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**Pearl Harbor Redefined:
USN Radio Intelligence in 1941**

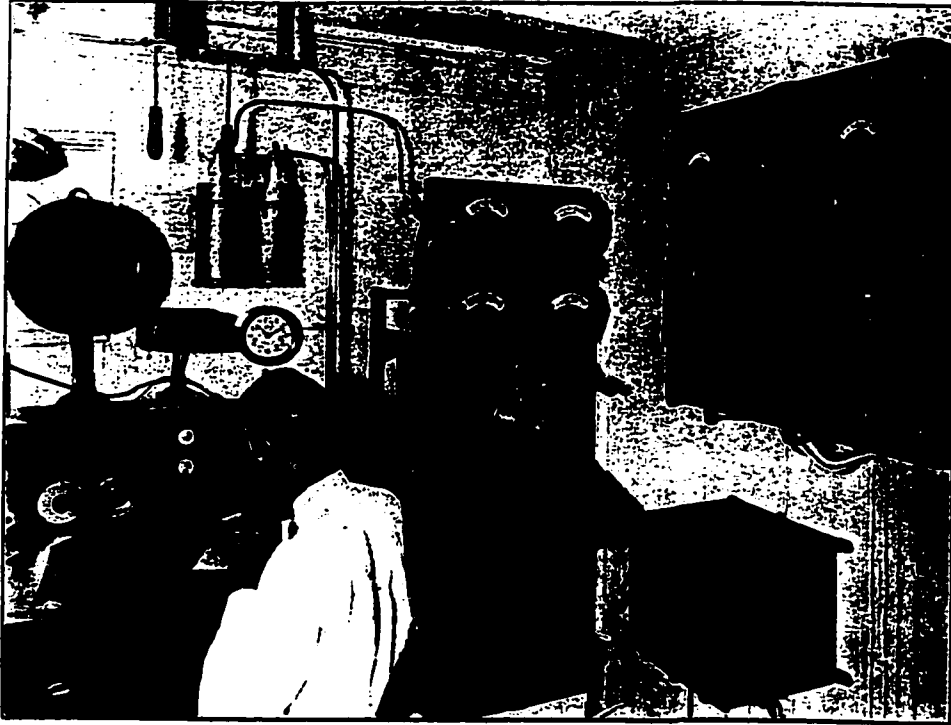


Photo: "A Radio Station Aboard Ship," George E. Sterling, *The Radio Manual*, 2nd ed. (New York: D. Van Nostrand, 1929), frontispiece.

by

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In memory of

Franklin John Wilford

My Grandfather

A man who encouraged us to explore and to inquire

In honour also of the

international community of radio operators



Abstract

The Pearl Harbor controversy may be redefined through a study of radio intelligence as practiced by the United States Navy (USN) in 1941. Newly released primary documents, supported by secondary historical and technical accounts, explain the effectiveness of USN radio intelligence in terms of its principal activities in 1941: cryptanalysis, traffic analysis and intelligence reporting. This evidence also demonstrates the extent to which the USN exchanged intelligence with its Allied counterparts. USN radio intelligence penetrated the vast expanses of the Pacific, permitting the partial reading of Japanese naval messages and the tracking of Japanese vessels. In the period preceding the Pearl Harbor attack, radio intelligence provided the USN with foreknowledge of Japan's intentions and actions in the north Pacific, although Washington failed to provide its Hawaiian commanders with adequate forewarning. Washington's response can now only be defined in terms of gross neglect or careful design, rather than surprise.

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Above all, I wish to thank my wife Laura for her unwavering support during the completion of this thesis. Her support, and that of our children, William and Elizabeth, has sustained me throughout the entire course of this project.

List of Abbreviations and Special Names

1 st Air Fleet	The Japanese aircraft carrier squadron that formed the Strike Force or <i>Kido Butai</i>
5-Numeral Code	The principal Japanese naval operational code known also as the AN Code or JN-25B
8 YU NA	The secret radio call sign of the aircraft carrier <i>Akagi</i> , the flagship of the 1 st Air Fleet
ABCD	American – British – Chinese – Dutch
ABD	American – British – Dutch
AD Code	The Japanese Navy Flag Cipher or Administrative Code
AN Code	The principal Japanese naval operational code known also as the 5-Numeral Code or JN-25B
CarDiv	Carrier Division
CI	Communications Intelligence or, alternatively, Counter-Intelligence
CIA	Central Intelligence Agency
CINCAF	Commander in Chief, Asiatic Fleet
CINCPAC	Commander in Chief, Pacific Fleet
CNO	Chief of Naval Operations
COM11	Communications Unit of the 11 th Naval District, San Diego (Station Item)
COM12	Communications Unit of the 12 th Naval District, San Francisco (Station Fox)
COM13	Communications Unit of the 13 th Naval District, Seattle (Station Sail)
COM14	Communications Unit of the 14 th Naval District, Hawaii (Station Hypo)
COM16	Communications Unit of the 16 th Naval District, Philippines (Station Cast)
Combined Fleet	The principal operational fleet of the Imperial Japanese Navy
COMSUM14	Communications Intelligence Summary, COM14 (Station Hypo)
COPEK	A USN radio circuit linking Hawaii, Philippines and Washington
DNC	Director of Naval Communications
DNI	Director of Naval Intelligence
FBI	Federal Bureau of Investigation
FCC	Federal Communications Commission
FECB	Far East Combined Bureau, Singapore
HF	High Frequency radio signals, 3 – 30 MHz (short wave)
IBM	International Business Machine corporation
J-19	A Japanese consular code
JIC	Joint Intelligence Committee, London, England
JN-25B	The principal Japanese naval operational code known also as the 5-Numeral Code or AN Code
<i>Kamer 14</i>	A Dutch cryptanalysis unit located in Bandoeng, Java, Netherlands East Indies
<i>Kata Kana</i>	A Japanese telegraphic code used for the phonetic expression of the Japanese language
<i>Kido Butai</i>	The Japanese term for Strike Force, the naval force (1 st Air Fleet) that attacked Pearl Harbor

LF	Low Frequency radio signals, 30 – 300 kHz (long wave)
MAGIC	The American term for decrypts of Japanese diplomatic messages
NSA	National Security Agency
NEI	Netherlands East Indies
Orange	American code word for Japan
ONC	Office of Naval Communications
ONI	Office of Naval Intelligence
OP-12	War Plans division, Navy Department
OP-16	Office of Naval Intelligence, Navy Department
OP-20	Office of Naval Communications, Navy Department
OP-20-G	Intelligence section of the Office of Naval Communications
OP-20-GX	The direction-finding unit of OP-20-G
OP-20-GY	The cryptanalysis unit of OP-20-G
OP-20-GZ	The translation and dissemination unit of OP-20-G
OPNAV	Naval Operations
PAA	Pan American Airways
PURPLE	The American term for the principal Japanese diplomatic code
RADAR	Radio detecting and ranging
RCA	Radio Corporation of America
RDF	Radio Direction Finding
R/E	Range Estimation
RFP	Radio Fingerprinting
RI	Radio Intelligence
RIP 5	A USN typewriter used to copy Japanese <i>Kata Kana</i> code characters
Station Baker	USN radio intercept station in Guam
Station Cast	USN radio intercept station in Corregidor, Philippines
Station H	USN radio intercept station in Heeia, Oahu, Hawaii
Station Hypo	USN communications intelligence station in Pearl Harbor, Oahu, Hawaii
Station King	USN radio intercept station in Dutch Harbor, Unalaska Island, Alaska
Station Victor	USN radio intercept station in Vaitogi, American Samoa
Strike Force	The <i>Kido Butai</i> , the Japanese naval force (1 st Air Fleet) that attacked Pearl Harbor
TESTM	USN radio circuit used to exchange RDF bearings and call signs throughout the Pacific
TINA	An operator-analysis technique whereby the Morse code sent by an operator is characterized
USN	United States Navy
War Plans	War Plans division (OP-12)

1. Introduction:

A Prelude to Pearl Harbor

If for reasons of political expediency, it has been determined to force Japan to fire the first shot, let us choose a method that will be more advantageous to ourselves.
Admiral H.E. Kimmel, CinC Pacific Fleet, July, 1941.¹

“SOS SOS SOS JAPS ATTACKED OAHU.” declared the intercept log of Station H in an entry made on the fateful morning of December 7, 1941.² Station H, a United States Navy (USN) radio station situated at Heeia, Oahu, in the Hawaiian Islands, was part of the navy’s Mid-Pacific Strategic Direction-Finder Net. The Net had been established in 1937 by Cmdr. Laurance F. Safford, head of OP-20-G, the intelligence section of the Office of Naval Communications (ONC) in Washington.³ Station H picked up radio transmissions from the Japanese navy’s Strike Force, or *Kido Butai*, during the air attack on Pearl Harbor. Several other stations gathered radio intelligence including Station Hypo in Pearl Harbor, Station Cast in Corregidor, Philippines, Station Victor in Vaitogi, American Samoa, and Station King in Dutch Harbor, Alaska, to name but a few. In 1941, sixteen USN radio intelligence stations monitored Japanese activities across the vast expanses of the Pacific Ocean.⁴ Supporting this network were six other stations operated

¹ Quoted, Edwin T. Layton, with Roger Pineau and John Costello, *And I Was There: Pearl Harbor and Midway – Breaking the Secrets* (New York: William Morrow, 1985), 128.

² Station H Intercept Log, 0537 hours, Dec. 8, 1941, Tokyo time, *Station H Monthly Report for December, 1941*, RG38, Crane – Inactive Stations (College Park, MD: National Archives II), 141. Courtesy of Robert Stinnett.

³ David Kahn, *The Codebreakers: The Story of Secret Writing*, c. 1967, 1996 (New York: Scribner, 1996), 8, 10.

⁴ Robert Stinnett, *Day of Deceit: The Truth about FDR and Pearl Harbor* (New York: Free Press, 1999), 61-2, 68. USN radio intercept stations were named alphabetically, but were usually known by the phonetic alphabet of the period. For example, Station B was Baker, Station C was Cast, Station K was King, Station V was Victor, and so forth. Station H at Pearl Harbor was known as Hypo, although its RDF station at Heeia was known simply as H.

respectively by the US Army, Britain, Canada and the Netherlands East Indies. Furthermore, the USN practiced every radio intelligence technique available in 1941 including cryptanalysis (message-decoding), traffic analysis (direction-finding, signals-analysis and address-reading), and intelligence reporting by airmail and radio. Yet the successful attack on Pearl Harbor seemed to represent a colossal intelligence failure. Radio intelligence, however, provided the USN with foreknowledge of Japan's intentions and actions in the north Pacific, although Washington failed to provide its Hawaiian commanders with adequate forewarning.⁵ Washington's response can now only be defined in terms of gross neglect or careful design, rather than surprise.

Few subjects of modern history have been as closely scrutinized as the Japanese attack on Pearl Harbor. This subject encompasses several debates, but arguably the central question is whether the attack utterly surprised the United States, as claimed by President Franklin D. Roosevelt and his administration at the time, or whether the Roosevelt administration had foreknowledge of the attack, kept silent and let it proceed. This is a different question than that of whether the Roosevelt administration expected or encouraged war with Japan.⁶ Nonetheless, while a complete history of Japanese-American relations prior to the advent of the Pacific War is beyond the scope of this thesis, the high points of those tumultuous relations need to be summarized. It must be established that the United States regarded Japan as its principal adversary in the Far East and that the American intelligence community had cause to monitor

⁵ In the context of this thesis, foreknowledge will refer to the possession of any information allowing a competent person to draw correct conclusions about a future event, whereas forewarning will refer to any advance warning of an event based upon relevant foreknowledge.

⁶ Brian Villa, Professor of History at the University of Ottawa, will address this question in his upcoming book on the Pearl Harbor controversy.

Japan's intentions and actions. The Pearl Harbor attack resulted from a long maturing crisis during which both Japan and the United States carefully prepared the instruments of war. In essence, the Pearl Harbor attack is proof that the United States failed to prepare or use those instruments designed to give advance warning of Japan's intentions and actions. Before turning to that question, which is the main subject of this thesis, it is vital to acquire an overview of the long developing political and diplomatic crisis.

The road to Pearl Harbor began with rivalry between Japan and the United States over influence in the Far East.⁷ Certainly, Japan's influence over China grew steadily from the 1890s until the advent of the First World War. Yet in the aftermath of the war, Japan not only assumed control of German concessions in China, but also expanded its naval power. In the 1920s, the United States responded with the Washington Conference and the Nine Power Treaty, which were designed to curb Japanese influence and naval power. At this time, American cryptanalysts broke Japanese diplomatic codes, thus offering American negotiators a great advantage. For example, Herbert Yardley, head of the "Black Chamber," a postwar cryptanalysis unit funded by the US Army and the State Department, "had been instrumental in maneuvering Japan into accepting the inferior naval status imposed by the 1921 Washington Naval Conference."⁸ Yardley's code breaking allowed American negotiators to know how much the Japanese were willing to concede in terms of naval power. Japanese negotiators ultimately accepted a "5:5:3 capital-ship tonnage ratio" between Britain, the United States and Japan.⁹

⁷ For a general study of the geopolitical conditions preceding the entry of both Japan and the United States into WWII, see Gerhard L. Weinberg, *A World at Arms: A Global History of World War II* (Cambridge: Cambridge UP, 1994), 238-63.

⁸ Layton, et al, *And I Was There*. 29.

⁹ *Ibid.*

Indeed, Japan's naval activity at this time compelled the USN to monitor messages transmitted by the Japanese navy. As early as 1920, the Office of Naval Intelligence (ONI) stole a Japanese naval codebook and photographed it for later use.¹⁰ By 1926, the USN was decrypting later cipher versions (superencipherments) of the original codebook, known as the "Red Book" within the USN. By 1930, the USN was both decrypting and translating Japanese naval messages sent in "Red". Cryptanalysis began to reveal Japanese naval operations in the Far East.

Tensions between Japan and the United States rose greatly throughout the 1930s. In 1931, Japan staged an incident in order to attack the city of Mukden in northern China, using the incident as a pretext to invade all of Manchuria. At the same time, Japan rejected most existing naval treaties and continued expanding its navy. In 1937, Japan invaded China proper, thus blocking the United States from further trade expansion in the region. Moreover, Japanese atrocities in China shocked American sensibilities. Yet since the Russo-Japanese war of 1905, the Japanese military regarded control of Asian territory as vital to Japanese security.¹¹ By the 1930s, Japan also sought to insulate itself from the economic depression in the West through the acquisition of more territory.¹² Fear of China's growing nationalism, increasingly supported by the Soviet Union, and its access to Western aid inspired Japan to act quickly.¹³

¹⁰ *Ibid.*, 31-2.

¹¹ Mushakoji Kinhide, "Structure of Japanese-American Relations in the 1930s," *Pearl Harbor as History: Japanese-American Relations, 1931-1941*, eds. Dorothy Borg, et al (New York: Columbia UP, 1973), 597.

¹² Michael A. Barnhart, *Japan Prepares for Total War: The Search for Economic Security, 1919-1941* (Ithaca, London: Cornell UP, 1987), 49, 64-7.

¹³ Akira Iriye, *The Origins of The Second World War in Asia and the Pacific* (London, New York: Longman, 1987), 4-11.

The United States, however, failed to understand or accept Japanese policy. Certainly, the United States refused to recognize Manchukuo, the new Japanese puppet state created from Manchuria, and imposed a “moral embargo” upon Japan in 1932. President Franklin Roosevelt also recognized the Soviet Union in 1933, probably to check Japan’s growing influence.¹⁴ From the beginning, Secretary of State Cordell Hull did not wish to make any concessions to the Japanese. Yet neither the American public nor Congress were willing to force Japan to honour treaty obligations. Despite America’s paternalistic outlook toward China and belief in the potential of future trade with that country¹⁵, Japan did not seem worth military effort in the midst of an economic depression. American policymakers responded to Japan’s aggression with various political speeches and economic sanctions, although inaction or peaceful coercion had entirely the opposite effect on Japan. These means suggested to Japan that the United States lacked the will to wage a lengthy war in the Far East.¹⁶ Moreover, the Japanese fleet had fully eclipsed the American fleet by 1940 owing partly to the great reluctance in Congress to approve Roosevelt’s requests for naval funding.¹⁷ Given that Britain could offer little naval support in the Far East as war in Europe approached, the United States found itself as the lone competitor in Japan’s naval race. Ultimately, America’s lack of political resolve and credible naval deterrence emboldened Japan.

Meanwhile, the USN responded to Japan’s increasingly adversarial relationship by carefully monitoring Japanese naval communications and ship movements throughout the

¹⁴ *Ibid.*, 28.

¹⁵ Kinhide, “The Structure of Japanese-American Relations,” 597-8.

¹⁶ *Ibid.*, 596.

¹⁷ Stephen E. Pelz, *Race to Pearl Harbor: The Failure of the Second London Naval Conference and the Onset of World War II* (Cambridge, Mass.: Harvard UP, 1974), 202-11.

Pacific. USN cryptanalysts decrypted and translated Japanese naval messages sent not only in “Red,” but also in “Blue,” a replacement Japanese naval code introduced in 1930. At this time, Lt. Thomas Dyer introduced “machine cryptanalysis” to the USN: tabulating machines assisted in the recovery of code and cipher values.¹⁸ Furthermore, by 1937, Cmdr. Laurance Safford’s Mid-Pacific Strategic Direction-Finder Net allowed the USN to track Japanese merchant and naval vessels even more effectively. USN stations throughout the Pacific gathered radio intelligence for use by the Office of Naval Operations (OPNAV) in Washington. Such intelligence permitted OPNAV to carefully monitor Japan’s intentions and actions.

The unfolding crisis in Europe made the situation in the Pacific even more dangerous. Japan first associated itself with the Axis powers when it signed the Anti-Comintern Pact in 1936. In reaction to Japan’s new association, the United States, Britain and the Netherlands strengthened their own ties, even though Japan seemingly only sought to limit Soviet power in the Far East.¹⁹ This relationship between the Americans, British and Dutch was later known as the ABD alliance. After Japan’s attack upon China in 1937, China joined this informal alliance, later known to Japan as the ABCD alliance. In 1940, both Axis and Allied powers strengthened their respective alliance systems. Indeed, German victories in Western Europe that year greatly altered political perspectives. The Tripartite Pact, signed by Japan, Germany and Italy in September, 1940, enjoined Axis powers to declare war on any neutral nation that attacked one of the powers, excepting the Soviet Union. For Japan, the Tripartite Pact seemed necessary to deter the United States and Britain from blocking Japanese expansionism. The United States

¹⁸ Layton, et al, *And I Was There*, 45-7.

¹⁹ Pelz, *Race to Pearl Harbor*, 174-6.

responded by expanding its navy, providing Chiang Kai-Shek with more funding, and strengthening its ABD alliance. From the Japanese viewpoint, this was not deterrence but provocation.

In early 1941, these alliances produced even more tension between Japan and the United States. American policy towards Japan at this time seemed to have three objectives: to protect ABD interests in southeast Asia by preventing Japan from striking south; to split the Axis alliance so that America could enter the war in Europe without fighting Japan; and to support the Chinese nationalists under Chiang Kai-Shek.²⁰ These objectives were addressed during staff conferences held in Washington from January to March between military and naval delegations representing the United States and the British Commonwealth.²¹ Yet fulfilment of the third objective was problematic. Support for Chiang Kai-Shek made Japan commit more of its military resources to China rather than elsewhere in Southeast Asia, but hardly improved Japanese-American relations. American support for China discouraged Japan from breaking its Axis alliance. Indeed, Cordell Hull remained steadfast in his support for China during his negotiations with Japanese ambassador Kichisaburo Nomura in the spring of 1941.²² Not surprisingly, the Hull-Nomura talks failed to resolve the vast differences that had arisen over the destiny of China.

²⁰ Paul W. Schroeder, *The Axis Alliance and Japanese-American Relations, 1941* (Ithaca, New York: Cornell UP, 1958), 203-4. Schroeder argued that the first two of these objectives were of principal concern to the United States in early 1941, but that by mid-1941 the third objective, support for Chiang Kai-Shek, became important to American negotiators, thus exasperating Japanese-American relations.

²¹ *Hearings before the Joint Committee on the Investigation of the Pearl Harbor Attack*, 79th Congress, part 15 of 39 parts (Washington, DC: United States Government Printing Office, 1946), 1496-1506.

²² Jonathan Utey, *Going to War with Japan, 1937-1941* (Knoxville: University of Tennessee, 1985), 143-7.

As the crisis developed, the USN, in cooperation with the US Army, perfected other communication intelligence techniques in an attempt to better assess Japan's intentions. One of the most impressive of these new techniques was the use of machine cryptanalysis to monitor Japanese-American diplomatic relations. In 1941, the USN, along with the US Army and the State Department, read Japanese diplomatic traffic encrypted in a cipher known to the American intelligence community as PURPLE. Decrypts of PURPLE messages, also known as MAGIC, were highly valued by the select few who received them. MAGIC provided insight into Japan's diplomatic intentions and served as a barometer for the growing tension between Japan and the United States.²³

Germany's attack on the Soviet Union in June, 1941, altered the political landscape once again. The war with Germany obliged the Soviet Union to transfer troops from Siberia to the European front, thus exposing Siberia to a possible Japanese attack. Roosevelt, who viewed Soviet participation as critical to the war's outcome, feared that a Japanese attack against Siberia would force the Soviet Union into a two-front war.²⁴ In July, however, Japan moved south into French Indochina. Japan had occupied northern French Indochina since September, 1940, but now occupied the entire region under the pretext of preventing ABCD "encirclement." In reaction to Japan's move, the United States, Britain and the Netherlands East Indies froze Japan's assets in late July, which effectively resulted in a complete trade embargo against Japan by August. Significantly, Japan was shut off from its usual supply of American oil, rendering the

²³ For a discussion of MAGIC, see Roberta Wohlstetter, *Pearl Harbor: Warning and Decision* (Stanford, CA: Stanford UP, 1962), 186-214; Kahn, *The Codebreakers*, 1-67; and Akira Iriye, *Pearl Harbor and the Coming of the Pacific War: A Brief History with Documents and Essays* (Boston, New York: Bedford/St. Martin's, 1999), 79-86.

²⁴ Waldo Heinrichs, *Threshold of War: Franklin D. Roosevelt and American entry into World War II* (New York, Oxford: Oxford UP, 1988), 157-9.

country dependent on domestic oil reserves that would only last for about another two years – less under conditions of war.²⁵ The American oil embargo compelled Japan to strike resource-rich Southeast Asia rather than Siberia. Indeed, several Washington officials opposed an embargo against Japan, believing that it would result in such a southward thrust.²⁶ Yet the Roosevelt administration adhered to its embargo, the purposes of which historians continue to debate. Washington may have wanted to defend China, protect American economic interests in Southeast Asia, deter Japan from making further advances, or force Japan south rather than north so that the Soviet position was not threatened.²⁷ Roosevelt may have favoured the embargo as a means to protect the Soviet Union, given the importance he placed upon Soviet participation in the war.

The USN responded to the ongoing diplomatic crisis by preparing for possible action against the Japanese navy. The USN planned for a naval conflict with Admiral Isoroku Yamamoto's Combined Fleet by first collecting as much intelligence as possible. Indeed, the USN increased its radio surveillance of all Japanese naval transmissions in an attempt to understand the structure and location of the Combined Fleet.²⁸ To the frustration of USN traffic analysts, however, the aircraft carriers of the Combined Fleet seemed to practice radio silence prior to any naval build-up or planned action. Nonetheless, USN traffic analysts detected a re-

²⁵ Minoru Nomura, "Japan's Plans for World War II," *Revue Internationale d'Histoire Militaire* 38 (1978): 201-17.

²⁶ *Hearings*, part 14, 1062. Rear Admiral R. Turner, Director of War Plans at the Navy Department, suggested that the embargo would soon compel Japan to advance southwards, with the possibility of a strike on American targets. See Layton, et al, *And I Was There*, 120-1.

²⁷ Schroeder, *The Axis Alliance*, 203-6; Jonathan Marshall, *To Have and Have Not: Southeast Asian Raw Materials and the Origins of the Pacific War* (Berkeley, Los Angeles: University of California Press: 1995), 176-81; Iriye, *Origins of The Second World War*, 150; Heinrichs, *Threshold of War*, 157-60.

²⁸ Layton, et al, *And I Was There*, 123-30.

organization of the Combined Fleet in July, 1941.²⁹ A fleet re-organization combined with radio silence suggested the possibility of a future naval engagement.

Apart from developments in the Pacific, Roosevelt continued an undeclared war against Germany in the Atlantic. Roosevelt had already provided aid to Britain through the Lend-Lease Act of March, 1941. By the summer, Roosevelt had also sent American warships to patrol the Atlantic. In August, Roosevelt and Churchill held their first wartime conference aboard the US cruiser *Augusta* and British battleship *Prince of Wales*, anchored at Placentia Bay, Newfoundland. The leaders discussed Allied needs and created the *Atlantic Charter*, a statement of Anglo-American war objectives. At this time, Roosevelt considered Churchill's request for "an inflexible American position" regarding Japan.³⁰ While he avoided meeting that request, he fully agreed that the Soviet Union required continued material support.

Opposing Roosevelt's increasing support for the Allied cause, however, was a powerful American isolationist lobby. This lobby, led by organizations such as Charles Lindbergh's *America First* and congressmen such as Senator Burton K. Wheeler, argued that America's best option was to avoid entering the European conflict. American public opinion seemed to favour isolationism as indicated by a poll of October, 1941: 79% of those polled wanted the United States to stay out of the war against Germany and Italy.³¹ Regarding attitudes toward Japan, another October poll result indicated that 43% of those polled believed that the United States

²⁹ *Ibid.*, 125.

³⁰ Francis L. Loewenheim, Harold D. Langley and Manfred Jonas, eds., *Roosevelt and Churchill: Their Secret Wartime Correspondence* (New York: E.P. Dutton, 1975), 153-5.

³¹ Rita James Simon, *Public Opinion in America: 1936-1970* (Chicago: Rand McNally College Publishing, 1974), 125. For a complete survey of American public opinion regarding entry into WWII, see Hadley Cantril and Mildred Strunk, eds., *Public Opinion, 1935-1946* (Princeton: Princeton UP, 1951), 954-5, 961, 966-78, 1135-7.

should not take action against Japan unless that nation attacked American territories or interfered with American supplies.³² Nonetheless, the same poll result showed that 34% believed Japan had “already gone far enough” and needed to be checked with an ultimatum backed by the promise of war. For the most part, the American public supported isolationism in 1941 as long as American interests did not appear to be in jeopardy. Roosevelt wanted American involvement in the European war, but faced a divided public and Congress back home.³³

Diplomatic efforts to resolve Japanese-American relations continued into late 1941, even as Japan continued to prepare for war. Roosevelt, at Hull’s suggestion, rejected a Japanese proposal in late August for a meeting between himself and Prince Fumimaro Konoye, prime minister of Japan. Hull would not appease Japan and, along with Roosevelt, remained suspicious of Japanese intentions.³⁴ Following the resignation of the Konoye government in mid-October, General Hideki Tojo, who took a less conciliatory approach to negotiations, formed a government in Japan. Nonetheless, the Tojo government offered the United States two proposals in November: Plan A and Plan B.³⁵ Plan A involved withdrawing most troops from China and all troops from French Indochina upon a diplomatic settlement with China. Plan B, essentially an ultimatum, involved promising no further southward advances and a withdrawal of troops from French Indochina if the United States restored full trade relations and stopped sending aid to China.³⁶ On November 22, Hull drafted a *modus vivendi* based upon Plan B, but Washington

³² *Ibid.*, 137.

³³ For a study of Roosevelt’s use of public opinion as a means to determine foreign policy, see Robert Dallek, *Franklin D. Roosevelt and American Foreign Policy, 1932-1945* (New York: Oxford UP, 1979).

³⁴ Schroeder, *The Axis Alliance*, 211; Utley, *Going to War with Japan*, 158-61.

³⁵ Iriye, *Coming of the Pacific War*. 38-40.

³⁶ Iriye, *Origins of the Second World War*, 176.

later rejected this compromise solution following consultation with other ABCD powers.³⁷ Considering Allied objectives, if China fell, more Japanese troops would be available for operations elsewhere in the Far East.

Finally, on November 26, the United States issued what amounted to an ultimatum, one that Japan was virtually compelled to reject. Hull's famous "note" contained terms that the Tojo government would never accept such as an end to all hostilities in Asia, complete troop withdrawals, recognition of Chiang Kai-Shek and international access to Asian markets.³⁸ Japan rejected Hull's note, but pretended to continue negotiations. Indeed, throughout the negotiations of late 1941, Japan secretly prepared for war in Southeast Asia and a "screening action" at Pearl Harbor, where the USN Pacific fleet had been based since 1940. After rejecting Hull's note, Japan proceeded with its war plans. The USN Pacific Fleet at Pearl Harbor would be destroyed as a prelude to Japan's conquest of Southeast Asia for much needed resources.

On the eve of Japan's intended attack, the United States also recognized that war was inevitable. The United States understood that rejecting Japan's diplomatic overtures meant war, one possibly initiated by a Japanese first strike. On November 28, Pacific commanders were issued a war warning explaining that it was in the United States' interests to have Japan commit the first overt act of war.³⁹ As well, Roosevelt's commitments, of dubious constitutional validity, to both the British and the Dutch placed the United States on a virtual war footing with Japan. On December 1, Roosevelt promised British ambassador Lord Halifax that "any Japanese

³⁷ Iriye, *Coming of the Pacific War*, 63-73.

³⁸ *Ibid.*, 73-7.

³⁹ Stinnett, *Day of Deceit*, 284-5.

incursion beyond an imaginary point in Southeast Asia that threatened the participants in the ABD agreements automatically made the United States a co-belligerent, even in the absence of any attack on American territory.”⁴⁰ On December 2, Roosevelt ordered the USN Asiatic Fleet to charter three small vessels, all to be established as American warships, to embark on a “defensive information patrol” across the path of Japanese convoys in the West China Sea and Gulf of Siam.⁴¹ The vessels *Lanikai*, *Molly Moore* and *Isabel* attempted this voyage, but failed to draw Japanese fire, the likely purpose of their assignment. On December 4, the Japanese navy crossed the point 100°E at 10°N and the United States was, by virtue of Roosevelt’s ABD agreement, unofficially at war with Japan three days before Japan itself declared war. Seemingly, Roosevelt was already committed to war with Japan, but preferred Japan to make the first strike.

Amidst these international developments, however, Pearl Harbor was left quite exposed to attack. As early as March 31, 1941, a joint report by Rear Admiral P. Bellinger and Major General F. Martin predicted that if Japan went to war with the United States, Japan would strike Pearl Harbor at dawn without warning using aircraft launched from one or more carriers.⁴² Yet by late 1941, Hawaii’s defences were rather limited. The “North Pacific Vacancy Order” of November 18, a directive from USN naval command that took effect on November 25, required all American vessels to stay clear of the north Pacific by using alternative southern routes.⁴³

Naval conflict in the north Pacific was to be prevented at the expense of adequate

⁴⁰ Frank Paul Mintz, *Revisionism and the Origins of Pearl Harbor* (Lanham, MD: University Press of America, 1985), 102. See also Layton, et al, *And I Was There*, 135-6, 240-1, 248, 252-3.

⁴¹ Layton, et al, *And I Was There*, 246-8.

⁴² *Ibid.*, 75.

⁴³ Message no. 181705 dated Nov. 18, 1941, from OPNAV to CINCPAC, CINCAF, COM12, and COM14, SRH-012, *The Role of Radio Intelligence in the American-Japanese Naval War, August 1941 – June 1942*, vol. 1, RG457, SRH Series, 190/36/9/2, Entry 9002, Box 9 (College Park, MD: National Archives II, MMRB), 160.

reconnaissance. On November 26, Admiral Harold R. Stark, Chief of Naval Operations, requested that fighter aircraft be transferred by aircraft carrier from Pearl Harbor to Midway and Wake islands.⁴⁴ The Pacific Fleet's only two aircraft carriers, along with a flotilla of modern support vessels, were to deliver about 40% of Hawaii's fighter aircraft to outlying naval bases that would benefit at Hawaii's expense. These conditions, along with the November 28 war warning that required Pacific commanders to allow a Japanese first strike in the event of hostilities, seriously weakened Hawaii's defences. The Hawaiian commanders, Admiral Husband E. Kimmel, Commander in Chief of the Pacific Fleet (CINCPAC), and Lt. General Walter C. Short, Commanding General of the Hawaiian Department, faced a daunting task at Pearl Harbor.

It is in this historical context that the Pearl Harbor controversy must be understood. Unquestionably, the United States regarded Japan as its principal adversary in the Pacific and had cause to monitor Japan's intentions and actions. If Washington had foreknowledge of Japan's intended attack, but deprived the Hawaiian commanders of sufficient forewarning, then either gross neglect or careful design was at play. Gross neglect may have irreparably broken the information chain linking intelligence gathering to both evaluation and dissemination. Under such circumstances, America's intelligence *failure* at Pearl Harbor must be explained in terms of bureaucratic dysfunction and poor decision-making. Careful design, however, may have permitted Washington to harbour critical information while awaiting Japan's first strike and to establish plausible deniability. Under these circumstances, America's intelligence *success* at Pearl Harbor must be explained in terms of geopolitical conditions and domestic politics. As Frank Mintz once explained of this thesis: "The essential task for the historical discipline is not

⁴⁴ *Hearings*, part 17, 2479.

that of identifying all the members of a Pearl Harbor blackout conspiracy but one of pinpointing the special circumstances that prompted Roosevelt and two or three of his service chiefs and cabinet members to want to forestall warnings to Pearl Harbor.”⁴⁵ This explanation of the events of December 7, 1941, must embrace the greatest historical context.

The task remains, however, to determine whether or not anyone in the United States had foreknowledge of the Pearl Harbor attack. Without doubt, diplomacy between Japan and the United States in late 1941 suggested that war was eminent. Yet diplomatic intelligence failed to provide sufficient foreknowledge of the Pearl Harbor attack. Only naval radio intelligence potentially allowed one to decrypt a naval adversary’s operational dispatches and to probe the vast expanses of an ocean for signs of ship movements. USN radio intelligence was the medium through which the United States could have gained foreknowledge of Japan’s intentions and actions in the Pacific. It is through this very medium that the Pearl Harbor controversy may be solved.

Historians studying the Pearl Harbor controversy have variously interpreted the role of radio intelligence. Prior to the 1960s, radio intelligence was not seriously considered in either traditionalist or revisionist accounts of Pearl Harbor.⁴⁶ Henceforth, any thesis contending that the Pearl Harbor attack surprised American authorities will be referred to as traditionalist, whereas any thesis contending that the attack did not surprise American authorities (or an American ally) will be referred to as revisionist. In 1962, Roberta Wohlstetter discussed many varieties of intelligence in *Pearl Harbor: Warning and Decision*. Wohlstetter advanced her now classic “signal and noise” theory, postulating that US authorities received an information overload:

⁴⁵ Mintz, *Revisionism*, 101-2.

⁴⁶ *Ibid.*, v-ix, 1-39. Mintz offers a survey of early historiography concerning Pearl Harbor.

“... signals announcing the Pearl Harbor attack were always accompanied by competing or contradictory signals, by all sorts of information useless for anticipating this particular disaster... In short, we failed to anticipate Pearl Harbor not for want of the relevant materials, but because of a plethora of irrelevant ones.”⁴⁷ Wohlstetter based her study upon the Pearl Harbor Congressional Hearings (1941-1946), which emphasized how Japanese radio practices defied the efforts of USN cryptanalysts and traffic analysts. Wohlstetter’s study remains one of the most articulate and brilliantly argued traditionalist accounts of the Pearl Harbor controversy.

In 1967, both David Kahn and Ladislav Farago considered the role of radio intelligence in their respective accounts of Pearl Harbor. Kahn, author of *The Codebreakers: The Story of Secret Writing*, explained that radio intelligence failed at Pearl Harbor owing to a lack of USN resources and the success of Japanese radio deception.⁴⁸ For Kahn, the principal Japanese naval code yielded no important information to USN cryptanalysts in 1941. Farago, author of *The Broken Seal: The Story of Operation Magic and the Pearl Harbor Disaster*, explained that neither cryptanalysis nor traffic analysis allowed the USN to penetrate the plans and operations of Japan’s Combined Fleet in late 1941.⁴⁹ USN resources, according to Farago, were diverted to the decryption of Japanese diplomatic traffic, which failed to yield sufficient forewarning. Farago, however, later provided new information in the postscript to the Bantam edition of *The Broken Seal*.⁵⁰ Farago explained that the USN received a direction-finding report on December 3, 1941,

⁴⁷ Wohlstetter, *Warning and Decision*, 3, 387.

⁴⁸ Kahn, *The Codebreakers*, 1-67.

⁴⁹ Ladislav Farago, *The Broken Seal: The Story of Operation Magic and the Pearl Harbor Disaster* (New York: Random House, 1967), 268-9.

⁵⁰ Ladislav Farago, “POSTSCRIPT: New Lights on the Pearl Harbor Attack,” *The Broken Seal: “Operation Magic” and the Secret Road to Pearl Harbor* (New York: Bantam, 1968), 379-402.

that demonstrated Japan's presence in the north Pacific. Farago also discussed Japanese codebooks that were recovered by American intelligence officers, Dutch intelligence reports regarding the Japanese navy, and Washington's delay in informing Hawaii of Japan's intention to break its relations with the United States on December 7, 1941. Nonetheless, Farago adhered to his original belief that the Pearl Harbor attack surprised US authorities.

Both traditionalists and revisionists later expanded the debate. In 1981, Gordon Prange and associates reasserted the traditionalist thesis in *At Dawn We Slept: The Untold Story of Pearl Harbor*. Prange minimized the ability of radio intelligence to provide the United States with any meaningful information. For Prange, "Japanese blackout of the task force, the dummy message traffic, and American complacency effectively cancelled out the possibility of locating Japan's First Air Fleet by these means."⁵¹ In 1982, John Toland, author of *Infamy: Pearl Harbor and Its Aftermath*, offered a revisionist account based upon testimony. He argued that Roosevelt and his senior staff ignored radio intelligence, amongst other sources, because they needed a Japanese strike on Pearl Harbor to enter the Second World War. Toland's new sources emphasized the success of traffic analysis rather than cryptanalysis. Indeed, Toland drew upon American and Dutch sources to show that the USN had foreknowledge of the *Kido Butai's* location in the north Pacific prior to the attack.⁵²

In 1985, Edwin Layton and associates offered a different perspective in *And I Was There: Pearl Harbor and Midway – Breaking the Secrets*. Layton, who had served as the Pacific Fleet's intelligence officer at Pearl Harbor in 1941, argued that radio intelligence offered potential clues

⁵¹ Gordon W. Prange, with Donald M. Goldstein and Katherine V. Dillon, *At Dawn We Slept: The Untold Story of Pearl Harbor* (New York: McGraw-Hill, 1981), 734.

⁵² John Toland, *Infamy: Pearl Harbor and its Aftermath* (Garden City, NY: Doubleday, 1982), 279-81, 283, 286, 299, 317-8.

as to Japan's intentions, but failed to yield results because of poor resources and leadership within the USN. Layton's account drew upon personal recollections as well as newly available archival material from Washington. Layton believed that Japanese radio silence prevented USN traffic analysis from succeeding, and that USN cryptanalysis only recovered 10% of JN-25, the principal Japanese naval code.⁵³

More recently, several specialist works have focussed upon the role of radio intelligence in the Pearl Harbor controversy. In 1992, James Rusbridger and Eric Nave advanced a new revisionist thesis in *Betrayal at Pearl Harbor: How Churchill Lured Roosevelt into World War II*. Rusbridger and Nave argued that British cryptanalysts broke JN-25 and gained foreknowledge of Japan's intentions to attack Pearl Harbor, but that Churchill failed to forewarn Roosevelt so that America would enter the war.⁵⁴ The authors contended that USN cryptanalysts failed to break into this Japanese code. In 1991, Frederick Parker, an historian for the National Security Agency (NSA), offered a new traditionalist interpretation in his article, "The Unsolved Messages of Pearl Harbor." He argued that Japanese messages intercepted by the USN foretold of Japan's intended attack, but that USN cryptanalysts were unable to read these messages. Parker explained that the USN failed to use its resources wisely, despite its intelligence capabilities: "Ironically, the Navy's principal capability to solve these secret radio messages was diverted to higher priority tasks in the last six months of 1941 with the result that the Japanese navy, in spite of its shortcomings, attained an almost total surprise on 7 December 1941."⁵⁵

⁵³ Layton, et al, *And I Was There*, 95-101, 231-3.

⁵⁴ James Rusbridger and Eric Nave, *Betrayal at Pearl Harbor: How Churchill Lured Roosevelt into World War II* (Old Tappan, NJ: Simon & Schuster, 1992), 180.

⁵⁵ Frederick Parker, "The Unsolved Messages of Pearl Harbor," *Cryptologia* 15.4 (Oct. 1991), 312.

Parker later reaffirmed his views in a specialist monograph of 1994 entitled *Pearl Harbor Revisited: United States Navy Communications Intelligence, 1924-1941*.⁵⁶ In 1995, John Prados, author of *Combined Fleet Decoded: The Secret History of American Intelligence and the Japanese Navy in World War II*, surveyed the existing literature and contributed new material on USN intelligence gathering in the Philippines. Prados contended that the USN failed to discover Japan's operations in the north Pacific, explaining that both limited resources *and* USN policy hindered the effectiveness of radio intelligence.⁵⁷

In 1999, Robert Stinnett, author of *Day of Deceit*, advanced the revisionist position with the benefit of sixteen years of archival research. Stinnett not only obtained documents through Freedom of Information Act (FOIA) requests, but also searched numerous archival collections, notably the Crane files (RG38) held at the National Archives II. For Stinnett, radio intelligence was a vital part of the information that provided Roosevelt's team with foreknowledge of the Pearl Harbor attack. Stinnett did not show the extent to which USN cryptanalysts were reading Japanese encrypted messages, but produced evidence showing that USN traffic analysis was much more comprehensive than previously thought. He also compared Japanese call signs with USN intercept logs, seemingly proving that the 1st Air Fleet, which later formed the *Kido Butai*, broke radio silence several times, thus providing American officials with foreknowledge of the Pearl Harbor attack.⁵⁸ Stinnett concluded that several military and naval personnel joined Washington in a plan to sacrifice Pearl Harbor as a means to enter the Second World War.

⁵⁶ Frederick Parker, *Pearl Harbor Revisited: United States Navy Communications Intelligence, 1924-1941*, United States Cryptologic History, Series IV, World War II, Vol. 6 (Washington, DC: Center for Cryptologic History, National Security Agency, 1994).

⁵⁷ John Prados, *Combined Fleet Decoded: The Secret History of American Intelligence and the Japanese Navy in World War II* (New York: Random House, 1995), 166.

⁵⁸ Stinnett, *Day of Deceit*, 208-9.

Yet a greater understanding of radio intelligence as practiced by the USN in 1941 will redefine the range of possible interpretations. Relevant USN documents now stored at several branches of the National Archives in the United States must form the basis for such an inquiry. USN records and histories have been released more slowly than those of the US Army, but researchers now have access to several record groups. OPNAV records, some available since 1979, may be found in record groups RG80 and RG457 at the National Archives II. Records of the 13th Naval District, made available in the 1990s, may be found in record group RG181 at the National Archives, Pacific – Alaska Region. The most important USN sources, however, are found in record group RG38, which includes files formerly held at the USN's depository in Crane, Indiana. The Crane Files, which were transferred from the Crane depository to the National Archives II in 1994, enjoyed a partial public release in 1995, but are presently being declassified and released in a more comprehensive way by the NSA. Amongst the RG38 documents released in 1999 are the Crane Inactive Station Files, which furnished most of the original documents cited in this thesis. Files concerning stations Cast, Hypo and H, all principal USN radio intelligence stations in 1941, are especially helpful because they are the most complete. British records, such as those held in the Public Records Office and the Churchill Archives, are also helpful in corroborating American sources. Furthermore, Japanese plans must be consulted to understand how the Strike Force conducted its operations and communications. This thesis draws upon Japanese sources cited in *The Pearl Harbor Papers*, by Donald Goldstein and Katherine Dillon, and the *Ca Nachi Papers* found in the MacArthur Archives.

These primary sources, supported by secondary historical and technical works, will explain the effectiveness of USN radio intelligence in terms of its principal activities: cryptanalysis, traffic analysis and intelligence reporting. Indeed, the code-reading ability of USN

cryptanalysts must be considered with respect to the content of intercepted Japanese naval messages. Such an assessment must consider all available correspondence and testimony: actual decrypts and translations of intercepted traffic from 1941 are not available. Furthermore, all methods related to USN traffic analysis must be examined with respect to capability, accuracy and application. As well, the way in which USN traffic analysts understood the technologies at their disposal must be explained whenever possible. USN methods of intelligence reporting must also be examined for speed and accuracy. Moreover, intelligence exchanges between the USN and its Allied counterparts must be assessed. Finally, any foreknowledge gained by the USN radio intelligence network must be compared with the extent of forewarning offered to the Hawaiian commanders at Pearl Harbor.

Any inquiry into the Pearl Harbor controversy should avoid fallacies of reasoning. David Fischer, author of *Historian's Fallacies*, cautioned historians to avoid the many logical fallacies that threaten their research and interpretation. For example, the fact that most USN decrypts and direction-finding reports from late 1941 are unavailable or missing may lead historians to commit the fallacy of “negative proof,” whereby absence of proof is considered as proof that such material never existed.⁵⁹ The USN radio intelligence network may have intercepted many thousands of Japanese transmissions. Conversely, the fallacy of “prevalent proof,” whereby mass opinion becomes a method of verification, does not well serve historians faced with an abundance of secondary works declaring Pearl Harbor to be an intelligence failure: contrary evidence may not have enjoyed sufficient consideration or approval.⁶⁰ As well, “presentist”

⁵⁹ David Hackett Fischer, *Historians' Fallacies: Toward a Logic of Historical Thought* (New York: Harper & Row, 1970), 47-8.

⁶⁰ *Ibid.*, 51-3.

conceptions of history, whereby the past is used as a ratification of the present, must be avoided.⁶¹ A revisionist historian may commit biases of omission or selection if attempting to show a causal link between Roosevelt's interventionist outlook and the present geopolitical order. Roosevelt's plans should not be viewed through the prism of modernity. Indeed, historians studying motivation must not attribute their protagonists with the same historical knowledge and cultural biases that they now possess.⁶²

Other fallacies of causation and motivation may also tempt unwary historians. Without doubt, historians relying upon antecedence as a causal factor risk committing the fallacy of *post hoc ergo propter hoc*.⁶³ Lt. Cmdr. Arthur McCollum's eight-point plan of 1940 to encourage Japan into a war with the United States did not necessarily "cause" the Roosevelt administration to follow suit in 1941 – McCollum's plan may only have reflected his own views and failed to influence others. The "pathetic fallacy," whereby animate behaviour is ascribed to inanimate objects, also bares close scrutiny.⁶⁴ The "American Military Mind" and "Japanese National Will" simply do not exist, although individual viewpoints do exist that are subject to historical assessment. Above all, historians must examine their own motivation when forming arguments contrary to current historiographical trends. For example, if it may be shown that the United States had foreknowledge of the Pearl Harbor attack, historians should not abandon a revisionist thesis because it will provoke disdain from traditionalists. Any *argument ad consequentium*

⁶¹ *Ibid.*, 135-40.

⁶² *Ibid.*, 209-13, 226-30. Fischer elaborates upon these points in his discussion of "the historians' fallacy" and "the fallacy of ethnocentrism."

⁶³ *Ibid.*, 166-7.

⁶⁴ Fischer, *Historians' Fallacies*, 190-3.

must be avoided because the consequences of an argument have no bearing upon the argument's validity.⁶⁵ Historians must succumb to logic, not peer pressure.

With such methodology in mind, the historian is prepared to journey down the road to Pearl Harbor. The events of December 7, 1941, will be placed into historical context through the medium of USN radio intelligence. Indeed, radio intelligence, by virtue of its ability to suggest the intentions, capabilities and actions of an adversary, forms a suitable foundation for an historical inquiry concerning Pearl Harbor. In a style as telegraphic as the information conveyed, let our journey begin.

⁶⁵ *Ibid.*, 300-2.

2. Understanding Japan's Intentions:

USN Cryptanalysis and the Challenge of JN-25B

We are reading enough current traffic to keep two translators very busy . . .
Lt. John Lietwiler. Station Cast, Philippines, November 16, 1941.⁶⁶

Reading coded messages has always been a means of understanding an adversary's intentions. As early as the 1920s, the USN stole a copy of Japan's naval codebook, photographed it, and then used cryptanalysis to decrypt later superencipherments of the original code.⁶⁷ Throughout the 1930s, the USN used cryptanalysis to recover new code and cipher values introduced by the Japanese navy. In 1939, the Japanese navy introduced a new principal naval code, which the USN later called JN-25A. Although USN cryptanalysts solved this code by late 1940, the Japanese navy changed codebooks again on December 1, 1940. The new codebook, later called JN-25B by the USN, became the object of much cryptanalytic effort. In 1941, the USN had three cryptanalysis centres working on Japanese naval codes: OP-20-GY at the Navy Department in Washington, Station Cast (COM16) at Corregidor, Philippines, and Station Hypo (COM14) at Pearl Harbor, Hawaii.⁶⁸ Both OP-20-GY and Station Cast were dedicated to the solution of JN-25B, while Station Hypo was directed to decrypt an infrequently used Japanese naval code. Kahn offered the following estimate of USN staffing: "Of the Navy's

⁶⁶ Letter dated Nov. 16, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. L.W. Parke, Navy Dept., Washington, page 1, 3200/1 – *NSRS Philippines, Operations Summaries*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 15 (College Park, MD: National Archives II, MMRB).

⁶⁷ Layton, et al, *And I Was There*, 31-2.

⁶⁸ OP-20-G was divided into three sections: OP-20-GX (direction finding), OP-20-GY (cryptanalysis), and OP-20-GZ (translation and dissemination). See Kahn, *The Codebreakers*, 11.

total radio-intelligence establishment of about 700 officers and men, two thirds were engaged in intercept or direction-finding activities and one third – including most of the 80 officers – in cryptanalysis and translation.”⁶⁹ Indeed, Station Cast employed three translators, whereas Station Hypo employed seven. Furthermore, the USN exchanged code groups with its Allied counterparts.

With all these cryptanalytic resources, the USN had the ability to penetrate messages transmitted by the Japanese navy. The USN also decrypted Japanese diplomatic traffic, which is discussed in part 4 of this thesis, but the main object of USN cryptanalytic effort in 1941 was the decryption and translation of Japanese naval messages transmitted by radio. On the eve of the Pearl Harbor attack, USN cryptanalysts could partially read JN-25B and numerous messages encrypted in this code revealed Japanese intentions in the north Pacific to any who were able to select and decrypt the right messages.

Other views of USN cryptanalysis

Historians have variously interpreted the cryptanalytic abilities of the USN in 1941. Wohlstetter focussed upon the value of monitoring diplomatic traffic: “The only markedly effective branch of Intelligence during 1941 was cryptanalysis. The messages decoded and translated from MAGIC provided vital data for predicting Japanese moves.”⁷⁰ Regarding Japanese naval codes, Wohlstetter asserted that these codes were virtually unreadable by the USN in 1941: “Of the naval traffic intercepted, Rochefort testified that his unit was able to decode and understand about 10 per cent. Neither unit [COM14 and COM16] had been able to

⁶⁹ Kahn, *The Codebreakers*, 10.

⁷⁰ Wohlstetter, *Warning and Decision*, 169. See also page 171.

break any high-priority naval code.”⁷¹ Wohlstetter mentioned that Safford alone believed that COM16 could partially read JN-25 by November, 1941, but sided with the majority of congressional testimony suggesting that JN-25 was largely a mystery to USN cryptanalysts.⁷² For Wohlstetter, MAGIC was the only viable source of cryptanalytic intelligence, but one that failed to serve as a warning signal because of the deluge of misleading information or “noise.”

In 1967, Kahn explained that the Japanese never sent any encoded messages revealing their intentions at Pearl Harbor: “Why, then, did it [cryptanalysis] not prevent Pearl Harbor? Because Japan never sent any message saying anything like ‘We will attack Pearl Harbor’.”⁷³ As well, Kahn fell silent upon the subject of JN-25 decoding, but discussed the USN’s access to MAGIC diplomatic intercepts. He explained that Admiral H.E. Kimmel received enough MAGIC intercepts by late November, 1941, to know that war was possible, but emphasized that any forewarning of the Pearl Harbor attack was not possible.

By the 1990s, however, Kahn, drawing upon more recent sources, admitted to some USN decryption of Japanese naval codes. He wrote in 1991 that the USN’s poor JN-25 reading ability “was due less to Japanese cryptographic superiority than to the navy’s insufficiency of cryptanalysts” and that “no reference to a raid on Pearl Harbor ever went on the air, even coded.”⁷⁴ Underscoring his point, Kahn stated that “JN25b messages intercepted before the attack, but solved after the war, show that even if that naval code had been fully solved and those

⁷¹ *Ibid.*, 31.

⁷² *Ibid.*, footnote 82, 41.

⁷³ Kahn, *The Codebreakers*, 4.

⁷⁴ Kahn, “The Intelligence Failure.” 144, 147.

messages read before December 7, they would not have foretold the attack.”⁷⁵ In 1996, he explained that “Rochefort’s attack on Japanese naval codes had achieved some minor successes in late October and November, but he could read only about 10 per cent of the naval traffic, and much of this consisted of weather and other minor systems.”⁷⁶ Kahn also asserted that “Cavite [COM16] was spottily reading JN25 messages – which revealed nothing about Pearl Harbor – until December 4, when the superencipherment was suddenly changed.”⁷⁷

Farago adopted a similar assessment of USN cryptanalysis in *The Broken Seal*. Farago argued that USN cryptanalysis was not particularly effective by late 1941 and that “dependence on traffic intelligence had become crucial.”⁷⁸ Drawing upon some of the sources used by Ellis Zacharius in *Secret Missions*, he decided that Japanese naval codes failed to yield important information to USN cryptanalysts.⁷⁹ Farago offered the following explanation:

The FLAG OFFICERS code was lost and Rochefort’s team of cryptanalysts was making no headway whatsoever in its effort to solve its replacement. Op-20-G did succeed in keeping the old JN series open and was, in fact, using its twenty-fifth variant, solved a few months before. But it was yielding only routine information, mostly of an administrative nature, with very little operational or tactical intelligence.⁸⁰

For Farago, JN-25 had been understood by OP-20-G, but not well enough to provide complete textual information. Like most discussions of this topic in the 1960s, Farago’s account is rather general and necessarily based upon limited primary sources owing to the security-classification

⁷⁵ *Ibid.*, 147.

⁷⁶ Kahn, *The Codebreakers*, 47.

⁷⁷ *Ibid.*

⁷⁸ Farago, *The Broken Seal*, 269.

⁷⁹ For comparison, see Ellis M. Zacharius, *Secret Missions* (New York: G.P. Putman’s Sons, 1946), 258.

⁸⁰ Farago, *The Broken Seal*, 268-9.

of such sources at the time. Nonetheless, Farago later offered important new testimony concerning code recovery, which will be later discussed. in his postscript to the Bantam paperback edition of *The Broken Seal*.

Prange also asserted that cryptanalysis failed to unlock the secrets of Japanese naval codes in *At Dawn We Slept*. Prange emphasised the decryption of Japanese diplomatic traffic, but explained that the USN had no working knowledge of JN-25: “In Safford’s unit, Op-20-G, tension was ‘at an all-time high.’ The ‘First Team’ of experts sweated over the Japanese fleet JN-25 code.”⁸¹ For Prange, only call signs could have been read because the actual text of Japanese messages could not be decrypted.⁸² Seemingly, Prange’s treatment of cryptanalysis was more conservative than that of Farago.

Yet Toland explained in *Infamy* that the Dutch had broken Japanese codes and made their intelligence available to the Americans. Toland failed to broach the subject of USN decryption of Japanese traffic, but relied upon testimony to show that forewarning of the Pearl Harbor attack, as deduced by Dutch cryptanalysts operating in the Netherlands East Indies, was provided to Washington in a timely fashion. Toland produced testimony from key Dutch military personnel: “. . . during a meeting in 1943 Vice Admiral Conrad E.L. Helfrich of the Royal Netherlands Navy expressed wonder that the Americans had been surprised at Pearl Harbor. The Dutch, Helfrich said, had broken the code and knew that the Japanese were going to strike Pearl Harbor.”⁸³ Nonetheless, Toland did not produce any decrypts of Japanese traffic and limited his

⁸¹ Prange, *At Dawn We Slept*, 464.

⁸² *Ibid.*, 425.

⁸³ Toland, *Infamy*, 317-8.

discussion of American message-reading to the USN's intercept of Tokyo's "East Wind, Rain" message, which meant Japan would declare war against the United States.⁸⁴

Layton, however, returned to Farago's position, but discussed the potential value of cryptanalysis. In *And I Was There*, Layton asserted that USN intercepts of Japanese radio traffic had "*potential* intelligence value as clues to Japan's operational intentions, *including* indications that an attack force of carriers was heading for an unknown target."⁸⁵ Layton carefully supported his position with SRN intercepts dating from November 14 to 29, 1941, which demonstrated that the Japanese navy was being placed on a wartime footing complete with a Strike Force, "Combined Fleet Battle Plan," and fuel-supply network.⁸⁶ Yet Layton offered no clear indication of how much information USN cryptologists gleaned from these intercepts of Japanese traffic, other than explaining that such traffic was 10% readable in 1941. Nonetheless, Layton offered readers a tantalizing piece of information concerning intelligence-gathering: Lt. Cmdr. Alwin Kramer, a naval intelligence officer with OP-20-G, went about New York City in early 1941 stealing Japanese code books from diplomatic offices.⁸⁷ Kramer, employing the "direct method" of code breaking, made photo-prints of these Japanese codebooks for OP-20-G. According to Layton, exactly which codes Kramer was able to secure remains unclear. In general, Layton's account contributed important evidence to the debate over USN methods of intelligence recovery in 1941, but stopped short of definitive answers.

⁸⁴ *Ibid.*, 286-7.

⁸⁵ Layton, et al, *And I Was There*, 231.

⁸⁶ *Ibid.*, 232, 548.

⁸⁷ *Ibid.*, 284.

In contrast, Rusbridger and Nave offered definitive answers in *Betrayal at Pearl Harbor*. The authors alleged that British cryptanalysts obtained enough intelligence from Japanese intercepts to predict Pearl Harbor, a feat not duplicated by the USN. Rusbridger and Nave explained that the Far East Combined Bureau (FECB) at Singapore, Britain's main intelligence unit in the Pacific, provided Churchill with foreknowledge of a long-range Japanese attack on American forces. Churchill, however, failed to share this important intelligence with Roosevelt. Paradoxically, Rusbridger and Nave supported some of their arguments by citing USN SRN-intercepts as proof of what the FECB must have intercepted itself.⁸⁸ Furthermore, the authors showed some misunderstanding of the JN-25 Japanese naval code as they failed to delineate the "A" version of the code from the later "B" version and confused code types (encipherment) with additive types (superencipherment).⁸⁹ Rusbridger and Nave provided testimony and letters to support certain points, but very little hard evidence to support their claims.

In 1994, Parker reaffirmed Layton's view in his well-researched account, *Pearl Harbor Revisited*. Parker, building upon the position he adopted in his 1991 article, "The Unsolved Messages of Pearl Harbor," explained that USN intercepts revealed Japanese plans for a trans-Pacific raid on capital ships moored in shallow waters, but that these intercepts were not readable by USN cryptologists.⁹⁰ Regarding JN-25B decryption, Parker explained that a lack of resources, particularly translators, prevented the USN from fully reading Japanese traffic: "Little if any of the COMINT provided by Station C [Corregidor] came from cryptanalysis. Because Washington

⁸⁸ Rusbridger and Nave, *Betrayal at Pearl Harbor*, 138, 146.

⁸⁹ *Ibid.*, 86, 115, 145.

⁹⁰ Parker, *Pearl Harbor Revisited*, 35, 43, 48. See also Parker, "The Unsolved Messages of Pearl Harbor," 295, 298.

could not supply current code group meanings, Station C was not able to read messages in . . . JN-25, or in several of the minor naval codes."⁹¹ Parker, an NSA historian, held to the view that all available USN decryptions were made in 1945-6, thereby concluding that the United States had no foreknowledge of Pearl Harbor. The strength of Parker's work is in his meticulous examination of the intercepted Japanese messages.

Prados expanded the debate over USN cryptology in *Combined Fleet Decoded*. Prados offered the first public account of the intelligence activities of Station Cast at Corregidor since the publication of Dwayne Whitlock's article, "Station 'C' and Fleet Radio Unit Melbourne (Frummel) Revisited."⁹² Prados also systematically described the principal stations of the USN radio intelligence network. Moreover, he criticized Rusbridger and Nave for failing to provide sufficient evidence to prove that the British and the Australians were reading JN-25.⁹³ Prados, working mainly from official military histories, adopted the position of both Layton and Parker, declaring JN-25B to be beyond the grasp of USN cryptanalysts owing to inadequate resources: "In 1941 the JN-25(b) cipher continued to resist efforts to break into it. Station Hypo's assistance could have been useful had it been brought into the attack. It was not."⁹⁴ As well, Prados described JN-25B as "a cipher that Cast actively attacked, but that only slowly yielded its secrets."⁹⁵ Prados provided a good survey of the existing literature and available sources, but ultimately defaulted to the traditionalist view of USN cryptanalytic achievements in 1941.

⁹¹ *Ibid.*, 48.

⁹² Prados, *Combined Fleet Decoded*, 210-5. See also Dwayne Whitlock, "Station 'C' and Fleet Radio Unit Melbourne (Frummel) Revisited," *Cryptolog* 14.2 (Spring 1993): 1-19. Whitlock, who served as a traffic analyst at Station Cast in 1941, asserts that neither traffic analysis nor cryptanalysis provided any foreknowledge of the Pearl Harbor attack.

⁹³ *Ibid.*, 171.

⁹⁴ *Ibid.*, 175.

⁹⁵ *Ibid.*, 213.

Stinnett, however, offered a revisionist account of USN cryptanalysis in *Day of Deceit*. He stated that the USN had the ability to solve four principal Japanese codes by the autumn of 1941: Code Book D (JN-25), the Call Sign Code, the Ship Movement Code (SM), and the Merchant Marine *Shin* Code (S).⁹⁶ Stinnett analyzed Station Hypo's communication summaries (COMSUM14s), finding that seven reports issued between September 4 and November 16, 1941, demonstrated Japanese code-reading ability, a feat not repeated again until December 19, 1941, well after the Pearl Harbor attack.⁹⁷ He also produced a message dated November 29, 1941, from Lt. Rudolph Fabian to Roosevelt's naval aide, which suggested that Station Cast was reading the Ship Movement Code.⁹⁸ Nonetheless, Stinnett, who conducted extensive research in several branches of the National Archives, found no reliable evidence "that establishes how much of the 5-Num text could be deciphered, translated, and read by naval cryptographers."⁹⁹ Stinnett relied upon the same cryptologic sources as previous authors, but decided that Japanese traffic was largely readable prior to the Pearl Harbor attack.

The range of possible historical interpretations may be redefined through an evaluation of USN cryptanalysis as practiced in 1941. Such an evaluation must consider capability, resource allocation and application. Indeed, an examination of key letters and message-intercepts, particularly those previously unavailable to historians, suggests how successful USN cryptanalysis was in 1941.

⁹⁶ Stinnett, *Day of Deceit*, 70-2.

⁹⁷ *Ibid.*, 133-4.

⁹⁸ *Ibid.*, 73.

⁹⁹ *Ibid.*, footnote 18, 324. See also footnote 32, 348.

USN cryptanalysis: capability and resource allocation

Japanese naval codes offered great challenges to USN cryptanalysts in 1941. The USN, working with limited resources, intercepted Japanese dispatches mainly encrypted in five principal codes from the *Kaigun Anjo*, a collection of 29 Japanese naval codes: the Japanese Fleet General Purpose System, the Japanese Minor Purpose System (for construction activities), the Merchant Vessel-Navy Liaison System, the Merchant Vessel-Navy 5-Letter Cipher, and the Japanese Naval Attache Cipher.¹⁰⁰ Apart from these principal codes, the Japanese infrequently sent messages in the Japanese Navy Flag Cipher (AD code), an administrative code that had been prevalent in the late 1930s before the introduction of JN-25. The cryptanalysis unit of OP-20-G, known as OP-20-GY, directed Station Hypo to work the AD code, one that was never broken because its traffic volume was insufficient for successful decryption.

Meanwhile, OP-20-GY and Station Cast both worked on the Japanese Fleet General Purpose System – Code Book D, variously known to the USN as the 5-Numeral code, AN code or JN-25B, a code that carried the bulk of encrypted traffic for the Japanese navy. Kahn once estimated that JN-25B comprised “45,000 five-digit groups, enciphered by two volumes of 50,000 five-digit additives each.”¹⁰¹ The code’s immediate predecessor had been JN-25A, which the Japanese navy used from June 1, 1939, until November 30, 1940.¹⁰² This code, one in which each word was represented by a five-digit group, had been further enciphered by summing a five-

¹⁰⁰ SRH-406, *Pre-Pearl Harbor Japanese Naval Despatches*, RG457, SRH Series, 190/36/11/4, Entry 9002, Box 120 (College Park, MD: National Archives II, MMRB), foreword, p. 7.

¹⁰¹ Kahn, *The Codebreakers*, 563.

¹⁰² Stephen Boudiansky estimated that JN-25A comprised about 30,000 code values and that the first additive groups also numbered 30,000. See Stephen Boudiansky, *Battle of Wits: The Complete Story of Codebreaking in World War II* (New York: Free Press, 2000), 7.

digit additive to each word using false addition (adding without carrying). Fortunately for USN cryptanalysts, when JN-25A changed to JN-25B on December 1, 1940, the additive groups, known collectively as Additive 5, stayed the same. This retention of the same additives aided recovery of the new JN-25B codebook. Nonetheless, the Japanese did change the additives used with JN-25B throughout 1941: Additive 5, or JN-25B5, was used from December 1, 1940, until January 31, 1941; Additive 6, or JN-25B6, was used from February 1 until July 31, 1941; and Additive 7, or JN-25B7, was used from August 1 until Dec. 4, 1941.¹⁰³ The extent to which USN cryptanalysts read JN-25B in 1941 has previously been unclear because original decrypts were never publicly released.

USN histories and document collections offer various estimates regarding JN-25B code recovery in 1941. In the *Naval Security Group History to World War II* (SRH-355), Captain J.S. Holtwick explained that “On 4 January 1941 it was reported that about 2000 values had been recovered out of 33,000 possible, in the 5-numeral code (JN-25).”¹⁰⁴ Parker assessed the importance of SRH-355 as follows: “This manuscript, which has been turned over to the National Archives, would have been listed as a primary source if all the documents uncovered by Holtwick could be examined by other historians.”¹⁰⁵ A code recovery report dated January 4, 1941, would have only concerned JN-25B, the system then current. As well, Holtwick delineated JN-25A from JN-25B in a footnote on the same page. Furthermore, the quote of 33,000 possible

¹⁰³ Stephen Budiansky, “Too Late for Pearl Harbor,” *Naval Institute Proceedings* (Dec. 1999): 50-1; Stinnett, *Day of Deceit*, footnote 36, 331-2; SRH-406, foreword, 7; SRN-116741, RG457, SRN Series, 190/36/26/4, Entry 9014, Boxes 142 to 146 (College Park, MD: National Archives II, MMRB). Hereafter, SRNs will be cited only by their numbers.

¹⁰⁴ SRH-355, *Naval Security Group History to World War II*, Part 1, RG457, SRH Series, 190/36/11/2-3, Box 108 (College Park, MD: National Archives II, MMRB), 398.

¹⁰⁵ Parker, *Pearl Harbor Revisited*, 92.

code values is reasonable given that the code's "divisible by three" garble check, which allowed Japanese operators to check the reliability of code reception, made only 33,333 code groups usable. Yet contemporaneous OP-20-GY status reports offer the following estimates of code group recoveries made throughout 1941: 300 code groups by April 1; 1100 by June 1; about 2000 by August 1; 2400 by October 1; 3000 by November 1; 3800 by December 1; and 6180 by January 1, 1942.¹⁰⁶ These estimates conflict with the single estimate offered in SRH-355 and suggest that the USN had only recovered about 3000 to 4000 code values in the weeks preceding the Pearl Harbor attack. However, even if about 1000 code values represented numbers, which already constituted important intelligence considering their use in reporting ship positions, weather, dates and schedules, the remaining code vocabulary of 2000 to 3000 word groups could have permitted the reading of pattern naval messages.

Additive recovery and message reading ability have also been variously interpreted. Certain OP-20-GY status reports suggest that less than 10% of JN-25B7 additives had been recovered by December, 1941.¹⁰⁷ Parker, an NSA historian, suggested otherwise: "Thanks to Japanese communications errors each successive JN25 Baker cipher . . . was successfully penetrated by analysts in Washington and Corregidor until [Additive 8] was introduced on 4 December 1941."¹⁰⁸ Regarding message reading, one official source states that no JN-25B messages were read in 1941.¹⁰⁹ Alternatively, the *History of GYP-1* explains that the discovery

¹⁰⁶ 5750/198 – CNSG, *OP-20-GY*, RG38, Crane Files (College Park, MD: National Archives II, MMRB).

¹⁰⁷ *Ibid.* See also Budiansky, *Battle of Wits*, 8, 364.

¹⁰⁸ Parker, "The Unsolved Messages," 298. The USN may have "penetrated" JN-25B additives throughout 1941 because it used tabulating machines and difference tables as aids to additive recovery. Holtwick briefly described the utility of these techniques in SRH-355, 399.

¹⁰⁹ 5750/197 – CNSG, *Activities and Accomplishments of GY-1 During 1941, 1942 and 1943*, RG38, Crane Files (College Park, MD: National Archives II, MMRB).

of “a number-date table in Baker code” placed the reading of JN-25B messages “on a current basis,” although in a limited way: “The reading of messages in Baker code before Pearl Harbor, however, must be understood to have been a qualified success. Current messages were read on Corregidor but they were few in number and invariably ship movement reports: arrivals and departures, together with some fragmentary schedules.”¹¹⁰ Clearly, these conflicting interpretations must result from conflicting sources.

Yet certain testimony suggests that the USN could more than partially read JN-25B in 1941. Winston Churchill offered a tantalizing assessment in *The Grand Alliance*: “From the end of 1940 the Americans had pierced the vital Japanese ciphers, and were decoding large numbers of their military and diplomatic telegrams.”¹¹¹ More significantly, Captain Laurance Safford, head of OP-20-G, discussed JN-25B reading ability in a memorandum of May 17, 1945:

Com 16 [Station Cast] intercepts were considered most reliable . . . not only because of better radio reception, but because Com 16 was currently reading messages in the Japanese Fleet Cryptographic System (5-number code or JN-25) and was exchanging technical information and translations with the British at Singapore [FECB]. As regards the JN-25 system the current version (JN-25b) had been in effect since 1 December 1 1940 [and] remained in effect until 27-31 May 1942, and was partially readable in November 1941.¹¹²

In August, 1970, Safford reaffirmed his views: “By Dec. 1 41, we had the code solved to a readable extent.”¹¹³ As well, Parker made an observation alluding to the USN’s ability to read

¹¹⁰ 5750/202 – CNSG, *History of GYP-1*, RG38, Crane Files (College Park, MD: National Archives II, MMRB), 25. Alternative listing: *History of GYP-1*, Series IV.W.I.S.13. Center for Cryptologic History, National Security Agency.

¹¹¹ Winston S. Churchill, *The Grand Alliance* (Boston: Houghton Mifflin, 1950), 598. Vol. 3 of *The Second World War*, 6 vols., 1948-53.

¹¹² Quoted, Letter dated May 17, 1945, from Cmdr. Laurance F. Safford to Lt. Cmdr. John F. Sonnett, Rusbridger and Nave, *Betrayal at Pearl Harbor*, 169-70. Indeed, Rusbridger and Nave claim that Britain’s cryptology unit, the Government Code and Cipher School (GCCS), had “300 people working solely on JN-25,” an effort eclipsing that of the USN.

JN-25B7 in late 1941: a Japanese dispatch of December 5, which instructed Japanese naval attaches in London, Washington and Mexico to immediately destroy their code materials, was the only message “found after 0000 4 December 1941 in the old cipher which could have been read before 8 December.”¹¹⁴

Testimony also shows that burglary accounted for some code reading. Farago, in his postscript to the Bantam paperback edition of *The Broken Seal*, offered the following testimony:

According to Mr. Lee Strobel, an expert locksmith who serviced the formidable safes of the Japanese Consulate General in Los Angeles, he was approached in December 1940 [i.e. when JN-25B first appeared] by a man who introduced himself as “Captain Webb of the U.S. Office of Naval Intelligence,” and was, with an eloquent appeal to his patriotism, persuaded to ‘crack’ the Consulate’s safe, thus aiding ‘Webb’ in the removal of a Naval code the Japanese were supposed to be keeping in it. Mr. Strobel agreed, the safe was opened surreptitiously, the code was found and removed – but it never appeared in any of the later accountings of Japanese crypt-material the Americans had at their disposal.¹¹⁵

Farago, explaining this lack of accounting, suggested that Captain Webb was a British agent and that if the British received the code, they failed to inform the Americans. It is more likely, however, that the USN limited the disclosure of its sources for security reasons. Other testimony offered in Farago’s postscript discussed the seizure of Japanese merchant navy codes. On May 28, 1941, George Muller, a US Customs Service agent cooperating with Cmdr. R.P. McCullough of the 12th Naval District in San Francisco, boarded the Japanese merchant vessel *Nisshin Maru II* and seized its codebooks.¹¹⁶ McCullough later brought copies of the codebooks to

¹¹³ SRH-355, 398.

¹¹⁴ Parker, *Pearl Harbor Revisited*, 66. Brian Villa originally made this observation following a careful examination of Parker’s work.

¹¹⁵ Farago, “POSTSCRIPT,” 392.

¹¹⁶ *Ibid.*, 393-5.

Washington. Layton, as mentioned, explained that in 1941 Lt. Cmdr. Alwin Kramer, a naval intelligence officer with OP-20-G, stole and made photo-prints of Japanese code books located in New York consulates. There is no evidence that the Navy Department ever stole the JN-25B codebook, although “direct” recovery of Japanese merchant naval codes (i.e. the “S” code) may have provided a better understanding of Japanese terminology and code-vocabulary.

Apart from testimony, other evidence indicates USN code-reading ability. As Stinnett observed, communications intelligence summaries (COMSUM14s) produced by Station Hypo for Admiral Kimmel demonstrate 5-Numerical Code reading ability on seven different occasions between September 4 and November 16, 1941.¹¹⁷ Yet inexplicably, no COMSUM14 refers to the 5-Numerical Code again until December 19, well after the Pearl Harbor attack. The Station Cast Chronology for October 16, 1941, also demonstrates text reading ability: “Itsu Aba Radio (Spratley Isl) was noted originating despatches containing direction finder bearings. Partial breakdown of despatches disclosed that the bearings were taken on two moving targets. These bearings might possibly be on the movement of Cardiv-4 from Sasebo to Takao area.”¹¹⁸

Another example of Station Cast’s text reading ability may be found in a COM16 report of November 29, 1941, which Parker summarized as follows: “COM-16 reports CINC2 to move south between 29 November and 2 December. [291029Nov41]”.¹¹⁹ Stinnett’s quotation of this

¹¹⁷ Stinnett, *Day of Deceit*, 133-4. The following COMSUM14s from 1941 show 5-Numerical Code reading ability: Sep. 4 and 24; Oct. 4, 14 and 23; and Nov. 13 and 16. See 5510/4 – NAVSECGRU, *Fourteenth Naval District Combat Intelligence – Unit Traffic Intelligence Summaries: 16 July to 31 Dec 1941*, RG38, Crane – Inactive Stations, 370/27/23/5, Box 3 (College Park, MD: National Archives II, MMRB). Hereafter, communication intelligence summaries produced by Station Hypo (COM14) will be cited as COMSUM14 followed by the date.

¹¹⁸ Station C Chronology, Oct. 16, 1941, 3220/3 – NSRS Philippines, *Chronology*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 16 (College Park, MD: National Archives II, MMRB), 86.

¹¹⁹ Parker, *Pearl Harbor Revisited*, 78.

intercept, as reported by Lt. R.J. Fabian to Roosevelt's naval aide, highlights Station Cast's ability to decrypt and translate such messages:

The Commander-in-Chief SECOND fleet indicates he will shift communications from the Kure Communications Zone at 0400, on the 29th; from the Sasebo Communication Zone at 0000, [on December] 1; and enter the Bako Communication Zone (in the Pescadores Islands west of Formosa) at 0000, on December 2, thus implying a move from Japan proper to the South.¹²⁰

Brian Villa has noted that the original message had been likely transmitted in JN-25B rather than the Ship Movement Code, because messages originated by high-ranking Japanese naval officers required greater security.

Certainly, the ease with which the next additive of JN-25B was solved following the Pearl Harbor attack suggests that good progress had been made on earlier versions. Safford originally made this point in his memorandum of May 17, 1945: "A new system of keys [Additive 8] was introduced on 4 December 1941 and reported by Com 16 [Station Cast] but the carry over of the old code made their solution quite simple and we were reading messages again by Christmas, Corregidor getting the initial break on 8 December 1941."¹²¹ Indeed, on December 15, Station Cast offered to send code recoveries on the "current period" to OP-20-GY if requested.¹²² Only three weeks after commencing work on Additive 8 on December 17, Lt. Cmdr. J.J. Rochefort, chief of the Combat Intelligence Unit at Station Hypo, started getting

¹²⁰ Quoted, Stinnett, *Day of Deceit*, 73. Stinnett regarded this particular message as an example of Station Cast's ability to read two Japanese naval codes: the 5-Numeral code and the Ship Movement (SM) code.

¹²¹ Quoted, Letter dated May 17, 1945, from Cmdr. Laurance F. Safford to Lt. Cmdr. John F. Sonnett, Rusbridger and Nave, *Betrayal at Pearl Harbor*, 169-70. See SRN-116741 for evidence that the Japanese navy permitted Additive 7 to be used simultaneously with Additive 8 in the period immediately following the introduction of Additive 8.

¹²² Quoted, *Ibid.*, 168.

results with help from Station Cast.¹²³ As well, Parker explained that USN cryptanalysts had the ability to read JN-25B8 by February, 1942, only about twelve weeks into the new additive period.¹²⁴ The USN had more resources for cryptanalysis following the outbreak of war, but JN-25B7 reading ability was evidently well developed in the crucial months before the Pearl Harbor attack.

Contemporary letters, however, offer further insight into the USN's approach to cryptanalysis. In late 1941, OP-20-GY chose to decrypt traffic from earlier additive periods in its attempt to recover JN-25B code values. This approach guaranteed "book-building," but at the expense of current additive recovery. In a letter of October 24, Lt. L.W. Parke, head of OP-20-GY, offered the following instructions to Lt. John Lietwiler, co-commander of Station Cast: "We are almost ready to begin work on the period recently ended [JN-25B6, Feb. 1 to Jul. 31]. If you have stopped your efforts on it, please let us know. I expect to have an official directive sent to you soon in that regard, so we won't be duplicating work."¹²⁵ In a letter of November 19, Lt. Robert Densford, also with OP-20-GY, offered further explanation to Lietwiler: "Since you are working on the current AN period [JN-25B7, commencing Aug. 1], we are shifting to the February-July period. We assume that all recoveries from you and Singapore for that period are now in our hands."¹²⁶ Furthermore, OP-20-GY continued to have Station Hypo toil away on the

¹²³ Layton, et al. *And I Was There*, 339-40.

¹²⁴ Frederick Parker. *A Priceless Advantage: U.S. Navy Communications Intelligence and the Battles of Coral Sea, Midway, and the Aleutians*, United States Cryptologic History, Series IV, World War II, Vol. 5 (Washington, DC: Center for Cryptologic History, National Security Agency, 1993), 20.

¹²⁵ Letter dated Oct. 24, 1941, from Lt. L.W. Parke, Navy Dept., Washington, to Lt. John Lietwiler, Fort Mills, P.I., 3200/1 – *NSRS Philippines, Operations Summaries*.

¹²⁶ Letter dated Nov. 19, 1941, from Lt. Robert Densford, Navy Dept., Washington, to Lt. John Lietwiler, Fort Mills, P.I., page 3, 1300/1 – *NSRS Philippines, Assignment & Distribution*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 15 (College Park, MD: National Archives II, MMRB).

infrequently used Japanese Navy Flag Cipher, or AD code. Densford explained to Lietwiler on November 19 that Station Hypo was not able to crack this code: “As for the AD or ‘successor to the 45 sign code’, we ain’t got some. Honolulu has been amazingly reticent; they won’t even mention the business. Presumably, then, it has not been cracked, and we so notified London long ago. They should inform Singapore.”¹²⁷ The AD code seemed to be a waste of Station Hypo’s resources, given that the station had IBM machines and seven translators at its disposal.¹²⁸

Meanwhile, Station Cast successfully decrypted JN-25B throughout 1941. Equipped with IBM machines, Station Cast mechanically processed great volumes of intercepted traffic.¹²⁹ Indeed, in May, Lt. Rudolph Fabian, commander of Station Cast, sent OP-20-G 159 negatives of code books, including 44 negatives of the “Five numeral book – subtractors” and 12 negatives of the “Five numeral code book and instructions.”¹³⁰ In a letter of August 30, Fabian told Safford of the progress made on JN-25B6: “Of course, with the recovery of the new cipher in the AN we will be that much better off - - it was wonderful in the last cipher period to recognize a movement, recover the cipher, and have all the R.I. [radio intelligence] deductions confirmed and made more positive . . .”¹³¹ In the same letter, Fabian told Safford that the current code period, JN-25B7, was beginning to yield results: “The new cipher has finally started ‘giving’ - - now all

¹²⁷ *Ibid.*

¹²⁸ Layton, et al, *And I Was There*, 358.

¹²⁹ Station Cast’s IBM equipment included a Type 405 alphabetical tabulator, Type 075 sorter, type 035 punch and Type 513 reproducing gang punch. For a summary of Station Cast’s machine installation, see 5750/4 – *NSRS Philippines, History, General*, RG38, Crane – Inactive Stations, 370/27/23:7, Box 18 (College Park, MD: National Archives II, MMRB), 52. For an excellent study of machine cryptanalysis, see Cipher A. Deavours and Louis Kruh, *Machine Cryptography and Modern Cryptanalysis* (Dedham, MA: Artech House, 1985).

¹³⁰ Letter dated May 5, 1941, from Lt. Rudolph Fabian, Fort Mills, P.I., to The Chief of Naval Operations, Navy Dept., Washington, 3200/1 – *NSRS Philippines, Operation Summaries*.

¹³¹ Letter dated August 30, 1941, from Lt. Rudolph Fabian, Fort Mills, P.I., to Cmdr. Laurance Safford, Navy Dept., Washington, page 1, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

we lack is sufficient material to prove it . . .”¹³² Also in his letter to Safford, Fabian urged OP-20-G to work on the current code period:

I sent the letter suggesting that OPNAV work on the current cipher period because it seemed that the info in current intercepts fed back into R.I. would be the best and fastest way of getting the Orange [Japanese] Fleet organization straightened out - - it worked so well here that one more source feeding cipher back would have made it work still better.¹³³

Clearly, successful decryption of JN-25 helped confirm other sources of radio intelligence.

Yet Station Cast made even greater strides in decrypting JN-25B7 in late 1941. In a letter of October 6, Lietwiler explained to Densford how Station Cast’s “Jeep IV” mechanical tabulator aided in the decryption of Additive 7:

We . . . hit the jackpot on the second trial, so the Jeep made a lot of face in a hurry. We are now beginning to break into the additive for this period, and the mathematics solution for indicator subtractors is a great help. It works especially well since there are apparently only 500 keys, and also since quite a few people are ‘tailing’ consistently.¹³⁴

By November, however, Lietwiler’s staff relied on manual solutions to Additive 7 as the novelty of using the “Jeep IV” wore off, considering the time required to set up the machine.¹³⁵

Lietwiler later furnished definitive evidence of Station Cast’s success in reading JN-25B7. In a letter of November 16, 1941, Lietwiler, responding to Parke’s letter of October 24, explained how successful Station Cast was at reading JN-25B7 and requested that OP-20-GY assist with current traffic decryption:

¹³² *Ibid.*, page 2.

¹³³ *Ibid.*, page 3.

¹³⁴ Letter dated October 6, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 1, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

¹³⁵ Letter dated November 16, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. L.W. Parke, Navy Dept., Washington, page 1, 3200/1 – *NSRS Philippines, Operations Summaries*.

We have stopped work on the period 1 February to 31 July as we have all we can do to keep up with the current period. We are reading enough current traffic to keep two translators very busy, i.e., with their code recovery efforts, etc. included. In this connection, I certainly wish you could see your way clear to drop the ancient history side of this cipher and work with us on each current system as it comes up. With Singapore, we have adopted a system of exchanging block numbers to prevent duplication. We have more or less given them a free hand in selecting the cipher blocks they tackle on account of their more limited traffic.¹³⁶

The translators at Station Cast not only read current traffic, but also assisted in the recovery of code values. Lietwiler's remarks clearly show that JN-25B7 was readable in 1941, although past censorship obscures the results of decryption.¹³⁷

Applications of USN cryptanalysis

Despite the limitations imposed by past censorship, later publications of pre-Pearl Harbor messages suggest that certain JN-25 intercepts were readable in 1941. SRH-406, entitled *Pre-Pearl Harbor Japanese Naval Despatches*, includes 188 Japanese dispatches from 1941 that were decrypted and translated by the USN in 1945-6. These 188 dispatches were selected from a group of 2,413 translated dispatches that, in turn, were selected from a collection of 26, 581 decrypted dispatches. An original copy of SRH-406 shows that about 90% of all intercepted

¹³⁶ *Ibid.* Lietwiler's letter to Parke is also discussed in a USN military history of the Philippines found in 5750/4 – *NSRS Philippines, History, General*, 54. The Parke-Lietwiler letters may have escaped past censorship because they had been misfiled in 3200/1 – *NSRS Philippines, Operations Summaries*; the letters likely should have been filed in 1300/1 – *NSRS Philippines, Assignment & Distribution*. Historians continue to debate USN code reading ability. Budiansky's assessment of OP-20-GY status reports led him to conclude that only 3800 JN-25B code groups, along with 2500 additives (Additive 7), had been recovered by November, 1941: "It was far less than 10 percent of the total, nowhere near enough to read current traffic." See Budiansky, *Battle of Wits*, 8. Yet Lietwiler's letter of Nov. 16 to Parke clearly states that Station Cast was reading current traffic.

¹³⁷ Past censorship has taken its toll. An index to the USN's depository at Crane, Indiana, the contents of which were moved to the National Archives II in 1994, shows that several files end well before December, 1941. For example, Station Cast's *Miscellaneous Japanese Translations* file ends at March 30, 1941. Station Cast's *Communication Intelligence Reports* file ends on April 30, 1941. Moreover, files entitled *Japanese Navy Addresses*, *Japanese Navy Callsign Data*, *Japanese Navy Communications Data*, and *Japanese Navy Movement Reports* all end on October 31, 1941.

Japanese messages were encrypted in JN-25B, a code that the USN could partially read in 1941.¹³⁸ Yet there are signs that this document also drew upon 1941 decrypts that had been reassessed in 1945-6. Brian Villa has noted that certain messages are marked with asterisks to highlight the portions of a message that were not understood by the USN at the time of the message's interception in 1941 – the implication being that the remainder of such a message *was* understood in 1941. For example, SRH-406 lists messages in which certain military force designators have been asterisked, such as “AF (Midway)* Destruction Unit.”¹³⁹ The asterisks mean the following: “Identity of these area designators was not known at time of origin of this message.” Hence, remaining designators, such as “Northern Force” and “Support Unit (Striking Force),” *were* understood at the time of the message's origin in 1941. The preceding example is reinforced by our knowledge that the USN did not identify the Japanese code for Midway as “AF” until 1942.¹⁴⁰ Certainly, similar examples of these asterisks may be found in SRN intercepts containing Strike Force addresses.¹⁴¹ Seemingly, in 1941 the USN had decrypted messages addressed to the Strike Force.

Several other intercepts likely provided the USN with foreknowledge of the Strike Force. The first mention of the Strike Force occurred as early as October 13, 1941, when a “COMBINED FLEET” dispatch gave instructions for communication drills to the “STRIKING FORCE’ and the

¹³⁸ Brian Villa located an original copy of SRH-406 and noted that the majority of intercepted Japanese messages had been encrypted in JN-25B. Indeed, the document lists the number of messages encrypted in each of five Japanese code systems. Out of 26,581 decrypts of messages intercepted between September and December, 1941, 23,778 used JN-25B, 819 used JN-20-C, 631 used JN-39, 426 used JN-161, and 927 used JNA-20. These figures show that 89.5% of all decrypts had been originally encrypted in JN-25B.

¹³⁹ SRH-406, 98-9.

¹⁴⁰ Layton, et al, *And I Was There*, 411-3, 419-22.

¹⁴¹ SRNs 116430, 116431, 116432, 116433 and 116434.

“ADVANCED EXPEDITIONARY FORCE.”¹⁴² Although the Japanese began burying their address headings in encrypted text by early November, Station Cast could probably read these addresses in JN-25B7. Japanese dispatches of November 9 and 11 provided the composition of the Strike Force in their address headings.¹⁴³ Furthermore, Parker explained that two messages of November 16, SRN-115430 and SRN-116430, “revealed details of designator list and scope of forthcoming fleet operations.”¹⁴⁴ Japanese messages were even sent to the Strike Force after it departed Hitokappu Bay on November 26. For example, dispatches of November 28 and 30 were both addressed to the Strike Force.¹⁴⁵ Message headings alone revealed the existence of the Strike Force.

Other messages intercepted by the USN alluded to Japan’s intentions in the Pacific. Not surprisingly, many messages correctly showed that Japan had military intentions in the south. An enormous amount of intelligence pointed to targets in Southeast Asia. Yet several naval messages encrypted in JN-25B, a code in which the USN had partial reading ability, suggested that Japan intended to launch a trans-Pacific raid on capital ships anchored in shallow waters. Parker’s study of 1991, entitled “The Unsolved Messages of Pearl Harbor,” demonstrates that several Japanese messages intercepted by the USN pointed to an attack on Pearl Harbor. Abandoning Parker’s contention that these messages were not readable when originally intercepted, the messages may be assessed in terms of their possible (rather than potential)

¹⁴² SRH-406, Chapter 1, 9.

¹⁴³ SRNs 115709 and 115787. The message of November 9 concerns secret training exercises for fuelling at sea, whereas that of November 11 concerns anchorages assigned in Saeki Bay.

¹⁴⁴ Parker, *Pearl Harbor Revisited*, 59.

¹⁴⁵ SRNs 115690 and 115460. The message of November 28 is a weather report, whereas that of November 30 is a list of geographic designators such as “AI” (Oahu) and “AF” (Midway).

intelligence value in 1941. Expressed in Wohlstetter's terms, certain "signals" could have soared well above the background "noise" of information.

Indications that the Japanese navy was preparing for war came early in this coded traffic. On September 5, the 2nd Fleet chief of staff transmitted the following directive to his fleet: "A STATE OF COMPLETE READINESS FOR BATTLE OPERATIONS MUST BE ACHIEVED BY THE FIRST OF NOVEMBER . . ." ¹⁴⁶ On September 9, the Combined Fleet chief of staff explained to all fleet chiefs of staff and all fleet commanders that "AS CONDITIONS BECOME MORE AND MORE CRITICAL, EACH AND EVERY SHIP UNIT WILL AIM AT BEING FULLY PREPARED.FOR COMMENCING WAR OPERATIONS BY THE FIRST PART OF NOVEMBER . . ." ¹⁴⁷ Evidently, war was coming in late 1941.

USN intercepts also indicated that a particular battle plan had emerged. On October 6, the 1st Air Fleet staff offered the following drill instructions to various commanders: "IN FIRST AIR FLEET AERIAL TORPEDO ATTACK DRILL #13, WHICH IS SCHEDULED TO BE CONDUCTED ON 21 OCTOBER AGAINST BATTLESHIP DIVISION 1, AKAGI AND KAGA ARE EACH ALLOTTED 9 TORPEDOES AND SOORYUU AND HIRYUU ARE EACH ALLOTTED 6 TORPEDOES." ¹⁴⁸ Drills simulating aerial torpedo attacks on battleships placed the 1st Air Fleet in a special category of training: these drills echoed the tactics that had insured a British victory at Taranto on November 12, 1940. Moreover, special shallow-water torpedoes were being developed as outlined in this October 28 message from the 1st Air Fleet chief of staff:

¹⁴⁶ Quoted, Parker, "The Unsolved Messages," 301.

¹⁴⁷ SRN-115533; Quoted, Parker, "The Unsolved Messages," 302.

¹⁴⁸ SRN-117453; Quoted, Parker, "The Unsolved Messages," 302.

ON 30 OCTOBER, THIS FLEET WILL PICK UP FROM 5 TO 10 NEAR SURFACE(?) TORPEDOES AT SASEBO MILITARY STORES DEPARTMENT(.) CLASSES ON THIS TORPEDO WILL BE HELD AT KANOYA FOR ABOUT FIVE DAYS FROM THE 31ST AND THEN WILL BE SHIFTED TO FIRING PRACTICE. . . . BY WORKING NIGHT AND DAY, IT SHOULD BE POSSIBLE TO COMPLETE 10 (A SPECIAL ATTACHMENT FOR TORPEDOES, PROBABLY BOW OR STERN PLANES) BY 5 NOVEMBER.¹⁴⁹

Parker also produced evidence showing that “three carrier divisions totaling six carriers were to be equipped with the new torpedoes” and that “practice torpedo drills were to be conducted against anchored capital ships.”¹⁵⁰ There were many capital ships anchored in the shallow waters of Pearl Harbor.

Furthermore, a message of November 3 from the 1st Air Fleet staff to the Saeki Air Base commander spelled out plans for a surprise air attack conducted in two waves:

IN THE 3RD SPECIAL DRILL IN AMBUSHING, 54 SHIPBOARD BOMBERS WILL CARRY OUT A BOMBING AND STRAFING ATTACK IN SIGHT OF SAEKI BASE FROM 0815 ON THE 4TH, 0715 ON THE 5TH AND 0815 ON THE 6TH, AND ABOUT AN HOUR OR AN HOUR AND A HALF AFTERWARDS 54 SHIPBOARD ATTACK PLANES WILL CARRY OUT A SIMILAR BOMBING ATTACK.¹⁵¹

Such messages made clear the battle tactics being perfected by the 1st Air Fleet, even if they did not allude to the location of the intended target. It is interesting to note that on November 5, Admiral Kimmel issued a report to the Pacific Fleet entitled *Aircraft Depth Bomb Alert Watch*.¹⁵² Whether or not Kimmel received intelligence reports based upon decrypts of recent Japanese messages or simply exercised caution on his own initiative remains unknown.

¹⁴⁹ SRN-117301; Quoted, Parker, “The Unsolved Messages,” 302-3. All parentheses were added by the translator.

¹⁵⁰ Parker, “The Unsolved Messages,” 303. See SRNs 116323 and 117665.

¹⁵¹ SRN-117665; Quoted, Parker, “The Unsolved Messages,” 303.

¹⁵² Route Slip dated Dec. 4, 1941, from CINCPAC to Staff HQ, Thirteenth Naval District, Subject: Aircraft Depth Bomb Alert Watch, Serial no. 01765, Nov. 5, 1941, FF1/A2-11, RG181, 13th Naval District Commandant’s Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 8 (Seattle, WA: National Archives – Pacific Alaska Region).

Apart from battle tactics, clues relating to long-distance carrier refuelling appeared in other Japanese messages. *Maru*-class oil tankers were engaging in carrier refuelling exercises, as this October 30 message from the 1st Air Fleet chief of staff demonstrates:

WHEN INSTALLATION OF GEAR FOR REFUELING UNDER TOW AND PREPARATIONS FOR ACTION HAVE BEEN COMPLETED, KUROSHIO (KOKU/CHOO) MARU AND SHINKOKU (KAMI/KUNI) MARU WILL DEPART SASEBO AND KURE RESPECTIVELY ON THE 13TH AND PROCEED TO KAGOSHIMA BAY, CONDUCTING EXERCISES WITH CARRIERS ENROUTE. REQUEST THEY LOAD FUEL OIL FOR REFUELING PURPOSES BEFORE THEY DEPART.¹⁵³

In November, messages showed that large quantities of fuel were being stockpiled and that plans were being made to carry extra fuel aboard carriers of the 1st Air Fleet.¹⁵⁴ Moreover, an oil tanker sent a message on November 20 stating that after loading fuel and aviation gasoline, it would join the Strike Force by November 27.¹⁵⁵ The Strike Force evidently required a lot of fuel for a long voyage.

In late November, USN intercepts placed the 1st Air Fleet in the Kurile Islands, a likely point of departure for the north Pacific. A JN-25B message of November 18 sent from Tokyo to the chief of staff, Ominato Guard District, revealed the location of the 1st Air Fleet: "PLEASE ARRANGE TO HAVE SUZUKI (1776) WHO WAS SENT TO 1ST AIR FLEET ON BUSINESS PICKED UP AT ABOUT 23 OR 24 NOVEMBER AT HITTOKAPPU WAN . . ."¹⁵⁶ In the preceding message, "HITTOKAPPU WAN," had been encrypted letter by letter rather than by a single code group – an easy decrypt for USN cryptanalysts. Furthermore, a message of November 20 concerning the movements of submarine I-19 confirmed that the 1st Air Fleet laid beyond Ominato: "I-19 WILL

¹⁵³ SRN-116588; Quoted, Parker, "The Unsolved Messages," 304. All parentheses were added by the translator.

¹⁵⁴ Parker, "The Unsolved Messages, 304-5. See SRNs 117180 and 116566.

¹⁵⁵ SRN-115375; Quoted, Layton, *And I Was There*, 232, footnote 34, 548.

¹⁵⁶ SRN-116643; Quoted, Parker, "The Unsolved Messages," 307.

LEAVE YOKOSUKA COMM ZONE ON NOVEMBER 21, AND ENTER OMINATO COMM ZONE. AT 1600 NOVEMBER 22 WILL ENTER 1ST AIR FLEET FLAGSHIP COMM ZONE.”¹⁵⁷ These changes in communication zones indicated a northern voyage from Yokosuka to Ominato and beyond. Certainly, the Kuriles lay beyond Ominato.

On the eve of the Pearl Harbor attack several USN intercepts pointed to a north Pacific operation. A message of November 27 addressed to the Strike Force discussed shipping conditions in the north Pacific: “ALTHOUGH THERE ARE INDICATIONS OF SEVERAL SHIPS OPERATING IN THE ALEUTIANS AREA, THE SHIPS IN THE NORTHERN PACIFIC APPEAR CHIEFLY TO BE RUSSIAN SHIPS . . .”¹⁵⁸ This message explained that there were only two Russian ships westbound from San Francisco. Moreover, weather reports sent to the Strike Force from November 28 to 30 likely reflected weather conditions in the north Pacific.¹⁵⁹ As well, on December 1, the oil tanker *Shiriya* sent a message conveying its position in the north Pacific to Destroyer Division 7 of the Strike Force: “THE SHIP IS PROCEEDING DIRECT TO POSITION 30.00N, 154.20E. EXPECT TO ARRIVE AT THAT POINT ON 3 DECEMBER. THEREAFTER WILL PROCEED EASTWARD ALONG 30 DEGREE NORTH LATITUDE LINE AT SPEED 7 KNOTS.”¹⁶⁰ This course, Parker calculated, placed the *Shiriya* in the north Pacific at 30° N, 170° E, on December 7, Honolulu time. Clearly, the *Shiriya* supported a Strike Force operation in the north Pacific rather than in the south. Only the date of battle operations remained undisclosed. Yet on December 2, the USN intercepted the famous “Climb Mount Niitaka” message, which told the Combined

¹⁵⁷ SRNs 116329 and 116990; Quoted, Parker, “The Unsolved Messages,” 309.

¹⁵⁸ SRN-116667; Quoted, Parker, “The Unsolved Messages,” 310.

¹⁵⁹ Parker, “The Unsolved Messages,” 309. See SRNs 116668, 115460 and 115690.

¹⁶⁰ SRN-115398; Quoted, Parker, “The Unsolved Messages,” 306.

Fleet that hostilities would begin on “1208,” or December 8, Tokyo time: “THIS DISPATCH IS TOP SECRET. THIS ORDER IS EFFECTIVE AT 1730 ON 2 DECEMBER. CLIMB NIITAKAYAMA 1208, REPEAT 1208.”¹⁶¹

USN intercepts of Japanese naval messages could have provided forewarning of the Pearl Harbor attack, provided that USN cryptanalysts read enough of the message texts in JN-25B. Parker succinctly summarized the intelligence value of these intercepts: “An objective extraordinarily far from Japan, the ambush of anchored capital ships, shallow-running torpedoes, six major carriers in a strike force, carrier fuel stored on deck, and a demonstrated interest in the waters of the northern Pacific – all these pointed inexorably to Pearl Harbor.”¹⁶² The Japanese offered important clues concerning their intentions in the north Pacific on the eve of the Pacific War.

Conclusion

In late 1941, USN cryptanalysis made important intelligence much more accessible. Cryptanalysis revealed the existence of a Strike Force and allowed numerical data such as ship schedules and positions to be read with relative ease. Evidently, Japanese messages transmitted primarily in JN-25B, a code that the USN could partially read, foretold of a long-range air attack on ships anchored in shallow waters. The sole fact that Station Cast was “reading enough current traffic to keep two translators very busy” in November, 1941, suggests that at least a portion of Japanese message-texts were accessible to the USN prior to the Pearl Harbor attack. Certainly, the selection and decryption of the most relevant messages amongst many thousands of intercepts

¹⁶¹ SRN-115376; Quoted, Parker, “The Unsolved Messages,” 312.

¹⁶² Parker, “The Unsolved Messages,” 312.

would have been an arduous task in 1941. The resources dedicated to the solution of JN-25B, rather than other code systems, remained limited. Nonetheless, our present understanding of USN cryptanalytic abilities in 1941 suggests that foreknowledge of Japanese intentions in the north Pacific was possible. The range of possible historical interpretations must be redefined.

The new evidence lends more support to revisionist interpretations than to traditionalist interpretations. Wohlstetter, Kahn, Farago, Prange and Prados offered assessments of USN cryptanalysis that are no longer tenable. These authors, who were necessarily dependent upon limited sources, incorrectly asserted that USN cryptanalysts could not effectively read the principal Japanese naval code, JN-25B, and failed to appreciate the intelligence value of messages encrypted in this code. Layton, Rusbridger and Nave, and Parker correctly appreciated the potential value of JN-25B messages, but incorrectly believed that such intelligence was inaccessible to USN cryptanalysts. Yet Rusbridger and Nave belong in a special revisionist category. The new evidence does not support their principal contention that the British read JN-25B while the Americans did not. Indeed, JN-25B was a joint project between the USN and its Allied counterparts. Station Cast in Corregidor exchanged code values with the FECB in Singapore. The new evidence, however, buttresses the revisionist positions advanced by Toland and Stinnett, although neither author proved that the USN could read JN-25B in late 1941. Toland did not address the issue, whereas Stinnett suggested only the probability of current decryption. Ultimately, the new evidence supports any interpretation suggesting that USN code breaking may have provided foreknowledge of Japan's intentions.

Future interpretations of USN cryptanalysis must assess *how much* message text was currently read through JN-25B decryption, rather than questioning the very possibility of such decryption. Although past censorship and missing documents make historical reconstruction

more challenging, the historical discipline is both art and science. and artful inferences can at least establish the probability of either the traditionalist or the revisionist thesis. More importantly, completely different kinds of evidence may buttress the arguments made thus far. Most certainly, USN radio intelligence had the potential to reveal far more than Japan's intentions: it could reveal Japan's actions on the high seas of the Pacific.

3. Understanding Japan's Actions:

USN Traffic Analysis and the Search for the Combined Fleet

The large number of high-precedence messages and general distribution might indicate that the entire Navy is being instructed to be prepared for drastic action. Station H report, Hawaii, December 4, 1941.¹⁶³

Traffic analysis has long been a principal means of gathering operational intelligence from radio transmissions. Traffic analysis, comprising direction finding, signals analysis and address reading, identifies an adversary's movements or organization even when radio transmissions are encrypted and unreadable. Through traffic analysis, the source of a transmission may be located, the identity of either a transmitter or an operator may be discerned, and the organization of a fleet may be revealed through call signs. In 1937, the USN established its Mid-Pacific Strategic Direction-Finder Net to track all vessels plying the Pacific Ocean. Kahn offered the following explanation: "By 1941, high-frequency direction-finders curved in a gigantic arc from Cavite in the Philippines through Guam, Samoa, Midway, and Hawaii to Dutch Harbor, Alaska. The 60 or 70 officers and men who staffed these outposts reported their bearings to Hawaii, where Rochefort's unit translated them into fixes."¹⁶⁴ Of course, many more radio operators were needed to perform other traffic analysis duties. Certainly, records show that Station Cast employed 130 radio operators in July, 1941.¹⁶⁵ Stinnett estimated that Station Hypo

¹⁶³ Station H Chronology, Dec. 4, 1941. *Station H Monthly Report for December, 1941*, 4.

¹⁶⁴ Kahn, *The Codebreakers*, 8.

¹⁶⁵ Allowance of Radio Stations. Sixteenth Naval District, Approved Jul. 24, 1941 by H.M. Briggs, 5750/5 – *NSRS Philippines, History, Corregidor Era*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 18 (College Park, MD: National Archives II, MMRB).

employed about 140 radio operators in 1941.¹⁶⁶ With these resources, the USN combed the Pacific in search of Admiral Yamamoto's Combined Fleet. Indeed, traffic analysis allowed the USN to track the Japanese navy and understand its organization in 1941. The USN also received information concerning Japanese movements across the north Pacific several days before the attack on Pearl Harbor.

Other views of USN traffic analysis

The role of traffic analysis within the USN radio intelligence network of 1941 has been the subject of much debate by historians. For Wohlstetter, "Radio traffic analysis was a difficult and somewhat inexact art at this time."¹⁶⁷ Accepting the views expressed in the Congressional Hearings on Pearl Harbor, she explained that Japanese radio deception allowed "the enemy to keep the relevant signals quiet" by transmitting "false signals into our information system . . ."¹⁶⁸ Wohlstetter also argued that the USN "lost" the Japanese carriers in both July and November of 1941 because of Japanese traffic procedures, such as call-sign changes, that concealed ship locations.¹⁶⁹ Wohlstetter explained that in November, 1941, COM14 at Pearl Harbor believed the missing carriers were in Japan's "mandated" islands, whereas COM16 at Cavite believed they were in Japan's home waters. Nonetheless, she failed to discuss the COMSUM14 of November 30, which stated that the aircraft carrier *Akagi* communicated with several *Maru* oil tankers. Apart from explaining the limitations of USN traffic analysis in 1941, Wohlstetter elaborated

¹⁶⁶ Stinnett, *Day of Deceit*, 62.

¹⁶⁷ Wohlstetter, *Warning and Decision*, 32.

¹⁶⁸ *Ibid.*, 393.

¹⁶⁹ *Ibid.*, 41, 111.

upon the secrecy surrounding such activity: "Radio traffic intelligence was a highly guarded secret at Pearl Harbor, Cavite, and Washington. Its existence was not officially revealed to any Army officer in Hawaii except General Short."¹⁷⁰

Since the publication of *The Codebreakers*, Kahn has asserted that traffic analysis was an important tool, but one that failed to reveal Japanese intentions. Kahn later explained that, "Only one form of intelligence appeared to offer relatively solid information about Japanese naval matters: traffic analysis. For years traffic analysts watched with precision the ships and squadrons of the Japanese fleet and their maneuvers."¹⁷¹ Yet Kahn argued that Japanese radio deception denied USN traffic analysts any foreknowledge of Pearl Harbor. The Japanese naval situation in November, 1941, seemed to be a repetition of earlier manoeuvres. In February, 1941, while Japan moved toward French Indochina, the carriers remained in home waters in a communications blackout, a situation repeated again in July, when Japan occupied French Indochina. As Kahn wrote, "Twice, then, a complete blank of communications with the carriers, together with indications of a strong southward thrust, had meant the presence of the carriers in Empire waters. A pattern seemed to have emerged."¹⁷² For Kahn, this pattern was reinforced in November and December when the *Kido Butai*, bound for Pearl Harbor, practiced strict radio silence while phoney carrier signals were transmitted out of Japanese home waters by the flotilla's original radio operators who were left behind.¹⁷³

¹⁷⁰ *Ibid.*, 32.

¹⁷¹ Kahn, "The Intelligence Failure," 144-5.

¹⁷² *Ibid.*, 145.

¹⁷³ Kahn, *The Codebreakers*, 32-3.

Farago adopted a similar position in *The Broken Seal*. He contended that “dependence on traffic intelligence had become crucial” as cryptanalysis was not effective, but that traffic analysis in the weeks before Pearl Harbor “proved not only woefully erroneous but fatally misleading.”¹⁷⁴ Unlike Kahn, Farago supported his arguments with references to specific communication reports. For example, he quoted the COMSUM14 of November 7, 1941, to explain how USN traffic analysis was hindered by Japanese operating procedures: “. . . Orange changes in methods of handling fleet traffic renders this [traffic analysis] more difficult than had been hoped.”¹⁷⁵ Ultimately, Farago also supported the theory of Japanese radio deception: “All ships of the ‘Z’ forces had orders to maintain radio silence. But Yokosuka, Kure and Sasebo kept up a large volume of radio traffic to compensate for the sudden diminution of communications from Japanese home waters.”¹⁷⁶ He argued that techniques such as call sign changes, simulated traffic volume and strict radio silence allowed the Japanese to conceal their plans from USN traffic analysts. Farago provided important new evidence, which will be later discussed, in his postscript to *The Broken Seal*, but nevertheless adhered to his original thesis that the Pearl Harbor attack was a surprise.¹⁷⁷

Prange chose to minimize the importance of USN radio intelligence altogether in *At Dawn We Slept*. He explained that the “Japanese blackout of the task force, the dummy message traffic, and American complacency effectively cancelled out the possibility of locating Japan’s

¹⁷⁴ Farago, *The Broken Seal*, 269.

¹⁷⁵ Quoted, *Ibid.*

¹⁷⁶ *Ibid.*, 267-8.

¹⁷⁷ Farago, “POSTSCRIPT,” 401.

First Air Fleet by this means.”¹⁷⁸ For Prange, traffic analysis in both the USN and the Japanese navy was limited to the reading of call signs only; substantial text reading was not possible. Furthermore, Prange was adamant that the Strike Force practiced strict radio silence. His interviews with Japanese servicemen in 1947 and 1949 convinced him that radio silence was observed despite the enormous repeat traffic sent from Tokyo to the 1st Air Fleet during its voyage to Pearl Harbor.¹⁷⁹ Prange admits that communications occurred between vessels of the Strike Force, but by means other than radio: “. . . *Hiei* was responsible for monitoring all messages to the task force, relaying them to *Akagi*.”¹⁸⁰ Indeed, regarding the COMSUM14 of November 30, 1941, Prange explains that “any talking *Akagi* did to her *Marus* was by signal flag or short-range blinker.”¹⁸¹

For Toland, however, traffic analysis was most effective in providing foreknowledge of the Pearl Harbor attack. In *Infamy*, Toland produced important new evidence. Seaman Robert Ogg, codenamed “Seaman Z” in Toland’s account, plotted bearings on Japanese vessels located in the north Pacific from December 2 to 6, 1941, for the 12th Naval District in San Francisco.¹⁸² Captain Johan E.M. Ranneft, Netherlands naval attaché in Washington, visited the Office of Naval Intelligence (ONI) on December 2 and 6 and saw a wall map showing the progression of a “Japanese Task Force” from Japan to Hawaii.¹⁸³ On December 1, Leslie Grogan, radio operator

¹⁷⁸ Prange, et al, *At Dawn We Slept*, 734.

¹⁷⁹ *Ibid.*, 427-8, and footnote 32, 772.

¹⁸⁰ *Ibid.*, 427-8.

¹⁸¹ *Ibid.*, 425.

¹⁸² Toland, *Infamy*, 280-1, 286, 299.

¹⁸³ *Ibid.*, 283, 298-9, and footnote 2, 317.

aboard the *S.S. Lurline* during its voyage from Los Angeles to Honolulu, noted that the Japanese were “blasting away on the lower Marine Radio Frequency – it is all in Japanese code” and that “signals were being repeated back, possibly for copying by crafts with smaller antennas.”¹⁸⁴ On December 2, Grogan obtained more RDF bearings, explaining that the signals came “from a NW by W from Honolulu, and from the signals, the Japs must be bunched up, biding time.”¹⁸⁵

Grogan, once again, noted that the Japanese continued “their bold repetition of wireless signals, presumably for the smaller crafts in their vanguard of ships . . .”¹⁸⁶ On December 3, upon arrival in Honolulu, Grogan and radio operator Rudy Apslund gave their log to Lt. Cmdr. G.W. Pease of the USN, although no record exists of what happened to the information. Indeed, Toland built a strong case for USN foreknowledge of Pearl Harbor using testimony rather than technical data. For Toland, traffic analysis as a method of surveillance was already a *fait accompli* in 1941.

In *And I Was There*, Layton discussed the limitations of traffic analysis and offered a reply to Toland’s evidence. Indeed, Layton drew upon his personal experiences as an intelligence officer serving under Admiral H.E. Kimmel at Pearl Harbor in 1941. During his daily consultations with Lt. Cmdr. J.J. Rochefort, head of COM14, Layton “was often reminded how painfully reliant we were on the inexact science of traffic analysis.”¹⁸⁷ For example, Japanese message addresses that mentioned the Strike Force by name and provided geographic identifiers offered potential intelligence, but were not deducible by USN traffic analysts in late

¹⁸⁴ Quoted. *Ibid.*, 279.

¹⁸⁵ Quoted. *Ibid.*, 280.

¹⁸⁶ Quoted, *Ibid.*

¹⁸⁷ Layton. et al, *And I Was There*, 182.

1941.¹⁸⁸ Layton summarized the intelligence concerning Japanese intentions as follows: “First, we had detected their naval exercises in the middle of November; second, we had tracked formations of the large task forces being formed; third, the call signs changed again. It all added up to the launching of offensive operations in the very near future.”¹⁸⁹ Yet according to Layton, the Strike Force and its six aircraft carriers remained elusive owing to radio silence; an attack near the Philippines looked more probable.

Indeed, Layton’s belief in radio silence allowed him to refute the testimonies of both Ogg and Grogan with conviction. According to Layton, their respective claims were suspect as they likely tracked one of two Russian freighters operating in the north Pacific at the time, the *Pavlov Vinogradov* or the *Uritsky*.¹⁹⁰ Layton also condemned the *S.S. Lurline*’s RDF equipment: “The liner’s relatively unsophisticated direction-finding apparatus placed the signals ‘north and west’ of Hawaii. This was also in the general direction of Japan – or Vladivostok.”¹⁹¹ As well, he suggested that RDF indications were possibly affected by “atmospheric anomalies” that created an apparent mid-Pacific location. For Layton, the radio silence of the Strike Force made such intercepts impossible. He explained that the COMSUM14 of November 30, 1941, was in error because the *Akagi* could not have addressed *Maru* vessels:

But we did not take these isolated communications as evidence that the other carrier divisions we thought were in home waters were also out because the low power of such transmissions thwarted accurate direction finding by Hypo’s shaky system. The report appears anyway to have been a misidentification of call signs.¹⁹²

For Layton, USN traffic analysis was no match for Japanese radio procedures and deception.

¹⁸⁸ *Ibid.*, 232-3.

¹⁸⁹ *Ibid.*, 237.

¹⁹⁰ *Ibid.*, 261-2.

¹⁹¹ *Ibid.*

¹⁹² *Ibid.*, 227.

In *Betrayal at Pearl Harbor*, Rusbridger and Nave offered few examples of traffic analysis, but nevertheless rejected the concept of radio silence. They explained that traffic analysis “is just as important as codebreaking itself,” but did not illustrate this point.¹⁹³

Regarding communications *to* the Strike Force, they reasoned that Admiral Yamamoto must have used radio to transmit the date of sailing from Hitokappu Bay, the date of refuelling in the mid-Pacific, and the date of attack, because no postal telegraph service linked Tokyo to Hitokappu Bay where the Strike Force was moored until November 26, 1941.¹⁹⁴ The authors alleged that the National Archives in Washington held at least twenty intercepts of messages transmitted from Yamamoto to the Strike Force.¹⁹⁵ Unfortunately, Rusbridger and Nave did not speak of communications *from* the Strike Force to Yamamoto. Such evidence would have proven that radio silence was not observed and that the Strike Force could have been tracked.

Parker, however, produced some evidence of successful USN traffic analysis, but maintained that Japanese radio procedures protected the secrecy of the Pearl Harbor mission. In 1994, he wrote that COM14 traffic analysts “had solved both the strategic and tactical Japanese naval communications structures” and could identify individual ships after call sign changes, but that this capability only lasted until “about three weeks prior to the attack on Pearl Harbor when callup and addressing procedures changed abruptly.”¹⁹⁶ Parker had previously written that “The accuracy of the prewar reports from Hawaii and the Philippines based only on traffic analysis . . . show without a doubt that the analysts who wrote about task forces aimed at southern objectives

¹⁹³ Rusbridger and Nave, *Betrayal at Pearl Harbor*, 42.

¹⁹⁴ *Ibid.*, 133-4.

¹⁹⁵ *Ibid.*, 137.

¹⁹⁶ Parker, *Pearl Harbor Revisited*, 38-9.

were intimately familiar with the operational habits of the Japanese navy.”¹⁹⁷ Yet Parker fell silent upon the possibility that USN traffic analysts tracked the trans-Pacific voyage of the Strike Force.

Prados also adhered to the radio silence theory in *Combined Fleet Decoded*. Prados focussing mainly on the traffic analysis abilities of stations Hypo and Cast. Supporting his arguments with COMSUMS and station chronologies, Prados explained that Station Hypo, lacking access to JN-25 decrypts, relied upon message address reading, call signs and RDF, but that “the Japanese outfoxed the Americans with radio silence, and by changing all their call signs on December 1.”¹⁹⁸ He noted that COMSUM14 daily reports demonstrated “a pattern of increasing inaccuracy as Japan deployed for war.”¹⁹⁹ Regarding Station Cast, Prados stated that traffic analysis provided Cast with “some of the earliest indications of Japan’s war preparations” and that a report of October, 1941, concluded that the Japanese were “on a wartime disposition.”²⁰⁰ Yet he underscored the limitations of traffic analysis. Prados acknowledged the testimonies of both Ogg and Grogan, but carefully reminded his readers that radio silence was observed by the Japanese, who went as far as disabling radio equipment by removing fuses and keying equipment.²⁰¹ Curiously, Prados, like Layton, failed to comment upon Ranneft’s testimony. Nonetheless, he identified the confusion experienced by USN traffic analysts following the Pearl Harbor attack: Station Hypo, on December 7, identified the *Akagi* as a

¹⁹⁷ Parker, “The Unsolved Messages,” 312.

¹⁹⁸ Prados, *Combined Fleet Decoded*, 176.

¹⁹⁹ *Ibid.*

²⁰⁰ *Ibid.*, 213-4.

²⁰¹ *Ibid.*, 172.

member of the Strike Force, whereas Station Cast, on December 8, placed the *Akagi* on a southward course passing through the region of Okinawa!²⁰² Ultimately, Prados concluded that Pearl Harbor was a surprise attack.

Stinnett expanded the debate over traffic analysis in *Day of Deceit*. Stinnett explained that Japanese radio deception was not effective against traffic analysis: “By organizing these fleets into combat-ready forces using the radio waves, Japanese officials unwittingly disclosed their intentions to Americans, Dutch, and British.”²⁰³ He identified 22 radio intelligence stations operating in the Pacific for the US, Netherlands and Britain, and discussed their respective intelligence activities.²⁰⁴ Moreover, Stinnett introduced readers to traffic analysis techniques not previously discussed at length by other authors: radio fingerprinting (RFP), monitoring operator’s “fist” (TINA), and radio frequency selection as an indication of transmission distance.²⁰⁵ Yet he discussed the existence of these techniques rather than their actual application by the USN: his account fell silent upon any specific intelligence obtained by these measures. Instead, Stinnett offered certain inferences. For example, he suggested that when Tokyo’s broadcast to oil tankers was changed from a daytime radio frequency of 11 MHz to 16 MHz in late November, 1941, “The long-distance frequency showed that Japan’s navy was refuelling warships at sea . . .”²⁰⁶

²⁰² *Ibid.*, 190.

²⁰³ Stinnett, *Day of Deceit*, 123-4.

²⁰⁴ *Ibid.*, 61-2, 68.

²⁰⁵ *Ibid.*, 53, 217.

²⁰⁶ *Ibid.*, 217.

Stinnett also argued vigorously against the theory of radio silence. He cited 129 radio intercepts taken at stations Cast and H that show communications between Tokyo, the 1st Air Fleet, the Carrier Divisions and the Midway Task Force.²⁰⁷ Indeed, he explained that thirteen of these intercepts were messages from Admiral Yamamoto, using call sign RO SE 22, broadcast between November 24 and 26, 1941.²⁰⁸ Furthermore, Stinnett showed that CarDiv5 (Carrier Division 5 of the Strike Force) broke radio silence on November 25 by transmitting on 4963 kHz, as recorded in the Station H Chronology.²⁰⁹ He supported the testimonies of Ogg, Grogan and Ranneft, explaining how the mid-Pacific storm of December 1 to 3 obliged the Strike Force to use radio communications. As well, Stinnett drew upon RDF sources to demonstrate that the USN tracked the Strike Force while it was near Hitokappu Bay.²¹⁰

A detailed examination of primary and secondary sources is necessary to verify or challenge these assertions. USN traffic analysis must be accessed in terms of its capability and application in 1941. It is essential to understand how well USN traffic analysts understood Japan's actions on the eve of the Pearl Harbor attack.

Capabilities of USN traffic analysis

Traffic analysis provided the USN with important intelligence concerning the location, structure and actions of the Japanese navy. As Parker explained, traffic analysis of radio messages included the interpretation of operational characteristics, communications activity and

²⁰⁷ *Ibid.*, 208-9.

²⁰⁸ *Ibid.*, 46.

²⁰⁹ *Ibid.*, 164.

²¹⁰ *Ibid.*, 154.

message headings.²¹¹ Radio Direction Finding (RDF) provided one important operating characteristic of an intercepted signal: the position of its source. RDF involved tuning in a radio signal and taking a line-bearing on the signal by rotating a directional receiving antenna until a null was obtained on a meter. Radar (radio detecting and ranging), as a form of RDF, provided the direction, range and velocity of an object, but was not widely used as an intelligence source by the US armed forces in 1941.²¹²

Yet radar had its applications and some personnel emphasized its importance. In the Pacific theatre of 1941, two land-based radar sets operated by the army served USN interests in both Hawaii and the Philippines. In Hawaii, Pearl Harbor was “protected” by the Opana radar station located in the north of Oahu. The Opana station employed a Type 270-B radar, which had a range of about 130 to 136 miles.²¹³ This range could provide about an hours’ notice of an impending air attack, a fact demonstrated on December 7, 1941. Radar picked up the approaching Japanese air squadrons within an hour of their arrival, although the duty officer incorrectly assessed this intercept, thinking that it represented an incoming flight of B-17s. Despite the limited range of such early systems, Admiral H.E. Kimmel was a strong advocate of radar by late 1941. In a memorandum to the Pacific Fleet dated November 17, Kimmel requested that all personnel trained in radar be employed on radar systems wherever possible, and that their

²¹¹ Parker, “The Unsolved Messages,” 312. The RIP-44 USN training manual offers a complete assessment of traffic analysis, explaining that radio calls could be identified by compromise, measurement, ear, deduction and analysis. See RIP-44, *Radio Intelligence Training Manual, 1938*, RG38, RIP Series, 370/27/17/6, Box 22 (College Park, MD: National Archives II, MMRB). i7-1 to 4.

²¹² For an excellent survey of radar principles and examples of WWII-era equipment types, see J. Francis Reintjes and Godfrey T. Coate, eds., *Principles of Radar*, 3rd ed., Massachusetts Institute of Technology (New York, London: McGraw-Hill, 1952), 1-53; and Henry Pujade, *Le Radar: La Science en Guerre* (Paris: Éditions de la *Revue d’optique théorique et instrumentale*, 1947).

²¹³ The Type 270-B radar had a specified range of 130 miles, although results varied from about 132 to 136 miles. See Layton, et al, *And I Was There*, 300; and Prados, *Combined Fleet Decoded*, 183-4.

“whereabouts be known at all times.”²¹⁴ Nonetheless, radar in 1941 only offered limited forewarning of intruders. The USN required standard wireless techniques to survey the vast expanses of the Pacific.

RDF filled this requirement remarkably well. RDF equipment types used by the USN, including the Adcock, CXK, DT, DY, XAB/HRO and XAB/RAB systems, provided accurate bearings when used by operators with several months training.²¹⁵ Indeed, most equipment types provided unilateral bearings, which indicated a single direction (i.e. 30°), rather than bilateral bearings, which indicated an axis passing through two directions (i.e. 30° and 210°).²¹⁶ Furthermore, radio signal fading could be minimized by using a “diversity receiving antenna,” which consisted of two or more antennae separated by several hundred feet.²¹⁷ Regarding accuracy, both USN and British Admiralty tests showed that RDF bearings were accurate to about 1° for strong signals and 5° for weak signals, even if these signals originated thousands of

²¹⁴ Memorandum dated Nov. 17, 1941, Serial no. 2626, from CINCPAC to Pacific Fleet, Subject: Personnel Specially Trained in Radar, FF1-1/A2-11, RG181, 13th Naval District Commandant’s Office. Regular Navy Files, 1941, Entry 1, 13/12/7, Box 61 (Seattle, WA: National Archives – Pacific Alaska Region).

²¹⁵ For a description of several RDF equipment types of this period, see RIP-44, 66-1 to 66-8. For an estimate of RDF operator training-time, see Patrick Beesley, *Very Special Intelligence: The Story of the Admiralty’s Operational Intelligence Centre, 1939-1945*, c. 1977 (Garden City, NY: Doubleday, 1978), 20-1. Some British specialists believed that it took three months to train an RDF plotter “to deduce reasonably accurate data . . .” RDF systems operated within various frequency bands including low frequency (LFDF), medium frequency (MFDF), and high frequency (HFDF). The most accurate bearings were usually taken on RDF systems operating at lower frequencies.

²¹⁶ Wesley A. Wright, assistant communications officer at COM14 (Station Hypo) in 1941, later discussed RDF equipment types and the ability to produce unilateral bearings on such equipment. See Wesley A. Wright Testimony, May 5, 1944, *Hearings*, part 26, 415-8. In 1941, the personnel of Station King at Dutch Harbor, Alaska, developed a technique for obtaining unilateral bearings with RDF equipment types that usually produced bilateral bearings. See Station Report, Aug. 23 to Sep. 21, 1941, page 6, SRH-352, *U.S. Naval Radio Station Dutch Harbor, Unalaska Island, Alaska*, RG457, SRH Series, 190/36/11/2-3, Box 108 (College Park, MD: National Archives II, MMRB).

²¹⁷ See RIP-44, 65-5. RIP-44 explains that “optimum results could be expected with the use of three antennae separated approximately one thousand feet taking the form of a triangle.”

miles away.²¹⁸ Swift results were also possible with such equipment. Skilled operators already tuned into the stations under surveillance could take RDF bearings in as little as two seconds.²¹⁹ These bearings were then plotted on a Great Circle chart (i.e. Gnomonic or Azimuthal chart) for accuracy.²²⁰ Bearings plotted as straight lines on such charts correctly represented the path taken by radio signals across the globe – the shortest path. Of course, two or more bearings on a single transmitter provided the coordinates by triangulation. Contemporary tests showed that RDF triangulation was accurate to within about 100 miles for transmitters located more than 1000 miles away.²²¹

Certainly, Japanese radio transmissions were within the range of USN RDF stations in the Pacific. Japanese long wave and short wave transmitters operating at 500 to 1000 Watts had a

²¹⁸ These estimates, confirmed by WWII RDF operators whom I interviewed, are supported by several sources. During RDF tracking exercises held by the USN's 13th Naval District in early 1940, the average total error in all participating states ranged from 1.8° to 5.3°. See *Report dated May 10, 1940, from Commandant, Thirteenth Naval District, to The Chief of Naval Operations, ENCLOSURE (A), Subject: Medium Frequency Radio Direction Finder Exercises . . .*, A6-2(4), RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region). USN RDF tests performed at Bainbridge Island, Washington, in November, 1941, confirmed that the model DT direction finder could locate signals from Bolinas, California, within 0° to 5° accuracy; signals from Laulaulei, Oahu, within 0° to 3° accuracy; and signals from Tokyo within 0° to 4° accuracy (a single bearing was off by 7°). See *Report dated Nov. 24, 1941, Serial no. 784, from Commanding Officer to Chief of Naval Operations*, A6-2, RG181, 13th Naval District Commandant's Office, Regular Navy Files, 1941, Entry 1, 13/12/7, Box 9 (Seattle, WA: National Archives – Pacific Alaska Region). A British Admiralty study of 1942 concluded that the accuracy of a "bearing-fix" using three RDF bearings was within about 2°. See C.H. Waddington, *O.R. in World War 2: Operational Research against the U-Boat* (London: George Allen & Unwin, 1973), 96-7.

²¹⁹ Several WWII RDF operators whom I interviewed provided this estimate. Seemingly, by 1941, tracking-speeds had improved with better equipment and training. In 1938, Station King found that it took ten to twenty seconds to take a bearing on the older CXK RDF system. See *Radio Tracking Exercises*, page 5, SRH-352.

²²⁰ For a comparison of the Gnomonic and Mercator types of projection, see RIP-44, 63-1 to 63-8. A Gnomonic projection of the Pacific Ocean may be found in Bernard Brodie, *A Layman's Guide to Naval Strategy* (Princeton: Princeton UP, 1943), 108.

²²¹ *Comparison of Positions given by U-Boats & Admiralty Fixes, July 21, 1943*, N.S. IV – R File, HW18/89, *Technical papers concerned with DF, RFP, TINA and strategic research, 1943 Nov. 24 – 1945 May 05* (London: Public Records Office). Hereafter, this record group will be cited as HW18/89, PRO. David Kahn estimated that for RDF fixes on U-Boats in the north Atlantic, "the margin of error averaged 25 miles," but that "it could range up to 60 miles 500 to 1000 miles offshore." See David Kahn, *Seizing the Enigma: The Race to break the German U-Boat Codes, 1939-1943* (Boston: Houghton Mifflin, 1991), 4.

range of up to 12,000 miles, whereas the Great Circle distances between radio stations at Tokyo, Manila, Guam, Heeia and Dutch Harbor only ranged from about 1300 to 4700 miles.²²² Moreover, ionospheric propagation characteristics were excellent throughout 1941. For example, propagation charts from the National Bureau of Standards (NBS), published quarterly in *QST*, showed that a mere 100 Watt signal could “skip” as much as 2500 miles and that sunspot activity would enhance “skip distances” by virtue of “Sporadic-E transmission.”²²³ These propagation characteristics were also noted by USN operators in 1941: Station Cast reported that “Generally unsettled receiving conditions as a result of sun spot activity were noted on all high frequency channels on 18 and 19 September.”²²⁴ Furthermore, the USN noted at what times the Japanese changed from day to night frequencies on the high frequency (HF) bands. Indeed, changes in HF operating frequency were more indicative of the time of day than the desired communications range. In October, Station H assessed Japanese frequency-usage, noting that “The shift to night frequencies was generally made between 1830 and 1900.”²²⁵ Seemingly, the USN intercepted Japanese transmissions with relative ease in 1941.

²²² SRH-211, *Japanese Radio Communications and Radio Intelligence, 1 January 1945*, RG457, SRH Series, 190/36/10/5, Entry 9002. Box 83 (College Park, MD: National Archives II, MMRB), 13; and RIP-44, 62-5.

²²³ NBS, “Predictions of Useful Distances for Amateur Radio Communications in January, February and March, 1941,” *QST* (Jan. 1941): 32-3; NBS, “Predictions of Useful Distances for Amateur Radio Communications in April, May and June, 1941,” *QST* (Apr. 1941): 46-7; NBS, “Predictions of Useful Distances for Amateur Radio Communications in July, August and September, 1941,” *QST* (Jul. 1941): 24-5; and NBS, “Predictions of Useful Distances for Amateur Radio Communications in October, November and December, 1941,” *QST* (Oct. 1941): 41-2. See also ARRL, “The Ionosphere and Radio Transmission,” *QST* (Mar. 1940): 32-5, 88, 90, 92, 96, 98; ARRL, *The Radio Amateur's Handbook, 1978*, 55th ed. (Newington, CT: ARRL, 1977), 559-72; and Stinnett, *Day of Deceit*, footnote 8, 363.

²²⁴ Operations, Station “C,” Sep. 1941, page 2, 3200/1 – *NSRS Philippines, Operations Summaries*.

²²⁵ *Station H Monthly Report for October, 1941*, RG38, Crane – Inactive Stations (College Park, MD: Archives II), 2. Courtesy of Robert Stinnett.

RDF allowed the USN to track Japanese vessels quite readily, as demonstrated by several sources. Station Cast's Naval Movement Reports for April 10-12, the period in which the 1st Air Fleet was formed, show call signs, ship names, communication zone changes, time of reception, frequency and daily bearing-fixes in latitude and longitude.²²⁶ Stations Hypo and H kept similar records in Oahu.²²⁷ For example, Station Hypo's COMSUM14 of September 12 provides the positions of 27 Japanese ships. As well, the Station H Chronology for October 22 discusses bearings provided by stations H and Victor: "DF cross bearings between Samoa and Lualullei place TOHI1 [at] Komabashi southeast of Gilbert Island. This vessel is in communication with Jaluit and Palao."²²⁸ Moreover, Station Sail in Puget Sound (near Seattle) took RDF bearings on "Orange Merchant Vessels" and produced weekly intelligence summaries.²²⁹ Regarding RDF coverage, many USN stations instituted a 24-hour RDF watch by late 1941, despite limitations in

²²⁶ Naval Movement Reports, Station "C," Apr. 1941, 3222/6 – *NSRS Philippines, JN Movement Reports*, RG38, Crane – Inactive Stations, 370/27/23/7. Box 17 (College Park, MD: National Archives II, MMRB), page 103.

²²⁷ Many examples of bearing-fixes on Japanese vessels are found in the Station H Monthly Reports for 1941, which are held in record group RG38 at National Archives II, MMRB, College Park, MD.

²²⁸ Station H Chronology, Oct. 22, 1941, *Station H Monthly Report for October*, 1941, RG38, Crane – Inactive Stations (College Park, MD: National Archives II, MMRB), 99. Courtesy of Robert Stinnett.

²²⁹ Route Slips dated Sep. 25, and Oct. 9 & 23, 1941, sent to Staff HQ, Thirteenth Naval District, Subject: *Method of reporting positions by Naval Coastal Frontier Forces*, A6-2(7), RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region); and Route Slips dated Nov. 4, 12, 18 and 24, and Dec. 2, 1941, from Commanding Officer, NRS, Bainbridge Island, to Staff HQ, Thirteenth Naval District, Subject: *High Frequency Direction Finder Bearings on Orange Merchant Vessels*, A6-2(2), RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region). Past censorship has eliminated examples of 13th Naval District intelligence summaries produced before the Pearl Harbor attack, but a summary dated Dec. 28, 1941, shows that the 13th Naval District successfully used RDF to locate Japanese ships and submarines. See Intelligence Summary No. 3, Serial no. 162317, dated Dec. 28, 1941, from C.S. Freeman, Commandant, 13ND, to various military and naval officers, A8-2(1), RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region).

manpower.²³⁰ Significantly, RDF bearings were usually sent to various USN stations by either air mail or radio networks such as TESTM, rather than by surface mail. For example, COM16 at Cavite, Philippines Islands, sent a TESTM report to Station Hypo on November 14 showing call sign 8 YU NA (the aircraft carrier *Akagi*) at a bearing of 026 from Station Cast on November 12.²³¹ Such data was used to triangulate the positions of Japanese vessels.

Apparently, Range Estimation (R/E) was the only radio technique not emphasized by the USN in 1941. R/E allowed radio operators to estimate the range of an intercepted signal, but not its direction. More significantly, R/E could estimate a position along a single line-bearing, thus confirming the reliability of RDF bearing-fixes made by triangulation. Operationally, R/E consisted of a radio receiver, an oscilloscope and a camera.²³² Technicians displayed an intercepted radio signal on the oscilloscope and then photographed the resulting waveform. A range estimate was produced after analyzing the waveform's amplitude and frequency with respect to local propagation characteristics. The British Admiralty employed the technique to good advantage in 1941: reports confirmed that R/E was accurate to within 10% over a working range of 500 to 3500 miles.²³³ The USN, however, experimented with other means of signals-analysis at its Pacific stations.

²³⁰ For example, Station Cast had a 24-hour RDF watch after October 1, 1941. See 5750/4 – *NSRS Philippines, History, General*, 59-60. Indeed, Lietwiler explained to OP-20-G on November 1 that although Station Cast was able “to stand a 24-hour watch on one DF,” he needed more “qualified DF men” to increase surveillance. See Letter dated Nov. 1, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington. page 2, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

²³¹ TESTM no. 141522, Nov. 14, 1941, 2000/1 – *NSRS Philippines, SI Genser, Msg Files, RG 38, Crane – Inactive Stations*, 370/27/23/7, Box 15 (College Park, MD: National Archives II, MMRB).

²³² *RFP/TINA/R/E report for month of October 1941*, dated Nov. 7, 1941, from Head of “Z” Section, Flowerdown, to Head of Naval Section, B.P., HW18/206, *Use of RFP, R/E and TINA to gain information against enemy vessels, 1941 Sep. 08 – 1942 Oct. 31* (Kew, Surrey: Public Records Office). Hereafter, this record group will be cited as HW18/206, PRO. I am grateful to Brian Villa for locating this record group.

²³³ Report dated May, 1941, entitled *R/E: Its Application and Importance*, from Lt. Merlin Minshall, RNVR, distribution D.S.D.9, HW18/206, PRO.

Apart from direction finding aids, radio fingerprinting (RFP) allowed USN traffic analysts to study the operational characteristics of intercepted signals. Proposed as early as March, 1938, by Cmdr. Laurance Safford, RFP was a transmitter identification technique whereby the “signature” of a known transmitter was recorded with a camera and an oscilloscope, and later compared with the “signatures” of unidentified transmitters (i.e. after a call sign change) as an aid to re-identification.²³⁴ RFP simply complemented the radio operator’s ability to discern different transmitter “tones” by ear. RIP-44, a 1938 USN training manual, explained that “An operator familiar with the peculiar characteristics as emitted by some transmitters may recognize the note regardless of the radio call used.”²³⁵ Moreover, a data sheet used by the USN for identification purposes had a section for recording “transmitter note characteristics.”²³⁶ Station Cast, which began experimenting with RFP in 1939, had a “High-speed Camera” and “Electron Oscillograph” listed on the station’s “Composite Equipment Listing” for 1940-1, as well as a “Radio Photo Signal Analysis” work area.²³⁷ An inventory record for Station H also listed such equipment. The USN was prepared to radio-fingerprint Japanese transmitters in 1941.

In fact, Japanese transmitters were more prone to identification by RFP than some other transmitter types. Japanese vacuum tubes, as tested by the Naval Research Laboratory in Washington during the war, proved to be inconsistent in performance, thus making RFP an even

²³⁴ SRH-355, 294-5. See also RIP-44, 17-7.

²³⁵ RIP-44, 17-9.

²³⁶ *Ibid.*, page 17-17. The data sheet included the following: call, frequency, bearing, time, date, address & originator, times heard being called & calling others, calls heard in conjunction with, type of traffic, radio stn. serial #, originator’s serial #, signal strength, quality of sending, keying speed, zone time on traffic, operator’s peculiarities, and transmitter note characteristics.

²³⁷ 5750/4 – *NSRS Philippines, History, General*, page 4 of E.E. Okins’ personal account of Comint, F-1, G-1.

more viable technique.²³⁸ Not surprisingly, some reports later confirmed that RFP was more effective against transmitters with inconsistent operating characteristics. A British Admiralty report of September 8, 1941, explained that German U-Boats were more difficult to radio-fingerprint because “German transmitters do not have well defined characteristics as a rule.”²³⁹ Evidently, German transmitters were uniform in performance. An Admiralty report of March 9, 1944, reinforced this point: “Earlier experience in the tracking of Italian ocean going submarines in 1942 and 1943 has shown that the peculiar problem presented in the identification of the transmitters in German U-Boats is not presented in the identification of those of other nationalities.”²⁴⁰ Japanese transmitters, however, were distinctive enough in “tone” to make RFP at least a possibility. For example, on December 8, 1941, the Station H intercept log reported that a transmitter had been identified by these means: “Same station tuned xmtr [transmitter] and now using HAFJ6HA for call instead of MENU1NA (same sta) (sig strength abt the same, same kind of note).”²⁴¹ Hence, even if the Japanese swapped their transmitters from carriers to destroyers to conceal the location of the Strike Force, as Captain Irving Newman once suggested, RFP could have supported other radio intelligence in identifying the changes.²⁴²

²³⁸ SRH-211, 25-6.

²³⁹ *Memorandum on R.F.P. and TINA (German)*, Ref. Z 284, dated Sep. 8, 1941, from Naval Section, distribution A.D.I.C., page 3, HW18/206, PRO.

²⁴⁰ Report #N.S. IV.A/No. 11, dated Mar. 9, 1944, entitled *R.F.P. AND TINA EFFORT ON GERMAN U-BOATS*, from Lt. Cdr. A.M.S. Mackenzie, RNVR, to D.D. (N.S.), page 1, N.S. IV – D file, HW18/89, *Technical papers concerned with DF, RFP, TINA and strategic research, 1943 Nov. 24 – 1945 May 05* (Kew, Surrey: Public Records Office). Hereafter, this record group will be cited as HW18/89, PRO. I am grateful to Brian Villa for locating this record group.

²⁴¹ Station H Intercept Log, Dec. 8, 1941, Tokyo time, *Station H Monthly Report for December, 1941*, 152.

²⁴² SRH-255, *Oral History Interview with Mr. Robert D. Ogg*, RG457, SRH Series, 190/36/10/7, Entry 9002, Box 90 (College Park, MD: National Archives II, MMRB), 50-1.

Nonetheless, British reports emphasized the limitations of RFP. An Admiralty report of September 8, 1941, offered the following explanation: “It seems to us that R.F.P. is still at the stage where it can make correct identifications only when the characteristics of the transmitters in question are well defined or where the number of possibilities are limited.”²⁴³ RFP was seen more as means of corroborating other radio intelligence than as an independent source of information. Indeed, Admiralty reports demonstrated that RFP was only partially effective as a sole intelligence source. One such RFP report, dated July 18, 1942, stated that 23 out of 94 transmissions by German vessels were classified by RFP; a total of 24%.²⁴⁴ Another report concluded that from December, 1943, to January, 1944, “R.F.P. got classifiable pictures of 25% of ship transmissions.”²⁴⁵ The same report suggested that RFP, amongst other techniques, “be abandoned or improved.” A report of March 9, 1944, showed that OP-20-G only identified 12 out of 1000 ship transmissions using RFP.²⁴⁶ Ultimately, British reports portrayed RFP as an experimental technology that was only effective when supporting other radio intelligence techniques. Given that USN RFP documents are still considered “security-classified” information, this portrayal of RFP by British sources must suffice. Seemingly, RFP marginally supported USN radio intelligence by helping to verify call sign changes.

Yet operator analysis, or TINA, performed the same function by revealing differences in keying styles. Most radio operators could hear the “fist” of other operators when messages were

²⁴³ *Memorandum on R.F.P. and TINA (German)*, page 3.

²⁴⁴ Report dated Aug. 21, 1942, from Head of “Z” Section, Flowerdown, to D.S.D.9, Admiralty, entitled *R.F.P./TINA/R/E Report for July, 1942*, HW18/206, PRO.

²⁴⁵ *R.F.P. AND TINA EFFORT ON GERMAN U-BOATS*, page 1, N.S. IV – D file, HW18/89, PRO.

²⁴⁶ Report #N.S. IV.A/No. 11, dated Mar. 9, 1944, from Lt. Cdr. A.M.S. Mackenzie, RNVR, to D.D. (N.S.), page 2, N.S. IV – D file, HW18/89, PRO.

hand-keyed in Morse Code (ICW transmission). For example, operator “fist” revealed the identity of the *Akagi* during the Pearl Harbor attack. When Layton asked Rochefort how he knew that the *Akagi* was transmitting, Rochefort answered, “It’s the same ham-fisted radio operator who uses his transmitting key as if he is kicking it with his foot.”²⁴⁷ Nevertheless, inked tapes of Morse messages allowed operator keying styles to be more readily characterized. Captain Irving Newman later explained this approach, one that had originated with the British SERPENTINA system:

The SERPENTINA came from the fact that when you printed out the hand-keyed signal on a tape, an inked tape, you got essentially a wavy form kind of a line, reflecting dots and dashes. TINA was a shortened nomenclature for an analysis system of individual operator characteristics which was shortened from SERPENTINA by the British.²⁴⁸

The TINA technique had been discussed as early as 1938 in RIP-44, the USN training manual: “It has been proven by tests . . . that an operator can be identified from a tape record of his sending characteristics at normal transmitting speed.”²⁴⁹ Indeed, USN stations were later equipped with TINA equipment. Station Cast had a work area for its “Ink Tape Recorders” and listed a “Transcribing Unit” on its equipment inventory for 1940-1.²⁵⁰ TINA had become an established intelligence technique by 1941.

According to British sources, TINA provided results that at least matched those of RFP. An Admiralty report of September 8, 1941, explained that TINA was “seldom wrong in a definite

²⁴⁷ Layton, et al, *And I Was There*, 317.

²⁴⁸ SRH-255, 31.

²⁴⁹ RIP-44, 17-8. See also pages 65-5 and 65-6 for an illustrated account of this principal. As well, an account of the inked-tape recording of CW signals may be found in John B. Moore, “Code Transmission and Reception,” *The Radio Engineering Handbook*, 3rd ed., ed. Keith Henney (New York, London: McGraw-Hill, 1941), 587-8.

²⁵⁰ 5750/4 – NSRS Philippines, *History, General*, F-1, G-1.

identification of a well known operator.”²⁵¹ A chart of percentages for July, 1942, demonstrated that 19% of all U-Boat transmissions produced readable TINA.²⁵² As well, a report of March 9, 1944, showed that OP-20-G regarded TINA as an aid to code recoveries, or cribbing: “. . . while R.F.P. in the U.S. is getting worse results, . . . Op.20.G consider that R.F.P. combined with TINA is definitely of assistance in cribbing.”²⁵³ Apparently, TINA supported a number of radio intelligence activities.

Apart from studying operational characteristics, USN traffic analysts interpreted Japanese communications activity. For example, frequency-usage was carefully recorded. Station Cast’s “JN Frequency Data” report for October, 1941, noted that “5250A” (5.25 MHz) was used by “HAMI9 (Akagi),” which worked “KIMU9 (Sasebo),” and that frequency designator “TAN28” was used by both the *Akagi* and the *Kaga*.²⁵⁴ Furthermore, Station H made the following report on December 6: “At 1600 Ominato sent a short message telling KURU1 to shift to ‘03’ and ‘N38’. Low Frequency bands were tuned unsuccessfully for this. ‘N38’ is listed as 4230A [4.23

²⁵¹ *Memorandum on R.F.P. and TINA (German)*, page 3, HW18/206, PRO.

²⁵² Report dated Aug. 21, 1942, from Head of “Z” Section, Flowerdown, to D.S.D.9, Admiralty, entitled *R.F.P./TINA/R/E Report for July, 1942*, HW18/206, PRO.

²⁵³ Report #N.S. IV.A/No. 11, dated Mar. 9, 1944, from Lt. Cdr. A.M.S. Mackenzie, RNVR, to D.D. (N.S.), page 2, N.S. IV – D file, HW18/89, PRO. Transmitting stations, as well as code changes, were more readily identified when TINA was combined with RFP, but these two techniques measured different parameters. Prior to the declassification of documents concerning these techniques, historians sometimes viewed TINA and RFP as one technology. See Kahn, *Seizing the Enigma*, 215, 229-30. Despite low identification percentages, TINA and RFP were used late into the war by both Britain and the US because any assistance with code breaking was vital. For example, a British report of July 27, 1944, explained that “the only vital reason for keeping U-boat RFP/Tina going at all costs, is that no small possibility of it being able to help in the event of ‘SHARK’ [the current Enigma code] stopping, must be overlooked – not only from the point of view of helping us to ‘get back in’ again, but also for immediate identification and plotting purposes.” See Report entitled *RFP/Tina*, dated Jul. 27, 1944, from N.S. IV (2/O Richards W.R.N.S.), to Cmdr. G. Hughes, R.N.V.R., and D.S.D. 9, Admiralty, copy to D.D.N.S., N.S. IV – D file, HW18/89, PRO.

²⁵⁴ 3222/10 – *NSRS Philippines, JN Frequency Data*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 17 (College Park, MD: National Archives II, MMRB), RIP-40-A: 16-7, 160, 169.

MHz] as a ship frequency.”²⁵⁵ Call signs, which the Japanese navy changed on many dates including May 1, November 1 and December 1, were also carefully monitored.²⁵⁶ Indeed, a report of July 31 sent from COM11 in San Diego to the 13th Naval District in Seattle discussed the calling procedures of Japanese ships.²⁵⁷ Station Cast’s “JN Callsign Data” report for October noted that the call sign for the “Akagi F.S. [flagship]” had changed from HA MI 9 to 8 YU NA, and that the “Airrons CombFlt,” or 1st Air Fleet, used communications indicator no. 7.²⁵⁸ As well, Station H’s “Secret Calls and Addresses” report for November identified certain call signs of the “Fleet-Air” group, or 1st Air Fleet, and listed 8 YU NA, the *Akagi*, as the flagship.²⁵⁹ Only broadcast calls, which hid message addresses in the encrypted text, defied standard traffic analysis.

Japanese ship movement reports also assisted USN traffic analysts. When Japanese vessels reported their positions by code, USN radio operators diligently recorded the information. Indeed, on July 27, 1941, Station Cast noted that “Movement reports were originated by CinC 3rd

²⁵⁵ Station H Chronology, Dec. 6, 1941, Tokyo time, *Station H Monthly Report, December, 1941*, 40.

²⁵⁶ See Lt. Cmdr. E. T. Layton’s remarks in “Memorandum for the Commission,” Jan. 5, 1942, page 1, PHLO Records, RG80, PHLO, 370/21.17/5, Entry 167F, Box 41 (College Park, MD: National Archives II). Lt. R. Fabian also explained how operators would carefully monitor call sign changes at the moment they occurred to readily learn of the new calls. See Letter dated May, 28, 1941, from Lt. R. Fabian, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 3, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

²⁵⁷ Route Slip dated Aug. 4, 1941, from Com11 to Staff HQ, 13ND, Subject: *Radio Intelligence: calling procedure of Orange Ship*, Serial no. C1643, Jul. 31, 1941, A6-2(5), RG181, 13th Naval District Commandant’s Office, Classified Central Subject Files. 1934-41 (514955-61), 8/29/11, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region).

²⁵⁸ 3222/13 – *NSRS Philippines, JN Callsign Data*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 18 (College Park, MD: National Archives II, MMRB), 182. Station Cast also mentions that Fleet Designator Numeral 7 was used for communications with the “Aircraft Squadrons Combined Fleet,” or 1st Air Fleet, in 3200/1 – *NSRS Philippines, Operations Summaries*, 107.

²⁵⁹ Secret Calls and Addresses. *Station H Monthly Report for November, 1941*, RG38, Crane – Inactive Stations (College Park, MD: National Archives II, MMRB), 132-3. Courtesy of Robert Stinnett.

Fleet . . . and CinC Combined Fleet . . .”²⁶⁰ On November 28, Station H recorded code movement reports made by two vessels of the Strike Force: RU SI 8, using the *Akagi*’s transmitter (recorded on Sheet No. 94644), and HA NI 1, the *Shiriyu* (recorded on Sheet No. 94630).²⁶¹ These record sheets are not presently available, but their existence in 1941 is verified by the *Station H Monthly Reports*. Furthermore, with a complete understanding of Japanese communication zones, the USN could meaningfully interpret Japanese reports of “Comm Zone” changes. Reported movements through “Comm Zones” such as Kure, Sasebo, Yokosuka and Ominato allowed USN traffic analysts to track vessels plying the Japanese waters.²⁶² Parker has confirmed that Japanese ship movement reports were encoded in JN-25, and that Station Cast could read these reports, although Parker minimizes this accomplishment.²⁶³

Nor were Japanese messages always encoded. Ship call signs and movements were sometimes revealed in plain-language messages. TESTM reports for June and July show plain-language identifications of call signs AMI 5 and YA ME 8.²⁶⁴ On October 2, Station Cast made the following report: “Several plain language dispatches give positive identification to various vessels and fleet calls.”²⁶⁵ In the same month, Station Cast, while commenting upon Japanese war games that had been conducted in plain language, alluded to its record-keeping: “For further

²⁶⁰ Chronology of Station “C,” Jul., 1941, 3220/3 – *NSRS Philippines, Chronology*, 65.

²⁶¹ Naval Movement Reports, Nov. 28, 1941, *Station H Monthly Report for November, 1941*, page 111.

²⁶² SRNs 116329, 116990, 117666, 117673 and 117674; Quoted, Parker, *Pearl Harbor Revisited*, 60. For a general explanation of the Japanese shore station organization, see RIP-44, 38-2 to 4, 43-2 to 19. For charts of Japanese local broadcast zones and aviation communication zones, see SRH-211, pages 9, 19.

²⁶³ Parker, *Pearl Harbor Revisited*, 35.

²⁶⁴ TESTM no. 061520, Jun. 6, 1941, TESTM no. 141520, Jul. 14, 1941, 2000/1 – *NSRS Philippines, SI Genser, Msg Files*.

²⁶⁵ Station “C” Chronology, Oct., 1941, 3220/3 – *NSRS Philippines, Chronology*, 76.

detailed information see plain language file for 12 to 20 October.”²⁶⁶ Clearly, USN traffic analysts exploited any breaches in communications security.

Traffic volume, however, provided another indication of communications activity. In this regard, the USN relied upon statistical volume-analysis as well as qualitative assessments. The COMSUM14 for October 17, 1941, reported that “Traffic flow [is] now being analyzed by statistical machinery and normals are established for all major and secondary stations.”²⁶⁷ On November 21, Station H reported that traffic volume suggested “a large turn-over of personnel or a movement of some sort involving a large portion of the Navy.”²⁶⁸ On December 1, Station H noticed a period of relative inactivity: “Under the circumstances it is believed that the circuits are too quiet.”²⁶⁹ Station H also discussed possible Japanese deception: “A considerable number of messages that had been originated several days ago were noted in traffic intercepted. This might have been done to keep the volume of traffic up to cover-up for a decrease in the amount of traffic originated.”²⁷⁰ On December 4, Station H expressed concern over the kind of traffic received: “The large number of high-precedence messages and general distribution might indicate that the entire Navy is being instructed to be prepared for drastic action.”²⁷¹ Finally, the COMSUM14 for December 6, 1941, confirmed the Japanese Navy’s broadcast scheme: “Traffic

²⁶⁶ Operations, Station “C,” Oct., 1941, 3200/1 – *NSRS Philippines, Operations Summaries*, page 6.

²⁶⁷ See also COMSUM14, Oct. 21, 1941, which discusses the “Statistical analysis of total navy traffic for period 15-19 October . . .”

²⁶⁸ Station H Chronology, Nov. 21, 1941, *Station H Monthly Report for November, 1941*, 83. Indeed, Station H intercepted over 1000 Japanese messages a day according to Traffic Chief Homer Kisner. See Stinnett, *Day of Deceit*, footnote 19, 359.

²⁶⁹ Station H Chronology, Dec. 1, 1941, *Station H Monthly Report for December, 1941*, 10.

²⁷⁰ *Ibid.*, 3.

²⁷¹ *Ibid.*, Dec. 4, 1941, 4.

volume very heavy with a great deal of old traffic being transmitted. Messages as far back as 1 December were seen in the traffic. This is not believed an attempt to maintain a high traffic level but is the result of confusion in traffic routing with uncertainty of delivery.”²⁷² Traffic volume seemed to be a gauge of Japanese military urgency.

Yet USN traffic analysts profited even more from their ability to read message headings. Evidently, certain intelligence materials guaranteed this ability. Radio operators were trained to copy Japanese code characters, known as *Kata Kana*, on special RIP-5 typewriters made for this purpose.²⁷³ Moreover, the document RIP-40, parts A through D, represented an important reference for all USN traffic analysts because it contained Japanese navy operating procedures and signals.²⁷⁴ The value of these materials was later demonstrated when Station Cast prepared for a Japanese invasion: “On 8 January 1942, COMSIXTEEN reported to OPNAV that all radio intelligence publications had been destroyed except the RIP 5 typewriters, RIP 40A and 40D, and all CI ciphers.”²⁷⁵ Further evidence will later surface, but for the moment some intelligence material is still unavailable for security reasons. For example, RIP-45, an important document that outlines many traffic analysis methods of the period, is still listed as “security-classified”

²⁷² See also COMSUM14, Dec. 5, 1941: “There were many messages of high precedence which appears to be caused by the jammed condition of all circuits.”

²⁷³ For a list of *Kata Kana* code characters, see RIP-44, 10-1. For examples of RIP-5 copy, see the Station H Intercept Log, *Station H Monthly Report for December, 1941*, 49-251. Indeed, the code speeds of USN *Kata Kana* specialists could exceed 25 WPM. See *Station H Monthly Report for October, 1941*, 159.

²⁷⁴ See, for example, the RIP-40-A traffic-analysis procedures for *Kana* and *Nigori* signals in 3222/17 – *NSRS Philippines, JN Comm. Tech. Data. General*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 18 (College Park, MD: National Archives II, MMRB). 189.

²⁷⁵ 5750/4 – *NSRS Philippines. History, General*, 55.

information.²⁷⁶ Nonetheless, the extent to which USN traffic analysts could read message headings may be demonstrated using other sources.

These sources show that Station Cast used message headings to study the organization of the Japanese Combined Fleet.²⁷⁷ On April 11, Station Cast identified the formation of “a new fleet command,” which the station called “UKI1,” but was actually the 1st Air Fleet.²⁷⁸ In a letter of June 15, Fabian explained to Admiral Thomas Hart, CINCAF, what communication intelligence sources revealed:

The ‘Carrier Squadrons’ Command first appeared in radio despatches on 11 April, 1941. The relative inactivity of the Combined Fleets as such since that date has rendered impossible a determination of the exact place in the fleet organization for this command. The title given may be inaccurate in its implication, but there is no doubt that the officer involved is the senior of those commanding carrier units. His flag is carried in the AKAGI.²⁷⁹

In the same report, Fabian described the remainder of the Japanese fleet in fairly accurate terms. On October 4, Station Cast reported that “headings of traffic” had changed greatly from their usual format, suggesting that this “might be an indication of a general shake-up or a large scale

²⁷⁶ I have filed a Freedom of Information Act (FOIA) request to secure both RIP-45 and an RFP document entitled RIP-213. Proof of RIP-45’s use in 1941 may be found in a Letter dated Nov. 12, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 2, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

²⁷⁷ The message headings were likely in 5-numeral code (JN-25B) like the text. For example, Station Cast made the following report on Oct. 21, 1941: “IKAE (Tokio Communication Office) originated one 4-part 5-numeral code and one 2-part 5-numeral code addressed for action to Chief of Staff All 1st and 2nd Class Naval Stations. All Force Comdrs and Chief of Staff Hainan Garrison . . .” See Station “C” Chronology, Oct. 21, 1941, 3220/3 – *NSRS Philippines, Chronology*, 90.

²⁷⁸ TESTM no. 111510, Apr. 11, 1941, TESTM no. 141510, Apr. 14, 1941, 2000/1 – *NSRS Philippines, SI Genser, Msg Files*; Station “C” Chronology, Apr. 12, 1941, 3220/3 – *NSRS Philippines, Chronology*, page 85.

²⁷⁹ Letter dated Jun. 15, 1941, from Lt. R.J. Fabian, Fort Mills, P.I., to CINCAF, Manila, P.I., pages 3 and 7, PHLO Records. See also Letter dated Aug. 27, 1941, from Lt. R.J. Fabian, Fort Mills, P.I., to CINCAF, Manila, P.I., pages 3 and 4, PHLO Records.

movement.”²⁸⁰ During October, of course, the Japanese navy formed its Strike Force and began war games in preparation for its Pacific assault. Message headings also identified which ships transmitted and received code movement reports, as noted on October 21: “NOTORO (RIHI2) originated code movement report . . . Despatch was addressed for action to Sasebo CinC and for information of Bako Naval Station.”²⁸¹ Furthermore, message headings revealed transfers of command, as reported on October 26: “Comdr CombAirforce still at Takao Air Station. Traffic routing indicates Flag of Airrons CombFlt shifted to AKAGI (HAMI9) on the 25th.”²⁸²

Stations Hypo and H also used message headings to gather intelligence, but with some misunderstanding of the 1st Air Fleet. The COMSUM14 for August 7, 1941, explained certain elements of the 1st Air Fleet: “There [are] growing indications that the SECOND FLEET and the Fleet Air Command are linked together. Whenever the COMBINED FLEET is called collectively the Air Force is exempted and is included whenever the SECOND FLEET is called collectively.” Yet as late as October, Station Hypo referred to the 1st Air Fleet by various other titles such as “COM CARRIER DIVS” or “FLEET AIR.”²⁸³ The correct name would not appear until November 3. Station Hypo, however, extensively reported the activities of individual ships and other commands with confidence. Complete address reading and radio call identification are demonstrated in COMSUM14s of September 8, 13, 23, and 28, as well as October 24. Nonetheless, discrepancies in reporting occurred after the Japanese changed their calling procedures. The COMSUM14 for November 6 noted that Japanese broadcast calls initiated the

²⁸⁰ Station “C” Chronology, Oct. 4, 1941, 3220/3 – *NSRS Philippines, Chronology*, 78.

²⁸¹ *Ibid.*, Oct. 21, 1941, 90.

²⁸² *Ibid.*, Oct. 26, 1941, 93.

²⁸³ See, for example, COMSUM14, Sep. 4, 1941.

day before concealed all message addresses. For example, on November 14, Station H correctly reported the presence of “Air Officer Cardivs” at Saeki Air Station, yet no mention of this appeared in the following COMSUM14.²⁸⁴ On November 28, Station H incorrectly stated that “Comdr Carrier Divisions and several Carriers are in the Kyushu area.”²⁸⁵ Station H later attempted to explain reporting problems, noting on December 6 that Tokyo’s broadcast method hid the Japanese fleet organization: “The use of this method of delivering messages tends to keep unknown the positions of vessels afloat, and is probably one of the first steps towards placing the operations of the Navy on a war-time basis.”²⁸⁶

Applications of USN traffic analysis

In many instances, the USN could penetrate Admiral Yamamoto’s Combined Fleet with its arsenal of traffic analysis techniques. RDF, RFP, TINA, radio frequencies, call signs, code movement reports, traffic volume and message headings all permitted USN traffic analysts to interpret Japanese naval actions. Traffic analysis not only explained the operational characteristics and communications patterns of Japanese radio traffic, but also offered insight into the structure of the Combined Fleet through its messages. Yet capability must not be mistaken for application. The extent to which USN traffic analysis revealed the actions of the *Kido Butai* must be explored. Where was the *Kido Butai*? How effective was Japanese radio deception?

²⁸⁴ Station H Chronology, Nov. 14, 1941, Station H Monthly Report for November, 1941, 75. See also COMSUM14s for Nov. 14 and 15, 1941.

²⁸⁵ *Ibid.*, Nov. 28, 1941, 91.

²⁸⁶ Station H Chronology, Dec. 6, 1941, Tokyo time, *Station H Monthly Report for December, 1941*, 38.

Japanese communications procedures did obscure USN traffic analysis to an extent.

TESTM reports of November 14 to December 5 show the *Akagi* at bearings between 026 and 030 from Station Cast as though the carrier never joined the *Kido Butai*.²⁸⁷ These bearings, which pass through both Kyushu and the Kuriles, are not conclusive without cross bearings. Indeed, bearings on the *Akagi* taken at Cast should have been greater than 030 after November 26.

Apparently, the Japanese practiced a measure of radio deception. Rear Admiral

Ryunosuke Kusaka, Chief of Staff of the 1st Air Fleet in 1941, later explained that he “planned to have land air bases and other ships transmit a great deal of false wireless signals so as to pretend that the Task Force was still in Bungo Strait and its vicinity as before.”²⁸⁸ Regarding the remainder of the Combined Fleet, TESTM bearings sent from Station Cast to Station Hypo suggest that Japanese operations were in the south or in the Mandates.²⁸⁹ Reports produced by stations Hypo and H point to the Mandates. Despite such indications, however, other evidence shows that USN traffic analysts had knowledge of a Japanese voyage across the north Pacific.

To begin with, radio silence in 1941 did not preclude the use of all frequencies at all times. Both low and high frequency signals travel far under certain conditions, particularly when the ionosphere allows such signals to “skip.”²⁹⁰ Moreover, HF signals, unlike LF, “skip” even at very low power levels under most ionospheric conditions. Yet a misunderstanding of radio

²⁸⁷ TESTM nos. 141522, Nov. 14, 1941; 281511, Nov. 28, 1941; 241511, Nov. 29, 1941; 011512, Dec. 1, 1941; and 051511, Dec. 5, 1941; 2000/1 – *NSRS Philippines, SI Genser, Msg Files*.

²⁸⁸ Quoted, Donald M. Goldstein and Katherine V. Dillon, *The Pearl Harbor Papers: Inside the Japanese Plans*, c. 1993 (Dulles, VA: Brassey’s, 2000), 143. Indeed, other forms of radio deception were possible in 1941. For an example of RDF deception as a means of simulating aircraft traffic, see R.V. Jones, *Most Secret War* (London: Hamish Hamilton, 1978), 40.

²⁸⁹ TESTM nos. 281511, Nov. 28, 1941; 011512, 011522, Dec. 1, 1941; and 051511, Dec. 5, 1941; 2000/1 – *NSRS Philippines, SI Genser, Msg Files*.

propagation influenced the radio silence policies adopted by some military personnel. Layton explained that US forces used HF ship-to-air voice communications believing that such transmissions were short-range or limited to the horizon.²⁹¹ The Japanese, upon intercepting these transmissions well beyond their intended range, ordered military alerts thinking that the Americans were close at hand. As a further example, on November 16, 1941, the Combined Fleet issued "Striking Force Operation Order # 1," which defined communication bands: "Commencing 0000 on 19 November, 'Battle Control' effective for short wave frequencies and 'Alert Control' for long wave."²⁹² The Strike Force was not yet ordered to observe radio silence, but was required to use HF for local battle control and LF for broadcast alerts. Again, HF (likely at low power) was reserved for short-range local communications. LF was reserved for alerts because it could reach most shore stations, ships and submarines around the clock, provided that sufficient power was used. Returning now to USN policy, a COM13 dispatch of December 17, 1941, permitted the 13th Naval District to use HF frequencies during periods of radio silence: "IN THE FUTURE WHEN RADIO SILENCE IS ORDERED THIS SILENCE WILL .NOT AFFECT TRANSMISSIONS ON FREQUENCIES ABOVE FIVE THOUSAND KC".²⁹³ HF, particularly low power HF, was sometimes seen as offering a measure of protection against surveillance.

Nor did Japanese radio procedures dictate complete radio silence during secret operations. A dispatch of October 24, 1941, from the 1st Air Fleet Staff to the 1st Air Fleet

²⁹⁰ For example, see Dale Pollack, "High-Frequency Transmission and Reception," *The Radio Engineering Handbook*, ed. Keith Henney (New York, London: McGraw-Hill, 1941), 514, 537.

²⁹¹ Layton, et al, *And I Was There*, 369.

²⁹² SRN-115397.

²⁹³ Memorandum dated Dec. 17, 1941, from COM13 to RDO Puget Sound; Naval Section Bases 1, 2, 3, 4, 6; NAS Seattle: NAS Tongue Point; Comdt PSNY; Radio Bainbridge; Senior Coast Guard Officer, Seattle; Commander Inshore Patrol; Inshore Patrol, A6-2, RG181.

emphasized the use of broadcasts to hide fleet activity, but offered the following provision:

“General operating procedure for STRIKING FORCE during COMBINED FLEET

Communications Test #2 . . . Communications from the STRIKING FORCE to other forces will be sent through Flagship BATDIV #3. Wave lengths of BATDIV #3 (TAN201, TAN401).”²⁹⁴

In November, the Japanese Navy directed the Tokyo Communications Unit (TOTSU), which the 1st Air Fleet communicated with directly and exclusively, to constantly broadcast on 4.175 MHz, 8.350 MHz and 16.7 MHz, and in 30 minute intervals on 1.744 MHz from 0100 to 1800 hours daily.²⁹⁵ The Japanese Navy also adopted the following strategy: “Broadcasting will be the principal means of communicating with an operational force. Acknowledgement will be required when there is uncertainty concerning receipt of the message or when confirmation is required because the message is especially important.”²⁹⁶ A dispatch of November 25 confirmed that emergency communications were possible during radio silence: “From 26 November, ships of Combined Fleet will observe radio communications procedure as follows. . . . Except in extreme emergency the Main Force and its attached force will cease communicating.”²⁹⁷ Moreover, Japanese naval ships in harbour could communicate by radio rather than telephone. An illustration of March 1, 1942, depicting the radio and wire circuits within the Kure

²⁹⁴ Dispatch #436. Oct. 24, 1941, SRH-406, 39.

²⁹⁵ *Ca Nachi Papers. Revision of Nov. 17, 1941, 2/46-49, 2/63, The MacArthur Archives, Reel 547* (Norfolk, VA: MacArthur Memorial Library), 19, 26. I am grateful to Brian Villa for locating these important documents.

²⁹⁶ *Ibid.*, 2/43, 17.

²⁹⁷ SRN-116866; Quoted, Parker, *Pearl Harbor Revisited*, 62.

Communications Unit, demonstrates this point.²⁹⁸ The Japanese navy relied upon radio for many operations.

The *Kido Butai* also relied upon radio for its secret operation. Radio silence was ordered, but some messages had to be sent. As Rear Admiral Kusaka of the 1st Air Fleet later explained: “It was needless to say that the strictest radio silence was ordered to be maintained in every ship of the Task Force. To keep radio silence was easy to say, but not so easy to maintain.”²⁹⁹ Without doubt, many broadcast calls received by the *Kido Butai* were important enough to warrant a response. The Station H Chronology for November, 1941, shows that Admiral Yamamoto, using call sign ROSE22, sent thirteen messages between November 24 and 26.³⁰⁰ Acknowledgement of orders was necessary to ensure compliance. Furthermore, as Brian Villa has observed, how could the *Kido Butai*, spread out over 360 square miles of ocean by day and 90 square miles by night during its voyage, cope with fog, storms and a ban on illumination without recourse to radio communications?³⁰¹ Under these circumstances, the ships certainly needed low-power radio to assemble at a common point in the north Pacific for refuelling.

Indeed, USN intercepts suggest that the *Kido Butai* transmitted radio messages. On November 25, as Stinnett explained, CarDiv5 (Carrier Division 5 of the Strike Force) broke radio silence by transmitting on 4963 kHz under call sign NAO 0, as recorded in the Station H

²⁹⁸ SRH-211, 12. Indeed, Rear Admiral Kusaka, Chief of Staff of the 1st Air Fleet, explained how landline communications were suspended at Hitokappu Bay in November, 1941: “One or two days before the arrival of the fleet at the designated assembly point of Hitokappu Bay, the *Kunajiri*, a gunboat, was dispatched there to suspend all communications through the Yona Post Office.” Quoted, Goldstein and Dillon, *The Pearl Harbor Papers*, 143.

²⁹⁹ Quoted, Goldstein and Dillon. *The Pearl Harbor Papers*, 143.

³⁰⁰ Stinnett, *Day of Deceit*, 46.

³⁰¹ For a convoy map of the *Kido Butai*, see Goldstein and Dillon, *The Pearl Harbor Papers*, 187.

Chronology.³⁰² On November 26, Station H reported: “The Carriers were heard using secret calls on 4963M [4963 kHz] during the evening watch.”³⁰³ These HF transmissions were most likely from the *Kido Butai* as six of Japan’s eight carriers were part of the force. On November 28, as previously mentioned, Station H recorded code movement reports made by two vessels of the Strike Force: RU SI 8, using the *Akagi*’s transmitter, and HA NI 1, the *Shiriyu*.³⁰⁴ The COMSUM14 for November 29 reported that the *Hiei* sent a message to the Chief of Staff, 3rd Fleet. As well, the COMSUM14 for November 30 reported that “The only tactical circuit heard today was one with AKAGI and several MARUS.”³⁰⁵ Moreover, Station H intercepted a radio transmission from a *Kido Butai* submarine using call sign WA HI 8 on December 6 at 0552 hours, Tokyo time.³⁰⁶ Nonetheless, Station H records cannot presently be used to confirm the *Kido Butai*’s radio activities from December 1 to 3, the period when the force sailed through mid-Pacific storm conditions: pages 43 to 48 of the Station H intercept log, which cover this period, have not been released by the security authorities.³⁰⁷

³⁰² Station H Chronology, Nov. 25, 1941, *Station H Monthly Report, November, 1941*, 110; Stinnett, *Day of Deceit*, 164.

³⁰³ Station H Chronology, Nov. 26, 1941, *Station H Monthly Report, November, 1941*, 89; Stinnett, *Day of Deceit*, 195.

³⁰⁴ Naval Movement Reports, Nov. 28, 1941, *Station H Monthly Report for November, 1941*, page 111.

³⁰⁵ See also Stinnett, *Day of Deceit*, 194-5.

³⁰⁶ Station H Intercept Log, December 6, 1941, *Station H Monthly Report for December, 1941*, 98.

³⁰⁷ *Ibid.*, pages 43 to 48 not present. Some USN records will never be available: fear of impending invasion caused the records of Station Baker in Guam to be destroyed on Dec. 3, 1941, and those of Wake Island to be destroyed in 1942. Yet the RDF records of stations Cast, H, King and Victor may later surface. For plots of the *Kido Butai* and the *Shiriyu* tanker, see Parker, “The Unsolved Messages,” 306. For the reported positions of *Kido Butai* ships (3rd Battleship Division) from December 1 to 8, 1941, Tokyo time, see Goldstein and Dillon, *The Pearl Harbor Papers*, 258-9. All RDF plots should be made on a Great Circle map of the Pacific Ocean, such as appears in Appendix II of this study. See Bernard Brodie, *A Layman’s Guide to Naval Strategy* (Princeton: Princeton UP, 1942), 108.

These USN intercepts could not *all* have represented Japanese radio deception. Radio deception did not include the transmission of secret call signs, code movement reports and traffic between aircraft carriers and oil tankers. Secret call signs suggest clandestine activities, whereas code movement reports and carrier-tanker traffic suggest movements away from home waters. Regarding the COMSUM14 for November 30, the reported intercept could only have represented transmissions between the *Akagi* and its oil tankers. The Japanese would have never sent a false message indicating that the *Akagi* was conversing on a “tactical circuit” with oil tankers when previous false messages showed the carrier in home waters – oil tankers meant long voyages, not anchorage in Kyushu.

Other sources discuss the tracking of Japanese vessels in the north Pacific. Robert Ogg, known in Toland’s book as “Seaman Z,” allegedly plotted bearings on Japanese vessels, located in the north Pacific, from December 2 to 6, 1941, for the 12th Naval District in San Francisco. Without doubt, USN stations along the Pacific coast were exchanging radio intelligence during the period in question. On December 3, the Staff Headquarters of the 13th Naval District received a report on “Direction Finder Bearings” from its Naval Air Station in Seattle.³⁰⁸ This report, which is unavailable to researchers, is significant because previous RDF summaries sent to staff headquarters in Seattle only concerned Japanese *merchant* vessels.³⁰⁹ As well, the 13th Naval District received a COM11 radio intelligence report from San Diego on December 5; it

³⁰⁸ Route Slip dated Dec. 3, 1941, from CO, Naval Air Station, Seattle, to Staff HQ, 13th Naval District, Subject: Direction Finder Bearings, A6-2(2), RG181.

³⁰⁹ Route Slips dated Nov. 4, 12, 18 and 24, and Dec. 2, 1941, from Commanding Officer, NRS, Bainbridge Island, to Staff HQ, Thirteenth Naval District, Subject: *High Frequency Direction Finder Bearings on Orange Merchant Vessels*, A6-2(2), RG181.

had received none from this station in the preceding weeks.³¹⁰ Nonetheless, Ogg's claims, as later recorded in an interview with Captain Irving Newman, must be treated as circumstantial because he was not directly responsible for RDF activities at the 12th Naval District.³¹¹ Ogg was responsible for wire-tapping telephone lines. No primary evidence presently available substantiates Ogg's claim that the 12th Naval District received the bearings in question from commercial cable companies.

Contemporaneous primary evidence, however, may be found in the diary of Captain Johan E.M. Ranneft, who served as the Netherlands naval attaché in Washington in 1941. On December 2, Ranneft visited the Office of Naval Intelligence (ONI) and saw a wall map showing that two carriers had "left Japan on an easterly course."³¹² On December 6, Ranneft again visited ONI, finding this time that the two carriers were located west of Honolulu.³¹³ Given Ranneft's sound reputation with the USN as the officer who provided them with plans for the coveted Bofors Gun, his diary entries are highly credible as evidence of his visit with ONI at the Navy Department. As a respected officer, Ranneft was accorded the privilege of observing USN tracking abilities. It is possible that the two "carriers" discussed by Ranneft may have been, in fact, select vessels transmitting radio traffic on behalf of the 1st Air Fleet such as the battleship *Hiei* and the flagship carrier *Akagi*. Toland's discussion of Ranneft's observations at ONI must be ranked as an important contribution to Pearl Harbor historiography.

³¹⁰ Route Slip dated Dec. 5, 1941, from Com 11 to Staff HQ, Thirteenth Naval District. Subject: Radio Intelligence Report, Dec. 4, 1941, Serial no. 02149, A6-2(5), RG181.

³¹¹ SRH-255, 35-40.

³¹² Alvin D. Coox, "Repulsing the Pearl Harbor Revisionists: The State of Present Literature on the Debacle," *Pearl Harbor Reexamined: Prologue to the Pacific War*, eds. Hilary Conroy and Harry Wray (Honolulu: University of Hawaii Press, 1990), 122. For comparison, see Toland, *Infamy*, 283.

³¹³ *Ibid.* For comparison, see Toland, *Infamy*, 298, and footnote 2, 317.

Yet the most startling evidence came from Leslie Grogan, a radio operator aboard the *S.S. Lurline* in 1941. Grogan and his fellow radio operators copied Japanese coded signals from December 1 to 3 and tracked their source in the north Pacific using RDF: the signals emanated from northwest of Honolulu to northwest by west of Honolulu. Grogan noted that these signals were a “repeat-back” of signals originally transmitted by Japanese shore stations. The radio officers of the *Lurline* submitted a report of their findings on December 3 to Lt. Cmdr. G.W. Pease of the 14th Naval District in Honolulu. Furthermore, Grogan composed his own “Record for Posterity” on December 10 following the *Lurline*’s docking at San Francisco. This record was sent to Grogan’s superiors at the Matson Navigation Company in lieu of the ship’s logs, which had been confiscated in San Francisco on December 10 by a USN boarding party led by Lt. Cmdr. P. Allen. Hence, two versions of Grogan’s observations were recorded: one written before the Pearl Harbor attack, and one written afterwards in an atmosphere of national security. Fortunately for researchers, Ladislav Farago saw both reports when he interviewed Grogan in 1967. Farago performed a great service as the documents originally handed to the USN have gone missing. Even more fortunate for researchers is the fact that Station H records and USN intercepts of Japanese messages corroborate Grogan’s documented accounts.

Certainly, Grogan’s “Record for Posterity,” written December 10, disclosed the *Lurline*’s interception of Japanese signals. but avoided specific details regarding frequencies and bearings. Grogan’s entry for December 1, 3:30 AM, described the signals he heard in the evening of November 30:

The Japs are blasting away on the lower Marine Radio frequency – it is all in Japanese Code, and continues for several hours. Some of the signals were loud, and others weak, but in most every case, the repeat-back was acknowledged verbatim [*sic*]. It appears to me that the Jap is not using any deception of ‘Signal Detection’ and boldly blasts away, using the Call letters JCS and JOS, and other

Japanese based stations that have their transmitting keys all tied-in together, and controlled from a common source, presumably Tokio. . . .

So much of the signals reaching us on the SS Lurline were good enough to get good R.D.F. We noted that signals were being repeated back, possibly for copying by crafts with small antennas. The main body of signals came from a Northwest by West area, which from our second night from Los Angeles bound for Honolulu – would be North and West of Honolulu.

Having crossed the Pacific for 30 years, never heard JCS Yokohama Japan before at 9 P.M. our time on the lower Marine Frequency, and then rebroadcast simultaneously on the lower Marine Frequency from some point in the Pacific.

If anyone should ask me, I would say it's the Jap's Mobilization Battle Order. . . .³¹⁴

Furthermore, Grogan noted next evening that the peculiar Japanese radio traffic resumed for two hours just like the night before.

Grogan's entry for the late evening of December 2 confirmed that the Japanese flotilla still transmitted "repeat-back":

We continue to pick up the bold Japanese General Order signals – it can't be anything else. We get good Radio Direction Finder bearings, mostly coming from a Northwesterly direction from our position. The Jap floating units continue their bold repetition of wireless signals, presumably for smaller craft in their vanguard of ships, etc. The Japanese shore stations JCS and JOS are keyed by remote tie-in, coming from Tokyo I presume, and if we had a recording device, it would only prove what we ourselves jot down, and we can't help but know that so much of it is a repeat back, letter for letter, because we have copied the original signals coming from Japanese land based stations, etc.

The Japs are so bold in using these low Marine frequencies too, but with all the tension we've seen up to now, it's safe to say something is going to happen, and mighty soon, but how soon? All this display means something – time will tell, and tonight's Radio Detection signals have come from a NW by W from Honolulu, and from the signals, the Japs must be bunched up, biding time.³¹⁵

³¹⁴ Toland, *Infamy*, 279. See also Leslie Grogan, "Record for Posterity," page 2, *S.S. Lurline File no. 2*, John Toland Papers (Hyde Park, NY: Roosevelt Library). I am grateful to Brian Villa for locating this file held at the Roosevelt Library. Quotations from *Infamy* are necessary because page 3 of Grogan's 10-page account, a copy of which Toland deposited in the Roosevelt Library, is now missing. Moreover, the Matson Navigation Company was unable to provide a copy of Grogan's account.

³¹⁵ *Ibid.*, 280.

On December 3, the *Lurline*'s radio officers submitted a full report to the 14th Naval District intelligence office in Honolulu.

Yet Grogan's interview with Farago in 1967 disclosed further details. To begin with, Grogan justified the *Kido Butai*'s need for "intercommunication":

It was necessary for the Japanese to find a means of secret wireless communication between the ships of Nagumo's Striking Force, and his advance units. It would be sheer folly to expect that a huge armada of ships, widely scattered at times, would be sent to sea, and remain there for ten or eleven days, without some form of intercommunication.

It was necessary to transmit orders and instructions, either to individual ships or to the Combined Fleet. Acknowledgement of such orders was mandatory to insure their proper execution.

While the larger ships of the Striking Force were able to receive signals regularly from their homeland on the *high* frequencies, it was impossible for the low-lying submarines to do so. . . . Submarines could often not intercept the *high*-frequency signals from Tokyo or other shore stations in Japan . . . other small craft found themselves in the same predicament.³¹⁶

Grogan also discussed technical details in 1967 that he had previously chosen (or had been obliged) not to reveal in the immediate aftermath of the Pearl Harbor attack. In his "Record for Posterity," submitted to Matson Navigation Company on December 10, Grogan's "lower Marine frequency" or "lower Marine *frequencies*" remained unspecified.³¹⁷ Furthermore, Grogan's account of December 10 explained that the Japanese were not using "any deception of 'Signal Detection'." Yet in 1967, Grogan explained how the *Kido Butai* concealed its "repeat-back" transmissions:

³¹⁶ Farago, "POSTSCRIPT," 385.

³¹⁷ In his account of December 10, 1941, Grogan used the phrase "lower Marine frequency" to represent any frequency on which the Japanese were transmitting. Of course, the "repeat-back" frequency used by the Strike Force had to differ from the frequency used by Japanese shore-based stations sending the original messages, otherwise interference would occur. Grogan's December 10 account did not disclose these frequencies: "Having crossed the Pacific for 30 years, never heard JCS Yokohama Japan before at 9 P.M. our time on the lower Marine Frequency, and then rebroadcast simultaneously on the lower Marine Frequency from some point in the Pacific." Grogan, however, did make clear that more than one frequency was used: "The Japs are so bold in using these low Marine frequencies . . ."

The Japanese were able to solve this problem by resort to ‘hoax.’ It was only necessary for one ship to pick up the *high*-frequency signals from the homeland and then retransmit this same signal, simultaneously, on a *low*-frequency which the smaller craft could intercept.

[An intercepted *high*-frequency signal from Japan would be used to] ‘key’ a transmitter whose frequency could be selected at will – in this case 375 kilocycles, as was chosen by the Japanese for secrecy on the run to Hawaii. A 375 kilocycle signal would fall in the band reserved for direction finding, a master of strategy by the Japanese, because no intercept or monitoring station would look for a Japanese signal in this band. Moreover, the power of the 375-kilocycle transmitter was low enough to severely limit its range.

Assuming that a particular intercept or monitor station had, by sheer coincidence, tuned across the spectrum and discovered a Japanese signal on 375 kilocycles, the receiving operator would not have known what to do about it . . . And unless the operator had returned to this same portion of the spectrum on successive nights to confirm any suspicions he might have had, as was done by the *Lurline*’s Radio Officer, there would have been no effort made to evaluate the incident.

It was only because the 375-kilocycle signals, transmitted from one or more Japanese ships of the Striking Force, were heard on *successive* nights that the *Lurline*’s Radio Officer was able to confirm his original belief to the extent that he had discovered a group of moving objects.³¹⁸

A variety of evidence supports Grogan’s explanation. Evidently, the Japanese already used HF for both broadcast calls and “repeat-back.” On November 28, the USN intercepted a message from Tokyo addressed to all communication units that ordered HF broadcasting: “Beginning 1 December 1941, Tokyo Comm Unit will initiate broadcasts on . . . 4175 kc in order to (maintain) volume of traffic . . . afloat, etc., in accordance with principles given in 2nd Communications Analysis of 1941.”³¹⁹ On December 2, Station H discovered a “repeat-back”

³¹⁸ Farago, “POSTSCRIPT,” 385-6. In this passage, Grogan also discussed the possibility that the Japanese used automatic re-broadcasting equipment to “repeat-back” the original messages from Japan to the vessels of the *Kido Butai*. Grogan’s hypothesis is supported by the fact that such equipment existed in 1941 and was already used by both the Japanese navy and the USN. The COMSUM14 for November 29, 1941, reported that the Japanese used such equipment, although their attempt was unsuccessful on the day in question: “Automatic transmissions [were] attempted on the Tokyo-Takao circuit but was a failure and traffic sent by hand.” For proof of the USN’s use of automatic re-broadcasting equipment, see Mailgram no. 080037 dated Jul. 10, 1941, from COM11 to COM12, A6-1/A1-1, RG181, 13th Naval District Commandant’s Office, Regular Navy Files, 1941, Entry 1, 13/12/7, Box 9 (Seattle, WA: National Archives – Pacific Alaska Region).

³¹⁹ Parker, *Pearl Harbor Revisited*, 63.

circuit operating on HF: “MERO6 (TAKAO AIR CORPS) ON 11500M [11.5 MHz] BROUGHT UP A ‘REPEAT BACK CIRCUIT?’ . . . ALL TRAFFIC RECEIVED PREVIOUSLY FROM TOKYO DIRECT, ON THE 1ST [Dec. 1].”³²⁰ Moreover, almost every message addressed to the Strike Force that was intercepted by the USN had been transmitted by HF.

Yet Tokyo also used long wave frequencies to make broadcast calls to the Combined Fleet. On December 5, Station H reported that Tokyo “UTU” broadcasts were made on two frequencies: “At 0430/6th Tokyo was observed using 32 Kcs for an UTU broadcast. This frequency was used dual with 12330 Kcs. Signals were very strong during the day. The use of this low frequency indicates traffic sent on this broadcast is for ships at a great distance from Tokyo.”³²¹ On December 6, Station H confirmed its earlier observation: “IT WAS DISCOVERED THAT TOKYO HAD A UTU UP ON 32 KCS SIMULTANEOUS WITH 12330 KCS. IT CAME IN S2 TO 5 DURING THE DAY WATCH AND MOST TRAFFIC WAS GOOD TO SOLID. MUCH OF THE TRAFFIC WAS REPETITION BUT OF HIGH PRECEDENCE.”³²² These reports support Grogan’s observation that Japanese shore stations transmitted strong signals to outlying vessels.

The Strike Force, however, insured that any vessels failing to copy Tokyo’s HF and LF broadcasts could receive “repeat-back” on LF. As previously mentioned, on November 16, 1941, the Combined Fleet issued “Striking Force Operation Order # 1,” which allocated HF for local “Battle Control” and LF for “Alert Control.”³²³ This Strike Force order was the *only* one sent to “TOKYO DF Control” for information. Tokyo DF Control needed to know that the Strike Force

³²⁰ Supervisor’s Report, Eve Watch, Dec. 2, 1941, *Station H Monthly Report for December 1941*, 15.

³²¹ Station H Chronology, Dec. 5, 1941, *Station H Monthly Report for December 1941*, 32-3.

³²² Supervisor’s Report – Day Watch, Dec. 6, 1941, *Station H Monthly Report for December 1941*, 39. See also page 38 for a confirmation of Tokyo’s transmitting frequencies.

³²³ SRN-115397.

would use a long wave direction-finding frequency for its own “Alert Control.” Indeed, as Brian Villa has observed, this communications plan already had a precedent with Tokyo DF Control. A message of November 6 from the chief of Tokyo DF Control to the commanders in chief of both the 2nd Fleet and the 1st Air Fleet reminded the 2nd Fleet that a long wave frequency it had used was actually reserved for the Strike Force: “In spite of the fact that 92 [kHz] is the wave length of the STRIKING FORCE, [censored] sent a message over this wave length to Tokyo Comm Unit at about 2100.”³²⁴

Not surprisingly, a more clandestine frequency was later selected for the Strike Force. The 375 kHz “repeat-back” frequency used by Nagumo’s ships was actually reserved for direction finding by international agreements. This fact is made quite clear in a table entitled “Summary of Frequency Allocations in United States” found in a 1941 edition of *The Radio Engineering Handbook*.³²⁵ Land-based radio beacons transmitted signals on 375 kHz so that ships could find their positions. In essence, these fixed radio beacons, then as now, served as a radio aid to navigation. Alternatively, ships could transmit signals on 375 kHz so that land-based stations could take bearings on them and then transmit RDF data back to the ships on the same frequency.³²⁶ Certainly, USN radio operators sometimes used this reserved frequency for

³²⁴ Message no. 259 dated Nov. 6, 1941, SRH-406, 41. Brian Villa originally located and interpreted this message.

³²⁵ Dale Pollack, “High-Frequency Transmission and Reception,” *The Radio Engineering Handbook*, 3rd ed., ed. Keith Henney (New York, London: McGraw-Hill, 1941), Table II, 535. Furthermore, radio range beacons for civil aviation operated in the 200 to 400 kHz band. See Harry Diamond, “Aircraft Radio,” *The Radio Engineering Handbook*, 3rd ed., ed. Keith Henney (New York, London: McGraw-Hill, 1941), 590-1.

³²⁶ For an explanation of these procedures, see Independent Wireless Telegraph Company, *Instructions to Operators* (New York: Independent Wireless Telegraph Company, 1926), section 153. As early as 1929, the USN offered free direction-finding on 800 metres (375 kHz) to maritime vessels. See Radiomarine Corporation of America, *Book of Rules: For the information and guidance of Radio Operators of the Radiomarine Corporation of America* (New York: RCA, 1929), 84. I wish to thank communications specialist Brian Holmes for locating these books and offering a technical assessment of their contents.

exchanging radio bearings. For example, in letter of October 6, 1941, Lietwiler told Densford that Station Baker in Guam had transmitted radio bearings to Station Cast on 375 kHz.³²⁷

Evidently, the USN already monitored this frequency for its own traffic. Yet when Grogan took bearings on the “repeat-back” signals each night, he noticed that the 375 kHz signals were not from a fixed radio beacon or land station – they were moving. Although the Strike Force sometimes used low power HF to exchange messages, as USN intercept logs show, low power LF “repeat-back” on a reserved DF frequency insured that all vessels, particularly submarines and smaller craft, could receive Tokyo alerts at any time of day in relative secrecy.

Conclusion

Ultimately, the USN received all the information necessary to track the *Kido Butai* well before it arrived in Hawaiian waters. The *S.S. Lurline*'s report of December 3 revealed what frequencies had to be monitored, although USN stations were already exchanging radio bearings on 375 kHz, the *Kido Butai* “repeat-back” frequency. Any differences of opinion between traffic analysts at stations Cast and Hypo regarding the location of the missing carriers could have been dispelled by the *Lurline*'s report. Not that USN traffic analysts necessarily required outside assistance: RDF, RFP, TINA, radio frequencies, call signs, code movement reports, traffic volume and decrypted message headings collectively provided important radio intelligence. Yet past censorship and missing documents obscure the results of USN traffic analysis from November 30 to December 3, 1941, when the *Kido Butai* probably transmitted messages in the north Pacific. Station logs for this period are not available in their entirety. Therefore, the

³²⁷ Letter dated October 6, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 2, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

Lurline's report becomes important in explaining how the USN had foreknowledge of Japanese actions in the north Pacific. The *Lurline*'s report proves not only that the *Kido Butai* was tracked during its arduous voyage, but also that the USN was privy to this information.

The radio silence thesis must finally be laid to rest. Direction finding alone revealed Japanese actions in the north Pacific. Wohlstetter, Kahn, Prange, Layton, Parker and Prados were incorrect in asserting that radio silence prevented the USN from monitoring the *Kido Butai*. In Wohlstetter's terms, certain "signals" soared above the background "noise." Stray signals may have been misinterpreted, but several days of "repeat-back" transmissions from the north Pacific had to be detected. Captain Ranneft's visits to ONI on December 2 and 6 confirm that at least some USN personnel were monitoring the carriers' progress. Certainly, Lt. Cmdr. Pease, who received the *Lurline*'s report in Honolulu on December 3, had something significant to report to his superiors. Farago, who maintained a traditionalist view of the Pearl Harbor attack, at least conceded in his postscript to *The Broken Seal* that the *Kido Butai* transmitted messages from the north Pacific and that the USN received foreknowledge of this fact. Rusbridger and Nave were correct in asserting that radio silence was not maintained, even though they failed to study traffic analysis and prove this point. Toland and Stinnett were quite obviously correct in their respective interpretations. Toland used important testimony to discuss the results of traffic analysis, although he did not discuss any techniques. Stinnett sometimes made more inferences than his primary sources warranted, but nevertheless offered the most comprehensive study of traffic analysis yet seen in Pearl Harbor literature. Our present understanding of USN traffic analysis fully corroborates the revisionist positions advanced by Toland and Stinnett.

Traffic analysis provided substantial foreknowledge of Japan's naval actions on the eve of the Pearl Harbor attack. Indeed, traffic analysis served as a corroboration of intelligence acquired

by cryptanalysis. Cryptanalysis may have revealed Japan's intentions in the north Pacific, but traffic analysis confirmed that Japan's operational plans were being followed with deadly precision. Yet radio intelligence was so much more than message decryption, direction finding, signals analysis and address reading. Intelligence gathered by these techniques only had meaning if properly evaluated and disseminated within the labyrinth of the USN. It is now necessary to determine the extent to which foreknowledge of the Pearl Harbor attack was translated into forewarning.

4. Integrating the Evidence:

USN Intelligence Reporting and Administration

A WE address today broke down as "ITIKOUKUU KANTAI". The literal reading of this as "1st Air Fleet" . . . indicates an entirely new organization of the Naval Air Forces.

Station Hypo report, Hawaii, November 3, 1941.³²⁸

Intelligence reporting within the USN in 1941 was a complex process. Thousands of intercepts, code values, radio bearings, call signs and other communications data had to be transferred between USN stations scattered across the Pacific Ocean and the United States. Airmail and radio networks assisted in this endeavour, although delays were inevitable. The USN also exchanged intelligence with its Allied counterparts: communication networks and liaison officers insured that such exchanges were possible. Moreover, radio intelligence gathered from various sources had to be evaluated and disseminated in a timely fashion. These processes were threatened by a feud within the Navy Department over the control of intelligence. Layton later assessed the damage inflicted by this feud: "It shaped the climate of hostility in which intelligence went unevaluated and the special needs of the Pacific Fleet to be kept informed were submerged in furious personal rivalries."³²⁹ Apart from any problems with USN intelligence reporting, there were political reasons to encourage a Japanese first strike on an American target in late 1941. As previously discussed, Roosevelt was apparently committed to war with Japan by late 1941 and desired that Japan commit the first overt act. Given that USN radio intelligence provided data clearly indicating Japan's intentions and actions in the north Pacific, the fact that

³²⁸ COMSUM14, Nov. 3, 1941.

³²⁹ Layton, et al, *And I Was There*, 95.

Hawaiian commanders failed to receive adequate forewarning of the impending air attack can only be answered in two ways. Only gross neglect or careful design explain why foreknowledge failed to become forewarning.

Other views of USN intelligence reporting and administration

Historians have variously interpreted how intelligence was reported and administered within the USN network. Wohlstetter believed that intelligence reporting suffered more from policy than from slow communications. She summarized the methods of intelligence transfer: “Important messages were sent either by radio in their own cryptographic system or by airmail in a locked pouch. All old information went by naval transport.”³³⁰ Nonetheless, Wohlstetter explained that intelligence reporting was impeded by an over-cautious security system as well as “intraservice and interservice rivalries.”³³¹ She supported her argument with several examples: Washington limited Rochefort’s ability to distribute information, particularly to the Army at Pearl Harbor; military intelligence was “denied knowledge of both the negotiations and the diplomatic plans”; and MAGIC reports were subject to limited distribution.³³² Wohlstetter did not expand upon the theme of American-Allied cooperation. Ultimately, Wohlstetter upheld her view that “relevant signals, so clearly audible after an event. will be partially obscured before the event by surrounding noise.”³³³

³³⁰ Wohlstetter, *Warning and Decision*, 31.

³³¹ *Ibid.*, 394-5.

³³² *Ibid.*, 33, 70, 394.

³³³ *Ibid.*, 397.

Kahn, however, argued that despite cooperation with Allied countries, poor resources hindered USN intelligence efforts. In *The Codebreakers*, Kahn wrote of Station Cast's exchange of information: "The 7 officers and 19 men in [Cast's] cryptanalytic group exchanged possible recoveries of JN25b codegroups with Washington and with a British group in Singapore; each group also had a liaison man with the other."³³⁴ Yet he later explained that insufficient manpower prevented the USN from successfully decrypting JN-25B messages: "This was due less to Japanese cryptographic superiority than to the navy's insufficiency of cryptanalysts, in part because it was helping the army decipher PURPLE messages (once the machine had been solved) while also helping the British break U-boat messages in the German navy's Enigma cipher machine."³³⁵ For Kahn, forewarning of the Pearl Harbor attack was impossible not only because the Japanese failed to transmit clear indications of such an attack, but also because of limited USN resources in the intelligence sector.

In *The Broken Seal*, Farago discussed the relative importance placed upon certain intelligence sources by American military leaders. Indeed, Farago explained that MAGIC intercepts had the potential to supplement other previously available sources of intelligence: "Suddenly it [MAGIC] began to carry at least some of the information the United States Navy had lost with the collapse of its traffic analysis and the change of the FLAG OFFICERS code."³³⁶ Farago, drawing upon the work of former intelligence officer Ellis Zacharius, concluded that USN radio intelligence was not viable in the months leading up to the Pearl Harbor attack. Moreover, he believed that American military leaders overlooked the new military and naval

³³⁴ Kahn, *The Codebreakers*. 10.

³³⁵ Kahn, "The Intelligence Failure," 144.

³³⁶ Farago, *The Broken Seal*. 277.

importance of recent MAGIC intercepts because MAGIC had been previously viewed as diplomatic traffic.³³⁷

Prange held similar views in *At Dawn We Slept*, but emphasized Roosevelt's interest in military intelligence just before the Pearl Harbor attack. Like Farago, he regarded USN radio intelligence as a technique made rather ineffective by late 1941. As previously mentioned, Prange argued that Japanese radio deception and "American complacency" prevented anyone from locating the 1st Air Fleet by radio intelligence.³³⁸ Evidently, Prange believed not only that USN cryptanalysis failed to produce results, but also that traffic analysis was not taken seriously. Indeed, Prange, who served under General Douglas MacArthur in the Second World War, viewed Admiral H.E. Kimmel as a rather unprepared commander – one who even failed to appreciate the intelligence value of radar. Regarding the use of MAGIC, Prange explained that intelligence reporting was not as timely as it should have been on the eve of the Pacific War.³³⁹ Nonetheless, he points out that by November, 1941, President Franklin Roosevelt requested copies of original military and naval intelligence summaries, rather than abstracts.³⁴⁰ For Prange, intelligence reporting and administration in 1941 was a rather *ad hoc* affair.

In *Infamy*, Toland offered a revisionist account of intelligence reporting, arguing that foreknowledge of the Pearl Harbor attack was officially suppressed. Apart from naval intelligence, Toland examined the "Tricycle Affair," in which Yugoslav double-agent Dusko Popov, Agent Tricycle, brought a German microdot questionnaire concerning Pearl Harbor

³³⁷ *Ibid.*, 278.

³³⁸ Prange et al, *At Dawn We Slept*, 734.

³³⁹ *Ibid.*, 84-6.

³⁴⁰ *Ibid.*, 86.

installations to FBI director J. Edgar Hoover, only to have this intelligence rejected by Hoover. Toland explained that the USN was not privy to this information.³⁴¹ He also asserted that at Station M on December 4, 1941, radioman Ralph Briggs copied Tokyo's "East Wind, Rain" message, the "Winds-Execute" alert that placed Japan on a war-footing with America. Apparently, Briggs alerted Cmdr. Laurance Safford of this intercept by "TWX" circuit, although Washington officials later denied foreknowledge.³⁴² Toland's most persuasive evidence, however, came from testimonies of Netherlands military officials who allegedly warned Washington of the impending attack on Pearl Harbor.³⁴³ Toland asserted that Dutch intelligence personnel in the Netherlands East Indies had broken the Japanese codes.

Layton offered a more traditional interpretation of USN intelligence reporting in *And I Was There*. He believed that communications were poor: "The lack of an adequate and rapid communications link between Oahu, Midway, Samoa, and Dutch Harbor also plagued the operation of the mid-Pacific radio direction-finding (D/F) network, which also came under Rochefort's command."³⁴⁴ He also explained that "There were comparatively few exchanges between Washington and Cast on the dedicated radio network on which the navy's three cryptographic centers swapped technical information using a secure cipher system code-named Copek."³⁴⁵ Furthermore, Layton criticized other intelligence gaffes. Station Hypo was denied a PURPLE machine for decrypting Japanese diplomatic traffic. Admiral Kimmel was denied

³⁴¹ Toland, *Infamy*, 258-60.

³⁴² *Ibid.*, 286-7.

³⁴³ *Ibid.*, 290-1, 317-8.

³⁴⁴ Layton, et al, *And I Was There*, 93.

³⁴⁵ *Ibid.*, 94.

important messages concerning, firstly, the *Lanikai* “defensive information patrol,” which was to radio Japanese naval movements in the West China Sea and the Gulf of Siam, and, secondly, the exchange of “full military information” with British and Dutch naval commanders.³⁴⁶ USN interception of the “Winds-Execute” message likely happened, but no word of this reached Pearl Harbor.³⁴⁷ Finally, during the Pearl Harbor attack, US Army telephone lines connecting Station Hypo with its RDF station at Lualualei were ripped out for security reasons.³⁴⁸ Layton attributed some of these mistakes to an internal feud at the Navy Department and general bureaucratic incompetence.

Yet Layton offered some positive examples of intelligence reporting. Layton himself presented daily intelligence reports to Admiral Kimmel. These daily reports included Rochefort’s COMSUM14 and Layton’s own “disposition chart,” or “location sheet,” which showed Japanese naval movements.³⁴⁹ Furthermore, Layton explained that both the British and the Dutch fully cooperated with the USN on JN-25B decryption. He claimed that the cryptanalytic ability of the Royal Navy equalled or exceeded that of the USN.³⁵⁰ Moreover, Layton illustrated the effectiveness of Dutch intelligence: General Ter Poorten, who liaised with US officials, regularly received *Kamer-14* intelligence reports including one that “showed Japanese naval concentrations near the Kuriles.”³⁵¹ The potential value of such intelligence needs no explanation to those familiar with the voyage of the *Kido Butai*.

³⁴⁶ *Ibid.*, 247.

³⁴⁷ *Ibid.*, 264-7.

³⁴⁸ *Ibid.*, 316-7.

³⁴⁹ *Ibid.*, 183, 237.

³⁵⁰ *Ibid.*, 206.

³⁵¹ Quoted, *Ibid.*

Rusbridger and Nave, however, focussed mainly upon the limitations of USN intelligence reporting. The authors explained that airmail was slow and infrequent at a time when cost was a great factor to peacetime US forces. For example, the USN relied upon weekly PAA Clipper flights between San Francisco and Honolulu that were subject to delays and bad weather.³⁵² As well, the sheer volume of USN radio intercepts made radio transmission rather slow. The authors also asserted that the “Winds-Execute” message was intercepted by radioman Ralph Briggs on December 2, 1941, although how such intelligence was reported remains unclear.³⁵³ Furthermore, Rusbridger and Nave criticized the extent of cooperation between the USN and both the British and the Dutch. Indeed, Washington denied the USN a PURPLE machine at Pearl Harbor, but had provided the British with three such machines by late 1941. Britain held back the Enigma machine, whereas the US gave Britain JN-25, PURPLE, and even CORAL, the cipher used by Japanese naval attachés.³⁵⁴ The authors asserted that Station Cast at Corregidor and the FECB at Singapore “were not being totally open with each” and that “the Americans in Singapore were certainly unaware until after Pearl Harbor that the British had broken JN-25.”³⁵⁵ Moreover, the Dutch at *Kamer-14* apparently penetrated several Japanese codes and shared their results on a daily basis with the British at FECB, an arrangement not extended to the USN.³⁵⁶ Finally, Rusbridger and Nave argued that Allied intelligence was not necessarily conveyed to the appropriate US authorities: FECB information “marked for repetition to CINCPAC” never

³⁵² Rusbridger and Nave, *Betrayal at Pearl Harbor*, 131.

³⁵³ *Ibid.*, 149.

³⁵⁴ *Ibid.*, 110-1.

³⁵⁵ *Ibid.*, 93-4.

³⁵⁶ *Ibid.*, 125-6, 146-7.

arrived in Hawaii, and no evidence exists showing that Roosevelt saw JN-25 or J-19 decrypts.³⁵⁷

The authors contended that Churchill denied Roosevelt important Allied intelligence that the Americans themselves failed to collect.

Yet Parker disagreed. Certainly, Parker argued that USN intelligence reporting left much to be desired: “Another cause of the Navy’s failure to read any of the Japanese navy’s codes before the war was the primitive communications facilities which existed at the time.”³⁵⁸ He explained that “The bulk of Japanese navy radio traffic and all technical exchanges except warnings . . . were sent in weekly shipments by a combination of ship and rail, which at best took weeks . . .”³⁵⁹ Even messages airmailed to the west coast had to be sent by rail to Washington. Nonetheless, Parker rejected the idea that Britain withheld information: “In view of the full collaboration and exchange with FECB, Singapore, there is no reason to believe that the British exceeded the U.S. accomplishments.”³⁶⁰ For Parker, neither Britain nor America had foreknowledge of the Pearl Harbor attack.

For Prados, USN policy defined the effectiveness of intelligence gathering in 1941. “The basic problem remained policy, however, not intelligence,” explained Prados, adding that “It is hardly surprising that, given limited resources, senior officials gave priority to the high-level diplomatic cables.”³⁶¹ Prados also noted an important exception to this priority: “A corollary intelligence policy, however, assigned the radio intelligence unit at Pearl Harbor to work

³⁵⁷ *Ibid.*, 94, 177-8.

³⁵⁸ Parker, “The Unsolved Messages,” 297.

³⁵⁹ *Ibid.*

³⁶⁰ Parker, *Pearl Harbor Revisited*, 35.

³⁶¹ Prados, *Combined Fleet Decoded*, 166.

exclusively on the Imperial Navy's Admirals' Code rather than have any role in deciphering diplomatic codes or the more widely used JN-25."³⁶² Nonetheless, Prados failed to explain why OP-20-G assigned Pearl Harbor a relatively unused code for decryption.

Stinnett, however, explained intelligence reporting and administration in revisionist terms. He contended that intelligence within the USN was exchanged with relative ease in 1941. He described USN radio-cipher networks such as COPEK and TESTM, offering some examples of the latter.³⁶³ Indeed, Stinnett was the first author to discuss TESTM: "The TESTM system was used exclusively for radio direction finder (RDF) data and could only be decoded at CAST, HYPO, or Station US in Washington."³⁶⁴ He also used Station H chronologies to demonstrate diligent intelligence reporting. For example, in November, 1941, the traffic chief at Station H used RDF and call signs to interpret the composition of the 1st Air Fleet: "He placed Destroyer Squadron One and the heavy cruiser HIMJS *Tone* with Carrier Divisions One, Two, and Five. From mid-November to December 6, this placement never changed."³⁶⁵

Stinnett made clear that despite good communications and astute analysis, commanders at Pearl Harbor were denied intelligence pointing to a Japanese attack. Hawaiian commanders were denied decryptions of the J-19 bomb plot messages intercepted by Station Five.³⁶⁶ By late November, 1941, COMSUM14s sent to Admiral Kimmel failed to report all the intelligence that Station H provided to Station Hypo – intelligence officers Rochefort and Layton were seen as

³⁶² *Ibid.*

³⁶³ Stinnett, *Day of Deceit*, 111-2, 185, 305.

³⁶⁴ *Ibid.*, 185.

³⁶⁵ *Ibid.*, 56.

³⁶⁶ *Ibid.*, 66.

culpable. As well, Admiral Kimmel and General Short failed to cooperate with each other, thus exasperating the problem. Seemingly, President Roosevelt was later cut off from direct intelligence reporting as per Lt. Cmdr. Arthur McCollum's directive, thus insuring plausible deniability.³⁶⁷ For Stinnett, intelligence concerning the Pearl Harbor attack was so good that it had to be officially suppressed so that America could enter the Second World War.

The range of possible historical interpretations, from traditionalist to revisionist, may be redefined through an assessment of USN intelligence practices in 1941. This assessment must consider how USN stations exchanged intelligence with one another as well as with their Allied counterparts, the product of such exchanges, how the USN reported and administered intelligence, and alternative explanations for the USN's management of such intelligence. This approach will reveal the extent to which foreknowledge was translated into forewarning in the period preceding the Pearl Harbor attack.

USN intelligence exchanges

An extensive data-exchange network supported USN radio intelligence activities. Evidently, the USN favoured air-freight and radio transmission for the transfer of important intelligence data in 1941. On February 21, Densford explained to Fabian that OP-20-G wanted to use registered air-mail if Station Cast's lock box (an air-cargo container used on Pan American Airways) could not accommodate the transfer of data cards. Densford continued: "I would say that every Clipper [Catalina aircraft] should carry cards to Pearl Harbor since speed is an integral part of the scheme."³⁶⁸ On July 3, Safford explained to Fabian that intercepts should be sent as

³⁶⁷ *Ibid.*, 187.

³⁶⁸ Letter dated Feb. 21, 1941, from Lt. Robert Densford, Navy Dept., Washington, to Lt. R. Fabian, Fort Mills, P.I., page 2, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

air-freight in one of three ways: lock box, microfilms sent by lock box, or registered US airmail.³⁶⁹ On October 6, Lietwiler explained to Densford that the microfilm method would be an acceptable replacement for the existing lock box system as long as delivery was less than two weeks.³⁷⁰ Nonetheless, throughout 1941, the USN usually sent intercepts on paper as air-freight.³⁷¹ However, radio networks such as TESTM and COPEK provided immediate data-transfer. For example, TESTM records show that RDF bearings were radioed across the Pacific between USN stations at Cavite, Guam, Samoa, Oahu and Dutch Harbor.³⁷² TESTM records also show that Station Cast and Station Hypo exchanged numerous identification lists of Japanese call sign changes.³⁷³ Although delays in data-transfer occurred occasionally (i.e. two weeks or more), USN stations exchanged information by air-freight and radio far more quickly than regular shipping made possible.

Nor were domestic USN stations excluded from the Pacific network. A mailgram of July 10, 1941, from COM11 to COM12 discussed how “automatic rebroadcast” equipment successfully routed traffic between San Diego and Point Loma, and suggested that this technique be applied to the existing Pacific network:

³⁶⁹ Letter dated Jul. 3, 1941. from Cmdr. L.F. Safford, Navy Dept., Washington, to Lt. R.J. Fabian, Fort Mills, P.I., 5750/5 – *NSRS Philippines. History, Corregidor Era*, RG38, Crane – Inactive Stations, 370/27/23/7, Box 18 (College Park, MD: National Archives II, MMRB).

³⁷⁰ Letter dated Oct. 6, 1941. from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 2, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

³⁷¹ For example, Station Cast told Station Hypo on Jun. 19 that “May frequency cards will be mailed next shipment.” See TESTM no. 201520. Jun. 19, 1941, 2000/1 – *NSRS Philippines, SI Genser, Msg Files*. As well, Station Cast told Station Hypo on Nov. 7 that the Japanese call sign “Identification list will be sent Air Mail.” See TESTM no. 031544, Nov. 7, 1941.

³⁷² TESTM nos. 082313 and 082327, Apr. 8, 1941; TESTM no. 051535, Sep. 5, 1941; TESTM no. 241533, Oct. 25, 1941; 2000/1 – *NSRS Philippines, SI Genser, Msg Files*.

³⁷³ TESTM nos. 021510-50, May 2, 1941; TESTM nos. 051510-50, May 5, 1941; TESTM no. 191510-40, May 19, 1941; TESTM nos. 241522-33, Nov. 25, 1941; 2000/1 – *NSRS Philippines, SI Genser, Msg Files*.

NO REASON EXISTS FOR ANY DIFFICULTY IN REBROADCASTING ON ANY FREQUENCY FROM SAN FRANCISCO WASHINGTON PEARL HARBOR OR VESSELS OF THE FLEET X ONLY LIMITATION IS POWER OF TRANSMITTERS AT PRESENT AVAILABLE X SUGGEST DAILY ONE HOUR USE IN HIGH SPEED TRAFFIC HANDLING³⁷⁴

Evidently, several radio links between various USN stations along the Pacific coast supported rapid intelligence reporting. A letter of September 30 from the 13th Naval District to OPNAV discussed the use of radio links between Puget Sound, San Francisco, San Diego, Washington and Alaska on both day and night frequencies.³⁷⁵ Although HF transmission problems sometimes occurred, ionospheric conditions usually insured reliable communications in 1941.³⁷⁶ Furthermore, some domestic USN stations used airmail when radio links became too congested. For example, in a letter of November 10, the commandant of the Puget Sound Naval Yard implored his staff to reduce “despatch traffic” by relying more upon “airmailgrams.”³⁷⁷ As well, the Naval Air Station at Sitka, Alaska, airtailed intercept reports and phonograph recordings of Japanese radio transmissions to the 13th Naval District in Seattle.³⁷⁸ Clearly, the USN depended more upon radio links and airmail than surface travel to convey important intelligence.

Yet the exchange of intelligence between USN and “Allied” intelligence units represented another level of cooperation. For example, the USN established a working relationship with

³⁷⁴ Mailgram no. 080037 dated Jul. 10, 1941, from COM11 to COM12, A6-1/A1-1, RG181.

³⁷⁵ Letter dated Sep. 30, 1941, from Commandant, Thirteenth Naval District, to The Chief of Naval Operations, A6-1/A1-1, RG181.

³⁷⁶ HF communications between the Pacific coast and Alaska suffered from interference in late November, 1941, but were fully restored by December 1. See Message dated Dec. 3, 1941, from RDO Bremerton to COM13, A6-1(2), RG181, 13th Naval District Commandant’s Office, Regular Navy Files, 1941, Entry 1, 13/12/7. Box 9 (Seattle. WA: National Archives – Pacific Alaska Region).

³⁷⁷ Letter dated Nov. 10, 1941, from Commandant, Puget Sound Navy Yard, to “All Yard Activities,” A6-1(4), RG181, 13th Naval District Commandant’s Office, Regular Navy Files, 1941, Entry 1, 13/12/7. Box 9 (Seattle, WA: National Archives – Pacific Alaska Region).

³⁷⁸ Route Slips dated Aug. 1, 5 and 25, and Sep. 29, 1941, from CO, NAS Sitka, to Staff HQ, Thirteenth Naval District, Subject: Japanese Radio Transmissions, A6-2(5), RG181.

Canadian stations in British Columbia. A report of January 24, 1941, circulated within the 13th Naval District at Seattle, discussed direct communications with the Royal Canadian Naval Dockyard at Esquimalt.³⁷⁹ Courier mail between the 13th Naval District and Canadian authorities in Victoria had been established by July 10.³⁸⁰ These links with Canadian stations were part of a wider liaison developing between America and Britain as highlighted by a report of September 5 sent from OPNAV to the 13th Naval District entitled *Interpretation of Cooperation between the United States and the British Commonwealth in the Pacific Ocean*.³⁸¹ Indeed, some evidence demonstrates that Canadian intelligence was conveyed to the USN. In a report of November 17, the commandant of the 13th Naval District received Canadian naval intelligence suggesting that the Japanese lacked “degaussing material” for the demagnetization of their ships.³⁸² Although many sources are still unavailable, it may be said that Canadian intelligence gathering, which included RDF and some cryptanalysis, complemented the activities of USN Pacific stations.

More significant intelligence, however, was received from British and Australian stations in the Far East. Code values, always an important commodity, were freely exchanged. For

³⁷⁹ Route Slip dated Jan. 27, 1941, from DCO to Chief of Staff, Staff HQ, Thirteenth Naval District, Subject: Direct communications with Royal Canadian Naval Dockyard at Esquimalt, British Columbia, Jan. 24, 1941, A16-1/A6-2, RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 2 (Seattle, WA: National Archives – Pacific Alaska Region).

³⁸⁰ Memorandum dated Jul. 10, 1941, from Guy Davis, Chief of Staff, to Heads of Departments, Staff HQ, 13ND, Subject: Courier mail to Victoria, B.C., A6-4, RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region).

³⁸¹ Route Slip dated Sep. 15, 1941, from CNO to Staff Headquarters, Thirteenth Naval District, Subject: Interpretation of Cooperation between the United States and the British Commonwealth in the Pacific Ocean, Serial no. 098512, Sep. 5, 1941, EF13, RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 8 (Seattle, WA: National Archives – Pacific Alaska Region).

³⁸² Report no. 122 dated Nov. 17, 1941, from District Liaison Officer, 13ND, to The Commandant, 13ND, A9 – *Reports and Statistics*, RG181, 13th Naval District Commandant's Office, Classified War Planning Files, 1941-42, Entry 13ND-4, 8/29/12-1, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region).

example, Station Cast received JN-25B code values from Singapore (FECB) on March 5, 1941.³⁸³ On May 28, Fabian, co-commander of Station Cast, offered Densford, an intelligence officer with OP-20-G, several JN-25B6 codes values from Singapore: “. . . if you by any chance are working on the current book we would like code values as they are ground out. We have a few more from Singapore. which we'll send very soon.”³⁸⁴ Letters sent in November between Station Cast and OP-20-G also mentioned the use of code values from Singapore. Lietwiler, co-commander of Station Cast, offered the following explanation to Parke, an intelligence officer with OP-20-G, on November 16: “With Singapore, we have adopted a system of exchanging block numbers to prevent duplication. We have more or less given them a free hand in selecting the cipher blocks they tackle on account of their more limited traffic.”³⁸⁵ Station Cast also exchanged code values with Australian cryptanalysts. On November 12, Lietwiler discussed such exchanges with Densford:

I am sorry about the mixup on the MU A YU RI business in the AD code. That makes two mistakes for our friends down under in one week. . . . Their Indicator Subtractor machine seems to be working now as we just received a list of about thirty by despatch tonight. Also, they sent three or four hundred additives each mail.³⁸⁶

USN cryptanalysts could only benefit from code values and additives received in exchange from their British and Australian counterparts.

³⁸³ Layton, et al, *And I Was There*, 93.

³⁸⁴ Letter dated May 28, 1941, from Lt. R. Fabian, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 2, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

³⁸⁵ Letter dated Nov. 16, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. L.W. Parke, Navy Dept., Washington, page 1, 3200/1 – *NSRS Philippines, Operations Summaries*.

³⁸⁶ Letter dated Nov. 12, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 3, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

Liaison with the Netherlands East Indies (NEI) also supported USN intelligence activities. At times, British intelligence sent to the USN was the product of both Britain's FECB in Singapore and the NEI's *Kamer 14* in Bandung, Java. Indeed, the FECB had a direct radio link with *Kamer 14*.³⁸⁷ Yet other times, the USN directly consulted the NEI for information. For example, in preparation for the flight of B-17 bombers to the Philippines in August, 1941, Edwin Layton was asked to furnish secret information from the NEI regarding air bases in the East Indies.³⁸⁸ Evidently, such liaisons were later officially sanctioned by the USN: on November 11, OPNAV sent a message to CINCAF requesting that "US, UK and NEI commands in the Far East area" integrate their naval plans.³⁸⁹ As well, a message from Washington to CINCAF on December 2 encouraged the fullest cooperation: "In view of existing situation CNO considers it very important that you exchange full military information with the British and Dutch Naval Commanders-in-Chief . . ."³⁹⁰ On the eve of the Pearl Harbor attack, the USN was already mandated to exchange intelligence with America's "Allies."

Diplomatic traffic provided the USN with another source of meaningful intelligence. The Japanese sent most diplomatic traffic on a "Type B cryptograph," which the Americans called PURPLE. Whereas the Japanese built 25 of these cryptographs, the Americans built eight copies to decrypt Japanese diplomatic messages. In 1941, American-made PURPLE machines were distributed as follows: the USN had two in Washington and one in Cavite, Philippines; the US

³⁸⁷ Rusbridger and Nave, *Betrayal at Pearl Harbor*, 146-7, endnote 49, 275.

³⁸⁸ Layton, et al, *And I Was There*. 149.

³⁸⁹ Message no. 110032 dated Nov. 11, 1941, from OPNAV to CINCAF, SRH-012, 155.

³⁹⁰ Message dated Dec. 2, 1941, from CNO to CINCAF, no. 012358, SRH-012, 183.

Army had two in Washington; and the British had three within their intelligence system.³⁹¹ As is well known, the American term MAGIC referred to decrypts of Japanese diplomatic traffic. Indeed, decryption of diplomatic traffic was a high priority early in 1941. In letter of February 21, the Navy Department requested Station Cast to send its diplomatic intercepts to Washington as soon as possible: “. . . send us your Red [an earlier cipher] and Purple intercepts at once, day or night, whether you can translate them or not. We will tackle them immediately on receipt, and send you the daily keys. You should proceed to crack them yourself, anyway, since the information is hot.”³⁹²

Yet the distribution of MAGIC was carefully controlled. The Hawaiian commanders, Admiral Kimmel and General Short, were deprived MAGIC intercepts after July, 1941, but by mid-November were restored to the list of the privileged few who were entitled to receive such intelligence. Within the USN, MAGIC intercepts were received by seven individuals: Admiral H.R. Stark, Chief of Naval Operations; Captain R.E. Ingersoll, Director of Naval Intelligence; Rear Admiral R.K. Turner, Chief of War Plans; Captain L. Noyes, Director of Naval Communications; Rear Admiral W.S. Anderson, Director of Naval Intelligence; Comdr. A.H. McCollum, Head of the Far East Section at ONI; and Lt. Cmdr. E. Watts, Chief of the USN's Japanese Desk.³⁹³ Frank Knox, Secretary of Navy, also received MAGIC. Many historians have emphasized the importance of MAGIC as a barometer of Japan's intention to eventually declare war on the United States, but it is clear that MAGIC alone failed to provide specific forewarning of an attack on Pearl Harbor.

³⁹¹ Rusbridger and Nave, *Betrayal at Pearl Harbor*, 80.

³⁹² Letter dated Feb. 21, 1941, from Lt. R. Densford, Navy Dept., Washington, to Lt. R. Fabian. Fort Mills, P.I., 1300/1 – *NSRS Philippines, Assignment & Distribution*.

³⁹³ Rusbridger and Nave, *Betrayal at Pearl Harbor*, 80-1.

The product of USN intelligence exchanges: foreknowledge of Japan's intentions and actions

Several intelligence sources available to the USN suggested what Japan's intentions and actions were likely to be in the north Pacific. As previously shown, USN cryptanalysts were partially reading JN-25B7 messages in late 1941. Some of these messages showed that the Japanese were planning a trans-Pacific aerial torpedo attack against capital ships anchored in shallow waters. By November, 1941, USN traffic analysts had discovered the formation of the 1st Air Fleet and had intercepted many messages addressed to the Strike Force, even before the Japanese started burying message headings within encrypted text in early November. The Mid-Pacific Strategic Direction-Finder Network combed the waters of the Pacific. Captain Ranneft, who saw ONI wall charts showing the eastern progression of Japanese carriers across the Pacific, provided credible evidence of the USN's ability to track the *Kido Butai*. Leslie Grogan and his fellow radio operators aboard the *S.S. Lurline* intercepted Japanese signals from December 1 to 3 and tracked their source in the north Pacific using RDF. Indeed, the *Lurline's* radio officers submitted a report of their findings on December 3 to Lt. Cmdr. G.W. Pease of the 14th Naval District in Honolulu. On the eve of the Pearl Harbor attack, the USN had already gathered several important pieces of intelligence concerning Japanese operations in the north Pacific. Nonetheless, other intelligence exchanges reinforced this emerging portrait of Japan's intentions and actions.

British intelligence provided important information regarding Japanese naval actions. Without doubt, many reports alluded to a Japanese advance in the south rather than the north. For example, a USN intelligence report of November 27 explained the following: "Information received from British Intelligence (Far East) sources states: Japan will commence Military Operations on 1 December against the KRA Isthmus, Thailand, with the objective of interposing

between Bangkok and Singapore.”³⁹⁴ Such intelligence reinforced the USN’s belief that a Japanese strike in the South China Sea was imminent.

Yet credible secondary sources suggest that British intelligence also revealed a trans-Pacific operation. Victor Cavendish-Bentinck, former chairman of the Joint Intelligence Committee (JIC) in Britain, later declared that the possibility of a Japanese attack on Hawaii was discussed at a JIC meeting of December 5: “We knew that they changed course. I remember presiding over a J.I.C. meeting and being told that a Japanese fleet was sailing in the direction of Hawaii, asking ‘Have we informed our transatlantic brethren?’ and receiving an affirmative reply.”³⁹⁵ William Casey, a wartime intelligence officer who later became director of the Central Intelligence Agency (CIA), confirmed that “The British had sent word that a Japanese fleet was steaming east towards Hawaii.”³⁹⁶ These quotations suggest that the British gathered RDF intelligence quite effectively. The only other explanation would be that the British intercepted diplomatic messages exchanged between Japan, Germany and Italy. Stephen Roskill, drawing upon later JIC records, offered the following assessment of Axis forewarning of Japan’s intentions: “Japs gave Germany & Italy several days warning of impending attack on Pearl Harbor. 28th Nov. Ribbentrop told Jap Ambassador Japan should ‘silently attack’ U.S.”³⁹⁷

³⁹⁴ Intelligence Report, serial no. 96, dated Nov. 27, 1941, PHLO Records. Indeed, NEI intelligence officers made similar observations on November 28. See Farago, “POSTSCRIPT,” 391.

³⁹⁵ Quoted, Richard J. Aldrich, *Intelligence and the War against Japan: Britain, America and the Politics of Secret Service* (Cambridge: Cambridge UP, 2000), 87. Aldrich quoted from C. Fitzgibbon, *Secret Intelligence in the Twentieth Century* (New York, Stein and Day, 1976), 255.

³⁹⁶ Quoted, *Ibid.* Aldrich quoted from William Casey, *The Secret War against Hitler* (New York: Simon Schuster, 1989), 7.

³⁹⁷ *Entry of Japan*, ROSKILL 4/56, *Japan – Entry into War*, Churchill Archives (Cambridge: Churchill College). I am grateful to Brian Villa for suggesting an examination of Roskill’s papers. Roskill’s remarks, based on information drawn from JIC 46/33, paragraph 83, are found on the second page of his un-paginated handwritten draft entitled *Entry of Japan*.

Whether RDF or cryptanalysis provided foreknowledge of Japan's impending attack, certain British intelligence sources seemed to be reliable.

Nor were Dutch intelligence sources any less reliable. General Ter Poorten received *Kamer 14* reports based upon traffic analysis that "showed Japanese naval concentrations near the Kuriles."³⁹⁸ *Kamer 14* intercepted a Japanese message on November 25 (found also in the *Ca Nachi Papers*) that was decrypted on November 27 and sent to Dutch naval attachés in both Singapore and Washington: the naval attaché in Washington delivered the decrypt to OP-20-G, believing it showed that a task force could be heading to Pearl Harbor.³⁹⁹ On December 4, as John Toland explained, General Ter Poorten had several reports indicating possible attacks on Hawaii and the Philippines sent to Washington military officials.⁴⁰⁰ Toland also offered the following testimony: "... during a meeting in 1943 Vice Admiral Conrad E.L. Helfrich of the Royal Netherlands Navy expressed wonder that the Americans had been surprised at Pearl Harbor. The Dutch, Helfrich said, had broken the code and knew that the Japanese were going to strike Pearl Harbor."⁴⁰¹ Helfrich also asserted that the Dutch government had forewarned the American government. With the use of cryptanalysis, RDF and submarine patrols, the NEI apparently gathered important intelligence on the eve of the Pacific War.

Regarding Japanese diplomatic traffic, MAGIC intercepts provided the USN with foreknowledge of Japan's intention to sever its relations with the United States. MAGIC

³⁹⁸ Quoted, Layton, et al, *And I Was There*, 206. This quotation is based upon a note (written in 1960) from Captain J.W. Henning, who had been second in charge at *Kamer 14* in 1941, to the Netherlands Military Archives: "... from analysis of Japanese radio traffic, it was possible to conclude from the last week of November 1941, that there were large fleet concentrations near the Kuriles."

³⁹⁹ Rusbridger and Nave, *Betrayal at Pearl Harbor*, 147.

⁴⁰⁰ Toland, *Infamy*, 290-1.

⁴⁰¹ *Ibid.*, 317-8.

intercepts have already been thoroughly examined by several historians, but just a few examples illustrate the preceding point. A message of November 15 from Tokyo to the Japanese consulate in Honolulu, translated by the USN on December 3, requested the following: "As relations between Japan and the United States are most critical, make your 'ships in harbor report' irregular, but at a rate of twice a week."⁴⁰² Tokyo addressed its Honolulu consulate again in a message of November 29 translated by the USN on December 5: "We have been receiving reports from you on ship movements, but in future will you also report even when there are no movements."⁴⁰³ These messages alone did not forecast an attack on Pearl Harbor, but suggested that surveillance of the USN Pacific Fleet was becoming increasingly important to Japan amidst growing political tensions with the United States. On December 3, OPNAV sent a message to COM16, CINCAF, COM14 and CINCPAC (Admiral Kimmel) that suggested war was fast approaching. The message, based upon MAGIC intercepts, explained that Japanese diplomatic and consular posts at Hong Kong, Singapore, Batavia, Manila, Washington and London were instructed to "destroy most of their codes at once and to burn all other important confidential and secret documents."⁴⁰⁴ Japan was ready for action in December.

Indeed, Franklin Roosevelt had already predicted that Japanese action would occur in December. Following a visit made by Lord Louis Mountbatten to the Pacific Fleet in Hawaii, Roosevelt made the following observations to Winston Churchill in a letter of October 15, 1941: "Mountbatten has been really useful to our Navy people & he will tell you of his visit to the Fleet

⁴⁰² SRH-012, 158. See also Message no. 12-100 dated Dec. 3, 1941, from OPNAV to COM16, CINCPAC, COM14 and CINCAF, PHLO Records.

⁴⁰³ *Ibid.*, 159.

⁴⁰⁴ *Ibid.*, 183.

in Hawaii. The Jap situation is definitely worse & I think they are headed North – however in spite of this you & I have two months of respite in the Far East.”⁴⁰⁵ Churchill, who later discussed Pearl Harbor in *The Grand Alliance*, wrote that Roosevelt and his senior staff “knew, earlier than we in Britain could know, the full and immediate purpose of their enemy.”⁴⁰⁶ Whether Roosevelt was privy to intelligence that demonstrated such timing or was planning to break relations with Japan in December is not clear. It is interesting, however, to note how Roosevelt viewed the Japanese situation well before the outbreak of the Pacific war.

Yet other radio intelligence suggested that war was imminent. The “Winds-Execute” message could have shown that war with Japan was coming in early December, but this source is still beyond verification. Certainly, the USN intercepted the “Winds-Set Up” message according to an intelligence report of November 28.⁴⁰⁷ If Japan went to war with the United States, then a weather message that included the phrase *Higashi no kaze ame*, or “East Wind, Rain,” would be broadcasted. Laurance Safford later testified in the Congressional Hearings that he had seen copies of the “Winds-Execute” message before the attack on Pearl Harbor. Radioman Ralph Briggs later declared that he had intercepted the “Winds-Execute” message on December 2 at Station M, a USN intercept station located in Maryland.⁴⁰⁸ Nonetheless, when Briggs later checked USN records in 1960, he found that his original intercept was missing. Quite simply,

⁴⁰⁵ Letter dated Oct. 15, 1941, from Franklin D. Roosevelt to Winston Churchill. CHAR 20/20/38-9, Churchill Archives (Cambridge: Churchill College). This letter is also quoted in Loewenheim, et al, *Roosevelt and Churchill*, 162. Indeed, Mountbatten, during his visit to Pearl Harbor, warned Admiral Stark that the USN Pacific Fleet was prone to aerial attack and should be better defended. See Richard Hough, *Mountbatten*, c. 1980 (New York: Random House, 1981), 135, 142-3.

⁴⁰⁶ Churchill, *The Grand Alliance*, 603.

⁴⁰⁷ Intelligence Report no. 97 dated Nov. 28, 1941, PHLO Records.

⁴⁰⁸ Toland, *Infamy*, 195-8.

there is no documentation presently available to corroborate the testimonies offered by Safford and Briggs.

However, documentation does exist to show that the USN intercepted certain Japanese consular messages sent from Hawaii to Tokyo. For example, “bomb plot” messages encrypted in J-19, a Japanese consular code, were sent from Honolulu to Tokyo in August and September of 1941. These messages provided Tokyo with a grid of Pearl Harbor and were intercepted by USN and US Army radio stations.⁴⁰⁹ Stinnett reproduced a copy of one such message that had been translated by the USN on October 10.⁴¹⁰ Apparently, these messages were never made available to Admiral Kimmel and General Short. Furthermore, the USN not only intercepted Japanese consular traffic sent by “radiograms,” but also later received direct copies of any such messages sent by the Radio Corporation of America (RCA). On November 14, David Sarnoff, president of RCA, agreed to allow Captain Irving Mayfield, District Intelligence Officer of the 14th Naval District in Hawaii, access to all Japanese consular traffic sent through RCA.⁴¹¹ Therefore, by late November the USN intercepted Japanese consular messages by both radio and direct recovery. Given that most of these messages were encrypted in PURPLE, the USN had a ready source of readable Tokyo-Honolulu consular traffic.

Evidently, the USN collected a variety of meaningful intelligence in 1941. Cryptanalysis, traffic analysis, “Allied” intelligence exchanges, and diplomatic traffic collectively suggested that Japan was going to war with the United States and that Pearl Harbor was a possible target. What

⁴⁰⁹ Stinnett, *Day of Deceit*. 103.

⁴¹⁰ *Ibid.*, 104.

⁴¹¹ George Street, RCA’s district manager in Hawaii in 1941, later explained the Sarnoff-Mayfield agreement to Ladislav Farago. See Farago, “POSTSCRIPT,” 396-8.

did the USN do with this intelligence? To what extent was this intelligence conveyed to the Hawaiian commanders? It is necessary to determine how much of this foreknowledge was translated into forewarning.

How the USN reported and administered intelligence

The reporting and administration of intelligence within the USN was not always conducted with the greatest efficiency or clarity. Assuredly, intelligence gathered by the Federal Communications Commission (FCC) was not welcome in Safford's OP-20-G. On February 5, 1941, Safford told OP-20-E that "The War and Navy Departments are not putting any dependence on the F.C.C. for the interception of radio traffic . . ." ⁴¹² Regarding delays in reporting, Wohlstetter explained that "The longest delay recorded in the Congressional hearings is 54 days between interception and translation." ⁴¹³ Inconsistency plagued intelligence reporting at USN Pacific stations. At Station Cast, good communications were maintained with Admiral Hart, CINCAF, but not with OP-20-G. On August 30, Fabian offered Safford the following explanation: "Cooperation with CinCAF and the district has been splendid except in certain isolated cases. Admirals Hart and Bemis have been out many times, and have always been very pleased at our results. We sent both the daily mail and my important summaries." ⁴¹⁴ Yet on November 1, Lietwiler told Densford that "Fabian asked me to mention the fact that he has

⁴¹² Memorandum dated Feb. 5, 1941, from Cmdr. L.F. Safford to OP-20-E, SRMN-007, Japanese Espionage Activities in the United States, 1941-1943, RG457, SRMN Series, 190/36/12/7, Entry 9020, Box 1 (College Park, MD: National Archives II. MMRB), 24. Indeed, Safford also emphasized the separation of duties between the FCC and the armed forces in a memorandum of October 29, 1941. See pages 32 and 34.

⁴¹³ Roberta Wohlstetter, "Cuba and Pearl Harbor: Hindsight and Foresight," *Foreign Affairs* (Jul. 1965): 698.

⁴¹⁴ Letter dated Aug. 30, 1941, from Lt. R. Fabian, Fort Mills, P.I., to Cmdr. L. Safford, Navy Dept., Washington, page 3, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

received no comment on the weekly summaries. although he asked for same by official letter.”⁴¹⁵

At Station Hypo, Rochefort was directed to make daily plots of all US and Japanese ship movements *except* those of Japanese naval vessels – an almost bizarre directive considering Rochefort’s position as head of the Combat Intelligence Unit.⁴¹⁶ Furthermore, the USN seemingly ignored Grogan’s *Lurline* log and its important RDF bearings: the USN later claimed that it had no record of the incident.⁴¹⁷ Finally, on the morning of December 7, Station Hypo lost the telephone link to its RDF station at Lualualei when the US Army disabled the line during the Japanese air attack for security reasons.⁴¹⁸

Although USN radio intelligence had the potential to provide forewarning of the Pearl Harbor attack, reporting remained unclear or contradictory. Stations Cast and Hypo failed to correctly report the position of the Strike Force during the critical months of November and December. On November 27, 1941, COM16 (Station Cast) reported on stray Japanese forces to CINCPAC, COM14, OPNAV and CINCAF: “It is impossible to confirm the supposition of reference report[s] that carriers and submarines are in the Mandates. The best indications are that all known First and Second Fleet Carriers are still in Sasebo-Kure area.”⁴¹⁹ Yet Station Hypo disagreed. On November 26, COM14 (Station Hypo) reported the following to OPNAV,

⁴¹⁵ Letter dated Nov. 1, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Densford, Navy Dept., Washington, page 2, 1300/1 – *NSRS Philippines, Assignment & Distribution*.

⁴¹⁶ Memorandum dated Sep. 23, 1941, from Lt. Cmdr. J.J. Rochefort to Fleet Intelligence Officer [E. Layton], PHLO Records.

⁴¹⁷ Lucy Jokiel, ed., “Something is Going to Happen.” *Ampersand* (Winter 1991): 10-1. This article also mentions that the Dept. of Defense told a reporter in 1966 that Grogan’s log “had been destroyed after being transferred to the Federal Communications Commission.”

⁴¹⁸ Wesley A. Wright Testimony, May 5, 1944, *Hearings*, part 26, 417.

⁴¹⁹ COM16 no. 261331, Nov. 27, 1941, SRH-012, 172-3.

CINCPAC, CINCAF and COM16: "It is thought that a strong force of submarines and air groups are in the vicinity of the Marshall Islands. . . . a strong force may be preparing to operate in Southeastern Asia while component parts of the Task Force may operate from the Marshalls and Palao."⁴²⁰ As well, although bearings (i.e. TESTM) indicated that the Japanese carriers were in home waters near Kyushu, USN intelligence authorities claimed they had "lost" the carriers by late November because they knew about the Japanese deception. Indeed, COMSUM14s sent to Admiral Kimmel in the first week of December failed to explain the whereabouts of the carriers. For example, the COMSUM14 for December 2, a date on which the *Kido Butai* was still transmitting "repeat-back" messages on 375 kHz, reported the following: "Almost a complete blank of information on the Carriers today. . . . it is evident that carrier traffic is at a low ebb."

Moreover, any intelligence concerning the Strike Force was infrequently or belatedly reported. It should be noted that Station Hypo's records must be consulted because the records of other USN stations are either unavailable or non-existent. For example, Station Cast's records for November and December, 1941, have not been made available. Parker, an NSA historian, provided proof that Station Cast produced daily intelligence summaries in *Pearl Harbor Revisited*: "It was not until October 1941 that Station C's technical reports began to appear as daily intelligence summaries."⁴²¹ Furthermore, the intelligence records of the 13th Naval District are incomplete, although this USN base in Seattle produced movement reports and weekly

⁴²⁰ COM14 no. 260110, Nov. 26, 1941, SRH-012, 170-1. See also COMSUM14, Nov. 23, 1941.

⁴²¹ Parker, *Pearl Harbor Revisited*, 39.

intelligence summaries in late 1941.⁴²² Nonetheless, Station Hypo's reports are important to consider because they constitute much of the intelligence made available to Admiral Kimmel in late 1941.

Station Hypo's COMSUM14s offered very little information regarding the Strike Force. Only one COMSUM14, dated October 22, mentioned the possibility of a Japanese screening manoeuvre staged from the Kurile Islands, amongst other locations. The only COMSUM14 that possibly outlined the organization of the "Task Force" is the one for October 23, but this report has been censored.⁴²³ However, the COMSUM14 for October 29 explained: "the areas of operations of the various forces as outlined in the summary of 23 October is substantially correct." Curiously, COMSUM14s following October 23 did not include bearings or positions as did many previous reports. Layton, as previously mentioned, presented daily intelligence reports to Admiral Kimmel that included Rochefort's COMSUM14 and Layton's own "disposition chart," or "location sheet," which showed Japanese naval movements.⁴²⁴ Perhaps these naval movements were later produced on a separate sheet for security reasons. Nonetheless, Station Hypo did not identify the "Task Force" as the 1st Air Fleet until November 3, when its

⁴²² For examples of such reporting within the 13th Naval District see: Route Slip dated Dec. 1, 1941, from ComScoFor to Staff HQ, Thirteenth Naval District, Subject: Movement Reports, Serial no. 0923, Nov. 15, 1941, FF1/A2-11, RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 8 (Seattle, WA: National Archives – Pacific Alaska Region); and Weekly Summary, No. 7, dated Nov. 26, 1941, A8-2, RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region).

⁴²³ Indeed, several important Japanese dispatches have been cut off from the "China" section of the COMSUM14 for October 23. For another explanation of how COMSUM14s have been censored in other file groups (i.e. PHLO, RG80, Box 41), see Stinnett, *Day of Deceit*, 207-8, and footnote 31, 347. A USN intelligence report of Nov. 26, 1941, discussed the organization of the Japanese fleet as analyzed by a "reliable source." The report, however, has been censored: the second page is cut off where the location of the Japanese vessels was revealed. See Intelligence Report no. 94 dated Nov. 26, 1941, PHLO Records.

⁴²⁴ Layton, et al, *And I Was There*, 183, 237. Evidence of the use of separate location sheets is found on page 1 of the COMSUM14 for October 27, 1941: "A survey of the past few days [*sic*] traffic and location sheets reveals the definite association of certain naval auxiliaries with several component parts of the Combined Fleet."

COMSUM14 reported this force as “an entirely new organization of the Naval Air Forces.”

Evidently, Station Hypo did not associate its recent find with the one that Station Cast had made as early as April 11. Until November, USN intelligence personnel variously referred to the 1st Air Fleet as the “Fleet-Air Group,” “Carriers Squadron,” “Airrons Combined Fleet,” “Combined Fleet.” or “Task Force.”

Of course, stray references to key vessels and commands did occur. The COMSUM14 for November 16 correctly identified a portion of the Strike Force: “Commander in Chief, Second Fleet will be in command of a large Task Force comprising the Third Fleet, Combined Air Force, some Carrier Divisions, and Battleship Division Three.”⁴²⁵ The COMSUM14 for November 30 reported an exchange of calls between the *Akagi* and several *Maru* vessels but failed to provide positions. Unfortunately, most reports were too incomplete to be definitive.

Admiral Kimmel proceeded as cautiously as he could despite the inconclusive reports he received from the USN intelligence network. Kimmel issued a report on November 5 entitled *Aircraft Depth Bomb Alert Watch* and circulated this report throughout the Pacific Fleet. Indeed, the 13th Naval District in Seattle received this report on December 4.⁴²⁶ Clearly, Kimmel wanted to protect his fleet from aerial attacks. He also advocated the full use of radar equipment. In a memorandum to the Pacific Fleet dated November 17, as previously mentioned, Kimmel requested that all personnel trained in radar be employed on radar systems wherever possible, and

⁴²⁵ Zacharias, *Secret Missions*, 258.

⁴²⁶ Route Slip dated Dec. 4, 1941, from CINCPAC to Staff HQ, Thirteenth Naval District, Subject: Aircraft Depth Bomb Alert Watch, Serial no. 01765, Nov. 5, 1941, FF1/A2-11, RG181, 13th Naval District Commandant's Office, Classified Central Subject Files, 1934-41 (514955-61), 8/29/11, Box 8 (Seattle, WA: National Archives – Pacific Alaska Region).

that their “whereabouts be known at all times.”⁴²⁷ Only the “North Pacific Vacancy Order” of November 18 limited Kimmel’s ability to reconnoitre the ocean waters north of Pearl Harbor. As OPNAV directed: “. . . until international conditions on and subsequent to November 25 become defined and clarified, any further direct or Great Circle routing between Hawaii and Philippines should not repeat not be used. Until further advised by the Department, routes south of Mandates should be used.”⁴²⁸ This order may have prevented an open confrontation with Japan in the north Pacific, but it seriously limited Kimmel’s ability to defend Pearl Harbor.

Seemingly, the USN followed Washington directives and subordinated naval defence to political expediency. Certainly, war warnings were issued to the Pacific commanders. In an intelligence report dated November 25, OPNAV warned that Japan “may make a surprise aggressive movement in any direction, including an attack on the Philippines or Guam. . . . Senior Army Officers in the Far East, Pacific and West Coast areas (including Panama) have been informed.”⁴²⁹ Nevertheless, Pacific commanders were ordered to allow Japan to strike first in the event of war. Admiral Stark’s war warning of November 28 explained the following to Pacific commanders:

IF HOSTILITIES CANNOT REPEAT NOT BE AVOIDED THEN THE UNITED STATES DESIRES THAT JAPAN COMMIT THE FIRST OVERT ACT X THIS POLICY SHOULD NOT REPEAT NOT BE CONSTRUED AS RESTRICTING YOU TO A COURSE OF ACTION THAT MIGHT JEOPARDIZE YOUR DEFENCE X PRIOR TO HOSTILE JAPANESE ACTION YOU ARE DIRECTED TO UNDERTAKE SUCH RECONNAISSANCE AND OTHER MEASURES AS YOU DEEM NECESSARY BUT THESE MEASURES SHOULD BE CARRIED OUT SO AS NOT REPEAT NOT TO ALARM CIVIL POPULATION OR DISCLOSE

⁴²⁷ Memorandum dated Nov. 17, 1941, Serial no. 2626, from CINCPAC to Pacific Fleet, Subject: *Personnel Specially Trained in Radar*, FF1-1/A2-11, RG181, 13th Naval District Commandant’s Office, Regular Navy Files, 1941. Entry 1, 13/12/7, Box 61 (Seattle, WA: National Archives – Pacific Alaska Region).

⁴²⁸ Message no. 181705 dated Nov. 18, 1941, from OPNAV to CINCPAC, CINCAF, COM12, and COM14, SRH-012, 160.

⁴²⁹ Intelligence Report no. 92, Nov. 25, 1941, PHLO Records.

INTENT . . . UNDERTAKE NO OFFENSIVE ACTION UNTIL JAPAN HAS COMMITTED AN OVERT ACT⁴³⁰

Stark's "do – don't" message placed Kimmel in an awkward position. Kimmel had the responsibility of defending Pearl Harbor, but not the authority to adopt full defensive measures.

The USN also deprived Kimmel of important intelligence concerning Japan's intentions and actions. Where were British and Dutch warnings about Japanese vessels steaming east? ONI personnel discussed their wall chart with Captain Ranneft – why not Kimmel? At the very least, Grogan's December 3 report could have been shared with Kimmel. Furthermore, Stark failed to inform Kimmel in a timely way of Japan's fourteen-part diplomatic message, in which Japan stated that its diplomatic relations with the United States would be severed at 1 PM, December 7, Washington time, or 8 AM Hawaiian time. Stark could have given Kimmel several hours' notice of this deadline because the original message had already been intercepted, decrypted and translated a half day before Japanese diplomats presented their official copy to Cordell Hull.⁴³¹ In this situation, Pearl Harbor was a sitting duck. Why? This control of information demands further explanation.

Alternative explanations for USN intelligence reporting and administration

Only gross neglect or careful design may be offered as explanations as to why the USN reported intelligence in this manner. The Pearl Harbor attack could *not* have been a complete surprise to *every* member of the USN. Foreknowledge failed to become forewarning. Gross neglect may have prevented the Hawaiian commanders from receiving sufficient forewarning.

⁴³⁰ Stinnett, *Day of Deceit*, 284-5.

⁴³¹ Henry C. Clausen and Bruce Lee, *Pearl Harbor: Final Judgement* (New York: Crown Publishers, 1992), 215-7.

Overly security-conscious intelligence officers may have jealously guarded important information within the labyrinth of bureaucratic quarters, thinking that the task of disseminating such information fell to others. Certain intelligence may have been ignored because it conflicted with presumptions about Japan's intentions in Southeast Asia. Alternatively, the control of relevant intelligence could have been the product of careful design on the part of Washington. Roosevelt was committed to war with Japan and wanted Japan to commit the first overt act. Indeed, Stark's war warning, one that permitted a Japanese first strike on American targets in the Pacific, was merely one expression of a greater political design. Both explanations now require further analysis.

Gross neglect may have resulted from a Navy Department embroiled in personal conflict and departmental power struggles. Evidently, a feud developed throughout 1941 between three sections of OPNAV: the Office of Naval Communications (ONC) or OP-20, the Office of Naval Intelligence (ONI) or OP-16, and the War Plans division or OP-12. Admiral Stark, Chief of Naval Operations (CNO), had decided as early as November, 1940, that the Director of Naval Communications (DNC) had to rely upon the Director of Naval Intelligence (DNI) for the evaluation and dissemination of intelligence.⁴³² In other words, any naval intelligence gathered by OP-20-G had to be handed over to ONI for further action. Rear Admiral L. Noyes, DNC at OP-20, was already competing with Captain T.S. Wilkinson, DNI at OP-16, for the control of naval intelligence by late 1941. Further complications arose as Rear Admiral R.K. Turner, Director of War Plans at OP-12, continued his personal crusade to usurp the authority of both OP-20 and OP-16 in an attempt to control naval intelligence. Turner had no written authority

⁴³² Layton, et al, *And I Was There*, 95-6.

from Stark to circumvent procedures enshrined in the ONC staff manual, but had an “understanding” with both Stark and Rear Admiral R.E. Ingersoll, Assistant Chief of Naval Operations.⁴³³ This triumvirate permitted Turner to dominate both Noyes and Wilkinson in Turner’s quest to control important intelligence amidst ever increasing security. Indeed, even Roosevelt was temporarily deprived MAGIC for security reasons. According to Edwin Layton, Turner “not only had access to the daily Magic summaries, but insisted on reviewing all operational intelligence sent to us at Pearl Harbor.”⁴³⁴

Yet some staff within the Navy Department protested at the lack of warning provided to Hawaii. Captain Arthur McCollum, head of the ONI Far East desk within OP-16, tried unsuccessfully to moderate tensions at the Navy Department, and send more warning to Hawaii.⁴³⁵ On November 24, however, McCollum did manage to have intelligence gathered in Hawaii sent on to COM16 at Cavite for further evaluation so that COM16 could produce more comprehensive intelligence reports for both Hawaii and Washington.⁴³⁶ Nonetheless, Washington provided insufficient forewarning to Hawaii. Departmental rivalry and personal conflict may have caused important intelligence to be overly protected in a bid for information control. Misunderstandings may have risen over who was responsible for intelligence reporting. There remains a possibility, however remote, that USN intelligence was so compartmentalized and guarded, for reasons of either security or personal gain, that the information chain linking intelligence gathering to both evaluation and dissemination was irreparably broken. Under such

⁴³³ *Ibid.*, 98-101.

⁴³⁴ *Ibid.*, 140.

⁴³⁵ *Ibid.*, 143. See also Toland, *Infamy*, 62-3, 74.

⁴³⁶ Stinnett, *Day of Deceit*, 187.

conditions, forewarning of the intended attack on Pearl Harbor would never reach the men on Battleship Row.

Gross neglect may also have contributed to the inaccuracy of the intelligence collected in Hawaii itself. Rochefort's Station Hypo was directed to track Japanese merchant vessels rather than naval vessels even though Hypo was the centre of communications intelligence within the 14th Naval District. This situation made Admiral Kimmel even more dependent upon outside intelligence sources. OP-20-G requested that Rochefort commit his many cryptanalytic resources to the solution of the infrequently used Japanese Navy Flag Cipher or AD code. Rochefort's team were not permitted to decrypt JN-25B, which carried the bulk of Japanese naval traffic. Furthermore, other sources of intelligence may not have been taken seriously. Evidently, the 14th Naval District did nothing with Grogan's RDF intelligence report of December 3. Lt. Cmdr. G.W. Pease, who received the report, would have surely reported this intelligence to his commanding officer, Captain Irving Mayfield, District Intelligence Officer for the 14th Naval District. Mayfield, as well as any naval officers with whom he shared this intelligence, may have considered Grogan's report as unreliable. Such neglect remains a possibility.

Disbelief that Japan would consider striking Hawaii before Southeast Asia may have also caused certain intelligence reports to be ignored. Richard Aldrich recently offered this explanation: "Across London and Washington in 1941, there was a developing consensus that the Japanese would attack South East Asia – either Thailand, the Philippines or one of the European colonies. . . . Above all, leaders tend to reject information that does not fit an already established pattern of presumptions about likely enemy behaviour."⁴³⁷ In this latest variation of Wohlstetter's thesis, strategic analysis eclipses even the most blatant warnings of an adversary's

actions. Decision-makers committed to a particular strategic view may ignore “signals” that soar well above the background “noise.” It is possible that USN decision-makers rejected information concerning Japan’s actions in the north Pacific because they so fervently believed that Japan would first strike Southeast Asia.

Careful design on the part of Washington is the only other explanation for the lack of forewarning provided to the Hawaiian commanders. Again, the Pearl Harbor attack could not have been a complete surprise to every single member of the USN given the wide range of intelligence sources. OPNAV may have received instructions from Roosevelt and his senior staff to clear all intelligence releases with them first. Roosevelt’s team may have been so desperate to enter the war for greater geopolitical aims that a Japanese first strike was deemed necessary. Given that few military or naval commanders were likely to “fall on their swords” and knowingly sacrifice the welfare of their men as a political expedient, any intelligence forecasting Japanese intentions and actions would have had to be carefully controlled. OPNAV would have had to control information derived from cryptanalysis, traffic analysis and “Allied” intelligence exchanges by centralizing the functions of evaluation and dissemination. Hence, even USN radio circuits such as TESTM or COPEK would have had to be controlled and monitored, lest any intelligence suggesting an aggressive Japanese action become inconveniently available. War warnings would have had to come directly from OPNAV through select bureaucratic channels such as CNO, DNC, DNI or the Director of War Plans.

Intelligence operations in Hawaii would have also required careful management. As Station Hypo was conveniently directed to track only Japanese merchant vessels, Kimmel would have received information concerning the location of Japanese naval vessels through controlled

⁴³⁷ Aldrich, *Intelligence and the War against Japan*, 83-4.

intelligence channels. For example, OPNAV could have supplied edited versions of naval intelligence reports to Hawaii. As well, Hawaii was conveniently dependent upon Station Cast's JN-25B decrypts because OP-20-G directed Station Hypo to work on the infrequently used AD code. In late 1941, Station Cast read enough current JN-25B7 traffic "to keep two translators very busy" while OP-20-G continued to decrypt outdated JN-25B6 traffic. Unlike Station Hypo, Station Cast likely read message addresses even after the Japanese began burying their addresses within encrypted message texts in early November. Hence, intelligence gathered by Station Cast would have been first sent to OPNAV for processing to prevent Hawaii from receiving sufficient forewarning of a Japanese trans-Pacific raid. Furthermore, intelligence officers in Hawaii would have been requested to report any locally gathered intelligence directly to OPNAV rather than Kimmel or Rear Admiral Claude Bloch, Commandant of the 14th Naval District. In this manner, stolen Japanese codebooks or stray RDF reports (such as Grogan's) could be independently assessed by OPNAV.

If the Pearl Harbor attack owed some of its success to Washington's careful planning, this is not to say that Washington anticipated such a devastating attack from the Japanese. Some military personnel were sure that Japan was an inferior power and quite unable to pose a serious threat to either American or Allied targets. The District Liaison Officer of the 13th Naval District expressed this belief to his Commandant in an intelligence report dated November 17, 1941, that was based upon Canadian sources:

[The Japanese Air Force] has been improved considerably, probably under German instructors. Fighter planes are definitely poor. There are huge bombers which look good but appear to be slow. The difference between the Japanese Air Force and the U.S. Air Force at Honolulu was most marked. The Japanese Air Force could

not stand up against the U.S. or British. . . . Japan has no inventive genius. Everything must be copied. With the necessary plans and blueprints Japan is able to produce good material . . .⁴³⁸

It is possible that the Roosevelt administration also harboured these views. What threat were the Japanese to the USN Pacific Fleet at Pearl Harbor, a powerful naval base complete with fighter aircraft support? The Roosevelt administration likely accepted that some small price would be paid to defeat American isolationism and enter the Second World War, but probably never believed that the cost of Japan's attack on Pearl Harbor would be so high. If the events of December 7, 1941, were a product of Washington's careful design, then Pearl Harbor was an American "war wish" that had gone too far.

Under these conditions, the Hawaiian commanders would have to pay for Japan's success. Blaming Kimmel and Short for Japan's attack would deflect criticism of Washington's practices. In the revisionist model, Washington's intelligence coup would be kept not only from the American public, but also from the intelligence community at large. The inherent fragmentation of information within any secure intelligence system would have prevented most intelligence staff from fully understanding the situation. The Hawaiian commanders would be portrayed as sentries who had failed in their duties. Obviously, the Hawaiian commanders would also have been denied comprehensive intelligence, given that they would have never jeopardized their men's welfare for the sake of any political expedient imposed by Washington. It must suffice to say that Kimmel and Short were going to be held accountable for almost any outcome at Pearl Harbor.

⁴³⁸ Report no. 119 dated Nov. 17, 1941, from Glenn Howell, District Liaison Officer of 13ND, to Rear Admiral C.S. Freeman, Commandant 13ND, pages 2-3, A9 – *Reports and Statistics*, RG181, 13th Naval District Commandant's Office, Classified War Planning Files, 1941-42, Entry 13ND-4, 8/29/12-1, Box 1 (Seattle, WA: National Archives – Pacific Alaska Region).

Conclusion

Our present understanding of USN intelligence reporting before the Pearl Harbor attack limits the range of possible historical interpretations. Cryptanalysis, traffic analysis and intelligence exchanges with friendly powers collectively insured foreknowledge of Japan's intentions and actions in the north Pacific. Given that Japan's impending attack could not have been a complete surprise to every single member of the USN, viable interpretations of this event must consider either gross neglect or careful design as the reason for Hawaii's lack of preparation on December 7, 1941. A variation of Wohlstetter's thesis is viable *if* it is accepted that certain "signals" prevailed over the surrounding "noise," but were ignored because of bureaucratic dysfunction or inaccurate strategic presumptions. In 1962, Wohlstetter was not aware of JN-25B7 decrypts or RDF bearings taken on the *Kido Butai*, but her analysis of the decision-making process is still valid. Until it is proven conclusively that Washington accepted incoming intelligence and believed an attack on Hawaii was imminent, but chose not to act, variations of Wohlstetter's thesis will find currency in Pearl Harbor historiography.

However, any traditionalist interpretation not accepting that USN radio intelligence provided foreknowledge of the impending attack must be categorically rejected. The interpretations offered by Kahn, Farago (prior to his postscript), Layton, Rusbridger and Nave, Parker and Prados must be rejected for this reason. Certain authors, however, require special mention. Layton correctly explained how feuding in the Navy Department undermined intelligence operations, even though he maintained that specific forewarning of the Pearl Harbor attack was not possible. Rusbridger and Nave incorrectly asserted that only the British intelligence service enjoyed foreknowledge of the Pearl Harbor attack – USN intelligence was just as conclusive. Prados correctly stated that *policy* impeded USN intelligence operations more

so than technical ability. Without doubt, poor resources did *not* prevent the USN from gathering sufficient radio intelligence to predict the attack.

Ultimately, our present understanding of USN intelligence reporting best supports the revisionist position. Toland and Stinnett offered interpretations of intelligence reporting that are consistent with the evidence: careful design prevented foreknowledge from becoming forewarning. Of course, neither author produced conclusive evidence demonstrating the extent of culpability in Washington. Toland only implied that Roosevelt devised a “Pearl Harbor blackout” to unify the American public and enter the Second World War. Stinnett went even further by suggesting which USN personnel were culpable for this plan, but only offered circumstantial evidence. Yet the geopolitical situation that Roosevelt faced in late 1941 suggests that he had reason to tolerate a Japanese strike on an American target. The particular way in which USN radio intelligence was reported on the eve of the Pearl Harbor attack suggests that the revisionist thesis is more plausible than traditionalist interpretations. The task remains to verify this assertion when more evidence becomes available.

5. Conclusion:

Pearl Harbor Redefined

Roosevelt's increasingly interventionist outlook has formed a compelling context for American suspicions that Roosevelt enjoyed forewarning of Pearl Harbor, but chose not to act. For some this offered a plausible alternative school to rival the orthodox ideas that either scandalous incompetence by a few, or general bureaucratic dysfunctionality, had allowed the Japanese to achieve a genuine surprise attack.

Richard J. Aldrich.⁴³⁹

Our present understanding of USN radio intelligence in 1941 raises certain questions that merit further discussion. In a technical sense, the capability of radio intelligence within the USN Pacific network is rather clear. Radio intelligence allowed Japan's intentions and actions to be monitored, although reporting remained contradictory. USN cryptanalysis had progressed well enough by late 1941 to permit the partial reading of Japanese naval messages, some of which revealed the existence of a Strike Force and others of which pointed to a trans-Pacific raid. Traffic analysis, comprising direction finding, signals analysis and address reading, allowed the USN to understand Japanese ship movements, frequency usage, call signs and naval organization. Intelligence exchanges with Allied powers or civilian entities such as the *S.S. Lurline* provided the USN with enough information to search for the *Kido Butai*, if the USN was not already doing so with its myriad of intercept stations. The British, the Dutch and the radio officers of the *Lurline* all warned of Japanese vessels heading east across the Pacific. Yet Hawaii failed to receive adequate forewarning of the intended attack on Pearl Harbor.

If gross neglect prevented Hawaii from receiving suitable forewarning, then historians must treat Pearl Harbor as an exercise in behavioural science and explain how such a complex

⁴³⁹ Aldrich, *Intelligence and the War against Japan*, 68.

intelligence system was undermined. Within this line of inquiry, any variables adversely affecting the decision-making process must be assessed. Interpersonal and interdepartmental rivalry, command hierarchy, communications structure, bureaucratic organization and strategic outlook are all variables to be considered. Any combination of these variables could have prevented gathered intelligence from being adequately evaluated and disseminated by people, departments or institutions entrusted with these responsibilities.

In this latest variation of Wohlstetter's thesis, the decision-making process in Washington was so undermined by human foibles that even the most *blatant* warnings of Japan's intended attack on Pearl Harbor were ignored. Decision-makers may not have received the appropriate "signals" because security-conscious intelligence officers harboured and compartmentalized such information. In this instance, strong "signals" were fragmented and obscured by bureaucratic "noise." The feud in the Navy Department over control of intelligence would have hastened fragmentation of important information. Admiral Turner of War Plans circumvented normal channels of communication between OPNAV, ONC and ONI by boldly forging alliances with OPNAV, thus altering the flow of intelligence. Alternatively, decision-makers ignored "signals" heralding Japan's attack because they were committed to strategic views that precluded the very possibility of a first strike on Hawaii. Key individuals or entire departments may have embraced these views. Indeed, a consensus in strategic outlook may have been perpetuated by any combination of strong leadership, shared rationalization or fear of ostracism. Throughout 1941, several American and British intelligence groups believed that Southeast Asia was the immediate goal of Japanese aggression. Finally, individuals or departments may have continued rejecting "signals" that conflicted with dearly held presumptions as they sought to defend their reputations. Officials denying reality could forestall any accountability for past decisions. A Navy

Department embroiled in personal conflict may have allowed emotions to transform reality on the eve of the Pearl Harbor attack.

But to what extent did Washington neglect sound information? This question is best answered by considering what pieces of intelligence had to be neglected to result in an information blackout in Hawaii: relevant intelligence gained from JN-25B decryption; the “bomb-plot” messages sent between Hawaii and Tokyo; RDF reports from key USN and Allied stations; corroborative traffic analysis; British and Dutch warnings of carrier movements in the north Pacific; the *S.S. Lurline*’s report concerning Japanese coded “repeat-back” transmissions from the north Pacific; and Japan’s message declaring relations with the United States to be terminated on December 7, 1941, at 8 AM, Hawaiian time. If the Hawaiian commanders were deprived all this intelligence by virtue of Washington’s gross neglect, then surprise at Pearl Harbor resulted from an intelligence failure of monumental proportions.

Careful design is the only other explanation for why the Hawaiian commanders failed to receive suitable forewarning. If this thesis is correct, then historians must treat Pearl Harbor as an exercise in political history to explain why American interventionists were compelled to defeat domestic isolationism through the clandestine control of intelligence. Such a thesis demands a thorough study of intelligence reporting, geopolitical conditions and the American political structure. Within this line of inquiry, Washington controlled intelligence gathered from both American and Allied sources while establishing plausible deniability. Furthermore, Roosevelt and his advisors, seeking to lead an undivided America into the global conflict, planned for a war with Japan initiated by a Japanese first strike against an American target. The revisionist thesis suggests certain patterns of behaviour that require further consideration.

In the revisionist model of Pearl Harbor, important intelligence regarding Japan's intentions and actions was covertly channelled through Washington or its agents in the Pacific. OPNAV had to exert great control over USN radio intelligence, the principal source of information. OPNAV centralized the processes of evaluation and dissemination while carefully allocating responsibility for intelligence gathering throughout the Pacific. Hawaii's cryptanalysis resources, the greatest of any American installation in the Pacific, were squandered on an infrequently used Japanese code. Decryption of the principal Japanese naval code, JN-25B, was assigned to the Philippines, far from Hawaii. Any JN-25B decrypts from the Philippines were sent to Washington for evaluation. Hawaii was not only denied a PURPLE machine to monitor Japanese diplomatic traffic, but also denied MAGIC intercepts from July to mid-November, 1941, the period when Japanese-American relations declined dramatically. Although Hawaii was the centre of the USN's direction finding network, OPNAV assigned Hawaii's traffic analysts the task of only tracking merchant vessels. OPNAV made other USN stations responsible for tracking Japanese naval vessels and vetted any RDF reports sent to Hawaii. Hence, important naval intelligence gained from both cryptanalysis and traffic analysis of relevant Japanese transmissions was gathered, evaluated and disseminated far from Hawaii. Any reports from Allied sources were also denied to Hawaii. The Pearl Harbor blackout was complete.

But what of plausible deniability? If the revisionist model is correct, then the magnitude of such deception required the fabrication of several excuses for later public consumption. By mid-November, Hawaii began receiving a limited number of MAGIC intercepts to demonstrate that Washington was not denying information. The "North Pacific Vacancy Order," which was meant to invite a Japanese attack, was portrayed as a means of protecting American shipping. Hawaii's aircraft carriers were spared destruction by being sent out as freighters prior the attack,

but this plan was presented as a viable means of delivering fighter planes to badly exposed outposts. Washington ensured even more deniability by issuing “do-don’t” war warnings to its Hawaiian commanders. After the attack, several other excuses surfaced to deflect criticism of Washington’s careful design. Japanese radio silence, the limited peacetime resources of the US armed forces, the impossibility of breaking Japanese codes, and the limitations of traffic analysis were all offered as reasons for Japan’s success.

The geopolitical situation faced by Roosevelt in 1941 also deserves careful consideration by revisionists. The asset-freeze of July, 1941, which resulted in an American oil embargo against Japan, must be seen as a turning point in Japanese-American relations. The geopolitical forces that compelled the Roosevelt administration to impose such sanctions against Japan must be assessed. In this regard, at least two factors must be considered: Germany’s attack on the Soviet Union in June, and Japan’s advance into southern French Indochina in July. With the Soviet Union in the war, Roosevelt may have feared that any Japanese advance into Siberia made possible an Axis victory over the Soviet Union in a two-front war. The Soviet Union had to be kept in the war to weaken the Axis position in Europe. Hence, Japan had to be encouraged to strike south rather than north. Japan’s move into southern French Indochina perhaps reinforced this view. Alternatively, Japan’s move, one that threatened ABD interests in Southeast Asia, may have encouraged an asset-freeze as a means of deterring Japan from making further advances. Either way, the resulting oil embargo limited any opportunity for meaningful diplomacy between Japan and the United States. In maintaining the oil embargo, Roosevelt committed himself to war with Japan.

Other important factors buttress this argument. Roosevelt’s undeclared war against German shipping in the Atlantic failed to bring the United States into the war against Germany.

War with Japan, by virtue of Japan's association with the Axis powers, offered Roosevelt a possible "back door" entry into the war in Europe. Furthermore, Roosevelt's unconstitutional commitments to the ABD alliance meant that the United States was unofficially at war with Japan on December 4, 1941, when the Japanese navy crossed the line 100°E at 10°N, thus threatening ABD interests as per the agreements. American isolationists would never tolerate an American first strike against Japan to protect European colonial interests. Roosevelt needed to tolerate a Japanese first strike against an American target – Pearl Harbor would satisfy this requirement.

For revisionists, however, the very essence of the Pearl Harbor controversy lies in Roosevelt's response to American isolationism. Nations often wage war when political influence or economic gain is at stake. Yet the relationship between the executive branch of government and the public it governs defines the manner in which war may be waged. In democratic governments, executive authority is limited by political accountability. In the American form of government, executive authority is even more limited by political accountability than in parliamentary democracies. In 1941, Roosevelt had to curry both public and congressional favour even as he planned for war. In revisionist terms, Roosevelt appeased American isolationists and met his objective of entering the war by subverting the American Constitution. This was the most expedient way for Roosevelt to harness sufficient executive authority to meet greater geopolitical objectives. Hence, the sacrifice of Pearl Harbor represents more than Roosevelt's need to enter the Second World War: it also represents the compromises that democratic leaders feel compelled to make when public interest differs greatly from public will. Roosevelt was a democratic leader who made such compromises to secure greater national advantage. Revisionist historians must see Pearl Harbor as an intelligence coup that reconciled

Roosevelt's vision of world affairs with American public opinion at the expense of both political accountability and the Pacific Fleet.

Historians, both traditionalist and revisionist, must also consider the pattern of censorship that has surrounded the Pearl Harbor controversy. An absence of documents does not in itself prove any particular thesis, but certain patterns are rather suggestive. It is worthwhile considering what documents are missing or have been previously withheld by the security authorities: 1941 decrypts of Japanese messages; Japanese codebooks acquired by the USN through direct means; thousands of RDF bearings taken at USN stations in late 1941; disposition charts provided to Admiral Kimmel showing the location of Japanese naval vessels; documents or histories concerning OP-20-GX (direction-finding); USN RFP/TINA documents similar to those released by Britain; the complete records of stations Cast and Hypo for the period November 26 to December 7, 1941; and the *S.S. Lurline* report of December 3, 1941. It is possible that certain documents suggesting American foreknowledge of the Pearl Harbor attack were embarrassing enough in times past to require suppression.

But now is the time for open discussion of all evidence. Security reasons may have prevented the release of relevant documents or accounts at a time when the United States was still consolidating its geopolitical position within the post-war world. At the end of the twentieth century, however, there seems no need to limit understanding of what was either gross neglect or careful design on the part of the American government of 1941. Intelligence gaffes of nearly sixty years ago are no reflection upon the present state of American security. The events of 1941 do not necessarily foreshadow the possibility of a nuclear Pearl Harbor in our times.

Alternatively, if the United States coaxed Japan into a war in 1941, one that ended with an American nuclear attack on Japanese soil, then it must be accepted that the Japan of today has

grown beyond recriminations. Japan, as a major creditor nation to the United States, has no need to reclaim its imperialist past and abandon its present path to economic success. With all key Japanese and American historical figures long since deceased, it now seems appropriate to assess all relevant documents and accounts.

Ultimately, the events of December 7, 1941, must be interpreted in a suitable historical context. The attack on Pearl Harbor galvanized American public opinion and heralded the entry of the United States into the Second World War. The bombs and torpedoes that destroyed much of the Pacific Fleet also destroyed the last vestiges of American isolationism. Pearl Harbor allowed Roosevelt to enter the war for greater national and international purpose. Yet radio intelligence could have provided at least a measure of forewarning to Hawaii. Pearl Harbor did not have to be an intelligence failure; radio intelligence penetrated the vast expanses of the Pacific in 1941. Pearl Harbor did not have to be an intelligence success; there were less costly ways to enter a war. No matter what reasons are given for Washington's failure to exploit radio intelligence collected before the Pearl Harbor attack, one fact is certain. The men on Battleship Row deserved a fighting chance.

Appendix I: Documents concerning Cryptanalysis

1. Letter dated August 30, 1941, from Lt. Rudolph Fabian, Fort Mills, P.I., to Cmdr. Laurance Safford, Navy Dept., Washington, 4 pages, 1300/1 - NSRS Philippines, Assignment & Distribution. This censored letter discusses the decryption of JN-25B6 and JN-25B7, RDF requirements, and intelligence reporting.

DECLASSIFIED
Authority DD2012
By KE NADA Date 2/2/00

~~SECRET~~

ization, movements, operations, etc., out of pure undulterated R.I.--don't you think it would be a shame at this stage of the world mess to permit his talents to go by the board? I would suggest, not knowing at this point what goes on in OP-20-GA, that he be ordered to that office to correlate the reports, intercepts, etc., that pour in there. He knows the Japanese fleet, I'm sure, better than anyone available, and I can see nothing but good come out of such a move. I have talked with him about it and he is not opposed to the idea if CINAV considers it to be in the best interests of the service, etc. He is sailing in mid-September.

The personnel situation here is bettered, but I think not sufficiently--I was the whole cause of your having gotten the despatch regarding the "freezing" of certain personnel until such time as they could be relieved--in other words, I was pulling for an increase in order to start a 24-hour D.F. watch, which I consider essential, but which we are not now able to do unless we (1) either get more personnel or, (2) drop coverage. The latter is not at all practical--we must retain our present coverage, and that has been increased by the advent of the new force in French Indo China. Right now we think it would be fatal to drop any of our coverage, and, furthermore, think that it would add to our usefulness to cover even more, since there are several more important circuits that might well be covered. Some of the people on the way out are tagged as "qualified in D.F." but since they were from general service it was thought that they don't know Xans and will not be of any use to us for D.F. They will be fine for Int. circuits but even then there will be a shortage if we start a 24 hour watch on D.F.

The new cipher has finally started "giving"---now all we lack is sufficient material to prove it
be too sure until we have at least two more that line up with them. but we cannot
a week we should be able to know positively. In

While on this subject; the translator would like the following:
(1) Any code or cipher recoveries from the last period that we do not have.
(2) A code book for the current code.

Would appreciate it if you could get them on their way soon.
All the officers and men you have sent have done a fine job--ens. Lewis is invaluable.
Furthermore, the women furnished by CINCAF have helped immensely--they were all handpicked, and are fine workers.

DECLASSIFIED
Authority DD2012
By KE NADA Date 2/2/00

~~SECRET~~

6
6X
6Y
6A

Navy Detachment,
Fort Mills, P.I.,
August 30, 1941.

My dear Comdr. Safford,

That with the arrival of Lietwiler it's just about time for the usual "even song" as OinC--when we have gone thru a couple weeks of intensive inventory and turnover he will take over and I shall turn my hat around and go into the R.I. business because of the Commander in Chief's wishes and because of the utter necessity of having an officer do just that. The normal sequence of jobs for officers coming out here has changed completely. In the first place, Roeder, at this point, may as well be considered as having practically no connection with our functions--he is really the CINCAF communication officer, and he apparently has a huge job on his hands. He is afloat, and has sent in for stowage a lot of files, etc., that applied to our work. When we received information that Lietwiler was on the way out I had a long talk with Mason about future employment. He said that CINCAF considered that since Roeder did the spade work it was considered unwise to relieve him at this time. Furthermore we all realize that this unit needs all the help it can get, and he proposed that I be ordered to CINCAF (I need sea duty) but that I remain here and take up R.I., which Dennis has been doing for a long while and getting such fine results. So... Lietwiler will relieve me as OinC, and I will drop what little C.I. work I've been able to set in and confine myself strictly to R.I. for an indefinite period. All this is quite agreeable with me--since it really makes no difference to me where I am out here.

I cannot too strongly plead for more officer training in R.I. work. I say that, knowing not too much about it at this point, but I have seen positive results from the time I first arrived. There have been times (right now is a beautiful example) when we've not been reading current traffic and all of our information had to come from R.I. Of course, with the recovery of the new cipher in the AI we will be that much better off--it was wonderful in the last cipher period to recognize a movement, recover the cipher, and have all the R.I. deductions confirmed and made more positive--then, too, we've gotten such valuable information on calls, and on general goings on which built up grand collateral. That with the C.I. and R.I. sections swapping information we have been very successful--but since there was so much to clear we have started an "information section"--one man who will receive info from both sources, and, in turn, feed info back to both in the form of a daily summary--I'm sure it will permit us to get a lot more out of the vast amount of info available.

Now that I'm on this subject I would make a suggestion. Dennis is really a wonder at R.I.--it was rather hard to believe at first, but he really gets worlds of valuable cops on organ-

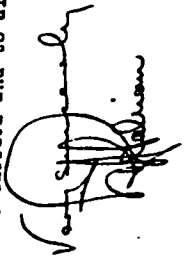
DECLASSIFIED
Authority: ODPD/2-
By: K- NARA Date 2/2/00

~~SECRET~~

I hope, in turning over, that I have at least done a satisfactory job.

Mrs. Fabian is improving slowly--had an operation the other day to cut some tissues that were keeping the lungs from a complete collapse--and should be recovering quickly now--don't know when she'll be permitted to leave the Sanatorium.

My very best regards to you and Mrs. Safford and to all my friends in the office.



DECLASSIFIED
Authority: ODPD/2-
By: K- NARA Date 2/2/00

~~SECRET~~

There is one who is particularly outstanding--Joulier. He is taking the course locally.

As for the local situation--it is really about the best ticket we could have written. Of course, since the place was evacuated and we are so isolated a lot of people do not like it at all. If all were peaceful and the families were permitted to be here it would be wonderful--no mixing of personnel, no outside interference, and nice places in which to live. The liaison with the Army was a great time consumer at first, but now it's eased off since MPC is out here and Lt. Comdr. Callahan is handling it. There is still a terrific amount of paper work, what with procurement, Army Regulations, etc. When too, since we maintain the bulk of 16th N.D. spare and War Reserve publications, an awful lot of time is consumed with publication turnover. It is not by any means a "dead storage". However, this is the ideal storage--and if worse comes to worse we could do local issuing here, whereas should Cavite get a scare we would probably find all the pubs burned and no longer available.

Cooperation with CincAP and the District has been splendid except in certain isolated cases. Admirals Hart and Bemis have been out many times, and have always been very pleased at our results. We send both the daily mail and any important summaries. Admiral Bemis, who knew nothing about this sort of activity before was sort of amazed--had a time convincing him that he couldn't bring "the crowd" along with him on his trips.

I know that you have probably sat back and said "I wish that crazy Fabian would pipe down", or some such thing--and I'm sorry if I've given you occasion to do just that. However, my thoughts on this whole business have changed a hundred percent since I got out in the field and actually saw the workings of a field organization--I was amazed at the way they worked, and with the results that were possible. I sent the letter suggesting that OPNAV work on the current intercepts back into d.I. It seemed that the info in current intercepts had back into d.I. would be the best and fastest way of getting the Gramp Fleet organization strengthened out--it worked so well here that one more source feeding cipher back would have made it work still better. I still think it would be a good idea, but I say that not knowing what Washington is doing, personnel available, etc.

2. Letter dated October 6, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. Robert Denford, Navy Dept., Washington, 2 of 3 pages, 1300/1 - NSRS Philippines, Assignment & Distribution. This letter discusses work on Additive 7 of JN-25B, airmail as a means of intelligence reporting, and the USN's use of 375 kHz, the DF frequency later used by the Kido Butai for "repeat-back" transmissions in the north Pacific.

DECLASSIFIED
Authority: ODPD 12
By: KE-NARA Date 3/8/00

Patrol is he is also commanding the Isabel, he went be out here, but Icedor Springs (retired) is his Executive Officer and has an office topside. The arrangement is working fairly well. They have taken over all the transportation except one station wagon, and they make all the regular bus trips for ferry, movies, OM mail, etc., except that we still furnish four officers for the OM mail duty, while they supply three. All records on personnel, etc., are kept in the Naval Units office, and there is now a Navy Sick Bay and Medical Office in the same building. As long as they continue to let us rest in peace everything will be lovely.

Parke made the suggestion in his last letter that your Jig recoveries and other values be sent at longer intervals by micro-film. If the interval is not over two weeks that is satisfactory. Up until this week we have had no enlarger, and the one we are now using is the personal property of one of the radiomen. You must also understand that from a special fund controlled by the staff. As soon as our reproducer arrives we can get film through the RMB, if we can get it to get the film we are now using to photograph a book, we had to send a man to Manila, and he spent all day combing the photo-shops to get what we needed. I can't quite see the reason for sending encrypted mailgrams by lockbox anyway. It has happened that Guam couldn't get in its package because the box was full of such material.

We are now on our second MK II. The clutch trip reset pawl which rides on the cam by the fiber cam shaft drive gear broke about a half inch from the tip. If we had had parts I could have replaced the pawl in about thirty minutes, but we had to send it in for repairs. I am slowly catching hold, but am still leaning heavily on Rudy because there is so much that goes on here by word of mouth instead of written order. If my letters are too sketchy or if there is anything specific you would like to know please say so in your letters.

In Project Baker, it has been decided to supply a generator instead of running a power line. The said generator has arrived, and I am now angling for a suitable site and house. It will aid us no end when installed as we now have to make a daily battery trip from here. That is the last word on the Collins' Baker sent in some bearings on 375 KC and Deiken says they couldn't get that low with the equipment he knew about. We now have a DT and DT mounted, with one DT in reserve. As soon as we have the time and men available we are going to test for emergency spots in case of casualty. A little advance dope on the spare and equipment necessary for the Collins would be appreciated.

I have run out for this time. Please extend my congratulations to the Commander on his selection, and give my best regards to all the force. You might mention to Edie Stanley that I saw Ethel Cole in San Francisco on my way out, and see if it gets any reaction.

Keep'em flying.

John

Had Gun get a DP post!

DECLASSIFIED
Authority: ODPD 12
By: KE-NARA Date 3/8/00

NAVY DETACHMENT, FORT MILLS

(File)

Corregidor, P. I.
6 October, 1941

Not too close, but the
I just then he got -

Lieut. R. L. Denford
Navy Dept., Washington, D.C.

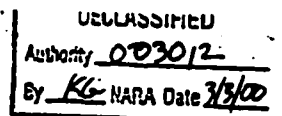
Dear Bob, Harold's orders came through and he is leaving on the current HENDRSON. It is useless to tell you that all hands are delighted. I wish you could see the lift it gave the whole unit. In conjunction with the preliminary letters on Hoover, Mason, Estes and Irving, Harold's orders have made us one big happy family again (or almost). Irving's advancement is particularly good, because the reserves have been a little worried. The GS men are the only ones now a little in doubt, and I am going to try to get as many as I can in the local quota in order to save our special quota as much as possible. Let me know if you have other plans. There are fourteen of them including the stewards and cooks. Bryan almost missed the boat, as the staff had him ordered to the Minnae, but Rudy was in Cavite for his physical at the time, so I phoned him and he pulled the necessary strings. Bryan reported on the 23rd of September. This morning we transferred Cal, Chase, Groundwater, Harold, Kaye, Simmons, and Walwood. All will leave in the Henderson for the 14th except Simmons, he being for San Francisco for discharge. This still leaves us with two men sleeping in an unused kitchen, but as soon as the new chiefs are made and move over we will fit very nicely.

M. Nav. 524's have been forwarded on Kaye, Monroe, Chase and Walwood for RMB/a, and they are recommended in that order. We are pretty well jammed for space in the office having put in three new desks two weeks ago. We are now casting about for space for the new punch when it arrives. It will be a welcome addition as the punch room gang is working late every night now.

Hess arrived with Jeep IV and it is now in working order. One circuit (number 4) is a little haywire, as there are certain good combinations on which it will not light. We are not attempting any repairs as we know nothing of the circuits. Two of the pawls were reversed but fortunately they were in the last row and we could reset them without disassembling the machine. We used an unknown column for our first test and hit the jackpot on the second trial, so the Jeep made a lot of face in a hurry. We are now beginning to break into the additive for this period, and the mathematical solution for indicator subtractions is a great help. It works especially well since there are apparently only 500 keys, and also since quite a few people are 'tailing' consistently. Rudy received authorization to proceed with the tennis court about the time I arrived and it is underway now. They are putting in the reek base, which will be followed by bluestone and then the concrete. The rainy season is just about over and there should be considerable progress during the next two weeks.

I suppose you know Admiral Rams has been relieved and is departing for the States. Also the DMO, who left with Dennis in the pierce. Also Commander Shears, who was Commander Inshore Patrol and Commanding Officer Naval Units. Corregidor Captain Ray is Acting Commandant Sixteenth, and Commander Hoefel has taken over the innmore

3. Letter dated Oct. 24, 1941, from Lt. L.W. Parke, Navy Dept., Washington, to Lt. John Lietwiler, Fort Mills. P.I., 3200/1 - NSRS Philippines, *Operations Summaries*. In this letter, Parke asks Lietwiler which additive of JN-25B he is decrypting at Station Cast because Parke does not want OP-20-GY's work on JN-25B6 to be unnecessarily duplicated. OP-20-GY, in its communications with USN intercept stations, often presented the decryption of Japanese naval codes as a cryptographic research project rather than as a current intelligence project. Parke also complains of the delays in traffic, likely old intercepts, sent from Guam and Corregidor to Washington.



NAVY DEPARTMENT
 OFFICE OF THE CHIEF OF NAVAL OPERATIONS
 WASHINGTON

October 24, 1941.

Dear John,

The circuit trouble in the Jeep may be one of the following. The small screws which thread into the bake-life separators and touch the fixed contacts for the wheels become loose. Small springs can be put under the screws to maintain the connection. Also constant use will cause arcing at the wheel contacts. This may be remedied by a micro switch at each operating handle to break the circuit before any wheels are turned. Instead of trying to fix the Jeep IV you may have a new machine which is being built, if you wish. Then the Jeep IV can either be kept as a spare, sent back to us, or given to our friends.

In your lists of additives, for the new period we aren't sure whether you found the true key, (based on a 500 page book) or simply applied the key subtractor.

We are almost ready to begin work on the period recently ended. If you have stopped your efforts on it, please let us know. I expect to have an official directive sent to you soon in that regard, so we won't be duplicating work.

We've had no traffic from B since June 30th, and none from C between 10 July and 14 August. Such delays are far too great, and I'm studying plans for forwarding traffic by air freight on onion-skin paper or by air mail on micro film. I favor the air freight method because it costs only about \$2.50 per pound and causes no elaborate set-up of photographic equipment at each end. Please let me know your reaction to this idea.

Best regards,

L. W. PARKE,
 Lieutenant, USN.

4. Letter dated Nov. 16, 1941, from Lt. John Lietwiler, Fort Mills, P.I., to Lt. L.W. Parke, Navy Dept., Washington, 2 pages, 3200/1 - NSRS Philippines, Operations Summaries. In this reply to Parke's letter of Oct. 24, Lietwiler explains that Station Cast is currently reading JN-25B7 and implores Parke to start decrypting current traffic rather than old JN-25B6 traffic. Lietwiler also complains that the code recoveries provided by Washington are redundant or inaccurate, although Parke's handwritten notes indicate that Washington is not necessarily to blame.

~~CONFIDENTIAL~~

as confirmed (i.e., the original wrong value). Let me urge you once more to have someone check on this work.

Please do not adopt the microfilm system for traffic. It would be practically impossible for us to handle our volume in this way. The air freight system I think an excellent idea. I regret the delay as much as you do, but the Issuing Officer here assures me he is doing the best he can. This also applies to the delay in car station reports. I will be glad to send them by the air freight also if you authorize this plan. I suppose some allotment will be set up to cover the cost.

This would require approval of Post Office Department and arrangement of freight for freight over payment

Lietwiler
JOHN H. LIETWILER.

This is a misunderstanding which resulted from our issue of RIP 79 (AN-1 Code Book). We copied all values into this book which had been submitted to us. We had confirmed none of them because we had done no work on the AN-1 Code at that time. Lietwiler has assumed that RIP 79 contains our recoveries, whereas his translators are actually comparing some of their own original recoveries with later ones.

Authenticity
By *KE* NADA Date *2/1/42*

G LA
GA file
GY LAMP
Navy Detachment,
Fort Mills P.I., Ford
November 16, 1941.

Case

~~CONFIDENTIAL~~

Lieut. L. W. Parke,
Navy Department,
Washington, D.C.
Dear Sir,

The novelty has worn off the Jeep IV now and it is seldom in use. I believe the reason mainly in the time required to make a set up. We have pretty well proved that it takes longer to set up ten groups and run the check by machine than to do it by hand. Also, there are about 10 people working at one time, and only one machine. A further reason is a new system of attack we have put in use. Using the 400 high frequency groups we have compiled a table of 24,000 differences. When we are stuck on a column now we take any likely looking group and subtract it from every other group in the column. The reciprocals of these differences are also written down which gives the difference of every group in the column from the master group. By reference to the table, the groups which produce these differences are found and tried in the proper spots, i.e., on the master group in the case of the original column, and on the columnar group in the case of the reciprocals. Two days ago I saw MYERS walk right across the first 20 columns of a sheet using this method almost exclusively. In view of this I do not believe we want a new Jeep IV.

Same as our main table

I do not understand your paragraph about 'whether we found the true key or simply applied the key subtractor'.

We have stopped work on the period 1 February to 31 July as we have all we can do to keep up with the current translators very busy, i.e., with their code recovery efforts etc. included. In this connection, I certainly wish you could see your way clear to drop the ancient history side of this cipher and work with us on each current system as it comes up. With Singapore, we have adopted a system of exchanging block numbers to prevent duplication. We have more or less given them a free hand in selecting the cipher blocks they tackle on account of their more limited traffic.

I am going to be very frank about the code recoveries you have sent us so far. The translators say they are of no help, as we already have the confirmed ones, and that those we do not have are usually proven wrong. They note that in one case one group we misspelled when we sent it in was copied exactly and sent back, and several values on which we were mistaken and have since corrected were sent back to us

* See next page

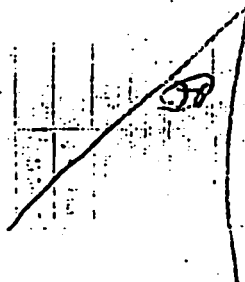
Authenticity
By *KE* NADA Date *2/1/42*

5. SRNs 116430 and 116431. This USN intercept of a Japanese message dated Nov. 16, 1941, is asterisked to show which area designators, such as "AF (Midway)* Destruction Unit," were not known at the time of the message's origin, the implication being that all other designators, such as Support Unit (Striking Force), were known at the time of the message's origin.

~~TOP SECRET-ULTRA~~

14	YO II	Supply Unit (main advance expeditionary force)
14	YO MA	Supply Unit (Striking Force)
14	YO XU	Supply Unit (Southern Force)
14	unident kana	Supply Unit (South Seas for a)

SI Comment: * Identity of these area designators were not known at time of origin of their message.



~~TOP SECRET-ULTRA~~

(ed)

U MO 2 4.1 Fleets

DE TOKYO Comms Unit.

HA FU 6 " LA

- SU 0 " LA

From J NE FU 34

Actions: 6 XI XI

1600/16 November 1941

Serial 53100

Combined Fleet Secret Order # 169, Special List

The following additions have been made to the list of Short

PAGE	SHORT TITLE	UNIT
4	E	Force (Southern Force) (Correction)
5	MI	Southern Force.
5	YA	Northain Force.
6	CHI	South Seas Force.
5	SE	S (British Navy) Force.*
5	RE	H (Dutch East Indies) Force
5	LA	M (Philippine) Force.
14	YO XI	Attached Force.
14	unident kana	G (GUAM) Occupation Force.
14	unident kana	LA (WASA) Occupation Force.*
14	unident kana	AF (Midway) Destruction Unit.
14	unident kana	Commerce Destruction Unit.
14	unident kana	Support Unit (Striking Force).
14	unident kana	Supply Unit (Northern Force).
1067 Z		(Unknown) Navy Trains 4/1/46

~~TOP SECRET-ULTRA~~

DECLASSIFIED per E.O. 12065 by Director, NSA/Chief, CSS

CDM NO 116430

DECLASSIFIED per E.O. 12065 by Director, NSA/Chief, CSS

SRN NO 116431

~~TOP SECRET-ULTRA~~

6. SRNs 115787 and 115788. This USN intercept of a Japanese message dated Nov. 11, 1941, reveals many call signs of the 1st Air Fleet, which later served as the Strike Force, or *Kido Butai*. Station Cast, which could partially read JN-25B, likely recovered such address headings even after the Japanese began burying all address headings within encrypted text in the first week of November, 1941.

~~TOP SECRET-ULTRA~~
(ab)

CRU Div 8 [redacted] TONE on a 50 degree line
 600 meters apart from position bearing 108 degrees, distant
 1600 meters from (OMYUU SHIMAZU).

Deson 2 [redacted] ABUKUMA bearing 120 degrees, distant
 1600 meters from (OMYUU SHIMAZU).

Deadiv 17 [redacted] on a 105 degree line 400 meters apart
 from position bearing [redacted] degrees, distance 500 meters
 from position of ABUKUMA [redacted]

Deadiv 18 [redacted] on a 105 degree line, 400 meters apart
 from position bearing 195 degrees, distance 1600 meters
 from position of ABUKUMA [redacted]

[redacted] AKIGUMO: bearing [redacted] degrees, distance 1500
 meters from position of ABUKUMA [redacted]

KENYOO (SUKOYAKA, HADA) HANU: bearing 90 degrees, distance
 1000 meters from (OMYUU SHIMAZU)

KORUTOO HANU [redacted] bearing 90 degrees, distance 600
 meters from position of KENYOO HANU.

KORUSOO (KUMI, HADA) HANU [redacted] bearing 90 degrees, distance
 1200 meters from position of KENYOO HANU.

[redacted] DERU (SHUTSU) HANU: bearing 90 degrees, distance 1800
 meters from position of KENYOO HANU.

TOOROO HANU [redacted] bearing 100 degrees, distance 2500
 meters from (OMYUU SHIMAZU).

TOOXI HANU [redacted] bearing 90 degrees, distance 600 meters from
 position of TOOROO HANU.

(JAPANESE)
(at) Navy Trans. ~~TOP SECRET-ULTRA~~

SRN. NO 115788

(ab)

1st Air Fleet Cast
 KICUSOO HANU C.O.
 KANU C.O.
 KOUYOO HANU C.O.
 HANU C.O.
 LENA Deadiv 4
 ZUIKAKU
 Unit in 1st Air Fleet
 ALIGUMO
 Deson 1
 Lena Deadiv 6
 Crudid 8
 Deadiv 21
 Deadiv 27
 Deadiv 15
 HANU C.O.
 HANU C.O.
 Combined Fleet Cast
 1st Fleet C/S

1st Air Fleet Cast
 KICUSOO HANU C.O.
 KANU C.O.
 KOUYOO HANU C.O.
 HANU C.O.
 LENA Deadiv 4
 ZUIKAKU
 Unit in 1st Air Fleet
 ALIGUMO
 Deson 1
 Lena Deadiv 6
 Crudid 8
 Deadiv 21
 Deadiv 27
 Deadiv 15
 HANU C.O.
 HANU C.O.
 Combined Fleet Cast
 1st Fleet C/S

(TOI 11/NOV 300 AM 4155)M

75600

Anchorage are assigned in SAIXI HAN [redacted] as follows:

AKAGI [redacted] bearing 115 degrees, distant 3000 meters.
 from [redacted] (OMYUU SHIMAZU).

KAGA (scrambled) bearing 90 degrees, distance 800
 meters from position of AKAGI (g. ruled) [redacted]

Saifurid
 SOOKU [redacted] bearing 180 degrees, distance 800 meters
 from AKAGI [redacted]

HINKUU [redacted] bearing 90 degrees, distance 800 meters from
 SOOKU [redacted]

ZUIKAKU [redacted] bearing 90 degrees, distance, 1800 meters
 from AKAGI [redacted]

(JAPANESE) ~~TOP SECRET-ULTRA~~

SRN. NO 115787

~~TOP SECRET-ULTRA~~
(ab)

U NO 2
 DE
 HANU 6
 NYI

From Action

RITA 33
 I KI 22
 TANA 459
 RITE 059
 RITE 559
 RITE 559
 KANU 9
 KANU 7
 HANU 8
 TDU 3
 SERA 5
 HANU 2
 I KI 4
 MORI 4
 MORI 7
 TEMI 7
 TUFU 759
 HANU 459
 HANU 658
 SATI 658

Info 1200/11 Nov 1941

[redacted] 75600

Send

DECLASSIFIED per E.O. 12065

by Director, NSA/Chief, CSS

1 June 1979

115787

SRN. NO

DECLASSIFIED per E.O. 12065

by Director, NSA/Chief, CSS

1 June 1979

SRN. NO

115788

DECLASSIFIED
 Authority: 48 CFR 1.10102
 By: 48 CFR 1.10102

ORIGINAL (February, 1958)

SECRET

Chapter 10.

JAPANESE MORSE (KANA) CODE.

A. COPY OF CODE AND KATA KANA CHARACTERS

イ	..	ソ	---	ア	---	テ	---	---
ロ	---	ツ	---	ア	---	ア	---	---
ハ	---	ネ	---	サ	---	サ	---	---
ニ	---	ナ	---	キ	---	キ	---	---
ホ	---	ラ	---	ク	---	ク	---	---
ヘ	---	ム	---	ケ	---	ケ	---	---
ト	---	ウ	---	ミ	---	ミ	---	---
チ	---	リ	---	シ	---	シ	---	---
リ	---	ノ	---	エ	---	エ	---	---
ヌ	---	オ	---	ヒ	---	ヒ	---	---
ル	---	ク	---	フ	---	フ	---	---
ヲ	---	ヤ	---	セ	---	セ	---	---
ワ	---	マ	---	ス	---	ス	---	---
カ	---	ケ	---	ン	---	ン	---	---
ヨ	---	フ	---	ン	---	ン	---	---
タ	---	コ	---	ン	---	ン	---	---
レ	---	エ	---	ン	---	ン	---	---
-	---	-	---	-	---	-	---	---
-	---	-	---	-	---	-	---	---
/	---	/	---	/	---	/	---	---

(This chapter contains 21 pages)

RIP-44 : 10-1

1. The Kana Kana Code, RIP-44, 10-1. USN traffic analysts copied Japanese naval messages sent in Kana Kana on special typewriters known as RIP-5.

ORIGINAL (February, 1958)

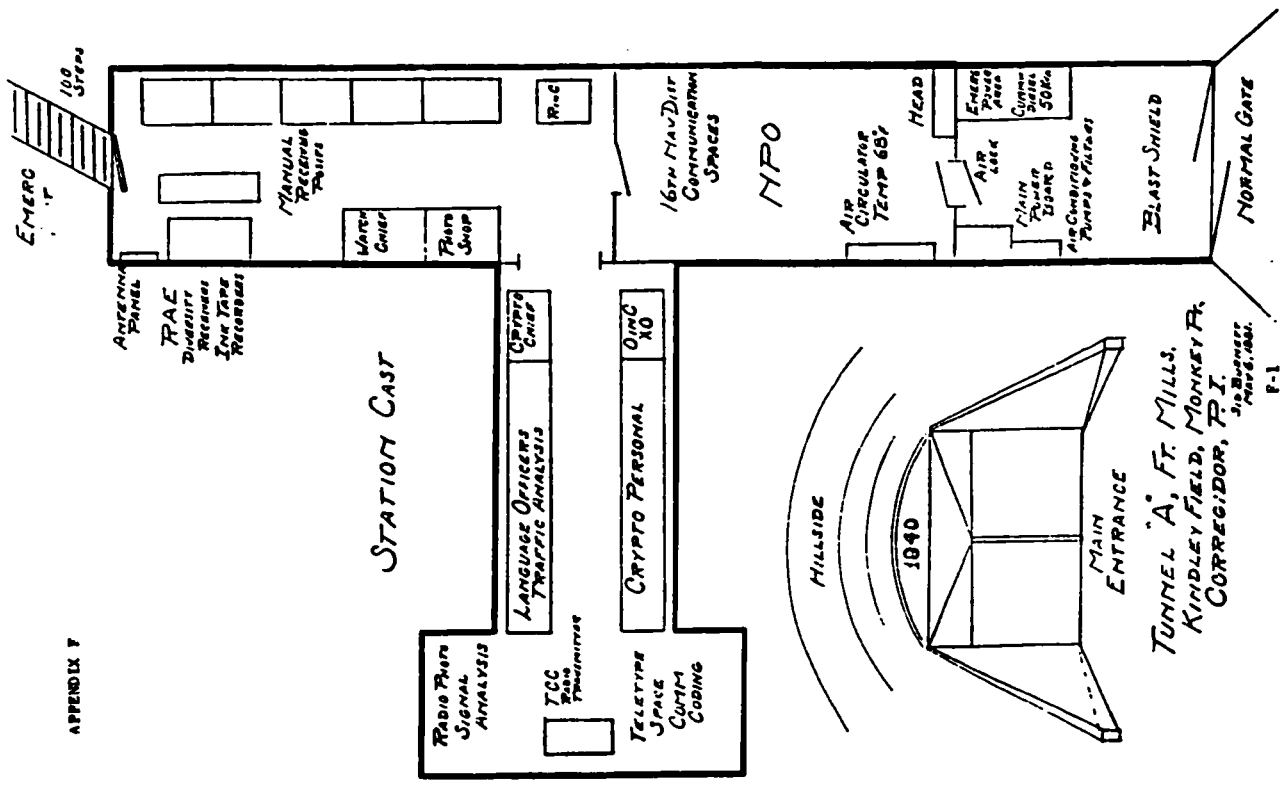
SECRET

Example of Data Sheet for Identification Purposes.

Call:
 Frequency(s):
 Bearing(s) & Time:
 Date(s):
 Address and Originator:
 Times Heard Being Called:
 Times Heard Calling Others:
 Calls Heard in Conjunction With:
 Type Traffic:
 Rdo Sta. Serial #:
 Originators Serial #:
 Signal Strength:
 Quality of Sending:
 Keying Speed:
 Zone Time on Traffic:
 Operators Peculiarities:
 Transmitter Note Characteristics:
 Remarks:

RIP-44 : 17-17

2. Sample Data Sheet for Identification Purposes, RIP-44, 17-17. USN traffic analysts were trained to record numerous signal characteristics.



SIGNAL ANALYSIS GROUP SYMBOLS
I.O.W. MODULATED SIGNALS

PERMANENT BIERLA, Secondary to I.O.W. Indeterminate Ripples.	1M/P IEL. EM. TEL. MEK.	P	
I.O.W. MODULATION, "Bad", Ripples 400-700 c.p.s.	700/M IEL. EM. TEL. MEK.	7	
HIGH MODULATION, "Bad", Ripples 400-700 c.p.s.	700/HB IEL. EM. TEL. MEK.	7	
S.O.W. MEDIUM MODULATION, Ripples 400-700 c.p.s.	700/M IEL. EM. TEL. MEK.	U	
MEDIUM MODULATION, "Bad", Ripples 400-700 c.p.s.	700/MB IEL. EM. TEL. MEK.	U	
I.O.W. MODULATION, Ripples 400-700 c.p.s.	700/S IEL. EM. TEL. MEK.	W	
SMALL MODULATION, "Bad", Ripples 400-700 c.p.s.	700/SB IEL. EM. TEL. MEK.	W	
I.O.W. MODULATION, Ripples 700-1700 c.p.s.	1700/M IEL. EM. TEL. MEK.	K	
HIGH MODULATION, "Bad", Ripples 700-1700 c.p.s.	1700/HB IEL. EM. TEL. MEK.	K	
S.O.W. MEDIUM MODULATION, Ripples 700-1700 c.p.s.	1700/M IEL. EM. TEL. MEK.	Y	
MEDIUM MODULATION, "Bad", Ripples 700-1700 c.p.s.	1700/MB IEL. EM. TEL. MEK.	Y	
I.O.W. MODULATION, Ripples 700-1700 c.p.s.	1700/S IEL. EM. TEL. MEK.	Z	
SMALL MODULATION, "Bad", Ripples 700-1700 c.p.s.	1700/SB IEL. EM. TEL. MEK.	Z	

3. A Plan of Station Cast, 5750/4 - NSRS Philippines, History, General, Appendix F, F-1. This plan shows that Station Cast employed a variety of traffic analysis techniques such as RFP (Radio Photo Signal Analysis) and TINA (Ink Tape Recorder).

4. Signal Analysis (RFP), HW18/206, PRO. This British RFP document of 1941 shows that traffic analysts could characterize radio transmissions by their waveforms. RFP was used to corroborate other radio intelligence.

STATION "C"
October, 1941.

SECRET

NAVY FREQUENCIES AFLOAT AND IN THE AIR

Frequency	Used by	Works	Remarks
4095 M	HEMI7 KIOS (Maru)	EIL (1st BDF)	
4425 M	EN09 (Yokohama Air, temporary) OY08 (Kamoi)	TER09 (Chitose Air, temporary)	See R.L. #586.
4755 A	Fleet and Type Comdrs, Combined Fleet	Each other and Tokyo radio	Tokio answers on 4175 series.
4800 A	1MAME 7MUTO 8ROSA (Carrier)	2MOMU 6AHO 8NEA	Night frequency.
4990 M	7RIRO (Kaga) 8FUNO	4BIE	See R.L. #474
5170 A	KIM05 (Kashii) NOR06 (Shimushu) NRZ0 (Saigon) SER03		KE24.
5225 M	RE SI DEI	HA NA TA WAKI YA	See R.L.'s #358 and 593.
5250 A	HAM09 (Akagi) HOM01 (Kaga)	KIMU9 (Sasebo)	Sasebo also on this frequency.
5290 M	FU LKO 3WU	NU 3KO 4WU	See R.L. #350.
5295 M	PHAMI	7HONE	See R.L. #193.
5335 A	1TKRU 8WIWA 7TOHE (F/S Subron 5?)	2FUKO (Submarine) 8NUSA 8STA 7MOFU 8HIYU	

RIP-40-A : 16-

-55-

Station "C"
October, 1941

SECRET

Station	Frequency	Remarks	Call Sign
8MORE	SORYU -		ACDV2
8KING	SHIOKAZE		DDV 3
8KISI	ALL FLEET FLAGS		
8KITI	COMBINED FLT		
8MOHA	COMB AIRFOR		
8MURU	COMB FLEET FS		
8NENO	AIRRON 23		ASN23
8NESI	SHIPT -		
8NIYO	FIRST FLEET		
8REHA	SECOND FLEET		
8ROTA	CV GROUP		ACDV5
8ROTA	AIR GROUP		
8SAFU	FIRST FLEET F8		
8SIMU	COMMAND F8 -		
8TAKI	FIFTH FLEET F8 -		
8TENO	TAKAO RDO		
8TO80	AIRRON8 COMBFLT		
8WAA	MARU		
8YAMU	CARDIV 2		ACDV2
8YON	SHIP OR COMD		SSN3
8YUNO	AIR STA S		
8YUNA	AKAGI F S		
9MEFU	COMB FLT F S		
9MII	DESDIV 5		DSN5
9FUTO	AIRRON		
9I NO	HAYAKURIHARA ARG		
9KEKU	HYUGA F S		
9KOO	KATORI F S		
9KUMI	COMBINED FLEET		
9MAKE	AIRRON COMBFLT		
9MANI	ARG		
9MIHA	COMB AIRFOR F C		
9MOE	FIFTH FLEET FS -		
9MUNE	DESRON 3		DSN3
9MUSA	KASHIMA F S		
9REYA	SIXTH B F S		
9RUSI	HIRYU F S		RFN 6
9SIHA	TAKAO RDO		ACDV2
9TAHA	AKASHI		
9TIIH	COMB FLEET -		
9TOSU	COMB AIRFOR -		
9TUMI	CRUOIV 7		
9TUYA	SECOND FLEET		CDV7
9MAWI	SHIP		
9YAN	THIRD FLEET		SSN 7
9YOA	SUBRON 7		
9YOKE	COMB FLEET FS		
9YONA	MIDZUHO		ASN 7
9YUNE	FOURTH FLEET		182

5. Japanese Navy Frequency Data, Station Cast, Oct., 1941, 3222/10 - NSRS Philippines, JN Frequency Data, 160. USN stations kept records of Japanese naval frequencies as shown in Station Cast's excerpt from RIP-40-A. For example, the Akagi used 5250 kHz.

6. Japanese Navy Call Sign Data, Station Cast, Oct., 1941, 3222/13 - NSRS Philippines, JN Call Sign Data, 141. USN stations kept records of Japanese naval call signs as shown in this Station Cast record. For example, the Akagi used call sign 8 YU NA.

DECLASSIFIED
 Authority: ODP 3012
 By: KJ-NARA Date: 12/10



Station H
 November, 1941.

Station C
 September,

NAVAL MOVEMENT REPORTS

SECRET

21 Sept.

At Base #217. (Saigon)
 At Base #245. (Camranh Bay)
 Sasebo to Maizuru Comm Zone at 1600.
 Kure to the Kinu Comm Zone at 0730.
 After 1200- Pass t/c for me thru Bako
 or Sasebo Radio.
 2000-2122 120.00E 21.22N
 2220-2000 120.00E 22.02N
 Sana to Chappu Bay Comm Zone at 1300.
 Hiryo to the Kaga Comm Zone at 1200.
 Kure to Sasebo Comm Zone at 1700.
 Sasebo to the Jingei Comm Zone at
 0800/22.
 After 2000- Pass t/c for me thru
 Sasebo or Bako Radio.
 2218-1920 116.20E 22.12N
 At 0900/22 Discontinue Comm with
 the Ieizu.
 Chappu Bay to Sama Comm Zone-1000/22.
 Discontinue Comm with Yokosuka, Es-
 tablish Comm with the Kitagami at
 1830.

22 Sept.

At Base #245. (Camranh Bay)
 At Base #217. (Saigon)
 Kure to the Myoko Comm Zone at 0800.
 Kure to Sasebo Comm Zone at 1000.
 Takao to Bako Comm Zone at 1200.
 Takao to Shanghai Comm Zone- 1000/24.
 Sasebo to Amoy Comm Zone at 1600.
 2089-7091 170.91E 08.92N ?
 Sasebo to the Hyuga Comm Zone at 1200.
 Takao to Sama Comm Zone at 1500.
 Takao to Canton Comm Zone at 0600.

23 Sept.

At Base #245. (Camranh Bay)
 At Base #217. (Saigon)
 Remaining in comm with the Takao Dis-
 continue Comm with Maizuru and Estab-
 lish comm with Kure at 0900.

At Base #217. (Saigon)
 At Base #245. (Camranh Bay)
 Remaining in comm with the Takao Dis-
 continue Comm with Maizuru and Estab-
 lish comm with Kure at 0900.

79

7. Japanese Navy Movement Report, Station Cast, Sep., 1941, 3222/6 - NSRS Philippines, JN Movement Reports, 79. This Station Cast record shows that Japanese naval movements were recorded by bearing-fixes and Comm Zone changes. For example, Cruiser Division 8 (Crudiv 8) used call sign SO TU 5, transmitted on 16700 kHz at 1225 hours, Sep. 23, and remained in communications with Takao.

NAVAL MOVEMENT REPORTS

CALL IDENTIFICATION

INDICATOR

TIME

SHEET NO.

26 November (Cont'd)

MOHE 8 Maru
 KURO 9 Maru
 MOHO 4 Maru
 KERA 8 Maru
 TUSA 3 Maru
 KEHI 9 Maru
 O YA 9 Maru
 JRESO 2
 KENE 7 Maru
 A HA 2 Maru
 HANA 1 Maru
 HOTO 8 Maru

Code Movement
 Sasebo to Takao
 2918 3359
 4212 2742
 5218 1558
 4011 1152
 5344 2332
 Code Movement
 Code Movement
 Code Movement
 Code Movement
 Code Movement
 Code Movement
 Code Movement

1030 92643
 1100 78830
 1200 78825
 1200 78843
 1200 78846
 1200 78861
 1200 78861
 1300 93614
 1300 93604
 1300 93304
 1330 93953
 1400 92944

27 November

RA U 8
 KENE 7 Maru
 KURO 8 Maru
 JRESO 8 COMDesDiv 12
 O YA 9 Maru
 INTY 8 Maru
 KENE 2 Maru
 KERA 8 Maru
 TOLA 3 Maru
 JRESA 5
 I RA 4
 HANA 1 Maru
 KU U 8 KONGO I-JRU

Code Movement
 Code Movement
 Kure to Chinkai
 Code Movement
 Saipan to ChichiJima
 226 431
 6108 1938
 4506 2637
 4959 1913
 Code Movement
 Code Movement
 Truk to Jaluit
 Code Movement

0530 92939
 0730 94802
 0900 72915
 0900 93433
 1100 78919
 1200 78926
 1200 78930
 1200 78932
 1200 78944
 1200 93249
 1400 93216
 1630 78979
 1950 93523

28 November

HANA 1 Maru
 RA U 8 KASUGA MARU
 KENE 2 Maru
 SEHI 8 Maru
 KERA 8 Maru
 TOLA 3 Maru
 RA O 7 Maru
 HANU 1 SHIRIYA
 SEHI 8 Maru
 SETA 9 MARU
 HUI 8 FAF
 KONO 9 ENIKO
 HI I 8 Cinc So.Ch.Fit.
 HUI 1 ComCruDiv 4
 E HE 6 Maru

Code Movement
 Code Movement
 Code Movement
 3727 0618
 4711 2602
 4735 2216
 ROSE 6 WITE 7
 Code Movement
 Discontinue with Bako
 Code Movement
 Code Movement
 Code Movement
 Code Movement
 Code Movement
 Code Movement
 MURU 4 to Bako

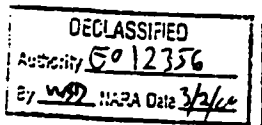
0600 94060
 0810 94069
 1100 93217
 1140 93079
 1200 79073
 1200 79070
 1200 79057
 1200 79060
 1300 94630
 1400 79007
 1400 94645
 1630 94644
 1500 94573
 1740 93925
 1940 93373
 2000 79080

111

8. Japanese Navy Movement Report, Station H, Nov., 1941, Station H Monthly Report for November, 1941, 111. This Station H record shows that Japanese naval movements were recorded by bearing-fixes and code movement reports. For example, RU SI 8, a 1st Air Fleet call sign transmitting from the Akagi, issued a code movement at 1430 hours on Nov. 28, 1941. Station H recorded this intercept on Sheet No. 94644.

9. Station Cast Chronology, Oct., 1941, 3220/3 - *NSRS Philippines, Chronology*, 91. This chronology demonstrates that traffic analysts at Station Cast could read message headings and portions of message texts. Cryptanalysts at Station Cast specialized in the decryption of 5-Numerical Code (JN-25B) dispatches.

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Station "C"
October, 1941

SECRET

Chronology, Cont'd.

22 Oct. Cont'd.

Comdr Combrit (KESI2) originated a 3-part 5-numeral code despatch addressed for action to all flagships and for information to SUTU7 (Tokio ?) and Camranh Bay Radio (NREB) - see (KESI2 #669/23813 23899/1113/13640).

IKAE (Tokio Communication Office) originated another 2-part 5-numeral code despatch today addressed for action to All Chiefs of Staff 1st and 2nd Class Naval Stations, All Force Comdrs and Eainan Garrison Chief of Staff - see (IKAE #321/07812 07899/0912/13640).

Traffic analysis shows disposition of Fleets same as for past few days

23 Oct.

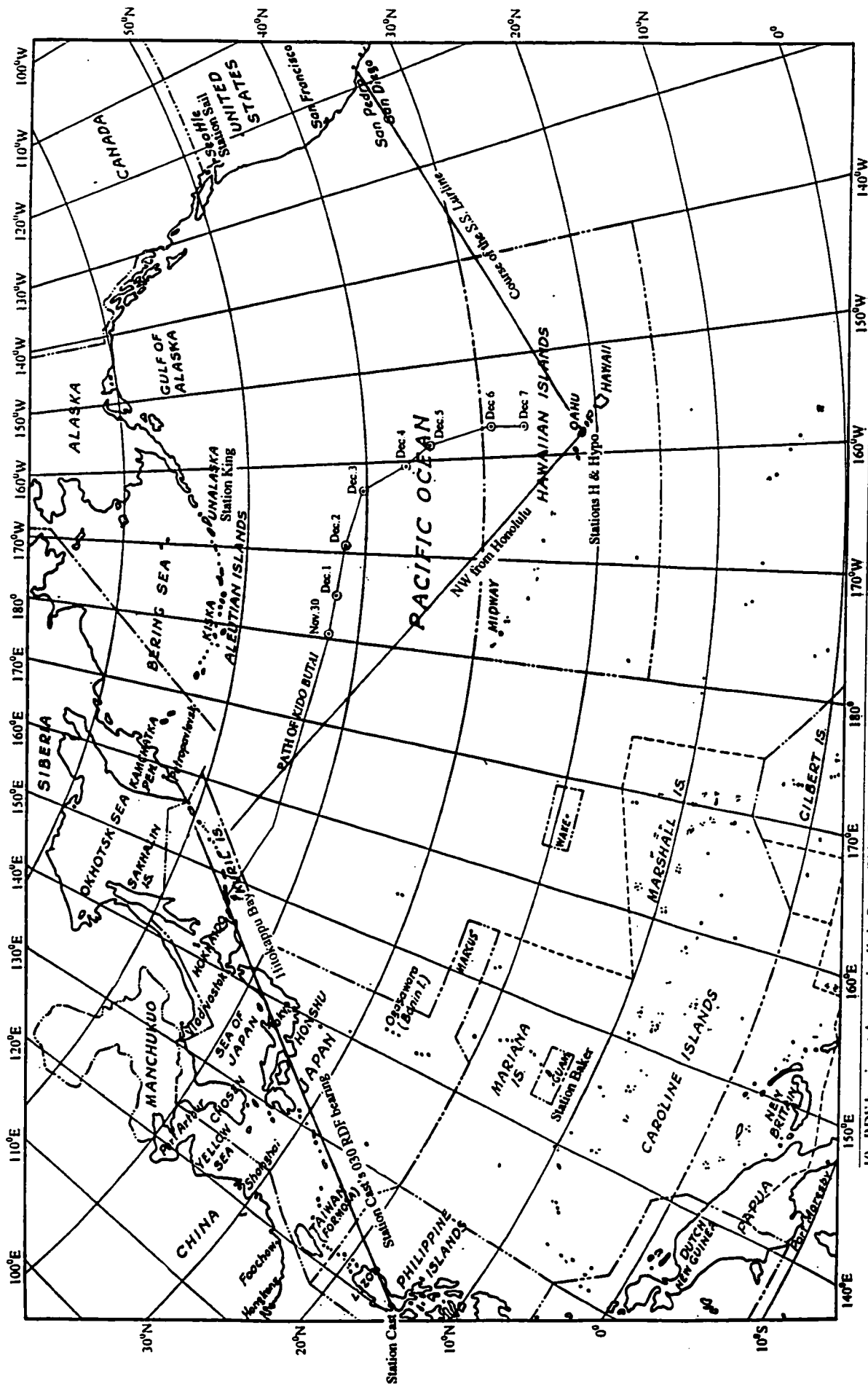
Analysis of traffic headings show SOTIS (New Maru-boat call) associated with #2 Base force in 3rdFlt; SENJO MARU (Air Tender) in Takao area. Traffic routing for AKAGI (Aircraft Carrier) today is through both Yokosuka and Sasebo. AKAGI apparently enroute from Yokosuka to Sasebo.

Units using letter numeral calls were heard working on 8270 kcs (A) during the morning watch. They were also heard working on 12730 kcs (A) later in the day.

Several individual ships were noted originating movement reports. Cardiv-3 and #2 Base Force also originated code movements.

Sasebo Radio (KIMU9) originated a despatch the text of which is thought to contain Direction finder bearings - bearings appear to have been taken hourly, namely at, 2030, 2130, 0430, 0530 and 0610 - see (KIMU9 #85/1210/12765).

SUTU77 (D/r section at Tokio ?) originated a 3-part period separator code addressed for action to SOTO77 (All Force Comdrs) for information of SUTU753 (?) and Tokio Naval General Staff Special Section - see (SUTU77 #441/23813NIYOCMI/1205/16700).



10. RDF bearings taken on the *Kido Butai*. This Great Circle map of the Pacific Ocean allows RDF bearings to be plotted as straight lines. Station Cast's 030 bearing on the *Akagi* taken in late November, 1941, passes through Japanese home waters as well as the Kuriles, from where the 1st Air Fleet, as the *Kido Butai*, began its arduous trans-Pacific voyage to Hawaii on Nov. 26, 1941. It cannot yet be determined whether Station Cast's bearings prior to Nov. 26 represent Japanese radio deception or actual intercepts of the 1st Air Fleet before it set sail. Leslie Grogan's report of Dec. 10, 1941, indicated that Japanese coded "repeat-back" transmissions came from about northwest of Honolulu. This bearing, though approximate, passes through the course of the *Kido Butai*. Map sources: Brodie, *The Layman's Guide*, 108 (Great Circle map of the Pacific); Goldstein and Dillon, *The Pearl Harbor Papers*, 258-9 (reported positions of the 3rd Battleship Division, 1st Air Fleet, *Kido Butai*); Parker, "The Unsolved Messages," 306 (the course of the *Kido Butai* on a Mercator map).

11. SRN-115397. "Striking Force Operation Order #1" defined the communications plan for the Strike Force, or *Kido Butai*. Shortwave (HF) would be used for local "Battle Control," whereas longwave (LF) would be used for "Alert Control." This is the only known Strike Force order also sent to Tokyo DF Control. The *Kido Butai* later used a reserved DF frequency (375 kHz) for "repeat-back" transmissions in the north Pacific. Tokyo DF Control likely needed to know that the *Kido Butai* was using a reserved DF frequency for its "Alert control."

~~TOP SECRET ULTRA~~

(db)

U NO 2 All Fleets
DE: KAFU 6 TOKYO Radio
C TU 7091
SDU NR 944
719

include

From:	NO TA 88	COMCARDIVS, Comb. Fleet
To:	TE NI 77	2nd Fleet, Unit In
	SI RA 55	DESRON 1 Comdr.
	SEI 11	
	NO TA 5	Incl CARDIV 3, May be CARDIVS, Comb. Flt., Collective
	NI RA 9	CARDIV 4
	TA YA 8	Unit in CARDIVS, Comb. Fleet
	SUTI 22	Bat Div 3 Comdr.
Info:	U NO 22	All Fleet CinCs
	KRE 88	TOKYO D F Control

11/161810/1 1941 (TOX11/16 0610 P BX 16628 A) R

Serial 830

Striking Force Operation Order #1.

Commencing 0000 on 19 November, "Battle Control" effective for short wave frequencies and "Alert Control" for long wave.

JPH

JN-5 40037-2

(Japanese)

(NK) Navy Tr. 11/26/45/4 ~~TOP SECRET ULTRA~~

11/16/46

[Handwritten signature]

DECLASSIFIED per E.O. 12065

by Director, NSA/Chief, CSS

1 June 1979

SRN. NO

115397

12. Combined Fleet Communications Procedures, *Ca Nachi Papers, Revision of Nov. 17, 1941*, MacArthur Archives, 17-8. Admiral Yamamoto's communications plan allowed operational forces to acknowledge their receipt of radio dispatches when necessary. This explains, in part, why the USN was able to intercept stray transmissions from the *Kido Butai*.

3. Communications procedure

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a. Broadcasting will be the principal means of communication within an operational force. Acknowledgment will be required when there is uncertainty concerning receipt of the message or when confirmation is required because the message is especially important.

Page
2/44

b. Each force, at the direction of its commanding officer will come into the short-range communications system of the nearest communications unit (TN Add "and into its broadcast communications system.")¹ (In cases of special necessity, it will come into the long-range communications system.) Communications dealing with transportation, supply, personnel and other communications not urgent from the standpoint of operations usually will come under this

¹Editor's Note: Revised by "Errata" issued by Flag Secretary, Combined Fleet as Combined Fleet Ultrasecret Serial 1 Part 99, dated 17 Nov 41, aboard the *YAGATO, SAKKI WAN*.

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communications system. The Task Force, Commerce Destruction Unit and other forces operating on special missions at great distances, when they set out from their rendezvous, will come under specially designated communications systems centered around the Tokyo Communications Unit (TOTSU).

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c. All communications units will relay to the proper authorities communications of operational forces within their respective areas. Relay usually will be by broadcast, and acknowledgments will be required when confirmation of receipt is especially needed. Relays of messages classified urgent or higher will be broadcast immediately; other important messages at the times indicated in Paragraph d, below.

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COMMUNICATIONS UNIT	COMMUNICATIONS TO BE RELAYED
Tokyo Communications Unit	Communications of Task Force, Commerce Destruction Unit and other forces under specially designated communications systems
Takao Communications Unit	Communications of submarine and airplanes under Southern Force
3 Communications Unit	Communications of SubRon 5 and of airplanes based in PALAU within Southern Force
81 Communications Unit	Communications of airplanes and submarines operating in the SOUTH CHINA Sea Area
5 Communications Unit	Communications of submarines and airplanes under South Seas Force
6 Communications Unit	Communications of Advanced Expeditionary Force (SENKEN BUTAI) submarines
<p>Note:</p> <p>Frequencies to be used in broadcasts will be as shown in d. When there is no danger of interfering with the operational communications of forces, frequencies of ships may be used.</p>	

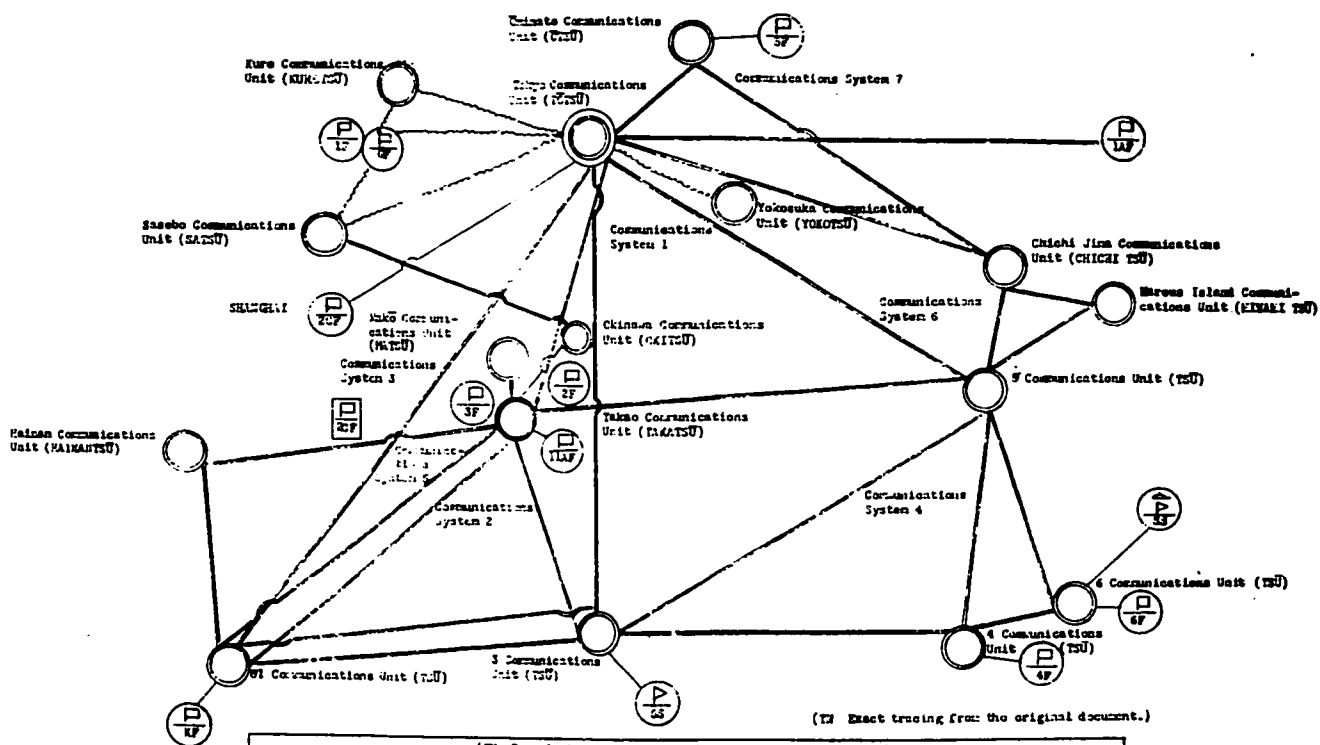
13. Combined Fleet Communications Plan. *Ca Nachi Papers, Revision of Nov. 17, 1941, MacArthur Archives, 26.* This plan shows that the 1st Air Fleet communicated exclusively and directly with the Tokyo Communications Unit (TOTSU).

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Appendix Chart

COMBINED FLEET COMMUNICATIONS UNIT. (BASE) COMMUNICATIONS SYSTEMS



(T) Exact tracing from the original document.

(T) Translation of conventional signs and abbreviations.

	CinC 1 Air Fleet		CinC 4 Fleet		CinC 11 Air Fleet		CinC 1 Fleet
			CinC 5 Fleet				
	Com SubBans		CinC 6 Fleet		CinC 3 Fleet		CinC 2 China Expeditionary Fleet
	CinC 6 Fleet		CinC 2 Fleet		CinC Combined Fleet		CinC Southern Expeditionary Fleet

14. Leslie Grogan's explanation of *Kido Butai* "repeat-back" transmissions, Farago, "POSTSCRIPT," 385-6. Grogan revealed how the *Kido Butai* repeated messages from Japanese shore stations to its many submarines and surface vessels by using 375 kHz, a reserved DF frequency.

It was necessary for the Japanese to find a means of secret wireless communication between the ships of Nagumo's Striking Force, and his advance units. It would be sheer folly to expect that a huge armada of ships, widely scattered at times, would be sent to sea, and remain there for ten or eleven days, without some form of intercommunication.

It was necessary to transmit orders and instructions, either to individual ships or to the Combined Fleet. Acknowledgement of such orders was mandatory to insure their proper execution.

While the larger ships of the Striking Force were able to receive signals regularly from their homeland on the *high* frequencies, it was often impossible for the low-lying submarines to do so. Thus the submersibles would be kept wholly in the dark, and some of the most vital elements of the fleet would thereby be required to literally grope in the dark.

This was an intolerable situation. Submarines could often not intercept the *high*-frequency signals from Tokyo or other shore stations in Japan because of their low antennas, and the curvature of the earth, which reflects the high frequencies (short waves). Not only the submarines, but other small craft found themselves in the same predicament.

The Japanese were able to solve this problem by resort to 'hoax.' It was only necessary for one ship to pick up the *high*-frequency signals from the homeland and then retransmit this same signal, simultaneously, on a *low*-frequency which the smaller craft could intercept.

For example, a signal from Japan would come into a receiver aboard ship at, say 12,000 kilocycles – a suitable frequency for a long-range communication during certain hours of daylight. Instead of using this 12,000 kilocycle signal to actuate a loudspeaker, it would be made to actuate a sensitive polarized relay, or one of the several forms of electronic keying devices. The relay, in turn, would 'key' a transmitter whose frequency could be selected at will – in this case 375 kilocycles, as was chosen by the Japanese for secrecy on the run to Hawaii. A 375-kilocycle signal would fall in the band reserved for direction finding, a master of strategy by the Japanese, because no intercept or monitoring station would look for a Japanese signal in this band. Moreover, the [power] of the 375-kilocycle transmitter was low enough to severely limit its range.

Assuming that a particular intercept or monitor station had, by sheer coincidence, tuned across the spectrum and discovered a Japanese signal on 375 kilocycles, the receiving operator would not have known what to do about it, other than to record it in his log. Practically all intercept and monitor stations were, at that time, land based. And unless the operator had returned to this same portion of the spectrum on successive nights to confirm any suspicions he might have had, as was done by the *Lurline's* Radio Officer, there would have been no effort made to evaluate the incident.

It was only because the 375-kilocycle signals, transmitted from one or more Japanese ships of the Striking Force, were heard on *successive* nights that the *Lurline's* Radio Officer was able to confirm his original belief to the extent that he had discovered a group of moving objects.

Finally, most if not all listening posts would have been so far distant with respect to the ships that they would have heard nothing at all.

It is not known for a certainty if Admiral Nagumo had knowledge of the re-transmissions made from one or more of his ships. It is generally assumed that he did not. When he stated that his force had observed total wireless silence on the run to Hawaii, he could have made a truthful statement. Knowing that many signals were sent, during three successive nights, it is obvious that the re-transmissions were under the direction of the Imperial Japanese Naval Intelligence Service.

Intelligence would have been the proper agency to handle this assignment. It was highly probable that the Japanese Intelligence people, like our own, had conceived and executed this project unknown to any officers attached to the Striking Force. It is extremely simple to install a complete, compact receiver-keyer-transmitter outfit in a restricted area of a warship, just as was done years ago, and continues to be done today.

The Japanese hoax was a rousing success. They made good use of it. We discovered it, and – in customary manner – did nothing about it!

15. Summary of Frequency Allocations in the United States - 1941, Pollack, "High-Frequency Transmission and Reception," *The Radio Engineering Handbook*, 535. This table shows that 375 kHz was indeed reserved for direction finding in 1941. Given that some USN stations used this frequency to exchange radio bearings, the USN may have monitored the "repeat-back" transmissions before Grogan's report of Dec. 3, 1941, alerted the 14th Naval District in Honolulu to the *Kido Butai's* communications plan.

Sec. 18] HIGH-FREQUENCY TRANSMISSION AND RECEPTION 535

TABLE II.—SUMMARY OF FREQUENCY ALLOCATIONS IN UNITED STATES
For details of frequency allocation in United States, see General Rules and Regulations, FCC, Part 2, U. S. Government Printing Office, and Order no. 67, FCC.

Frequency channels, kilocycles	Allocation	Frequency channels, kilocycles	Allocation
10-103	Fixed, government	11.010-11.685	Ship telegraph, maritime calling, government, coastal telegraph, fixed, aviation, miscellaneous
103-141	Coastal telegraph, government		
143-193	Maritime calling, ship telegraph, fixed and coastal telegraph. (190 kc to state police and government)	11.710-11.890	International broadcast, government
		11.910-13.990	Aviation, fixed, government, ship telegraph, coastal telegraph, miscellaneous
194-391	Government, fixed, airport, aircraft (375 kc to direction finding)	14.005-14.395	Amateur
		14.410-15.085	Fixed
		15.110-15.330	International broadcast, government
392-548	Coastal telegraph, government, ship telegraph, aircraft, intership phone (500 kc to maritime calling and government)	15.355-17.740	Fixed, government, aviation, ship and coastal telegraph, miscellaneous
550-1,600	Broadcasting (1,392 to Alaska services)	17.660-17.840	International broadcast
1,600-1,712	Geophysical, relay, police, government, experimental, marine fire, aviation, motion picture	17.860-21.440	Fixed, government, aviation
		21.460-21.650	International broadcast, government
		21.650-23.175	Coastal telegraph, government, ship telegraph, miscellaneous
1,716-2,004	Amateur		
2,004-2,500	Experimental visual and relay broadcast, police, government, ship harbor, fixed, miscellaneous	23.200-25.000	Aviation, government, miscellaneous
		25.025-26.975	Broadcast, government
2,504-3,497.5	Coastal harbor, government, aviation, fixed, miscellaneous	27.000-27.975	Government, general communication
		28.000-30.000	Amateur
3,500-4,000	Amateur	30.000-42.000	Police, government, relay broadcast, coastal and ship harbor, miscellaneous
4,005-6,000	Government, aviation, fixed		
6,020-6,190	International broadcast, government	42.000-50.000	Broadcast and educational
6,200-6,990	Coastal telegraph and phone, government, fixed, miscellaneous	50.000-56.000	Television, fixed
		56.000-60.000	Amateur
		60.000-112.000	Government, television
7,000-7,300	Amateur	112.000-116.000	Amateur
7,305-9,490	Government, fixed, aviation, ship telegraph, coastal telegraph, miscellaneous	116.110-139.960	Broadcast, government, aviation, police, miscellaneous
		140.100-143.880	Aviation
9,510-9,690	International broadcast	144.000-400.000	Government, television, fixed
9,710-11,000	Government, fixed aviation	400.000-401.000	Amateur
		401.000 and above	Experimental

DECLASSIFIED
Authority: OP3012
By: KC NAIPA Date: 2/8/00

Beant

C
Beant Dent

12-1-4

011512 Bearings 10 hours 30th WISN8 at 523,
NAR.3 at 2, TE66 at 0, TOHE0 at 320,
NSU8 at 3, 8YUNa and 8ROTA at 27, SA17 at 99,
SOH1 at 86, MUTA9 at 98

011522 MoNo7 at 92, IKU7 at 105, MES.9 at 80;
New arrivals in Jaker area are YoMo09 (COMBESRON 5
IN NATORI), SETA9 (NAKA) joined Desron 4, known
TAHE3 (CHOGEI FLASHIP OF SUBRON previously known
as NORTHERN BLOCKADE FORCE)

011532 CINC Second Fleet shifted Comm
Zone from KURE to SASEBO. For Nygo -
your 292310 unreadable.

011547 Summary Res

DECLASSIFIED
Authority: OP3012
By: KC NAIPA Date: 2/8/00

ICIBO MATR AFFIX KAPIN GUTEM BOONS TERTY INTIK AWIRA
WISSR ICHTA TTRER KEAKN TYTRR KELLA RINAR ITRER NATTW OLTRE
TRESI XATER RUGTO NESTON KESRO ATTER KESTRE KEKUN SORSU KIGHT
ATTER KESSEI GUTTU MAYUN AANDE ICHTR OZARO ZAAAT VERTY SEVEN
XSAIS AISHY EBATH INERTY THERR XSOOS OUCHE ATREG RTTISI XIAGOT
AMUTA NINEA THIRE TYRIG NITLK YABRO TPOCB VODSI C 011512

PSYTH BIRINC ACHSII MORSOM OROSE VEMAT NIMNT YTWOL INIUK
USIVE MATON BEERO FIVE MESIM BQINI MBATE ICHTR XUNEN ABRIY
ALGIN TAKAO ARMA REXYO MOTOM OBIKE COMDE SHOPT IVEGON MAFOR
IZIANT ASSTA ELIKEN AKYHA KAJOI NEMDE SEONP OUBET AHISTA NESTER
KESRO OBIPI, JOSEI POPYU MROCP BEKIO USLAK KUMBA SHOPT YKROB
TACKA DIFON CHUIC INGE COMA USARE TOSAM UIRJAN C 011522

WRETY CROWS NESTY XIKRE ATSDO OMDPL KESTSE IPTED COMAS
ONEDR OMKUR ETOSA NEROK LPTORR YGOTO ORTWE RTTIRI NANTOR RTTTH
BENTR NUNNR NDABL KILFED JURESD VVVOP RDETY KUDBOY DSXQW APYDT
C 011532

VOTEG ICHUR UOCHA JITEN KILZE UOQQA C 011542 Summary

Res 12-1-41 AM

16. TESTM nos. 011512, 011522 and 011532, Dec. 1, 1941, 2000/1 - NSRS Philippines, SI Genser, RG38. This report sent by TESTM radio circuit from Station Cast to Station Hypo indicated that the Akagi, call sign 8 YU NA, was located along a bearing of 027 from Corregidor on Nov. 30, 1941. This RDF bearing passes through Japan's home waters as though the Akagi never crossed the north Pacific with the Kido Butai. This particular bearing must represent Japanese radio deception.

17. Supervisor's Report, Station H, Dec. 2, 1941, *Station H Monthly Report for December, 1941*, RG38, 15. This report of Dec. 2, 1941, shows that Station H intercepted a Japanese "REPEAT BACK CIRCUIT" operating on 11.5 MHz, an HF frequency.



SUPERVISORS REPORT

H 2 DEC 41

EVE WATCH

~~SECRET~~

TRAFFIC LOAD GOOD - SIGNALS REMAINED GOOD ON SOME OF THE DAY FREQUENCIES, BUT OTHERS FADING OUT - TOKYO ON 16880 TO TAKAO WAS NOT GOOD ALL EVENING, ALTHOUGH 15520, 14930 AND 15210 REMAINED GOOD UNTIL SHIFTING ABOUT 1830.

TOKYO ON 16170A WORKING SUKA4 (CINC S.CHINA) AND TUKUS (UNIDENT) DID NOT HAVE MUCH TRAFFIC AND 16570A RETURNING WAS VERY POOR.

SAMA HAINAN ON 8500A FAILED TO SHOW GOING TO TAKAO.

MAJOR COMMANDERS ON 11370A FAIRLY BUSY WITH HEAVY INTERFERENCE MOST OF THE TIME. CALLS USED ON THIS CIRCUIT WERE - SUKA4 (S.CHINA FLT); YOKO0 (CHINA FLT); YUI1 (SAMA) AND KANE1.

CANTON AND OTHERS THAT WERE ON 7755A LAST EVENING FAILED TO SHOW ALTHOUGH CLOSE CHECK MADE.

SASEBO RADIO WORKING MARU SCATS FROM 12850 DURING EARLY PART OF THE WATCH, LATER SHIFTING TO 7765A.

MERO6 (TAKAO AIR CORPS) ON 11500M BROUGHT UP A "REPEAT BACK CIRCUIT?" - CALLED REHEB, AND HAD PREFIX TURA REHEB WITH A SLANT (IKA) AFTER THE TI IN THE HEADING. ALL TRAFFIC RECEIVED ON THIS CIRCUIT WAS RECEIVED PREVIOUSLY FROM TOKYO DIRECT, ON THE 1ST. 8465A WAS MENTIONED ALSO, BUT WAS NOT HEARD. THIS CIRCUIT DROPPED AT 1730.

NOTE MESSAGE NR993, PREFIXED NIKÁ USING TWO CHARACTER ADDRESSES AND ORIGINATOR.

TI SINI SUHO HA MAYA

95798.

YAE7 (SHORE CALL) AT 1330 UP ON 14470A TO TAKAO ALSO CALLED IMU3 (PALAO), SENT SEVERAL SHORT SUU'S (D/F) MESSAGES.

NE09 - NEW (ALTERNATE) CALL FOR ANKING STATION SHIP. SAME BASE NUMBER AS CARRIED BY HANE4.

NOTE THAT SOME OF THE TRAFFIC ON THE UTU WHICH CARRIES AUTHENTICATORS AFTER THE MESSAGE NUMBER SUCH AS RURURU, HAHANA, HOHOHO ETC. CARRY AN ADDITIONAL AUTHENTICATOR IMMEDIATELY FOLLOWING THE UTU NUMBER. TWO CHARACTERS WERE USED - TA AND SA. WHEN USED, THE UTU NUMBER AND CHARACTERS WAS SENT 3 TIMES.

000015

18. Station H Chronology, Dec. 5 and 6, 1941, *Station H Monthly Report for December, 1941*, RG38, 5-6. On December 5 and 6, 1941, Station H reported that Tokyo was broadcasting simultaneously on LF (32 kHz) and HF (12330 kHz). Regarding the 32 kHz transmissions, Station H explained that "The use of this low frequency indicates traffic sent on this broadcast is for ships at a great distance from Tokyo." These reports support Leslie Grogan's observations.

Dec. 5, 1941

South China Area: Tokyo Naval Intelligence and Communications Division continue sending high-precedence messages for general distribution and especially to CincPac's Combined, Second, Third, South China Fleets and Comdr. Indo-China and Combined Air Forces. From all indications, Cinc Second Fleet is in command of operations in Indo-China and South China areas.

Combined Fleet: No indication as to location of the Carriers was noted in today's traffic, although it is believed that they remain in the vicinity of Kyushu.

Fourth Fleet: Cinc Fourth Fleet seems to have moved from Truk to the Jaluit area. There has been quite an exchange of messages between units in the Fourth Fleet and in the South China or Indo-China areas. This indicates closer cooperation between the Mandate and South China forces.

General: Saipan, Ominato, and Takao were heard broadcasting traffic to vessels in their vicinity. At 0430/6th Tokyo was observed using 32 KCS for an UTU broadcast. This frequency was used dual with 12330 KCS. Signals were very strong during the day. The use of this low frequency indicates traffic sent on this broadcast is for ships at a great distance from Tokyo.

Dec. 6, 1941

South China Area: Considerable activity in the South China and Indo-China areas was indicated by the large amount of high-precedence traffic originated by and sent to units in these areas. Most of the traffic sent to units in southern waters was originated in Tokyo. Cinc's Second and Third Fleets are still in the vicinity of Takao or farther south. Comdr. Combined Air Force is at Takao Air (Station). Traffic for Kanoya Air Corps, Shingnan Air Corps, German Air Corps, Eleventh Air Corps, and Takao Air Corps, and other units believed to be Air Corps or Squadrons, was handled by Takao, indicating they are in the South China or Indo-China area.

Dec. 6, 1941 - Cont'd

Combined Fleet: Cinc's Combined and First Fleets are believed to still be in the Kure area. Very little activity in the Empire was observed. Most of the traffic addressed to Cinc's Second and Third Fleets and Comdr. Combined Air Force and Indo-China is also given to Cinc Combined Fleet—probably to keep that command informed of operations being carried out in Indo-China.

Note: There is no mention of Japanese Carriers.

Submarines: No activity of importance was observed in the Subforce. Several indications lead to the belief that ComSubfor is at Jaluit. At least two Subrons are believed to have remained in home waters, with one at Yokosuka and the other at Kure.

Fourth Fleet: It has been definitely established by traffic study that Cinc Fourth Fleet is in the Truk area. Traffic continues to be exchanged between several Fourth Fleet units and commands in the Indo-China area.

Fifth Fleet: Ominato has been heard working the flagship and, at least, one other unit of the Fifth Fleet for the last few days. This fleet has been based at Chichijima for some time. It is probable that part of this force has remained at Chichijima; it is known that NED6 (Airron attached to 5th Fleet) is there.

General: At 0430, Tokyo was heard using 32 KCS, dual with 12330 KCS, for UTU broadcast of traffic. This broadcast was discontinued at 1800, but 7285 KCS (W) was immediately brought up and used until 1900, when it was secured. This broadcast was used in addition to Tokyo's regular UTU. Tokyo also broadcasted traffic on 4465 KCS (A) during the evening. Comdr. Combined Air Force, Saipan, and Ominato were also heard broadcasting traffic to units in their vicinity. The use of this method of delivering messages tends to keep unknown the positions of vessels at fleet, and is probably one of the first steps towards planning the operations of the Navy on a war-time basis.

2. Mailgram no. 080037 dated Jul. 10, 1941, from COM11 to COM12, A6-1/A1-1, RG181. This mailgram sent from COM11 in San Diego to COM12 in San Francisco shows that the USN used "AUTOMATIC REBROADCAST" equipment to relay radio dispatches. Leslie Grogan suggested that the *Kido Butai* may have used such equipment to produce "repeat-back" messages.

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STAFF HEADQUARTERS, THIRTEENTH NAVAL DISTRICT *A6-1/A1-1*

FORM 5-14-41 50M

MAILGRAM

080037

RESTRICTED

PARAGRAPH THREE URLTR JULY SECOND TRAFFIC ROUTING ALTERNATE PROVISIONS AUTOMATIC REBROADCAST IS PRACTICABLE AT SANDIEGO X POINT LOMA REBROADCAST INSTALLATION IS COMPLETE AND OPERATION IS SATISFACTORY X DESIREABLE THAT YOU UTILIZE THESE FACILITIES AS MUCH AS PRACTICABLE IN ORDER THAT MORE PERSONNEL AT POINT LOMA MAY RECEIVE EXPERIENCE IN OPERATION OF NEW EQUIPMENT X NO REASON EXISTS FOR ANY DIFFICULTY IN REBROADCASTING ON ANY FREQUENCY FROM SANFRANCISCO WASHINGTON PEARL HARBOR OR ~~XXXXXXXX~~ VESSELS OF THE FLEET X ONLY LIMITATION IS POWER OF TRANSMITTERS AT PRESENT AVAILABLE X SUGGEST DAILY ONE HOUR USE IN HIGH SPEED TRAFFIC HANDLING

1941 JUL 10 11:23:09

FM: COM 11	TO: COM 12 Action: One punch.	INFO: OPNAV BUSHIPS CINCPAC COMS 13,14 Info: Two punches.
------------	----------------------------------	--

Comd	Ch of Staff	Operations	Intell	Dis	Sup of	WFL	Mail	Per Og	Test Div	NAV RES	Med Og	Intd	PTO	Lead Og	Sup Cont	Pub Rel	Ch Per Og	Ordance	Comales	DCO	Ch/Clk

E.O. 12356 Sec. 3.4
 Project: *Project: [unclear]*
 By: *SAK*
 WPA Date: *5/1/60*

3. TESTM nos. 051515, 051525 and 051535, Sep. 5, 1941, 2000/1 - NSRS Philippines, SI Genser, Msg Files, RG38. This TESTM report, sent by radio from Cavite, Philippines, to Station Hypo, shows how RDF bearings were exchanged between USN stations in the Pacific. Cavite was the administrative centre for the 16th Naval District in the Philippines.

DECLASSIFIED
Authority: 003012
By: Kc HARA Date 3/3/00

DECLASSIFIED
Authority: 003012
By: Kc HARA Date 3/3/00

SECRET
FROM: CAVITE
5 SEPTEMBER 1941.

051515
BEARINGS 11 HOURS FOURTH I TOFU3 AT 358
KUNA3 AT 358
ROTOP AT 358.
TAW12 AT 003,
SOKK2 AT 006,
SUA 3 AT 007,
SEU 8 AT 007,
TIB12 AT 008
BATA9 AT 015

051525
THIRD FLEET UNITS LEAVING POCOBON AREA/ XX
SOW15 AT 330
6KABU AT 20
SWAWI AT 20
9KATA AT 20
4ROTO AT 20
90 KI AT 20
7REME AT 21
1SEMI AT 22
2TISA AT 23
TIR12 AT 12
SOKK2 AT 13
IWI 6 AT 85
TWENTY THREE HOURS XX

051535
FOR HYPO X ASSUME FIRST SEVEN BEARINGS YOUR 2300 TEST MESSAGE
WERE FROM VICTOR AND THAT YOUR TWENTY THREE TEN WAS DUMMY

C 0 5 1 5 1 5
MACKI
TREP1 ELIAB ABING SBLAY KKHOU ESPOU NYELI TOTUT
OPUTH RHEKT UNITU HIZER OIEMOH AMONA TUNER AIHMO TURUT UZBRO
ATYER KETAP TYAIG NYATE WYEN ITWOA TEMBO BENDT KREK1 SOKK2
OKEW OATIS ROBER OSIKI SUTHE REBAR DEBUS HUKIO NYATE BOKS
ROSEV KOKTI ELIYH ITWOA TEMBO/ SERGE IGREK BAZAR AZANTI HAKES
BHOVI PTERE YEHK NYLKE TUBIT SIBAND JKERT KDOGX

C 0 5 1 5 2 5
MEURS KATPS KELLIS AVING POOOR ONABE ALEPU WISOW IPIVIE
ATYER KATRE NYTIS IKA SUKAS UUTIV EMANT MAWIX WIRIK NYAKS Y
APOUR ROTOR OYDAS NYINE ONIOM LATTW KETIX KSEVE NYEANG BEMBA
TWEIN TYOBE JONES NYISS KILATT WENYI TWOKT WOTIS ATISA AITWS
NYATE KSELI TWENT YTHRE KMOUR SLETH IYIKI TWQAT TWELV KESOK
KSOCK TWQAT THIRT KREK1 NYELW YUOUPC VBERP DOXHE

C 0 5 1 5 3 5
CTPCL SHERI DAREK IYENW ISILA TRICH TYTIV KAPOR NYPOK
ASSOU NYTIS TURE NYBAR INGSY OUKTW KMETT KREKT WENYI TETRE
ESSAG NYEWA FRONT ICTOR ABYTH ATYOU NYWEN NYER ERKEN WABDU
NYKXI XYINI SBNVY CAYSD ZAPENW DOPOR JKAMB UYTHK NYKXK CQZLU

C 0 5 1 5 4 5 - dummy

4. Memorandum dated Sep. 23, 1941, from Lt. Cmdr. J.J. Rochefort to Fleet Intelligence Officer [E. Layton], 2 pages, PHLO Records, RG80. Rochefort's memorandum to Layton shows that Station Hypo (COM14) was responsible for plotting all vessels in the Pacific *except* Japanese naval vessels. This allocation of intelligence resources is difficult to explain given Station Hypo's role as the combat intelligence unit for Hawaii's 14th Naval District. Layton produced daily location sheets for Admiral Kimmel, but what information Layton received and reported remains unknown.

44-3/14ND/OI
Serial 28948

OFFICE OF THE COMMANDANT
FOURTEENTH NAVAL DISTRICT
NAVY YARD, PEARL HARBOR, HAWAII, U. S. A.

SECRET

(dgr)

44-3/14ND/OI
Serial 2-2048
OFFICE OF THE COMMANDANT
FOURTEENTH NAVAL DISTRICT
NAVY YARD, PEARL HARBOR, HAWAII, U. S. A.

SECRET

23 September 1941.

MEMORANDUM - FLEET INTELLIGENCE OFFICER.

Subject: Combat Intelligence Plot, Utilization of.

1. There is being maintained in Combat Intelligence (Fourteenth Naval District), a plot of vessels in the Pacific. This plot shows:-

- (a) All U.S. Merchant units in the Pacific.
- (b) All U.S. Fleet units in the Pacific (less those in Pearl and Hawaiian operating areas).
- (c) All Japanese merchant ships in the Pacific.
- (d) All other foreign merchant ships and public vessels in the Pacific, plus aircraft as desired.

2. The information required to maintain the visual plot is gathered from many sources, and with the possible exception of certain movements of Fleet units, is believed to be complete. The positions of units are plotted daily, or oftener as received on an α x λ chart of the Pacific, and are also entered on cards for future reference.

3. From the above it will be seen that provisions have already been made in Combat Intelligence to maintain a complete plot of all ship movements in the Pacific. The maintenance of such a plot is highly desirable, and almost essential in connection with other duties of Combat Intelligence. In other words, whether or not the results of the plot are used outside this office, it must still be maintained.

4. At the present time the results of this plot are made available only to other Districts, OpNav, and in connection with movements of craft for which the Commandant Fourteenth Naval District is responsible. For example, when orders are issued by Com-14 affecting the movements of a vessel under his command, or when a vessel is routed, this office furnishes the Commanding Officer with a memorandum indicating what vessels may be sighted including time and location. This information is furnished as an information annex, to be destroyed by burning after its purpose has been served. If desired, this service can be expanded to furnish Fleet units (through CINCPAC) with the same information. However, in order to accomplish this, it is necessary that this office be furnished with pertinent information regarding projected movements, escorts, etc., of Fleet units.

MEMORANDUM - FLEET INTELLIGENCE OFFICER.

Subject: Combat Intelligence Plot - Utilization of.

in order that information of units which may be sighted enroute can be expeditiously furnished. In this connection, it is suggested that the present location of Combat Intelligence is ideally suited for such a purpose in that space is available, security of a high order is insured, and rapid communications with sources of information is available.

5. Recommendations - That the Fleet utilize the facilities now available in combat intelligence, Fourteenth Naval District, for information regarding ships or units which might be sighted by Fleet or merchant vessels of the United States traversing Pacific waters. If desired additional information can be furnished these ships or units while enroute. All liaison between this office and the Fleet must, in the interest of security, be with one officer from Fleet (Fleet Intelligence Officer). Insofar as the individual units or ships are concerned the origin of all information of this nature is CINCPAC.

J.J. Rochefort
J.J. ROCHEFORT.

5. COMSUM14s, Nov. 3 and 30, 1941, 5510/4 - NAVSECGRU, Fourteenth Naval District Combat Intelligence Unit - Traffic Intelligence Summaries: 16 July to 31 Dec 1941, RG38. Stray references to the 1st Air Fleet, which later served as the Kido Butai, sometimes appeared in Hypo's COMSUM14s. On Nov. 3, 1941, Hypo reported the appearance of the 1st Air Fleet as "an entirely new organization of the Naval Air Forces." On Nov. 30, Hypo explained that "The only tactical circuit heard today was one with AKAGI and several MARUs."

DECLASSIFIED
Authority 5012356
By WPD NNSA DAB 3/4/4

COMMUNICATION INTELLIGENCE SUMMARY
November 30, 1941.

~~SECRET~~

GENERAL - Traffic volume less than for past few days. Today's traffic consisted largely of despatches bearing old dates, some as far back as 26 November. No reason can be given for the retransmission of these messages unless the high volume of traffic for past few days has prevented the repetition of despatches. The number of despatches originated on the 30th is very small. The only tactical circuit heard today was one with AKAGI and several MARUs. The TOKYO Intelligence activity originated two WVI despatches to Mar for Fleet Commanders. One urgent despatch was sent by W3 to Chiefs of Staff, Combined, Second, Third, Fourth and Fifth Fleets, Combined Air Force, Submarine Force and China Fleets.

COMBINED FLEET - The Chiefs of Staff of the Combined Fleet and First Fleet are in KURE. In the same message the Chief of Staff Second Fleet was not at any location. Other traffic indications are that he is at sea. Commander in Chief Second Fleet sent one to his usual addressee of the Third Fleet and Combined Air Force but also included KOMEI and HIRAI, which places them as members of his Task Force. The Commander in Chief Second Fleet is no longer adding PALAO activities and has not for past two days. The HMO PALAO today addressed two messages to TAIWAN GUNNING (TAIWAN Army Headquarters).

THIRD FLEET - Commander in Chief Third Fleet addressed two messages to COMSUM 2, 4 and 5; COMSUM 5 (Five) First and Second Base Force and Defense Division One for information to Commander in Chief Second Fleet. No information obtained as to the location of the Commander in Chief Third Fleet, which gives the strong impression that he is underway.

FOURTH FLEET - Believed to be still in TRUK area. D.V. activity in Marshalls a little greater today than normal. JALUT addressed Commander Submarine Force and AIRRON 24 in one despatch. The continued association of JALUT and Commander Submarine Force plus his known progress from the Empire to CHICHIRIYAMA to SAIPAN makes his destination obviously the Marshalls. Since one of his large units (Sivi 4) arrived in the Marshalls some time ago this unit cannot agree with Com 16 that there is not a submarine concentration in that area. Every evidence points to a concentration not only the small Fourth Fleet submarines there but also a good portion of the Fleet submarines of the Submarine Force. AIRRON 24 plus YOKOHAMA AIR CORPS presence in that area points to intended air-submarine operations from the Marshalls. Also the presence of a unit of plane guard destroyers indicates the presence of at least one carrier in the Mandates although this has not been confirmed.

SOUTH CHINA - RAID active with despatches to Second and Third Fleets, Combined Air Force and SAM. Commander in Chief China Fleet becoming more and more active as an originator with despatches to the Task Force. He made a movement report with the South China Fleet as an information addressee. The Staff Communication Officer of the South China Fleet was addressed at Shanghai today.

DECLASSIFIED
Authority 5012356
By WPD NNSA DAB 3/4/4

COMMUNICATION INTELLIGENCE SUMMARY
November 1941

~~SECRET~~

GENERAL - Traffic volume slightly under normal although fair for Monday. Receiving conditions good but all circuits slow. General messages continue to emanate from TOKYO communications. Such as amount is unprecedented and the import is not understood. A mere call change does not account for activities of this nature. The impression is strong that these messages are periodic reports to the Major Commander of a certain nature. Dummy traffic is again being sent on the TOKYO broadcasts. Naval intelligence TOKYO addressed two WVI messages to Chief of Staff Combined Fleet and to KUMI 8 (unidentified).

COMBINED FLEET - Commander in Chief Combined Fleet sent an urgent message to HMIIL information all Major Commanders, Combined Fleet, Naval Intelligence Tokyo, the Chief of Naval General Staff, and Bureau of Personnel. Commander in Chief, Combined Fleet also was associated in traffic with offices in the Mandates, principally HMO PALAO. The Commander in Chief, Combined continues to be associated with the Carriers and Submarines.

THIRD FLEET - Third Fleet traffic continues at a high level. A movement report by HAI66 (unidentified) was addressed to Commander in Chief Third Fleet for information.

AIR - A US address today broke down as "YIHIEKUU KAWAII". The literal reading of this as "1st Air Fleet" is correct it indicates an entirely new organization of the Naval Air Forces. There are other points which indicate that this may be the case. An old call (YON7) which never identified seemed to be in a high position with respect to the Carriers and the Air Corps. Upon movement of air units to TAIWAN the association of GarDiv 4 and GarDiv 3 with units of the Combined Air Force was apparent. Their association in a command sense between shore based air and fleet air had never occurred before but under the concept of an AIR FLEET can easily be accepted. Traffic in the Air Force continues at a high level.

107

ROUTE SLIP
STAFF HEADQUARTERS
THIRTEENTH NAVAL DISTRICT

Date received... 6 December 1941
 Received from... CINCOPAC COMINT... LETTER 130L-43
 Our file No. **FF1/A2-11**
 Their file No. **A2-11/FF12**
 A7-37(12)
 Serial 01765
 Dated... 11-5-41
 Subject... Aircraft Depth Bomb. Bomb. Al. Att. Watch.

S.E.Q.	Action	Initial	PSNY	Action	Initial
Comdt. 13th N.D.	<input checked="" type="checkbox"/>	<i>PA</i>	Comdt. PSNY		
Chief of Staff	<input checked="" type="checkbox"/>	<i>PA</i>	D.P.W.O.		
War Plans			Dist. Sup. Off.		
Operations	<input checked="" type="checkbox"/>	<i>PA</i>	Dist. Mar. Off.		
Personnel			Training Off.		
Dir. Nav. Res.			R.M.O.		
Ch. Clerk			Labor Board		
Port Director			Aide to Comdt.		
Material					
Intelligence					
Asst. Dist. Sup. Off.					
Disbursing					
DOC					
Comdr. Inshore Patrol					
Civilian Personnel Off.					
Budget Off.					
Supr. Cost Insprr.					
Dehousing Officer					
Legal Off.					
Asst. Chief of Staff Sec.					
Adm. Officer					
Public Relations					
Dist. Wts. Officer					
Dist. Ord. Officer					
Dist. Avs. Officer					
Dist. Operating Annex					
Gas Defense Officer					
Comales					
Comdr. N.W. Sector					

PRINT 1025-41 3X (1)
 992102
CONFIDENTIAL

6. Route Slip dated Dec. 4, 1941, from CINCOPAC to Staff HQ, Thirteenth Naval District, Subject: *Aircraft Depth Bomb Alert Watch*, Serial no. 01765, Nov. 5, 1941, FF1/A2-11, RG181. Admiral Kimmel, obviously alert to the possibility of an air attack against the Pacific Fleet, issued his *Aircraft Depth Bomb Alert Watch* on Nov. 5, 1941.

Cincopac File No. A2-11/FF12(1)
 FIG-3/AMM/S87(1)/222
 Serial 2626

RESTRICTED

From: Commander-in-Chief, United States Pacific Fleet.
 To: PACIFIC FLEET.

Subject: Personnel Specially Trained in RADAR.

Reference: (a) Article D-4022(6) (g), Bunav Manual.

1. In view of the expected large number of RADARS to be installed within the Pacific Fleet it is imperative that each man trained, either as an operator or maintenance man, be employed in connection with the subject equipment and that his whereabouts be known at all times.

2. It is considered important that care shall be exercised to ensure that the proper entry, in accordance with reference (a), is made in the service records of those men specially qualified in RADAR.

3. Commanding Officers shall keep their Type Commander informed at all times in regard to the following:
 (a) The name of any man qualified as a RADAR operator who is not employed as such.
 (b) The names of men qualified in RADAR maintenance.

4. Unless so directed Commanding Officers shall not consider RADAR trained personnel as being eligible for transfer in furnishing quotas for general detail drafts but shall transfer other eligible ratings. In event no other ratings are eligible notify Type Commander or Fleet Personnel Officer, as appropriate, and substitution will be made if possible.

DISTRIBUTION: (7CN-41)
 List II, Case 2, P. X.
 ENS, ENA, FFO, NA11, NA12,
 NA36, NA31, NA37, NB18,
 ND11-ND14, NY6-NY10, NB49, CINCOPAC (10).
 List I, Case 1.
 A. (Cincant and Type Comdr.)

P. C. Croaley,
 Flag Secretary.
 USN Pms-10-11-41-1-100.

(Handwritten notes and signatures)
 H. E. KIMMEL
 (26-2-11-41-1-100)
 (26-2-11-41-1-100)

STAFF HEADQUARTERS
 UNITED STATES PACIFIC FLEET
 U. S. PENNSYLVANIA, Flagship
 Dec 5 9 46 AM '41

PEARL HARBOR, T. H.
 November 17, 1941.

PACIFIC FLEET MEMORANDUM 41M-41.

7. Memorandum dated Nov. 17, 1941, Serial no. 2626, from CINCOPAC to Pacific Fleet, Subject: *Personnel Specially Trained in Radar*, FF1/A2-11, RG181. Admiral Kimmel requested that all radar personnel be employed wherever possible on radar systems and that such personnel be accounted for at all times. Clearly, Kimmel wanted good radar surveillance for the Pacific Fleet.

8. Report no. 119 dated Nov. 17, 1941, from Glenn Howell, District Liaison Officer of 13ND, to Rear Admiral C.S. Freeman, Commandant 13ND, 4 pages, A9 - *Reports and Statistics*, RG181. This report, based upon Canadian sources but produced by the District Liaison Officer of the 13th Naval District in Seattle, demonstrates how some navy staff regarded Japan's capabilities on the eve of the Pacific War.

AS-2/EF 37
Serial 119

SECRET

Subject: General information on Japan

SECRET

to 6000 tons. This was cut down to 3000 tons in 1938. Considerable quantities used to be shipped to Germany through the German Commission of which Wohlat was the head.

Indo China can supply 6000 tons of rubber per month which is adequate but allows no surplus. It is possible that supplies of rubber in Japan are low.

6. Tin Tin stocks are not high. The informant's firm received proposals for contraband tin but turned them down.

9. Vegetable Oils Japan sought but was refused vast quantities from the Dutch East Indies, though Japan actually requires comparatively little. 15,000 tons, the quantity asked for, is far beyond Japanese requirements.

10. Raw Cotton The supply has been completely cut off and stocks are low. Army requirements are considerable.

11. There are no actual hardships imposed by reason of shortage of food. There is a rigid price control in Japan but in China the price of rice and sugar has risen several hundred percent. Draft has been abolished to a very considerable extent under advice from Germans in contact with the Japanese Government.

12. Shipbuilding Speed of production is enormous. In contrast to the Dutch East Indies who have been producing 12 knot ships with an eye to economical running the Japanese have been producing 18 knot ships.

13. Army The soldier is tough, with enormous powers of physical resistance. He is, however, very ill equipped with no initiative. There are vast quantities of equipment, as evidenced by the "overseas" mobilization of June/July, probably of good second class quality including tanks of which they probably have several thousand. Discipline is excellent.

14. Navy In 1933 and 1934 the informant states as definite fact that 3 destroyers turned turtle and could be seen bottom up in the harbour.

15. Air Force This has been improved considerably, probably under German instruction. Fighter planes are definitely poor. There are huge bombers which look good but appear to be slow. The difference between the Japanese Air Force and the U.S. Air Force at Honolulu was most marked. The Japanese Air Force could not stand up against the U.S. or British.

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Serial 119

SECRET

17 November, 1941

GH/ht

SECRET

From: District Liaison Officer
To : The Commandant

Subject: General information on Japan.

1. The following information on Japan was received by me on 14 November from Headquarters Pacific Command, Victoria, B.C. (Canadian Army). Source - reliable.

2. Raw Materials

The supply of oil and raw materials which have been accumulated in past years is underestimated.

(a) Oil There is enormous oil storage sufficient for from two to five years of total war. Most of this is in the north end, it is reported, mostly underground.

(b) Scrap The last American scrap arrived in Japan December, 1940. In March of 1941 all export contracts were suspended and contracts between Japan and the company represented by the informant were and still are outstanding. In July the order restricting exports became law.

3. War Materials

From mobilisation, indications are that Japan has far more war materials than is generally believed, particularly in tanks.

4. Metal factories have been working day and night for four or five years.

5. Welding is coming into Japan except from China which is being systematically despoiled.

6. Rumors This was discovered in the Dutch East Indies within the past six years and was sold direct to the Japanese Government. Shipments have been halted. Japan may be short of this.

7. Rubber Rubber supply has been completely cut off from the Dutch East Indies. The monthly consumption used to be from 5000

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Subject: General information on Japan.

16. Anti-aircraft defense. Japan is very vulnerable to an attack. There is no visible A.A. defense; no shelters. There is a large number of A.A. guns; these are constantly practicing in conjunction with searchlights; one of the methods is to loose gas balloons, pick them up with searchlights and fire at them. In connection with A.A. defense these following points are of interest:

Kobe, dockyards, steel factories, munitions works.

Ooaka, munitions and cotton. The joint population of Kobe and Ooaka, 5 million.

MaJoya, airplanes and munitions, population 1 million.

Tokyo and MaJasaki, dockyards and munitions. Population 6 - 7 millions. All these are very visible from the sea.

17. Synthetic Products and Manufacturing Ability. Japan has no inventive genius. Everything must be copied. If Japan were to be isolated for 5 years it would mean a serious setback. With the necessary plans and blue-prints Japan is able to produce good material, as is evidenced by the quality of their ships (though the Navy is said to have some queer looking craft). A further example is found in their looms which, in efficiency, are not far behind those produced in Manchester. Germany (through Krupp) has sold a number of patents to Japan, including those for making steel from low grade ore (10,000,000 yen) and for cracking low grade oils and coal for making gasoline. The Krupp representative is the only foreigner permitted to visit Koshaido.

18. Japanese Atrocities. From most reliable sources it is stated that reports of atrocities are very much under-statements of the truth.

19. Political. The informant is definitely of the opinion that war is inevitable in the near future. The foreign policy is a run-away horse and the country is coming more and more into the hands of the military.

There were three reasons for the general "overreas" mobilization of June/July:

- (a) To prevent Germany from getting Vladivostok.
- (b) To expand to the south.
- (c) Because of the fear of an armistice between England and Germany. For this reason it became necessary to increase the defense of China in order to be able to hold what they have taken.

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Subject: General information on Japan.

The reasons put forward for an early breach are: The "overreas" mobilization required the transportation of vast quantities of war materials into China. This took two months. A further four months was required to prepare bases for attack; these bases will probably be ready in December and attack can be launched at any time after December.

This opinion is subject to the development of the German-Russian war.

Japan believes that England will suffer further reverses after the Russian campaign is over. She will then attack the Burma Road, not Singapore or the Dutch East Indies. The reasons for this are twofold: (a) in the hope that an attack on the Burma Road would not be considered a casus belli by the U.S.; (b) to cut off supplies along the Burma Road.

If, however, the U.S. were to disclose the intention of declaring war if Japan were to move in any direction or if the Mediterranean were to be lost to the British the attack would immediately be directed against Singapore.

A subject of anxiety in Japan is the possibility of a German-Russian peace or a complete Russian defeat, giving Vladivostok to Germany, which would be entirely contrary to Japanese interests.

The Japanese do not trust the Germans in spite of the fact that Germans have penetrated into Japanese government departments. The German move into Russia, coming so soon after the non-aggression treaty between Japan and Russia, abetted the Japanese sense of honour.

The present trend of politics is a return to the feudal state abolished in 1868. The move is, then, natural to the political and religious traditions of the Japanese race. The Emperor will be pushed back from the political sphere into the nominal and spiritual head of the Empire. Shinto will be continued and even more widely advocated as propaganda to maintain unity within the Empire.

20. Three additional copies are attached hereto for such disposition as the Commandant may desire.

Olewn Howell.

Copies to:

- Chief of Staff
- District Intelligence Officer (2)
- District Material Officer
- War Plans Officer
- Commander Alaskan Sector
- Port Director
- Assistant District Supply Officer.
- District Aviation Aide
- Army Liaison Officer
- District Communications Officer
- Public Relations Officer
- Commanding Officer,
- Seattle Air Station.

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