recovery, and to a lesser extent his experience using phrase substitution in improvised solos with number substitution. Musical transposition is a skill particularly evident in jazz musicians and orchestral trumpet players, of which Palchefskey was both. (Bolen, 1976; Ferguson & Foundation, 2001; Palchefskey, 2023)

7.1 Project Venona Connection

Of the nine bandsmen who moved to the Nebraska Avenue Complex later in the war (*Muster Roll of Washington Navy Yard*, 1943), Frank Wanat leaves a particularly intriguing trail. Musician First Class Wanat sat between Peter Panyon and Warren Harding in the trombone section of Unit Band 16 (Panyon, 2017). Along with others from the band he transferred to Washington DC in 1943, and like Pete Panyon and Mike Palchefskey would remain in Communication Intelligence for decades (Administration, 1941-1945; *Muster Roll of Washington Navy Yard*, 1943; Palchefskey, 2023).

At the same time the bandsmen were at the Nebraska Avenue facility from late 1943, the US Army Signals Intelligence Service (SIS) was housed in Arlington Hall, a similar site near Washington D.C. In a back hallway of Arlington Hall in 1943, US Army Lieutenant and accomplished Assyriologist Richard Treadwell Hallock assembled a small team to tackle a highly classified project, the reading of Soviet encoded and enciphered messages sent from trade missions in the US back to Moscow (Benson, 2001). Known by several codenames in the 1940s, this effort would be collectively referred to as *Project Venona*. *Venona*, a tightly held secret throughout the Cold War and declassified in 1995, revealed the code-names of Soviet agents and influencers within the United States Government, including those holding political, military, or technological secrets that would compromise national security if shared. In his official *History of Venona*, NSA Historian Robert 'Lou' Benson lists the names of Hallock's team of cryptanalysts working on this 'Russian Problem'. The list includes Frank

Lewis, Genevieve Grotjan Feinstein, and Frank Wanat (Benson, 2001). Frank Wanat of Band 16 was a sailor of the Navy during the war, not a soldier of the Army, but the connection is intriguing.

The 'Russian Trade Problem' Richard Hallock's team was working on in secret was a cryptanalytic challenge requiring techniques similar to those used on JN-25b, with four- and five- digit code groups and related additives. A Soviet codebook held by the Finnish Government and acquired by the United States showed similarities between the two systems (Benson, 2001). Wanat's experience with punch card and tabulating machines, and his years of experience with the similar JN-25b systems, make him an interesting candidate for this important Cold War effort. While the political climate between the US Army and Navy intelligence services at the time make a cross-service assignment before 1944 implausible, soon Arlington Hall and Nebraska Avenue would indeed begin collaborating, and sharing both ideas and staffing. In his *Early History of the NSA*, George F. Howe mentions that US Army Signals Intelligence was willing to begin merging with the smaller Naval Communications Intelligence element OP-20-G as early as 1945, particularly in matters requiring a united front toward American allies (Howe, released 2007). By 1943 Admiral Joseph Redman of the Navy's OP-20-G and Colonel Clarke of the SIS began investigating methods of collaboration, with the extended goal of holding on to the national communications intelligence (COMINT) capabilities following the war (Burns, 1990).

Frank Wanat continued in Communications Intelligence as a member of the US Navy, the AFSA, and from 1952 the National Security Agency until his death in 1967. Wanat's wife Better Rogers Wanat served in the NSA for two decades after his death. This interesting relationship between Unit Band 16, the intelligence successes in the early War in the Pacific, and the *Venona Project* revelations, is the next stage of investigation for the author.

7.2 Future study

Other musicians of this mid-20th Century found success crossing into cryptology. Agnes Meyer Driscoll was the daughter of conductor

Gustav Meyer, and an accomplished pianist who taught at a Music Conservatory in Texas before becoming a pioneer cryptologist of the US Navy. Lambros Callimahos was a lauded flute soloist who gained a Flute Professorship in Salzburg's *Mozarteum* in 1935, then joined the Signals Intelligence Service and eventually edited the NSA training text *Military Cryptanalytics*. Such musical associations are worthy of further study both for historical value and perhaps to aid in identifying potential cryptologic perspicacity in the future.

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Appendix A: Roster of US Navy Unit Band 16

Last, First	Nickname	Jazz Instrument	Concert Instrument	1941 rating	1943 rating	1946 Rating/ Rank	1949 rating/ Rank	AFSA/ NSA
Bolen, Joseph	Duke	Banjo	French Horn	Mus2c	Y2c			
Carroll, Robert	Bob	Trumpet	Trumpet	Mus1c		CTRC	CTC	
Carroll, Raymond	Ray	Drums	Drums	Mus2c	Y2c	CTRC	CTC	
Conley, Lawrence	Larry	Alto sax	Clarinet	Mus2c	Y2c			
De Stwolinska, Adelbert	De	Double bass	Double Bass	Mus2c	Y1c	CWO2	CWO2	
Garbuschewski, Horst	Garbo	Tenor sax	Bass Clarinet	Mus2c		CTA-CM	CTC	
Harding, Warren		Trombone	Trombone	Mus2c		CTRC	CTC	
Kennedy, David	Grandma	Guitar	Horn/ arr.	Mus2c	Y2c			
Leonard, Percy	Perc	Trumpet	Trumpet	Mus2c	Y1c			
Luckenbach, Lovine	Red	Leader	Conductor	Bmstr AA	Bmstr PA	LCDR		
Manley, Edgar	Jug Butt	Tuba	Violin/	Mus2c	Y2c	CTC	CTC	
Marnette, Richard	Dick	Baritone sax	Clarinet	Mus2c	Y2c	CTRC	CTC	
Palchefsky, Michael	Mike	Trumpet	Trumpet	Mus2c	Y2c	CWO2	CWO2	Yes
Panyon, Peter, Jr.	Pete	Trombone	Trombone	Mus2c	Y1c	LT	LT	Yes
Parker, Robert	Bob	Alto sax	Clarinet (Eb)	Mus1c	Y1c	CWO2	CTC	
Rutledge, John		Piano	Bass drum	Mus2c	Y1c			
Shelly Jr, Russell	Sig	Tenor saxophone	Clarinet/ arranger	Mus2c	KIA 12/7/41			
Sumpman Jr., Russell	Baby	Trombone	Euphonium	Mus2c	Y3c			
Tallbacka, Verner, Jr	Finn	unknown	Flute/ piccolo	Mus2c	Y2c			
Theis, Robert	Bob	Trumpet	Trumpet	Mus2c	Y2c			
Wanat, Frank		Trombone	Trombone	Mus1c	Y1c	CTC	CTC	Yes

Key

Bmstr (AA) (PA) – Bandmaster (Acting and Permanent)

Mus2c/ Mus1c – Musician 2nd class and 1st class; *Y2c/ Y1c* – Yeoman 2nd class and 1st class

CTA – Cryptologic Technician (administrative); *CTA-CM* – Cryptologic Technician (administrative), Master Chief Petty Officer

CTC – Cryptologic Technician (tech.); *CTRC* – Communication Technician (collection), Chief Petty Officer

CWO2 – Chief Warrant Officer 2; *LT* – Lieutenant; *LCDR* – Lieutenant Commander