

RALPH LEE DEFALCO III

Blind to the Sun: U.S. Intelligence Failures Before the War with Japan

In the grim months that followed Japan's air attack on Pearl Harbor, Hawaii, on 7 December 1941, United States forces across the Pacific were sent reeling by a powerful, well-equipped, and well-trained enemy. The Imperial Japanese Navy proved to be a potent force, armed with the weapons and the practiced tactics needed to engage its opponents with seeming invincibility. To say that Americans were shocked by Japanese capabilities is an understatement.

The U.S. Army and Navy had planned for war in the Pacific for decades. Japan had long been the target of assiduous intelligence-gathering activities. Then, too, since 1937, myriad reports from war-torn China streamed into the War Department's Military Intelligence Division (MID) and the Office of Naval Intelligence (ONI), providing accurate and often detailed information about Japan's military capabilities. Still, the image of Japan that emerged from prewar intelligence was never quite in focus.

The hard fact is that U.S. intelligence collection was better than generally supposed. Despite the numerous obstacles and barriers imposed by Japan's obsessive secrecy, by language, and by deliberate obfuscation, much was known about the Imperial Japanese Navy. But American intelligence in the interwar years was basically a patchwork effort, and largely uncoordinated. And some of what U.S. intelligence knew of Japan's various achievements was ultimately entangled in smoldering personal feuds, bureaucratic wrangles, and rivalries that precluded good reporting and analysis. Some

Lieutenant Commander Ralph Lee DeFalco III, a Senior Analyst at the Joint Analysis Center Detachment of the United States European Command, Chicago, is also an Adjunct Professor of Joint Maritime Operations at the College of Continuing Education, United States Naval War College, Great Lakes, Illinois. He received a master's degree in Strategic Intelligence from the Joint Military Intelligence College, Washington, D.C.

fine reports were not properly disseminated. Finally, the information consumers did not believe much of the intelligence that was ultimately communicated. Instead, it was rebutted or even ignored. Pervasive biases, including a presumption of technological superiority, stereotyping, and even outright racism, also blinded many American eyes.

INTELLIGENCE IN THE INTERWAR YEARS (1919–1941)

U.S. Pacific-area intelligence in the interwar years was a broad, but badly fragmented, effort to collect timely information on the capabilities and intentions of newly ascendant Japan. Included was the work of defense attachés, military liaison officers, foreign advisors, members of the diplomatic corps, fleet officers, and even a nascent radio intercept and cryptanalysis operation. Early indications of Japan's growing naval might during the interwar years came, in part, from the collection of signals intelligence. In fact, by the time the Imperial Japanese Navy went to sea for maneuvers in the spring of 1931, the Office of Naval Intelligence's (ONI) radio intelligence section was primed to exploit the intercepts from that fleet exercise, as explained by retired Rear Admiral Edwin T. Layton:

The rich intelligence haul made from the intercepts of Japan's 1930 naval maneuvers was officially compared to "exploring virgin territory" since no one in our navy at the time had any idea of the professional concepts, communications routines, or even the battle tactics of the Japanese fleet. By assembling the decrypts, we were able to learn a great deal about how Japan intended to conduct any naval war against us.¹

The Struggle for Control of Intelligence

But the rich intelligence haul would not be shared treasure. The U.S. Navy lacked a systemic way of analyzing and disseminating the information. In addition, a feud for control and power was already developing between intelligence and operations, and communications intelligence about Japan was held hostage. According to Admiral Layton,

The United States had won a major victory in ... 'the undeclared war' against the Japanese. Yet this success sparked another undeclared war at home as a long struggle for the control of this valuable new source of intelligence began within the navy department... The result was that by 1930 naval intelligence was being denied the information obtained from the Japanese fleet exercises.²

The putative reason for this struggle was the need to maintain secrecy. While creation of a system of compartmented information gleaned from decrypted radio traffic may have been necessary, in practice the system seems to have developed more to assuage personalities. On the eve of the

attack on Pearl Harbor, Admiral Richmond Kelly Turner, at that time the Navy's chief of war plans and almost by default, chief of naval operations, had taken unto himself many of the functions of the Office of Naval Intelligence. In this capacity, he was even developing his own estimates of Japanese intentions and forwarding them to ONI.

Turner's insistence on developing his own intelligence estimates was symptomatic of an intelligence organization that was badly flawed. As Lyman Kirkpatrick points out,

It was, in effect, making each of the top officials his own intelligence officer because what he was receiving was raw, unevaluated intelligence. It had not been processed in any manner except for the decoding and translating and was still in the usual cable format. . . . Only one form of evaluation had taken place. The Army and Navy had weeded out those messages it did not consider important.³

The system may have applied only to "Purple" and "Magic" intercepts, and this severe security plan virtually assured the secrecy of the code-breaking. But it also points up a complete failure to develop and then drive finished intelligence through the system to meet the needs not just of the strategist, but of the war fighter.

The Lack of Tactical Intelligence for the Fleet

In a similar vein, Admiral Layton recounts that until he reported aboard the *U.S.S. Pennsylvania* in December 1940:

The Pacific Fleet never had a full-time intelligence officer . . . the sturdy safe built into battleship *Pennsylvania's* bulkhead as a repository for the fleet's most secret documents contained just eighteen file folders; and most of them were empty!

In only one did I discover *any* [emphasis in the original] information about Japan. This was ONI Monograph 49, which, kept meticulously up to date, provided only the broadest generalities about the imperial navy. It had languished in the safe for years protected by its red-stamped cover, which read, TO BE REMOVED ONLY IN THE EVENT OF WAR.⁴

In retrospect, the unavailability of tactical intelligence to the fleet, especially in view of considerable efforts being made to collect the information, seems more than surprising.

Intelligence Collection in Japan

The U.S. naval attachés and staff in Tokyo routinely reported on the state of the Imperial Navy. In the mid-1930s, a permanent assistant attaché for air was added to that staff. Americans in Japan also joined the "Attachés

Club,” and thereby routinely traded news and information with naval officers from various nations.

As tensions with the United States mounted, Japan became increasingly sensitive to the presence of the American attachés. Tours of shipyards and military installations were canceled or severely restricted. Americans had made their last official visit aboard a Japanese warship in 1934. Shortly thereafter, the Japanese began rigorous enforcement of denied areas around military installations, built screens of wire and bamboo to hang from the scaffolding erected over hulls during dockyard construction, and even went so far as to erect tall brick walls around their naval bases. Foreigners who took trains that ran past sensitive areas were strategically placed in compartments facing away from the sites, or strictly admonished to keep the compartment windows closed and shades drawn.

The U.S. attaché office in Tokyo was understaffed, and labored under working conditions handicapped by a lack of resources, linguists, and timid superiors. Admiral Layton, for example, reports that he was told by superiors not to carry a camera, to avoid “snooping,” and any involvement in espionage.⁵

“Nevertheless,” according to author John Prados, “with imagination, persistence, and effort, the attachés gained surprising knowledge of Japanese activities.”⁶ The attachés proved to be voracious consumers of the Japanese press, and clipped, saved, and annotated hundreds of news stories and photos from open sources. The press covered sessions of the Japanese Diet, or parliament. The U.S. embassy routinely copied press reports of the Diet debates, and established a solid system for translating and assessing the contents.⁷

The attachés also proved adept at circumventing the “rules” imposed by both their American superiors and the Japanese. In 1939, assistant attaché Stephen Jurika, for example, secured photos of shipbuilding in the tightly restricted Japanese shipyards with the help of a cooperative passenger liner captain and the covert use of a telephoto lens camera. Other naval attachés took “vacations” or recreation in areas that would allow them to observe ships and aircraft. Some were even skilled at managing sources, informants, and the occasional agent, in spite of the standing proscription to refrain from engaging in espionage. As Prados indicates:

Despite Japanese sensitivities and regardless of the limitations on the information available to the public, U.S. naval attachés were surprisingly well informed on the Imperial Navy, its ships, men, and weapons. Given the inherent difficulties of intelligence gathering in that age, and the less sophisticated technical collection systems then available, perhaps one should conclude that the Tokyo attaché provided *remarkable* [emphasis in the original] intelligence. But the

quality of intelligence did not matter much if it was not believed by consumers—in 1940–41, by the White House and the U.S. Navy. Nowhere did this problem become more apparent than with respect to intelligence on Japanese naval aviation.⁸

INTERWAR YEARS AVIATION INTELLIGENCE

U.S. efforts to gain reliable information about Japanese military aviation in the inter-war years were initially confined to the periodic visits of an aviation officer. That officer's information was gleaned from what can only be described as perfunctory tours of Japanese Naval Air Force (JNAF) stations. But, by 1935 the full-time naval attaché for air was on staff, and these men would be responsible for collecting and assessing information on the size of the JNAF, its readiness and capabilities, and the productive capacity and technical level of Japan's aviation industry. In many cases their reporting was both timely and accurate.

But reports also flowed to MID and ONI from Americans in China. Claire Lee Chennault, for example, dutifully and routinely provided detailed information. Chennault, a retired U.S. Army Air Corps officer and an expert on fighter tactics, had been recruited by the Chinese to rebuild, train, and reequip their shattered air forces in 1937. During the next four years, Chennault carefully recorded his impressions of Japanese air combat tactics and compiled accurate information on the performance characteristics of Japan's aircraft as they were introduced during the air war in China.⁹ In May 1938, he forwarded drawings and specifications for the new Mitsubishi A5M (*Claude*) low-wing monoplane fighter. Later, Chennault actually flew a Japanese Nakajima Ki-27b (Type 97 or *Nate*) fighter that had been captured intact, and prepared an exhaustive report. Chennault warned the War Department that Japan had a new fighter that "climbs like a sky-rocket and maneuvers like a squirrel."¹⁰

With the help of Chinese mechanics, I noted all its specifications, took numerous photographs, and compiled a thick dossier on its construction and performance. . . . When I was in Washington in 1939, I turned over my dossier on the Nate to military intelligence in the War Department. Some months later in China, I received a letter from the War Department thanking me for my interest and informing me that my data had been turned over to 'aeronautical experts' who informed the War Department that it was impossible to build an aircraft of the performance I cited with the specifications (as) submitted.¹¹

This report on the Nakajima aircraft was eventually included in the War Department's field manual for identification of Japanese aircraft.¹² But that report was either not widely circulated among Army aviators, or ignored. Chennault's regular reports, had they been subjected to an

objective scientific and technical review and some trend analysis, should have provided sufficient evidence to indicate the growing Japanese edge in designing pursuit aircraft. There is no evidence that this kind or level of analysis was conducted. But Chennault had created a great deal of ill will in the Army Air Corps before he left for China. Widely regarded as a maverick, his reports may have been dismissed as unreliable, or largely discounted by those who disliked him.

Still other voices were sounding the alarm. Captain James M. McHugh, a Marine officer who served as assistant naval attaché in China, routinely reported to ONI on Japanese air capabilities. He wrote detailed reports, drew diagrams of Japanese radio equipment, and sent forward technical data and even aircraft parts.¹³ Reports also came from Royal Leonard, a former Army Air Corps officer, an experienced airman, and Generalissimo Chiang Kai-shek's personal pilot. Both men were in a position to witness first-hand the capabilities of Japanese military aviation.

Despite the skills and intentions of these men, their reporting flew in the face of pervasive Oriental stereotypes and was victimized by an Occidental bias. Much of the reporting about America's future wartime adversaries was filtered through this perceptual lens. "German efficiency, unity, and organization became racial maxims in American minds. Germany could do almost anything militarily, and partially for the same racial reasoning the American leaders suspected that Japan could do almost nothing."¹⁴

In the United States, popular magazine reports of Japanese aviation fostered images of pilots plagued by poor eyesight, physical handicaps, and mechanical ineptitude. Some of these fictions were even the product of the writings of William D. Puleston, a former director of naval intelligence. Professional journals of the time echoed many of the same sentiments. A wide assumption was that the Japanese simply could not design their own aircraft and relied, instead, on reverse engineering Western-built aircraft, or outright purchases of foreign types.¹⁵ The June 1941 issue of *Proceedings* carried a report that estimated Japanese aircraft design was seven to eight years behind design trends in the West.¹⁶ Even Chennault, an astute observer, was not immune. Before submitting his detailed report on the aircraft, Chennault initially identified the nimble *Claude* fighter as a French-built Dewoitine 501.¹⁷ Japan, many American experts believed, was just incapable of forging the weapons of modern aviation.

A more dispassionate and critical analysis of the facts would have revealed the Japanese regarded naval aviation as a critically important new weapon of war. Japanese pilots were rigorously screened before admission to flight school and then thoroughly trained. Western aircraft imports were secured mainly for test flying and for technical exploitation. The Japanese had devoted themselves to a methodical program of aeronautical research, too.

The Yokosuka Naval Air Station was home to a modern aeronautical engineering lab and center specifically for development and testing.

The Japanese, however, purposefully masked their progress in aviation and carefully managed the amount of information available to the Western observers. The same restrictions and deceptions in place at the major Japanese shipyards were also pursued at Japanese airfields. Still in all, American intelligence crafted solid assessments of the size and structure of the JNAF in the five-year period prior to the war; “effectively the pattern was one of *qualitative* underestimate but *quantitative* near accuracy.”¹⁸ Nowhere was the pattern more rigidly set than in assessments of the JNAF’s front-line fighter.

Japan’s Mystery Fighter

Japan was a nation at war long before its attack on Pearl Harbor. The Japanese offensive in China that began in 1937 offered U.S. military officers a first-hand look at Japan’s military capabilities. Their reports, and reports from other informed military and civil aviation experts then in China, should have immediately altered the assessment of Japan’s air forces. Instead, these reports were often met with incredulity, sometimes ridiculed, and routinely ignored. So it was that in the months following Pearl Harbor, American pilots were stunned by the flight characteristics of a mystery fighter, the Mitsubishi A6M2 Zero. They need not have been surprised.

Beginning in the late Spring 1940, Claire Chennault pieced together a substantially accurate assessment of the capabilities of the Zero then being flown in combat against Chinese forces. In December 1940, Chennault was able to explain the Zero’s fighting and flying capabilities directly to General George C. Marshall, the Army’s new chief of staff. Marshall seems to have taken Chennault’s report, and the threat posed by the new Japanese fighter aircraft, very seriously. Deeply concerned about the shortage and the lagging performance of American pursuit planes, Marshall passed Chennault’s information to Lieutenant General Walter C. Short in Hawaii during the first week of February 1941. A similar warning about the deficiencies of the U.S. P-35 pursuit aircraft then used in the Philippines went to Major General George Grunert at the same time:

While the number of your pursuit squadrons has been increased from one to three and new planes have been made available, we realize these are not at all up to the standards of the performance that you should have though there has been a decided improvement in numbers and quality. When compared to the performance of the present carrier based Japanese plane the deficiencies are only too evident. Incidentally, the new Japanese plane is rated at 322 miles an hour, with a very rapid

climb, with leak-proof tanks and armor, and with two 20 mm machine guns and two .30 caliber guns.¹⁹

In early 1941, the Tokyo-based attaché, Stephen Jurika, actually climbed into the cockpit of a Zero on static display at a Japanese air show. Dutifully, he recorded the information found on the cockpit data plate and reported it to ONI. That information was reviewed in Washington, and dismissed as obviously inaccurate: the performance statistics were so far out of line with that of previous Japanese aircraft types that it had to be a mistake. Jurika was told to be more careful in writing future reports.²⁰

The information available on the Zero—excepting a photo or silhouette—made its way into a MID field manual in March 1941, the last issue published before Pearl Harbor. Postwar accounts suggest this manual did not move through commands to the squadron level. Pilots in the Philippine-based pursuit squadrons, for example, say they knew little or nothing about the quality of Japan's air forces. Moreover, they believed Japanese aircraft to be inferior to their own, and thought Japanese pilots to be physically incapable of really rigorous combat flying. Pilots who saw the manual regarded the information with skepticism if not outright ridicule.²¹

Historian William Leary notes that, “Although American intelligence possessed abundant technical information about Japanese aircraft, MID and ONI, viewing their function primarily as one of communicating technical data to staff and operational levels, usually left assessment to the ‘customer.’”²² Left to individual U.S. airmen, these assessments could easily be colored and quickly subjected to the biases and racial stereotypes of the times. In addition, in 1941, with only a rudimentary intelligence organization in place, no formal process existed to create finished intelligence, develop assessments, and then brief the pilots who would confront the Japanese in combat. Technical data on the Zero was simply not exploited to develop tactics, weapons, or counters.²³

Long-Range Bombing

If reports on the vaunted Zero fighter could not make it past the incredulity of analysts in Washington, early reports of the JNAF's long-range bombing capabilities seemingly never got past the senior naval attaché responsible for forwarding them.

In 1937, air attaché Francis Bridget compiled a report on the twin-engine bombers then operating from nearby naval air stations. Piecing together information from newspaper accounts of raids against mainland China staged from offshore Formosa, and personal observations of local flights, Bridget prepared a comprehensive report that “proved how wrong were the assumptions current in Washington before the war that Japanese pilots could not fly and shoot straight. . . . It might have dispelled such racial-

illusions and have had a far-reaching effects on our state of preparedness three years later.”²⁴

The report never saw the light of day. After completing the report, Bridget drew the ire of Captain Harold Bemis, the U.S. naval attaché in Tokyo. In a fit of pique, Bemis refused to sign or even forward the document.

The episode with Bridget could be viewed as an isolated incident. But the absence of credible and corroborating information left huge gaps in the U.S. understanding of Japan’s aerial bombing capabilities. Simply put, the record is uneven and contradictory. Some reports that reached ONI from Tokyo made sound assessments of the training, capability, and morale of Japanese bomber pilots and crews. Other reporters saw Japan’s aviation operations as mediocre, evaluated the aircraft as inferior to Western planes, and classified the bombing as ineffective. Marine Corps Major Edward G. Hagan, the assistant naval attaché in Shanghai, was one such critic. His dismissive reports matched those coming from the U.S. Asiatic Fleet and Rear Admiral Harry E. Yarnell.²⁵

INTELLIGENCE ON JAPANESE SURFACE FLEET WEAPONS AND TACTICS

Japan and the U.S. had eyed one another warily across the Pacific for many years before Tokyo’s attack on Pearl Harbor. The adversaries had planned, practiced, and even trained for their conflict. U.S. plans for war in the Pacific were the subject of war games at the Naval War College in Newport, Rhode Island, and the source of professional papers and journal articles. This was also true for the Japanese, who based their games on a strategy that called for attrition of the U.S. fleet in the days before a climactic mid-sea showdown. Despite these preparations, U.S. intelligence on the Japanese fleet would prove seriously deficient.

Fighting the Odds: Japan Prepares a Fleet for War

After the Washington Naval Treaty limited the number of Japanese warships to a smaller ratio as against the American and British fleets, Tokyo knew it would be numerically inferior in any contest with these adversaries. In turn, Japan developed a tactical doctrine to compensate for its numerical disadvantage.

The Japanese concentrated on building ships with guns superior in firepower and range to similar American and British ships. They sought to even the numerical odds by preparing to engage at night, with torpedoes, at a range outside that of even their own large-caliber guns.

Then the Japanese set out to integrate these weapons and tactics in their fleet exercises. They trained selected sailors to become highly competent lookouts, equipped them with powerful new optical equipment and special range finders, and practiced them in range estimates day and night.

Catapult aircraft pilots practiced nighttime flare dropping missions (outside the range of conventional star shells) at a time when the Americans stopped their catapult operations, as a matter of routine, at dusk.

By contrast, the sailors of the Imperial Japanese Navy were “relentlessly drilled and maneuvered under the worst possible conditions . . . maneuvers and exercises were carried out at high speed at night, by ships lacking radar or other electronic devices, and disastrous collisions were far from rare.”²⁶ The exercises were often held in the storm-lashed waters near the Kurile Island, both to preserve secrecy and to toughen the sailors.

The Japanese were thereby able to conceal their skills in night fighting, as well as their tactical plans for use of night engagements. Japanese press accounts never included information about naval exercises or weapons training, and no Japanese naval officer would talk about these matters.²⁷

Blind to the training conditions and sea states of the exercises, U.S. intelligence assumed the collisions were evidence of poor seamanship, and that vessels that foundered or capsized did so because of poor construction or faulty maritime architecture. Assumptions of this kind fit nearly with the prevailing misconceptions of Japan as a nation deficit in technical skills, and of the Japanese as a race incapable of little more than copying the original designs of others. The barriers erected to prevent ONI from having complete access to the cryptanalysis gained from intercepts of Japanese fleet exercises surely figured into these faulty assumptions.

Japan's Secret Torpedo Technology: Uncovered and Ignored

Japan's strategy for war called for engaging the U.S. fleet at distances outside of gunnery ranges. To engage at these distances, the Japanese developed a powerful, long-range torpedo. By 1933, the Japanese had made operational a 24-inch, oxygen-fueled torpedo with a range of 24 miles at 39 knots, or 12 miles at 49 knots. As late as 1941, the best American torpedoes were 21-inch models with a range of about 4,500 yards.

Curiously enough, there was no shortage of information on this Japanese torpedo technology. In April 1940, an agent passed details of the torpedo to the naval attaché's office in Tokyo.²⁸ Although the report understated the true range and speed performance of the Type 96 or Long Lance torpedo, it still showed its superiority to any U.S. weapon. In keeping with policy, ONI received the sensational report and dutifully forwarded it to the Navy's Bureau of Ordinance. The Bureau scoffed at the report, sniffing, “no torpedo could travel at such a speed over that range.” Author Bruce Loxton comments: “Here the yardstick for judging the credibility of such information seems to have been the capability of American technology to

develop a similar item. In other words: if it could not be done in America, it could not be done.”²⁹

INTELLIGENCE FAILURE BY DESIGN

U.S. intelligence badly underestimated the Imperial Japanese Navy’s capabilities for a number of reasons. The collection effort, while broad, was fragmented and uncoordinated. The good collection that was nevertheless accomplished resulted from individual diligence and dedication, rather than from a deliberate plan. Collection was also hampered by Japanese secrecy and counterintelligence activities that became more effective over time. In addition, collectors had little in the way of formal training in the intelligence craft. Their skills and aptitude for the intelligence trade varied.

Intelligence in the inter-war years was, in many ways, immature and hardly robust enough to meet the needs of a nation that would have to fight a global war. Personal feuds and personality conflicts in the peacetime armed services undercut the cooperation needed. The lack of a real, centralized intelligence agency precluded effective all-source analysis. Then, too, a certain national and technical arrogance and presumed racial superiority biased both reporting and analysis. Gaps in collection and failure in reporting led to analytical lapses. Finally, the intelligence consumers often did not make use of, or even believe, the reporting that was available. As John Prados observes,

In many ways, the Imperial Navy would be the most advanced fighting force in the Pacific when hostilities began. Actual Japanese achievements stood in marked contrast to the Western image of a poorly trained and ill-equipped adversary. This much is fairly familiar ground. What is startling, even disconcerting, is that American intelligence *knew* of Japanese technological developments, but the image persisted despite that knowledge. This becomes apparent in examining evaluations of the Japanese surface fleet, naval aviation, and certain technical matters such as torpedo design.³⁰

In the end, the intelligence failure had been perversely “made in America.” In the years before the outbreak of the Pacific War, the American leaders were, in fact, the blind who could, but would not, see the brightness of a rising sun.

REFERENCES

- ¹ Rear Admiral Edwin T. Layton, U.S.N. (Ret.), with Captain Roger Pineau, U.S.N.R. (Ret.), and John Costello, “*And I Was There*”: *Pearl Harbor and Midway—Breaking the Secrets* (New York: William Morrow, 1985), p. 35.
- ² *Ibid.*, p. 36.

- ³ Lyman A. Kirpatrick, Jr., *Captains Without Eyes: Intelligence Failures in World War II* (London: The MacMillan Company, Collier-MacMillan, Ltd., 1969), pp. 89–90.
- ⁴ Edwin T. Layton, op. cit., p. 38.
- ⁵ Ibid, pp. 66–67.
- ⁶ John Prados, *Combined Fleet Decoded: The Secret History of American Intelligence and the Japanese Navy in World War II* (New York: Random House, 1995), p. 26.
- ⁷ As a result, Washington was regularly informed of the building plans of the Japanese Navy. In fact, by January 1937 a complete summary of all Japanese naval vessels built, building, or authorized was in the hands of authorities in Washington. That information included the startling revelations that Japan felt no longer bound by the limits of the naval treaty and was moreover, now committed to building more battleships (*Yamato*-class), aircraft carriers (*Shokaku* and *Zuikaku*), and 63 other combatants.
- ⁸ John Prados, op. cit., p. 32.
- ⁹ Chennault's method of analyzing, disseminating, and using intelligence was far superior to anything accomplished by the armed forces of the United States during the same period. Chennault lectured for hours from his detailed notebooks and trained his pilots to recognize Japanese flight tactics. Pilots were then thoroughly briefed on the construction, performance, and armament of every Japanese aircraft they might encounter. Chennault gave every pilot mimeographed data sheets on the enemy's aircraft. This was followed by sessions at a blackboard where Chennault diagrammed the vital spots of Japanese aircraft—oil coolers, bomb bays, gas tanks—in colored chalk. Erasing the board, Chennault then had pilots redraw the diagrams from memory. The results speak volumes about Chennault's use of intelligence: Under the most daunting conditions, and in less than six months, the American Volunteer Group would be credited with 297 confirmed kills against the combat loss of only 14 of their own aircraft.
- ¹⁰ Daniel Ford, *The Flying Tigers: Claire Chennault and the American Volunteer Group* (Washington, DC: Smithsonian Press, 1991), p. 33.
- ¹¹ Claire Lee Chennault, *Way of a Fighter: The Memoirs of Claire Lee Chennault* (New York: G.P. Putnam & Sons, 1949), pp. 93–94.
- ¹² Basic Field Manual 30–38, "Military Intelligence: Identification of Japanese Aircraft." (Washington, DC: U.S. War Department).
- ¹³ William M. Leary, "Assessing the Japanese Threat," *Aerospace Historian*, Winter 1987, p. 274.
- ¹⁴ Williamson Murray and Allan R. Millett, eds., *Calculations: Net Assessment and the Coming of World War II* (New York: The Free Press, 1992), p. 250.
- ¹⁵ John Prados, op. cit., pp. 33–35.
- ¹⁶ "Professional Notes," *United States Naval Institute Proceedings*, 67 (June 1941), p. 880.
- ¹⁷ Daniel Ford, op. cit., p. 25.

- ¹⁸ John Prados, op. cit., p. 37.
- ¹⁹ Larry I. Bland, ed., *The Papers of George Catlett Marshall II* (Baltimore: Johns Hopkins University Press, 1986), pp. 411–416.
- ²⁰ John Prados, op. cit., p. 39.
- ²¹ William Leary, op. cit., p. 276.
- ²² Ibid.
- ²³ John B. Lundstrom recounts that Lieutenant Commander Jimmy Thach received information on the Zero in a Fleet Air Tactical Unit Intelligence Bulletin in the summer of 1941. Reportedly, he was so impressed by the credibility of the information that he immediately began to devise and practice tactics to counter the Zero's astounding rates of climb and speed and great maneuverability. Those tactics were the foundation of the Thach Weave Defense. If Lundstrom's account is correct, then Navy pilots had both timely and accurate information on the capabilities of the Zero. U.S. air combat losses because of faulty tactics might then be ascribed to the failure to disseminate the report widely among pilots, its lack of credibility with them, squadron commanders' failure to understand the import of the information, or a combination of all three. The episode is included in Appendix 4 of Lundstrom's *The First Team: Pacific Air Combat from Pearl Harbor to Midway* (Annapolis, MD: Naval Institute Press, 1985), pp. 480–481.
- ²⁴ Edwin T. Layton, op. cit., p. 68.
- ²⁵ A variety of these reports, from Hagan, Bemis, and others can be found in the ONI records for 1937, ONI File A-1-Z.
- ²⁶ Ronald H. Spector, *Eagle Against The Sun: The American War with Japan* (New York: The Free Press, Division of Macmillan, Inc., 1985), p. 46.
- ²⁷ Bruce Loxton, with Chris Coulthard-Clark, *The Shame of Savo: Anatomy of a Naval Disaster* (Annapolis, MD: Naval Institute Press, 1994), p. 44.
- ²⁸ John Prados, op. cit., p. 31.
- ²⁹ Bruce Loxton, op. cit., p. 6.
- ³⁰ John Prados, op. cit., p. 25.