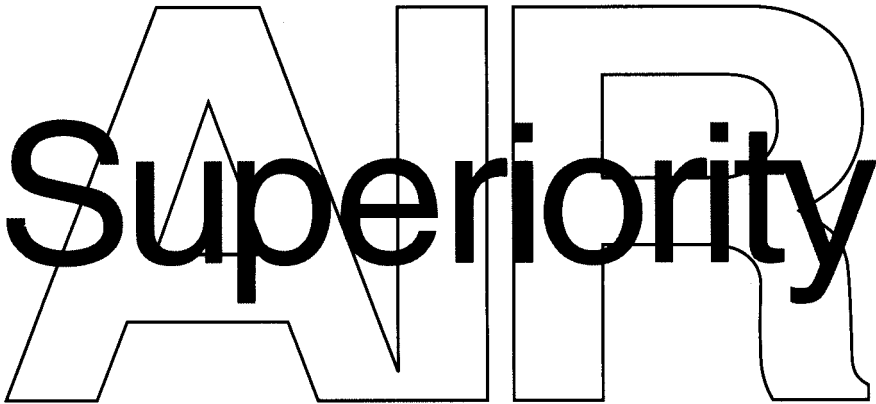


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The word "AIR" is rendered in large, hollow, black-outlined capital letters. The word "Superiority" is printed in a solid black, sans-serif font, centered over the outline of the letters "AIR".

**Benjamin Franklin Cooling**

**Editor**

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## Air War Against Japan

*Alvin D. Coox*

Although Japan had been waging major, undeclared hostilities against China since 1937, it was not until December 1941 that the authorities in Tokyo launched all-out war with the American-British-Dutch (ABD) powers. This essay addresses the period between the attack on Pearl Harbor and Japan's capitulation in August 1945. The achievement of other than regional Allied air superiority, however, had to await the seizure of forward bases and the development of bomber and fighter aircraft able to reach targets in the distant Japanese homeland. Inasmuch as such capabilities were not available until 1944-45, it is that climactic period of the war that will receive the preponderance of attention. And, since the ultimate unleashing of the B-29 bomber offensive overshadowed and predated the introduction of fighters, emphasis on the attainment of Allied air superiority centers on the consequences of the thrust westward across the Central Pacific, allowing the B-29 command to be relocated from China to the Marianas and built up there, and U.S. fighters finally to be based on Iwo Jima. While other American and Allied air forces broke through the periphery of the China-Burma theater, the Seventh Air Force and U.S. Navy and U.S. Marine Corps aviation fought their way through the Phoenix, Ellice, Gilbert, and Marshall Islands to Palau and the Marianas. The Seventh Air Force went on to Okinawa and took part in the last campaign against Japan. As the Allied counteroffensive unfurled and the air war progressed toward the home islands, Japanese defense planning revealed a frenzied and largely *ad hoc* dimension that was exacerbated by fatal qualitative and quantitative weaknesses. This chapter describes and assesses the course of ultimate Japanese failure and Allied success during the quest for air superi-

ority over the strategic zone called the Inner Defense Perimeter by the Japanese.

## Background

If the Japanese threat had not been so underestimated in 1941, and if Japan had been located geographically closer to North America, perhaps American war planners before 1941 would not have agreed that the strategic emphasis in case of war involving the United States must be on the Atlantic rather than the Pacific theater. The Americans were also unenthusiastic about defending British, Dutch, or French interests in Asia, and were averse to committing themselves to war in the Far East unless or until the objectives of the Japanese became entirely clear. Sympathy for beleaguered China, however, and revulsion at Japan's behavior there, engendered some remarkably aggressive private thoughts among administration officials in Washington. When Treasury Secretary Henry Morgenthau tried to influence Secretary of State Cordell Hull in favor of the Chinese Nationalist Government a year before Pearl Harbor, Hull asserted that "what we have to do, Henry, is to get 500 American planes to start from the Aleutian Islands and fly over Japan just once. . . . That will teach them a lesson." Hull then volunteered an even more startling hope: "If we could only find some way to have them drop some bombs on Tokyo."<sup>1</sup>

In addition to being impolitic and premature, Hull's personal comments scarcely alluded to fundamentals that would long hamper United States air operations in the Pacific: the relatively short reach of existing Army and Navy planes, as against the enormous distances that had to be traversed. To compensate for the weaknesses in range, U.S. aircraft were being ferried in 1941 to outposts as far away as the Philippines.<sup>2</sup> But the transoceanic routes were truly daunting. It is 2,100 miles from San Francisco to Oahu, 4,770 miles from Pearl Harbor to the Philippines, 1,400 miles from Manila to Japan. From Panama to Japan it is 8,000 miles. The Great Circle route via Alaska therefore attracted some attention, but even the Kuril Islands' approaches to Japan involve enormous distances: Paramushir is 1,200 miles north of Tokyo, 650 miles west of Attu in the Aleutians, over 1,000 miles west of Kiska. From Seattle to Tokyo via Hawaii, the distance is 6,600 miles but, even by the Great Circle, it is still about 4,900 miles from Seattle to Tokyo via the Aleutians.

While technological and geographical limitations thus thwarted any realistic American notions about contesting the skies in the Western Pacific at an early stage, "American racism and rationalism [in the words of

historian David Kahn] kept the United States from thinking that Japan would attack it."<sup>3</sup> Despite some notable yet largely ignored exceptions, American observers tended to regard the actual threat posed to U.S. interests by the Japanese as not impossible but improbable. Shortly before his death in February 1936, Billy Mitchell remarked privately that for years Franklin Roosevelt had been espousing the erroneous "idea that a war in the Far East would be impracticable and that an attack upon us by Japan is inconceivable."<sup>4</sup> Presumably experts shared the President's notion to the bitter end. Thus, as late as mid-November 1941, the highly respected military critic, Maj. George Fielding Eliot, asserted that Japan was "in no case to fight a war with a group of major opponents." The Japanese Army was "sadly out of date" and Japanese air power was "almost nonexistent."<sup>5</sup> *Aviation Magazine* supplied the encouraging word that, "isolated from her Axis fellow aggressors . . . her air force of low offensive strength . . . Japan, if engaged in a great air war, would crumble like a house of cards."<sup>6</sup>

The downplaying of the Japanese menace was reinforced by ill-founded feelings of racial superiority. Naval writer Fletcher Pratt sought to systematize the various reasons why "every observer concurs in the opinion that the Japanese are daring but incompetent aviators." One explanation was medical: the Japanese are not only myopic but suffer from defects of the inner ear, affecting their sense of balance. Another theory was religious: the Japanese undervalue individual life and extol devotion to the Emperor, inducing pilots to "die cheerfully" instead of bailing out in case of trouble. A third notion was psychological: whereas pilots must operate uniquely alone, the Japanese lack individuality and therefore make poor airmen. Lastly, according to an educational theory, Japanese children play with fewer mechanical toys and receive less mechanical inculcation than any other people.<sup>7</sup> Former Director of the U.S. Office of Naval Intelligence, Capt. W. D. Puleston, admitted that Japan was energetic in efforts to develop naval aviation but was "usually a phase behind." Japan was unable to match American aircraft carriers in the number of planes carried, and Japanese personnel could not "send planes aloft or take them aboard as rapidly as American personnel."<sup>8</sup>

For their part, Japanese Navy officers did not underrate the British or the Americans, but the Japanese Army had, or professed to have, a veritable scoring system to indicate the level of contempt it felt for all national enemies. The Army's low regard for its Western ground foes in particular was partially caused by the fact that perhaps seventy percent of the hostile colonial forces in the Philippines and Southeast Asia consisted of native troops. Western military aviation was not similarly denigrated. On November 5, 1941, at an Imperial Conference, Army Chief of Staff General Gen Sugiyama said of the fighting capability of enemy air forces that he assumed it could not be regarded lightly in comparison to ground forces, since "the quality of the aircraft is excellent and their pilots are comparatively skilled."<sup>9</sup>

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As for the views of the Japanese government and High Command on the matter of home defense, it is untrue that no consideration was given to the danger of enemy air attack once war began. Shortly before the outbreak of hostilities in the Pacific, a final Imperial Conference was held on December 1, at which time Finance Minister Okinori Kaya spoke of emergency fiscal measures that would be adopted in case parts of Japan were raided by enemy planes. The most illuminating commentary is found in the interpellation by Privy Council President Yoshimichi Hara:

There is one thing I don't understand and that is what will happen in the event of air raids. It's admirable that you are providing a good deal of training for emergencies, such as air-raid drills, in order to avoid damage as much as possible. But in the event of a conflagration, can we bring it under control, given the kind of buildings in Tokyo, even though we may try to prevent it from spreading? What are we going to do if a large fire should break out in Tokyo? Do you have a plan to cope with it?

Planning Board Director Tei'ichi Suzuki tried to assuage Hara's concern by insisting that sufficient food had been stored, and expressing the hope that some of the people whose homes were burned could seek refuge elsewhere; for those who had to remain, there were plans to put up simple shelters. Hara retorted that it did not suffice "merely to have given some thought to the matter." The plans were inadequate; Suzuki ought to be fully prepared, but Hara would pose no further questions at this time.<sup>10</sup>

From the Japanese military's standpoint, the main threat to national security stemmed from the Soviet Union, which was known to possess the capability of making air strikes against Japan proper from bases in eastern Siberia. Motivated always by a preference for offensive action, the Japanese High Command contemplated neutralizing the Russian air threat by destroying or capturing the Soviet air bases in the Maritime Province at the outset of hostilities with Russia. In planning the war against the ABD Powers, the Japanese hoped to maintain tranquility on the northern front. Yet, General Sugiyama admitted at the Imperial Conference of November 5 that the Americans might set up air bases in Soviet Siberia from which to mount raids on Japan. Prime Minister Tojo agreed as to the danger, but deemed such attacks unlikely in the early period of the Pacific War. Tojo, however, was explicit in advising the military councillors that homeland air defense must not interfere with the Japanese offensives overseas. Tojo did not believe that the ABD Powers could launch major air raids on Japan for some time after hostilities broke out. In the initial phase of the war, enemy air attacks would be infrequent and staged from carriers.<sup>11</sup>

Thus, in the planning for and initiation of the Pacific War, Japanese military leaders paid relatively scant attention to air defense of the home islands. The High Command was convinced that the foe could be kept to a distance that would prevent land-based air raids on Japan. The possible carrier raids mentioned by Tojo and others were regarded as a minor threat; their primary purpose would be diversion of Japanese effort and enhance-

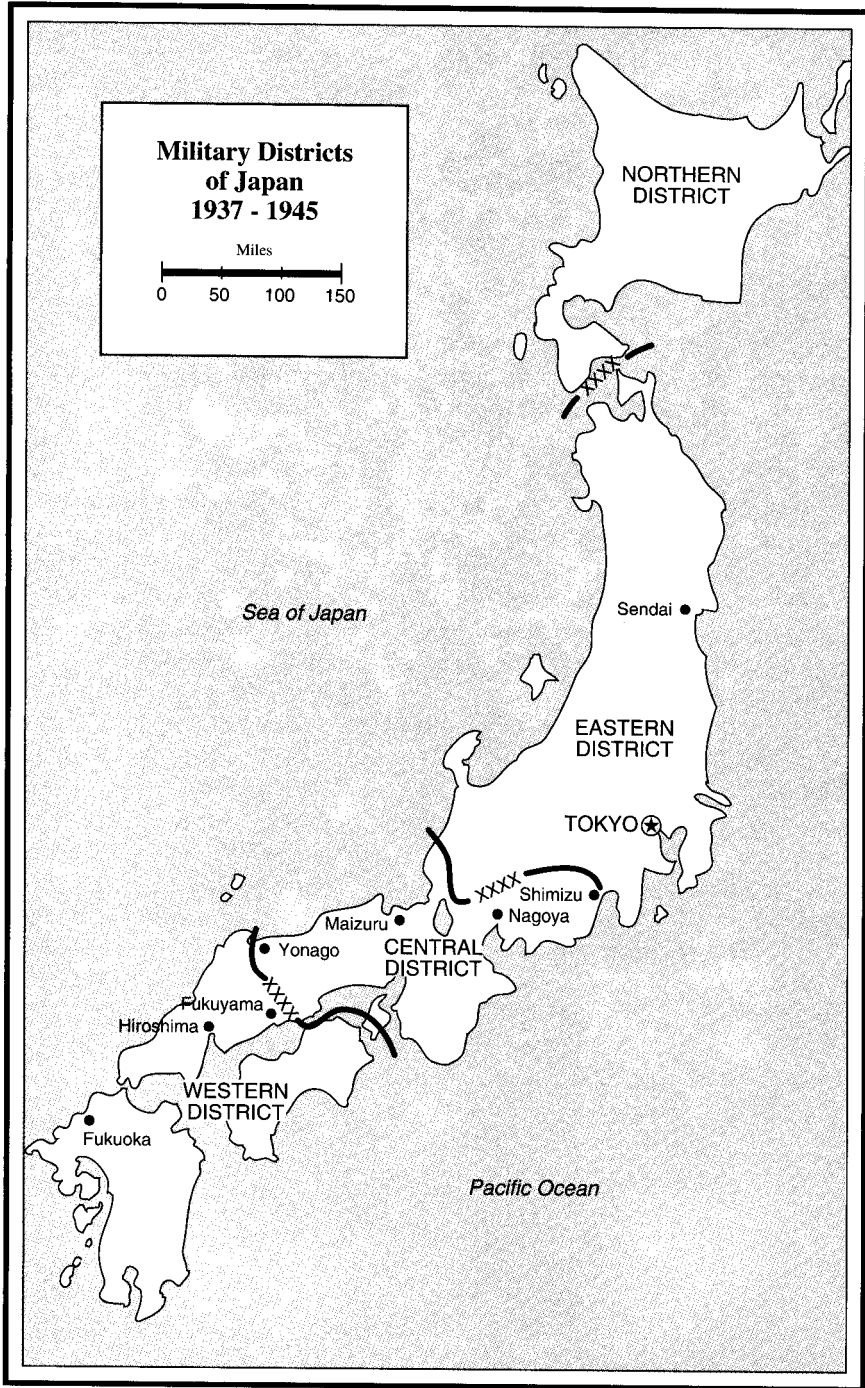
ment of enemy morale. Conceivably, American planes could strike northern and eastern Honshu from bases in the Aleutians and Midway, and could attack central and western Japan from aircraft carriers or bombers based in Chekiang Province in China.<sup>12</sup>

The Homeland Defense Area comprised four military districts, each district commander serving concurrently as the commander of the tactical army. The Northern District, based at Sapporo, was responsible for defending Hokkaido; the Eastern District (headquarters, Tokyo), responsible for northern Honshu; the Central District (headquarters, Osaka), responsible for Honshu; the Western District (headquarters, Fukuoka), responsible for western Honshu and all of Kyushu. In July 1941, the General Defense Command (GDC) was established, with nationwide responsibility for homeland defense. In practice, GDC was a coordinating link between the district commands and Imperial General Headquarters (IGHQ) in Tokyo, and it possessed minor command authority.<sup>13</sup>

At the time of Pearl Harbor, few planes and antiaircraft guns were retained in Japan: about 100 Army and 200 land-based Navy fighters; 310 Army and 200 Navy antiaircraft pieces at most. The purpose of these defenses was to frustrate and discourage sporadic, small-scale, and retaliatory air raids. The real priority of the air forces was to take the offensive and seek out and destroy the enemy's aircraft carriers or air bases that might be set up in China. Meanwhile, IGHQ directed the GDC to provide point defense for 4 strategic military, government, and industrial locations: 1) Tokyo-Yokohama area (about 50 percent of available planes and guns); 2) Nagoya (10 percent of available resources); 3) Osaka-Kobe (20 percent of available resources); and 4) Kokura-Yawata and Shimonoseki-Moji (20 percent of available resources). Japanese sources agree that, compared to the strength sent overseas, air defense units in the homeland in 1941 were not only few but poorly trained and equipped. Antiaircraft guns were mainly 75-mm; Army fighters, the Type 97 (NATE)\*, Japan's first low-wing military monoplane, in production since 1937. The air raid warning system included some primitive radar units but was primarily dependent on visual detection by military and civilian observers and radio-equipped naval picket ships stationed 500–600 miles from the coast.<sup>14</sup>

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\*Allied code name; Allied code names will appear initially in parentheses and then will be used to refer to the Japanese craft.





## Early Phase of the Pacific War

Diplomacy having failed to resolve the American-Japanese impasse in the autumn of 1941, Japan opted to launch "the greatest undertaking since the opening of the country," with full realization that the result would be "glory or oblivion." Most fearful of protracted hostilities, the Naval General Staff issued orders that the enemy fleet in the Hawaiian area be "reduced to impotency." Adm. Chuichi Nagumo's 1st Air Fleet carried out these instructions to the letter. The Japanese Army, whose objective was to reduce the main U.S., British, and Dutch bases in the Far East, undertook swiftly to occupy the Philippines, Guam, Hong Kong, Malaya, Burma, Java, Sumatra, the Celebes, Borneo, the Bismarck Islands, and Timor. Audacious Japanese forces unleashed powerful tridimensional assaults against this broad array of objectives throughout the Pacific and Southeast Asia. From the very outset, the Japanese naval and military air forces wrested air superiority from a motley constellation of outclassed and outnumbered American, British, Australian, and Dutch air units, whose planes were largely obsolete and universally "inferior in performance and armament to Japanese aircraft of a similar type."<sup>15</sup> Maj. Gen. Jonathan Wainwright, whose doomed command in the Philippines put up a longer fight than either the British or Dutch could mount in their colonies, later lamented "the futility of trying to fight a war without an Air Force."<sup>16</sup> It was the bleakest of times for the Allies; as Churchill put it, "We had lost the command of every ocean except the Atlantic. . . . Japan was supreme and we everywhere weak and naked."<sup>17</sup>

The Japanese attack on Pearl Harbor fanned elemental passions: Americans thirsted for early revenge against Japan. Senator Lister Hill called for "gutting the heart of Japan with fire."<sup>18</sup> Only two weeks after the disaster in Hawaii, Lt. Gen. Henry H. Arnold, Commander of the Army Air Forces, revealed what the United States was contemplating, when a senior British visitor, Air Chief Marshal Sir Charles Portal, asked about American plans for attacking Japan: "I gave him such meager information as we had on the proposed operations from eastern China, and said that preliminary negotiations indicated we would soon get permission to operate from bases near Vladivostok."<sup>19</sup>

On that same day, President Roosevelt had told his most senior military and naval advisors that he wanted to "[strike] back at Japan at the earliest possible moment and [he] asked everyone present to consider ways and means to attack Japan as soon as possible." The President expressed his desire, repeatedly and emphatically, for "a bombing raid on Japan proper as soon as humanly possible to bolster the morale of America and her Allies," and to carry home to the Japanese "the real meaning of war." General Arnold promptly directed the War Plans Division of the Air Staff to start planning for the retaliatory air strikes requested by Roosevelt. On

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January 10, 1942, the President repeated his wish for an attack on Japan and pressed Admiral King and Generals Marshall and Arnold to “keep their respective staffs thinking of ways and means to carry the fight to the enemy and bolster public morale.”<sup>20</sup>

It is not surprising that Roosevelt’s high command had not yet devised a concrete plan. Not only had overseas air superiority been lost to the Japanese, but Anglo-American planners, as will be noted, had also accepted a Europe-first main strategy. How to reach the Japanese homeland at that early stage of the war, with the short-range surviving aircraft? The British staff, particularly Chief of the Air Staff Sir Charles Portal, advised the Americans that air strikes on Japan should be the purview of the Navy, using aircraft carriers to surprise the homeland, just as Japanese carriers had surprised Hawaii. Among the reasons for General Arnold’s failure to be impressed by the British rationale was his belief that “it would be suicide for the Navy to bring their carriers within range of Japanese land-based aviation.”<sup>21</sup> After all, the radius of action of carrier planes did not exceed 300 miles.

When the President conferred with his advisers on January 28, he reiterated the urgency of striking Japan from the air as soon as possible. General Arnold discussed the possibility of operating from North China or Russia. Roosevelt directed that the China alternative be explored, especially after being told that the distances involved in a strike from the Aleutians were too great. Unmentioned at the meeting was the fact that, of those present, Arnold and King had begun working on a daring plan spawned after the discussions on January 10. They proposed launching modified long-range U.S. Army medium bombers from an aircraft carrier deployed within striking distance of Tokyo.<sup>22</sup>

Already, however, by the last day of 1941, the most important decision in initial wartime grand strategic planning had been reached: to discard the widely held notion of abandoning Europe and Great Britain as lost and of launching an early counteroffensive against Japan. Instead, the Joint Chiefs of Staff (JCS) accepted, and the Combined Chiefs of Staff (CCS) formally adopted, the concept of a strategic defensive against Japan. Only after the Germans had been defeated would maximum strategic offensive operations be mounted against Japan. It was the considered opinion of the CCS that, despite Japan’s entry into the war, Germany remained the primary foe, whose defeat was the key to victory; “once Germany is defeated, the collapse of Italy and the defeat of Japan must follow.”<sup>23</sup>

The U.S. Navy understandably pressed for a more positive role in the Pacific, euphemistically termed “limited active defense,” envisaging the commitment of a U.S. Army strategic air force in support of the Navy. Army Air Forces planners, in the person of Maj. Haywood S. Hansell, Jr. (supported by Lt. Col. Albert C. Wedemeyer), argued that the diversion of

American strength to the Pacific would “dilute our sparse resources beyond recognition.” In this view, “failure to thwart Hirohito would lead to discomfort,” whereas failure to thwart Hitler would invite disaster. The ultimate decision called for “maintaining only such positions in the [Far] Eastern theater as will safeguard vital interests and deny to Japan access to raw materials vital to her continuous war effort while we are concentrating on the defeat of Germany.”<sup>24</sup>

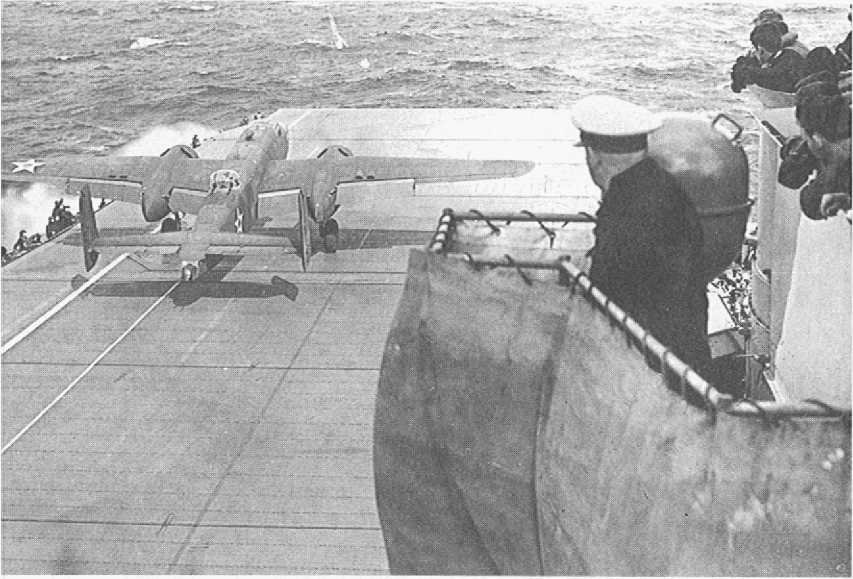
The CCS spoke vaguely of the need to secure as many vantage points as possible from which the ultimate all-out offensive against Japan could be staged when additional forces became available. But the chiefs were not unaware that “the first essential is to gain general air superiority at the earliest possible moment, through the employment of concentrated air power.” Piecemeal commitment of the limited available aviation must be minimized. While the main objectives of air offensive operations were delineated by Army Air Forces planners in some detail concerning Europe, “they were less definitive with regard to Japan.”<sup>25</sup>

In this, the “lean period of the war” (as Samuel Eliot Morison phrased it), only the U.S. Navy had the reach to lunge at Japanese-held islands. A carrier strike against Wake on January 23 had to be called off, but, on February 1, American carriers and cruisers raided targets in the Marshall Islands, deep in the old Japanese Mandates. Though the objectives were peripheral and the results meager, the inflated reports boosted U.S. morale, and the strikes provided the task forces with practice in real combat. The same can be said of the well-orchestrated attacks by fast carrier forces of the U.S. Pacific Fleet against the islands of Wake, Marcus, and New Guinea on February 24, March 4, and March 10, respectively.

An American naval officer admitted that the Japanese did not mind the first U.S. carrier raids “any more than a dog minds a flea.” Nevertheless, from such modest beginnings sprang the eventual major contribution by Navy air power to victory in the Pacific. Japanese naval historians find it hard to believe that the early raids by Admirals Halsey, Spruance, Fletcher, and Brown represented less than the “limited active defense” which the U.S. Navy had pleaded for in vain.<sup>26</sup>

## The Doolittle Raid

The U.S. Army Air Forces was able to unleash one brief, indecisive, but psychologically telling blow—against mainland Japan itself—when Lt. Col. James H. Doolittle’s 16 B-25 bombers, borne piggyback aboard the carrier *Hornet* within range of Honshu, struck Tokyo and 3 other cities at low level by daylight on April 18, 1942. The Japanese defenses were no better at this time than they had been prior to the opening of the Pacific



**THE DOOLITTLE RAID**, *Above*: One of Colonel Doolittle's sixteen B-25 bombers takes off from the USS *Hornet* on April 18, 1942, within striking distance of Honshu. *Below*: Jimmy Doolittle (*second from right*) poses with his own Tokyo bombing crew and Chinese friends after the airmen bailed out over China.



war. To cover the entire Tokyo-Yokohama-Kawasaki complex—the Kanto Sector—there were only 50 NATE fighters (244th Air Group) and 150 anti-aircraft guns. Nagoya was defended by merely 10 planes and 20 guns; Osaka, by 20 fighters and 70 guns.<sup>27</sup>

A War Ministry general officer asserted that the Imperial Japanese Army (IJA) and Imperial Japanese Navy (IJN) leaders' interest in air defense was "almost nil." Army officers had been arguing that no nation had ever been defeated by strategic bombing, and that bombardment of Japan was utterly impossible until a super high-altitude airplane appeared. Premier Tojo insisted that Japan was in no danger—that Japan was not Germany. By this he meant that enemy air bases were very far away and that the construction of Japanese buildings would supposedly reduce their vulnerability. They were of low height and made largely of wood. IJN publicists boasted that the "invincible Navy" would prevent even one enemy plane from penetrating Japan's air space; indeed, the conduct of air raid drills was called an insult to the Navy.<sup>28</sup>

In mid-January 1942, the War Ministry had proposed the first comprehensive air defense measures, including the evacuation of major urban areas, dispersion of key factories, and protection of utilities, transportation, and communication systems. Tojo rejected the plan. Evacuation, he said, was the act of a coward; and dispersal of facilities would reduce productivity. In early February, before the Doolittle raid, the War Ministry recommended at least the evacuation of women, school children, and the aged. Again Tojo refused, arguing that evacuation would wreck Japan's family-based structure. As a result of the authorities' negative attitude toward air defense precautions, according to Japanese sources, there were only two locations in all of Japan where adequate air raid shelters were in place: one at the Imperial Palace in downtown Tokyo, and another at the War Ministry headquarters in Ichigaya, also in central Tokyo.<sup>29</sup>

On the day of the Doolittle raid, the Japanese had ample warning but mishandled their air defenses. At 0630 on April 18, 1942, almost 6 hours prior to the dropping of the first American bombs on Tokyo, a Japanese picket vessel was able to transmit 6 messages to IJN headquarters before being sunk by a U.S. cruiser. The naval staff, however, decided to defer a counterattack because the enemy carriers were still beyond the 300-mile range within which deck planes could operate effectively. Nobody expected that long-range bombers were coming, and only a few interceptors were scrambled. For example, the Navy sent up only 4 Type 1 (BETTY) attack bombers to search for the enemy, and put 9 Zero (ZEKE) fighters on standby. Three hours after the first warning message had been received, a BETTY caught sight of aircraft of unknown type and nationality, 70 miles off shore but, though it pursued the intruders at its top speed of 270 miles per hour, it could not catch up. Nevertheless, it was able to confirm that the

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enemy aircraft were twin-engine and large. This was the only concrete information received in Tokyo by noon, when the raid began.

A small but unspecified number of NATE fighters and DINAH command reconnaissance planes had been sent aloft on patrol in mid-morning, but they had landed to refuel when the B-25s attacked. Only after the U.S. bombers were in the Tokyo-Yokohama area did the defense command issue a tardy alert and scramble about 40 fighters and scouts. These planes began their search at an altitude of several thousand meters, and the Americans, sweeping in at 200-700 meters, had left the target area by the time the Japanese realized their error. Only 2 NATES caught up with a pair of B-25s in the Izu area and scored a nonlethal hit on an engine. One brand-new IJA Type 3 Hien (TONY) fighter tracked a B-25 near Kitaura and fired its useless training ammunition at the bomber before breaking off contact. A second TONY, armed by now, had a close call when it was attacked over Tokyo by three ZEKE pilots who had obviously never seen a TONY. By the time the mixup had been corrected, it was too late to chase B-25s.

Once the Tokyo raid was in progress, the Japanese Navy scrambled thirty BETTYS and twenty-four ZEKE fighters. Eleven ZEKES were over Yokosuka when a single B-25 struck a warship but, like the Army fighters, the ZEKES operated at too great an altitude to locate intruders. Japanese fighters were not even scrambled against the single B-25s that struck Nagoya, Yokkaichi, and Kobe, eight hours after the picket's first warning. Inexperienced antiaircraft gun crews fired many rounds and made some wild claims that embarrassed GDC but, since not one enemy bomber was found to have been downed over Japan, IGHQ made no claims when it issued its first communique. Later, parts of a B-25 that crashlanded in China were put on display in Tokyo to cover up the fact that none of the bombers was shot down over the homeland. The Japanese Navy kept on looking until April 26, without success, for the U.S. task force from which the Doolittle raid was mounted.

The casualties and damage inflicted on the Japanese by the Doolittle raid were comparatively light: about 50 persons killed and more than 400 wounded; approximately 200 houses burned. For the Americans, however, the raid thrilled the home front, coming so near the U.S. debacles of Bataan and Corregidor: "Pearl Harbor to some slight degree had been avenged, and the Japanese had been forced to swallow their proudest boast—that Tokyo could never be bombed." Admiral Halsey called the feat "one of the most courageous deeds in all military history."<sup>30</sup> Though none of Doolittle's bomber aircraft was brought down over Japan, none saw action again after their one-way trip to China (or, in the case of one plane, to Soviet Siberia), and this type of raid was never repeated.

Though some Japanese drew the feeble conclusion, from the evidence of the small-scale Doolittle strike, that "air raids aren't so bad, after all," a

certain degree of uneasiness permeated the civilian populace. A number of military leaders did comprehend the nature of the air threat to Japan. A War Ministry general officer, for example, was astonished by the level of casualties as a factor of the minor bomb load dropped—double the ratio reported to have been caused by German air raids on England. A new civil defense plan was submitted to Tojo, with supporting documentation on England's experience and on the terrible vulnerability to strategic bombardment of the overconcentrated production base in the Kawasaki-Omori area. Tojo again stymied the proposal, though he did not reject it outright this time. Saying that Japan could not be bombed on the same scale as Germany and that needless worries were being expressed, Tojo would authorize only facilities that did not require heavy expenditures of funds and materials. Front-line combat zones, he insisted, must continue to take precedence over the demands of the home front. Although a portion of the Army General Staff was sympathetic to the War Ministry's proposition, large-scale funds were never forthcoming, and effective civil defense measures did not materialize, even after the initial shock caused by the Doolittle raid.<sup>31</sup>

The two services, however, did take stock of their poor performance on April 18. The Navy, which was responsible for seaward search and attack operations, had failed in both capacities, revealing insufficient patrol and intelligence collection capabilities. Charged with the main mission of air defense of the homeland, the Army had shown numerous tactical weaknesses: lack of a comprehensive warning net; delay in the transmission of information; low reliability of intelligence, caused by confusion; shortage and low capability of interceptor aircraft; insufficient training of anti-aircraft gun crews, who were unacquainted with the characteristics of any aircraft and who fired blindly against low-flying planes.<sup>32</sup>

Japan's fighter and anti-aircraft (AA) defenses obviously needed to be reinforced and upgraded. The Army set a target of tripling the number of fighters to 400 and almost quadrupling the number of guns to 1,900. By the end of April 1942, 2 AA batteries were recalled to the homeland from the Southwest Pacific and assigned to the Eastern District Army. From production, 108 more guns were allocated to that army, and another 160 guns to all the other military districts in the homeland. As for fighters, a squadron was brought back from Burma in April and assigned to the defense of Tokyo. In an effort to establish more effective tactical air units within the structure of GDC and the 1st Air Army, the 17th Air Wing was also organized under the air army and placed under the operational control of the Eastern Army command. The wing consisted of 2 fighter groups, an independent fighter squadron, and a command reconnaissance squadron. In May and June of the same year the 18th and 19th Air Wings were similarly activated and assigned to the Central and Western Army commands, respectively. These 3 wings constituted the homeland's main defense units until early 1944.

Japanese critics assert that this was no real air defense organization—only an air training setup organized into elements which could serve as a defense force in an emergency.<sup>33</sup>

The Japanese Army, nevertheless, took a new look at its fighter planes. The NATE, designed for dogfighting, had performed excellently on the continent, but it was obsolescent and outclassed as the mainstay air defense interceptor in terms of speed and firepower. Better suited were the Army's twin-engine Type 2 Toryu (NICK) and the new single-seater Type 2 Shoki (TOJO).<sup>34</sup>

## The Middle Years

While the Americans' easy penetration of the airspace of the Japanese homeland and of the Imperial capital in particular had been a source of humiliation to Japanese leaders in 1942, it was certainly not the same thing as denting Japan's command of the air. The real struggle for air superiority would still have to await the appearance of long-range fighter planes and powerful land-based bombers (specifically, the B-29 Superfortress, with a range exceeding 3,000 miles, an altitude of 25,000 feet, a speed of 350 miles per hour, and a bomb load of 15,500 pounds). American strategists devised paper plans for an air offensive against Japan, similar to the one unleashed first against Germany, but the initial 2 years of the war were simply "too early to give anything more than general guidance in terms of objectives and targets."<sup>35</sup> After all, the B-29s did not begin to come off the assembly line until late 1943, and the new fighters needed bases within realistic range of their intended targets.

Meanwhile, Japanese strategic momentum had been checked by reversals in 1942-43, which included the Battle of the Coral Sea and the abandonment of major landings at Port Moresby in New Guinea (May 1942); the Battle of Midway (June 1942); withdrawal from Guadalcanal (February 1943); the loss of Attu (May 1943); and the evacuation of Kiska (July 1943). By the fall of 1943, the materialization of a two-prong Allied counteroffensive, mounted earlier than the Japanese expected, was already becoming apparent—the Southwest Pacific thrust under Gen. Douglas MacArthur and the Central Pacific thrust under Adm. Chester W. Nimitz.

The U.S. Army Air Forces component for the westward offensive across the Central Pacific was the Seventh Air Force which, in its own words, "was, in effect, a land-based air arm of the Navy." In February 1942, Maj. Gen. Clarence L. Tinker's Hawaiian Air Force headquartered at Hickam Field had been redesignated the Seventh Air Force. Following General Tinker's death in action in early June 1942 and the brief interim command of Brig. Gen. Howard C. Davidson, the Seventh Air Force was taken over by Maj. Gen. Willis H. Hale on June 20, 1942. Maj. Gen. Robert



W. Douglass replaced General Hale on April 15, 1944, and commanded the air force until June 23, 1945, when Maj. Gen. Thomas D. White became its last wartime commander.

The tactical core of the Seventh Air Force, on its activation, was the 18th Bombardment Wing, redesignated VII Bomber Command, and the old Hawaiian Interceptor Command, which first became VII Interceptor Command and was then redesignated VII Fighter Command in May 1942. Admiral Nimitz, in his capacity as CINCPOA (Commander in Chief, Pacific Ocean Area), was in theater command of the Seventh Air Force until mid-July 1945.<sup>36</sup>

The domain of the Central Pacific is enormous, dotted by 1,000 islands or atolls, singly or in clusters. From Hawaii southwest to the Gilberts, it is 2,000 miles; from the Gilberts northwest to the Marshalls, 600 miles; from the Marshalls west to the Carolines, 900 miles; from the Carolines northwest to the Marianas, 600 miles; and from Iwo Jima west to Okinawa, 1,000 miles. From the beginning of the war until November 1943, the Seventh Air Force engaged in 35 reconnaissance missions; thereafter, under a series of Navy task force commanders, it supported six amphibious landing campaigns: 1) Gilbert and Marshall Islands (Kwajalein, Eniwetok), from December 1943 to March 1944; 2) Mariana Islands (Saipan, Tinian, Guam), from March to August 1944; 3) Palau (Peleliu), from August to December 1944; 4) the Philippines (Leyte), from August to December 1944; 5) Volcano Islands (Iwo Jima), from January to March 1945; and 6) Ryukyu Islands (Okinawa), from April to June 1945. Thereafter, the Seventh Air Force took part in the final offensive against Japan itself.<sup>37</sup>

Admiral Nimitz's objective—to seize island air and sea bases and to secure them against enemy attacks—was achieved by “blanketing attacks on all enemy airfields within range.” The Seventh Air Force operated mainly bomber aircraft—B-24s since 1942—but its fighters at various times included the P-38, P-39, P-40, P-47, P-51, and P-70. The first fighter units did not appear in the Seventh Air Force order of battle until the Marshall Islands phase, when 3 of 14 squadrons were made up of fighters (48 P-39s and 26 P-40s) based in the recently conquered Gilberts. No Japanese interceptors were encountered at Kwajalein after January 30, 1944. At Maloelap in early February, P-40s fitted with belly tanks ended Japanese air opposition, claiming 10 fighters downed and 3 probables, in a matter of minutes. Seventh Air Force fighters flew 1,058 effective sorties in the Marshalls, claimed to have destroyed or damaged 29 enemy fighters, and lost 10 of their own, including 6 to antiaircraft fire, none to interceptors, 2 to noncombat and another 2 to unknown causes.<sup>38</sup>

During the Marianas campaign (March–August 1944), the Seventh Air Force began operations with 12 squadrons, only 1 of which consisted of fighter aircraft, and ended with 3 squadrons of fighters and 2 flights of night



**Adm. Chester W. Nimitz, Commander in Chief of the Pacific Ocean Area (CINCPAC).**



**Gen. Douglas MacArthur, Commander of the Southwest Pacific area (CINCSWPAC).**

fighters out of a total of 13 American squadrons. The Seventh Air Force had deployed its advanced headquarters to Kwajalein in the Marshalls, retained the forward tactical base at Makin in the Gilberts, and mounted strikes against Truk and Ponape from the Navy field at Eniwetok. A week after D-day on Saipan, P-47s were catapulted from escort aircraft carriers (CVE) and flew their first combat mission on the day they landed at Isley Field, now the most advanced of the Seventh Air Force bases. Two flights of P-61 night fighters, flown in from Hawaii, maintained night Combat Air Patrol (CAP) while the P-47s flew CAP from dawn to dusk. Seventh Air Force fighters conducted 1,870 sorties, claimed to have knocked out 16 enemy fighters, and lost 14 planes, 6 of which were combat-related. By helping the Navy to neutralize Truk, the Seventh Air Force also prevented Japanese air or surface attacks against U.S. bases in the Gilberts and Marshalls. Army, Navy, and Marine aircraft claimed to have destroyed 223 Japanese planes and damaged 56 at Mili, Wotje, Jaluit, and Maloelap in the Marshalls by June 1, 1944. The Seventh Air Force lost 28 planes of all types in combat during the entire Marianas campaign.<sup>39</sup>

U.S. carrier planes struck Iwo Jima on June 15, July 3-4, and August 3-5, 1944. The Seventh Air Force began its own raids against Iwo Jima, from Saipan, on August 16. These operations became particularly important during October and November, when very heavy bombardment bases were established in the Mariana Islands to accommodate B-29s that could strike at the heart of the Japanese homeland—something that had not been feasible or profitable from the China-Burma-India theater, despite enormous Allied logistic efforts. Well aware of the new B-29 threat, the Japanese launched a total of 80 to 100 sorties from Iwo, mostly by night, against the Marianas. The persistent U.S. air strikes against Iwo Jima, conducted by the Seventh Air Force and the Navy, contributed to the interdiction of that island and the ultimate success of the Marianas-based B-29 offensive against Japan. All large U.S. missions met interception in force—the only time Japanese air resistance was regularly encountered. Of 1,466 sorties, 661 were conducted by P-47s, which claimed to have destroyed 7 Japanese aircraft (6 of which were airborne). P-38s claimed 14 enemy planes destroyed (12 airborne) and 11 damaged (3 airborne). By December 1944, the Seventh Air Force employed 1 group and 1 squadron of fighters, out of 4 groups (and 1 photo reconnaissance flight) in action. Of its campaigns to date, the Seventh Air Force judged that “enemy bases in the western Pacific whose neutralization was entrusted to [this] AF were the source of no real disturbance to the movements of United States forces in the area, and the development of our bases in the Marianas was continued almost without any enemy interruption.”<sup>40</sup>

## The Japanese Homeland Revisited

By the time that American forces began to reconquer the Philippines (landings on Leyte in October 1944, on Mindoro in December, and on Luzon in January 1945) and to storm ashore on Iwo Jima in February 1945, the complexion of the war in general and of the air war in particular had changed dramatically. In January 1945, Admiral Nimitz established his advance headquarters on Guam. American aircraft carriers, exploiting their new numbers and their mobility, range, and punch, had proved instrumental in projecting air power westward across the Pacific, toward the inwards of Japan. Shore-based air facilities were typically set up as quickly as possible, once a ground position was secured, but, as Fleet Admiral King pointed out, "there will always be a period following a successful landing when control of the air will rest solely on the strength of our carrier-based aviation."<sup>41</sup> In addition, for the first time, the U.S. Navy added a strategic component to its usual tactical targeting. Just before the landings on Iwo Jima, the Navy launched an intense series of carrier attacks against the Tokyo area, the first since the small raid by Doolittle from the USS *Hornet* in 1942. The new carrier strikes were designed not only to assist the Iwo Jima operation but to damage Japanese aircraft production capabilities. As Adm. Raymond A. Spruance said, "I could see no object in any longer fighting those aircraft around the perimeter, if we could by accurate bombing wreck the factories where they were being produced and so reduce the output." For the first such campaign, Admiral Mitscher's Task Force 58 of Admiral Spruance's Fifth Fleet possessed 5 task groups with a total of 17 carriers, large and small, and 1,170 embarked aircraft. Admiral Nimitz asserted that the opportunity to conduct this operation fulfilled "the deeply cherished desire of every officer and man in the Pacific Fleet."<sup>42</sup>

Arriving undetected 60 miles off the coast of Honshu, U.S. Navy fighters went into action on February 16 to pave the way for succeeding dive bombers and torpedo bombers. To his largely green pilots (nearly half of the air groups were on their first battle mission), Mitscher said, "[The Japanese] is probably more afraid of you than you are of him." Japanese interceptors did seem "listless" and reluctant to close. One of the task group commanders, Admiral Sherman, remarked that he was "amazed at the lack of determined air opposition. No Japanese aircraft came within 20 miles of our disposition and our planes roamed at will over the enemy's territory seeking their targets." The Americans had to contend mainly with the sometimes zero-zero weather—"the damndest, rottenest weather I could think of" (in Spruance's words). By evening, Mitscher reported that his units had destroyed 350 planes and damaged airfield installations, but had effectively hit little more than one aircraft factory. Sherman's task group alone claimed to have destroyed or damaged at least 167 aircraft. Thirty

American planes went down, several of them because of the overeagerness of green Hellcat pilots who broke formation and sought dogfights.

The weather was wretched again on February 17, but the U.S. Navy bombings and strafings continued throughout the morning. Near noon, Mitscher was obliged to end his flight operations. The Navy later judged that the strikes had been "substantial but not spectacular," although Admiral Sherman said he could see "the Rising Sun setting." The best results were achieved not against ground facilities but in air-to-air combat and in runs against parked planes, although the claims for both days were somewhat scaled down: 322–341 aircraft reportedly shot down and 177–190 wrecked on the ground. A total of 60 USN planes were lost in the course of 738 combat engagements, and a further 28 aircraft were lost to other causes. Contesting the skies with the Japanese air forces seemed to have brought about 3 days of immunity from aerial attacks for the U.S. forces on Iwo Jima.<sup>43</sup>

Japanese sources assert that the Naval General Staff in Tokyo did expect raids against the homeland as early as February 15, and that both the IJNAF and IJAAF went on alert promptly. But, most importantly, on February 9 the Air Defense Command had already decided to avoid engaging enemy light and medium aircraft and to try to conserve air strength for the decisive campaign in the homeland. As for the USN strikes on February 16, there was no tactical warning because the first American fighters came in at an altitude of only 1,300 feet. One IJAAF night-fighter group and all "second-class" flight personnel were ordered to take refuge at alternate airfields. Aircraft in the region that would not be committed to combat were to have their fuel drained and ammunition unloaded and be hidden far from the airstrips. Ten minutes after the initial sightings of the Americans on the early morning of February 16, the first of 4 U.S. Navy waves (estimated at 90, 90, 100, 120 planes, respectively) started attacking IJNAF and IJAAF bases in the coastal zones of Chiba and Ibaragi prefectures. In the afternoon, 3 new waves of U.S. Navy aircraft—estimated at 90 in the first, and 450 in the second and third—hit an aircraft factory and airfields deeper inland. IJAAF interceptors reported shooting down 62 U.S. planes and damaging 27, at a cost of only 37 fighters and some scout planes. Anti-aircraft artillery (mainly 70-mm and 80-mm guns) and automatic cannon batteries emplaced near the airfields claimed to have shot down 19 and damaged 17 enemy planes.<sup>44</sup> The Japanese figures mentioned above for USN aircraft downed on February 16 are much higher than the actual losses; but U.S. claims similarly exceed Japanese losses by an even larger factor.

The Japanese Air Defense Command concluded that continuation of such combat as had been waged on February 16 would deplete IJNAF-IJAAF capabilities in short order. On the night of the 16th, the two best IJAAF air groups in the defending 10th Air Division were pulled out and

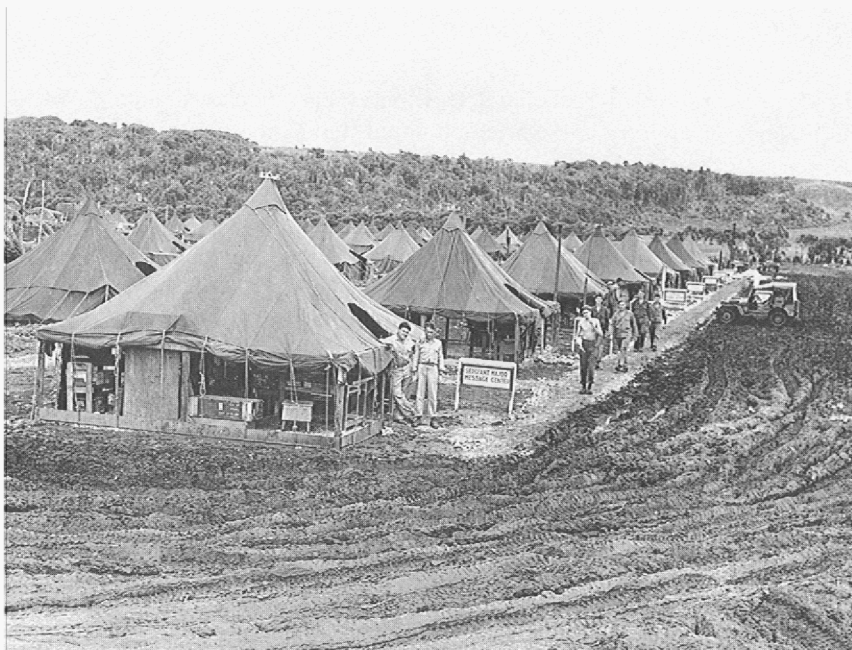
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ordered to disperse and seek shelter. Division Commander Maj. Gen. Kihachirō Yoshida argued that to conserve air strength contradicted the purpose of air defense. Pursuing a deliberate policy of “gradual decline” would only lead to impotence when maximum defensive strength was really needed. The core of fighter pilots’ *élan* was the offensive; morale would be eroded, once the interceptors lost their *raison d’être*. Though impressed by Yoshida’s impassioned plea, the Air Defense Command declined to lift the restriction on all-out engagement of enemy fighters, “lest strength be consumed prematurely.”<sup>45</sup>

With their numbers reduced by losses on February 16, and by the withholding of fighter units, the Japanese put up fewer interceptors to meet the 4 waves of U.S. Navy carrier planes (estimated at 180, 90, 250, 70, respectively), which struck at airfields, factories, and maritime facilities on Honshu the next day. Nevertheless, the IJAAF claimed good results, not far off the actual mark, for February 17: 36 enemy planes shot down and 18 damaged, at a cost of 14. Antiaircraft batteries fired at the same rate as on the 16th, though 120-mm gun crews were more active. In the day and a half of air defense on February 16–17, the Japanese made the wildly exaggerated claim of having shot down 273 enemy aircraft (including 98 by IJNAF) and having damaged more than 84 (including 3 by IJNAF). As previously noted, total U.S. Navy plane losses did not actually surpass 84. But Japanese losses on the ground were far fewer than the Americans reported, because, the Japanese contend, of their good dispersion and concealment. For example, IJAAF plane losses on the ground really amounted only to 2 on February 16. Nonetheless, the Japanese admitted that many fine pilots were lost in the interceptors that crashed—more than 50 pilots in Army units alone.<sup>46</sup>

On February 25, in concert with a 200-bomber B-29 strike, Task Force 58 returned to the attack, since the results of the strikes on February 16–17 had obviously not been decisive and since the fast carriers were not needed at Iwo Jima. Terrible weather, however, rendered the results in the Tokyo area even less successful than during the earlier strike, and Mitscher called off further operations by mid-day; mainly secondary targets had had to be attacked. Said Admiral Sherman: “The enemy opposition was only halfhearted and Japanese planes which were not shot down seemed glad to withdraw from the scene . . . as swiftly and unceremoniously as possible. Even here, over their own capital, the enemy were notably inferior to our naval aviators in aggressiveness, tactics, and determination.” Antiaircraft opposition was severe over the urban area, but “it was remarkable,” added Sherman, that Japanese planes did not attack the U.S. task force at sea.<sup>47</sup>

The Japanese sighted about 600 U.S. Navy planes in total on the 25th. Worsening weather and heavy seas forced Mitscher to cancel a planned strike against Nagoya the next day. The Americans made an unrealistic claim to have destroyed at least 158 Japanese aircraft, but the IJA gunners’



**BUILDING UP THE BOMBER FORCE IN THE MARIANAS.** *Above:* Message center and other installations of the 805th Engineer Aviation Battalion at an air base on Saipan. *Below:* B-29s in the dispersal area at the North Field on Guam.



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more modest report of downing 9 U.S. Navy carrier planes accords with the U.S. Navy's admission. Spruance noted that "this time again the Japs made no attempt whatsoever to attack us either while we were there or on the run out. This is very different from the way they used to be, when they threw everything at you they could as long as they could reach you." In all, Task Force 58 claimed to have destroyed 393 Japanese planes in the air and more than 250 on the ground between February 16 and March 1. Though Japanese records are incomplete, their actual losses in this period amounted to perhaps 15 or 20 percent of the totals claimed by the Americans. During the same period, 84 U.S. aircraft (with 60 pilots and 21 crewmen) were lost in combat, and another 59 aircraft (with 8 pilots and 6 crewmen) were lost for other reasons.<sup>48</sup> These figures, too, are far lower than Japanese counterclaims.

### Approaching the Climax

Once the Marianas had been seized in 1944 and the B-29 Superfortresses became available in quantity, the Army Air Forces could close down the difficult China-based bombing raids and set up shop in the Western Pacific. In personal command of Twentieth Air Force since its activation in Washington, D.C., in April 1944, General Arnold was finally able to apply his basic principle in practice against Japan; i.e., that "the main job of the Air Force is bombardment," employing large formations of bombardment planes to hit the foe. The Japanese homeland could now be struck directly and often. As U.S. analysts later remarked, "nowhere could the Japanese air forces prevent the concentration of Allied forces relatively close to their objective or force the costly dispersal and other defensive measures which attend the threat of heavy and sustained air attacks." General Arnold put it simply: "In the air war with the Japanese, our strength constantly increased; theirs steadily diminished."<sup>49</sup>

The emphasis on bombardment aviation, to which Arnold alluded, affected the way the battle for air supremacy against Japan was fought in 1945. "One of the basic premises of Army Air Forces doctrine," air historian Robert Futrell observed, "was that its heavy bomber aircraft, flown in massed and self-defending formations, could successfully penetrate enemy defenses and perform precision-bombing attacks in daylight hours." In addition, prewar AAF doctrine evinced "little concern for the effect that hostile anti-aircraft artillery fire might have on strategic bomber missions" because of the high altitudes at which the bombers operated. The most severe Japanese fighter interception against Marianas-based B-29s took place between November 24, 1944, and February 25, 1945. During that period, the Japanese concentrated fighters to defend several key areas where most of the priority industrial targets were located. Since the B-29s



were still few and the Japanese interceptors were numerous, the Americans admitted that they faced “a serious but temporary problem.” From a peak resistance on January 27, Japanese fighter reaction diminished steadily in intensity and in numbers.<sup>50</sup>

The relative lack of success of the earliest B-29 precision-bombing raids against Japan seemed to be more attributable to bad weather and strain on engines imposed by high altitudes and heavy bomb loads than to the effectiveness of Japanese air defenses. “Over Japan, we ran into problems that we hadn’t foreseen,” remarked Maj. Gen. Curtis E. LeMay, the Commander of XX Bomber Command in India from August 1944 and of XXI Bomber Command on Guam from January 1945. One of the unforeseen problems was a “ferocious” jet stream never before encountered by American airmen. The winds aloft over Japan interfered seriously with bomb sight computation. Japanese visual flying weather was abominable and difficult to predict. In addition, many of the U.S. flight crews were seeing combat for the first time, and the B-29s themselves had many bugs to work out. “We were feeling our way along with a new weapons system,” said LeMay. Indeed, the general went so far as to suggest that most of the B-29 losses over Japan were due more to mechanical problems than to the



**Maj. Gen. Curtis E. LeMay** (*left*), Commanding General of the XXI Bomber Command, and **Brig. Gen. Roger Ramey**, Commanding General of the XX Bomber Command, as LeMay departs for his new command in the Marianas.

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enemy's defense system. Another constant difficulty in deciding how to wrest air superiority from the Japanese was the lack of information on Japan and its defenses. "I could never be certain just how good my Intelligence really was," LeMay said. Before he was transferred to the Marianas, the general participated in a B-29 raid from China in September 1944 against Anshan in South Manchuria in order to observe Japanese defensive capabilities firsthand. Though his bomber was hit by flak at about 25,000 feet over the target, LeMay was unimpressed by the tactics of the Japanese fighter planes, which "turned the wrong way [and] never mounted a decent attack."<sup>51</sup>

General Arnold took no chances. Although, in the absence of bases for friendly fighters within reach of Japanese targets, it had been necessary to send in bombers alone, at high altitude and by day, Arnold was convinced that "all types of bombing operations must be protected by fighter aircraft. This proved essential in the Battle of Britain, and prior to that our own exercises with bombers and fighters indicated that bombers alone could not elude modern pursuit, no matter how fast the bombers traveled." As early as July 1944, Arnold had recommended that Iwo Jima—located 660 miles from Tokyo—be seized as a base for long-range fighter-escorts. Additionally, Iwo Jima would be useful as an emergency landing site, an advanced staging base and an air-sea rescue station. In July 1944, too, Arnold considered plans to send 5 very long-range (VLR) P-47 and P-51 fighter groups to support XXI Bomber Command in the Marianas.<sup>52</sup>

With the buildup of U.S. strategic air forces in the West Pacific, specifically the introduction of XXI Bomber Command (constituted and activated on March 1, 1944), it appeared necessary to create a theater air echelon above the Seventh Air Force, the senior air command in the region until then. In August 1944, after Army Air Forces, Pacific Ocean Areas (AAFPOA) was activated in Hawaii, the Seventh Air Force was transformed into a tactical command, controlling only its VII Fighter Command and VII Bomber Command. Component units, in turn, continued to be assigned to Navy task force commanders. Seventh Air Force fighter aircraft operational with units in 1945 were as follows:

	<i>Seventh AF fighters operational with units</i>	<i>Number of night fighters included</i>
Jan	280	28
Feb	361	54
Mar	332	43
Apr	301	45
May	540	26
Jun	481	37
Jul	526	37

The Twentieth Air Force itself was assigned the 301st Fighter Wing, and 413th, 414th, 506th, 507th, and 508th Fighter Groups, which were placed under the operational control of XXI Bomber Command.<sup>53</sup>

The increases in AAF aircraft inventory were significant. Whereas in August 1944 there had been 999 Army planes of all types in the Pacific Theater, by the middle of July 1945 there were 3,006 Army aircraft. AAF types and models had also changed significantly. No B-29s were in the theater in August 1944, but 985 were in place at the end of July 1945. As for Army fighters, 451 P-47Ns reached the theater between March and July 1945, and the number of P-51s rose from 8 in November 1944 to 348 in July 1945 (in addition to 74 P-61 Black Widows). Once omnipresent, the P-38s and P-39s were almost through.<sup>54</sup>

To exploit the impending seizure of Iwo Jima, P-51s of the 15th Group started to land on the island as early as March 6, while the fighting was still in progress. They were in action in two or three days, relieving the carrier planes by flying close-support and CAP missions at first. On March 20, a squadron of night fighters arrived. Three days later, when a second airstrip was finally ready, the 21st Group flew in. Though resistance had supposedly ended on the 16th, in late March the camp site of the 21st Group was actually penetrated by Japanese survivors, who killed forty-four Americans and wounded twice that number before being driven back. The 306th Fighter Group arrived on May 11.<sup>55</sup>

## **The Japanese Response: Conventional Approaches**

Not until 1943 did Japanese Army Air Force doctrine begin to veer away from emphasis on traditional ground support tasks to the attainment of air superiority through the concentration of sizable strength for sustained air-to-air missions. Old ideas died hard, however, and attention to protracted air operations was not common. It was widely argued in IJAAF and IJNAF circles that aviation technology had not progressed sufficiently, at least so far as Japan was concerned, to develop high-speed, fast-climbing fighter planes that could operate at great altitudes, at night, or in adverse weather. Infused with the offensive spirit, IJAAF and IJNAF officers typically regarded air power as most suitable for attack, not defensive action. In the Navy, the senior staff still tended to regard aviation essentially as support for the surface fleet, geared to Jutland-type big-gun battle. Japanese military and naval successes in the first part of the Pacific War naturally fostered euphoria; Army and Navy planners gave no serious thought through 1943 to the possibility of enemy landings in Japan. It was only the deterioration of the military situation

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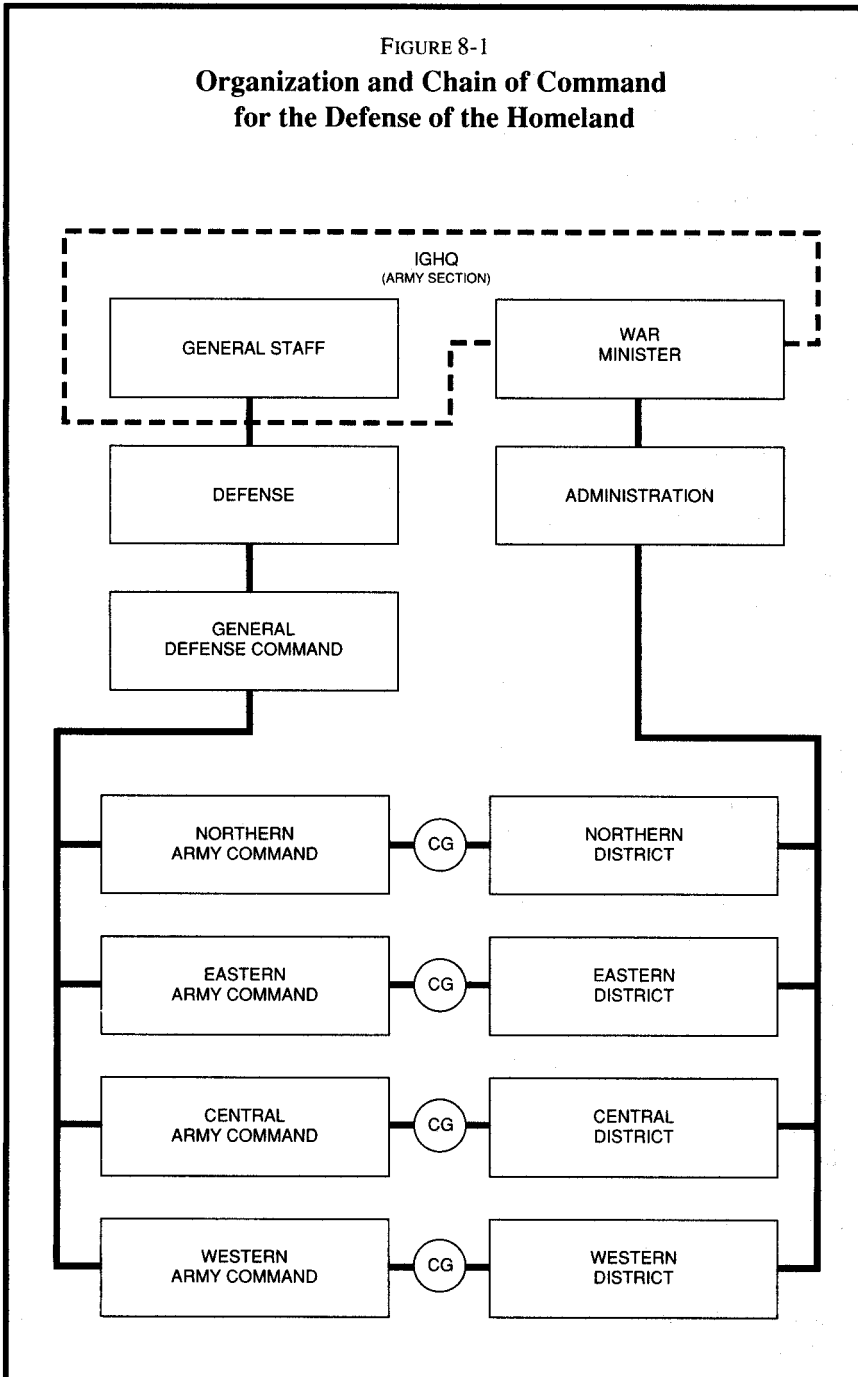
in the spring of 1944 that finally inspired Imperial General Headquarters (IGHQ) to address the question of improving the air defense of the homeland proper.<sup>56</sup>

First, IGHQ reduced the protective zone for which the General Defense Command was responsible. (See Figure 8-1) In February 1943, the Northern Army had already taken over the defense of Hokkaido, Karafuto (southern Sakhalin), and the Kuril Islands. Now, in March 1944, prime responsibility for the defense of Korea, Taiwan, and the Ryukyu, Bonin, and Volcano Islands was assigned to commands other than GDC; namely, the Korea Army, the Taiwan Army, the new 32d Army (stationed on Okinawa), and the Western Army. These changes left GDC with direct responsibility for defending the heart of Japan—the main islands of Honshu, Kyushu, and Shikoku. Although there were agreements between the Army and the Navy General Staffs to cooperate in defense of the homeland, in practice the conduct of Japan's air defense (other than harbors and naval facilities) lay with IJAAF and the Army's antiaircraft artillery elements.

IGHQ's second step to improve the air defense of the homeland, in March 1944, was to augment the 17th Air Wing and reorganize it as the 10th Air Division. Two months later, the division was transferred from the 1st Air Army (actually a training command) and assigned to direct control of GDC, although operational command was vested in the Eastern Army. As of October 1944, the 10th Air Division possessed about 150 fighter aircraft (organized in 5 groups) and 50 high-altitude scout planes (in an independent squadron) with which to try to defend Tokyo and the Kanto region. The division was obliged to release fighter units to assist in defense of other areas, such as the Philippines, central and western Japan, and Iwo Jima. Replacement units of uneven quality were brought in from the Kwantung Army Air Force in Manchuria.

In the spring and summer of 1944, IGHQ also upgraded the 18th Air Wing to the 11th Air Division (200 planes) under the Central Army, and the 19th Air Wing to the 12th Air Division (150 planes) under the Western Army. Apart from a small number of reconnaissance aircraft, all planes in the new air divisions consisted of fighters (6 types in all). In late December 1944, the Air Training Army was reorganized as the 6th Air Army, and several Air Training Divisions were formed. By February 1945, recognizing that the 6th Air Army was too weak to conduct such ambitious missions as attacks on the Marianas or participation in the defense of Japan, GDC limited its role to that of a strategic reserve to be committed only against enemy invasion forces. The next month, in March, the 6th Air Army had to be moved from the Kanto area to Kyushu and assigned to the Combined Fleet for the Okinawa campaign. A new IJAAF fighter wing was organized to help protect the Kanto sector against enemy carrier task forces. Training was intensified and new airfields were built.

FIGURE 8-1  
**Organization and Chain of Command  
 for the Defense of the Homeland**



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With the intensification of U.S. air raids in early 1945, IGHQ decided to unify all air defense forces under one command—the new Air General Army, under General Masakazu Kawabe, effective April 15. The 1st Air Army, reorganized as an operational command, was assigned the 10th Air Division. Simultaneously with the activation of the Air General Army, IGHQ organized the 1st and 2d General Armies to take over ground defense, and the old army commands became known as area armies. Thus the 10th Air Division was now transferred from the operational command of the Eastern Army to that of the 12th Area Army.<sup>57</sup>

### Japanese Antiaircraft Capabilities

The reach of Japanese AA guns was generally unimpressive. After undergoing the first large-scale B-29 raid in November 1944, the Antiaircraft Group reported to the Eastern Army that the enemy bombers were flying at about the maximum range of the workhorse 75-mm AA guns (30,000 to 31,000 feet), whereas the guns' effective range was a mere 17,000 to 23,000 feet. Only 120-mm guns, with a maximum range of 67,000 feet and an effective range of 47,000 feet, were deemed effective against the B-29s; but 120-mm pieces were in short supply.

An improved 75-mm AA gun was designed, calling for a maximum range of 27,000 feet, but few were manufactured by war's end. In late 1943, Japanese Army Ordnance designed a giant 150-mm piece weighing 120,000 pounds. One gun was produced in April 1945, a second in May. Both were assigned to the defense of Tokyo, where they supposedly wreaked havoc upon the B-29s.

In general, the effective vertical range of Japanese AA guns was customarily about 80 percent of the maximum listed in the manuals. Gunners grouched that it was impossible to engage enemy planes flying above clouds or at night. Radar computations of the altitude of hostile aircraft were not accurate enough for AA batteries, and it was always difficult to pick up single planes. Army officers complained that the Navy's supply of AA guns, deployed to defend naval bases and naval districts, far exceeded the numbers available to the Army to protect all of the homeland. The Army repeatedly asked the Navy to release some of its AA strength for defense of Army sectors of responsibility, but few guns were ever turned over.

Against low-flying aircraft, the most commonly used Japanese Army AA automatic cannon was the 20-mm Hoki, which had a vertical range of 3,200 feet. Unable to develop a design of a more formidable piece in the 25-mm or 30-mm class, the Army in 1942 purchased various guns produced by Rheinmetall in Germany. The versatile 37-mm Flak version looked good, and the decision was taken to go into production. However, only a few

test models of the Flak version had been produced early in the war, when the superior Swedish Bofors 40-mm automatic cannon (which had been employed by the British enemy) caught the fancy of the Japanese Army. Production was then converted from the Rheinmetall to the Bofors model; yet the conversion was too late, and only one 40-mm automatic cannon was ever turned out.

As the war progressed, there was a chronic shortage of antiaircraft guns and ammunition because of the decline in industrial production. For example, the Army's output of AA guns and shells in May 1945 declined to 60 percent and 53 percent, respectively, of April's production. In the spring of 1945, Japanese AA assets on Kyushu, the first objective of the expected enemy invasion of the homeland, were deployed as follows:

- 1) Covering Northern Kyushu (Yawata steel works, port of Wakamatsu)—120 guns (including only 12 120-mm), 96 searchlights (maximum range 26,000 feet), less than 2 machine cannon batteries (mainly 20-mm), 30 barrage balloons;
- 2) Covering airfields and railways—150 guns, 10 machine cannon batteries;
- 3) Covering Hakata, Nagasaki—60 guns, 30 searchlights, 1½ machine cannon batteries;
- 4) Covering Kurume, Omuta, and bridges—36 guns;
- 5) Covering Kumamoto, airfields, factories, and bridges—36 guns, 1½ machine cannon batteries.

When Lt. Gen. Kametoshi Kondō assumed command of the 10th Air Division in March 1945, he tried to reinforce the AA defenses of his bases in the Tokyo area, but about the best he could do was to augment fire power by modifying a number of his automatic cannon and to install some improved plotting radar apparatus. Actually, the Army and the Navy engaged in fierce competition to develop and acquire radar facilities. According to one Japanese technician, the intent of the AA defenses was more psychological than practical: "Apparently the brass felt better when antiaircraft guns could be heard firing during an air raid. The sound conveyed the impression that something effective was being done to deal with the air attacks." There were cases when unsuccessful AA unit commanders were reprimanded by superiors or transferred.<sup>58</sup>

Limited though the Japanese antiaircraft capability was, B-29 commanders regarded flak as a greater danger to them than enemy fighters, and they adjusted their bomber formations accordingly.<sup>59</sup>

## Japanese Interceptor Problems

Japanese fighters participating in interceptor combat usually numbered between 20 and 50 planes per air defense region, seldom reaching 100 at a

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time. This inability to employ sizable numbers of fighters stemmed largely from the difficulty of concentrating forces in insular Japan, which is characterized by a lack of geographical depth and by the location of all strategically crucial installations on the long Pacific coastline. Even if there had been sufficient warning of enemy raids, and sufficient numbers of interceptors to scramble, Japanese fighter planes were deficient in ceiling and rate of climb. Designed essentially for ground support at an optimum altitude of 16,000 feet, the Army's Type 2 NICK fighter required 7 minutes to climb to that altitude; its maximum ceiling was 34,500 feet. The Navy's GEKKŌ fighter needed 9 minutes 35 seconds to reach 16,000 feet; its ceiling was about 29,500 feet.

Like most Japanese AA artillery, the fighters had difficulty grappling successfully with bombers flying at an altitude exceeding 26,000 feet. By dint of rigorous training, stripped armor, and improved materiel, it became possible by the summer of 1944 to fight at an altitude of about 29,500 feet using such planes as a converted scout and a heavy bomber armed with medium-caliber weapons. Still, the long-awaited high-altitude interceptors did not progress beyond the experimental stage and were never used in combat. For example, much was expected of the Mitsubishi SHUSUI, modeled on the Messerschmitt Me-163B, a sensational rocket-powered fighter. The SHUSUI was designed with a maximum speed of 550 miles per hour at 33,000 feet, a service ceiling of 39,500 feet, and a capability of climbing to 33,000 feet in 3½ minutes. By war's end, production was underway, but only 7 prototypes had been delivered for testing.

The best that ordinary Japanese interceptors could do at 33,000 feet was to attack bombers in level flight; when they banked, they lost altitude to a serious extent. Generally, the fighters could make only one pass at a bomber. The problems were only compounded when experimental large-caliber cannon were installed on certain IJAAF fighters and heavy bombers, to enable them to cope with the B-29. A 10th Air Division officer attributed Japanese aeronautical troubles to the country's late start in science and technology. If the Japanese had had fighters capable of climbing regularly to 40,000 feet, he said, "we would have been able to do five times as well at half the cost."<sup>60</sup>

Crippling losses of Japanese aircraft and flight personnel rendered replacement very difficult. The new 10th Air Division Commander, General Kondō, in the spring of 1945 sought to compensate by improving tactical doctrine and procedures governing the operations of his units on guard in the vital Kanto district. Thus he directed that instead of attempting constant interception of intruding enemy planes and protection of strategic locations, fighter units should engage only targets of opportunity. Emphasis on battle against bombers should give way to training against fighters, though decisive combat even against the latter must be avoided until thorough training had been accomplished. In devising these plans, Kondō was



influenced by reports of ineffectiveness of IJAAF units in coping with the U.S. Navy carrier raids of February 1945. The general was convinced that, because of the previous Japanese stress on fighter versus bomber tactics, interceptor pilots must have been unschooled in methods of identifying and engaging enemy fighters. In the case of large-scale enemy bombing raids, Kondō wanted defending fighters to conduct concentrated counterattacks, without being distracted by enemy scout planes. Kondō also wished to tighten the protection of parked aircraft, to employ decoy planes that would lure enemy aircraft within range of ground artillery, to modernize the defensive system with new radar, and to improve the maintenance and supply of aircraft and equipment.

Among the practical effects of General Kondō's directives in the spring of 1945 were a pronounced intensification of fighter versus fighter training and the delegation of responsibility to IJAAF group commanders to engage raiders, on a case-by-case basis, designed to exploit any local advantages. Surviving officers of the 10th Air Division assert that by terminating the old system of unit-wide alerts, of aimless patrolling, and of blanket area coverage, Kondō introduced flexibility of command and operation and reduced wasted effort on the part of the defenders.<sup>61</sup>

Of course, the various measures instituted by the Japanese were intended to enhance the air defense posture, but they came very late in the war and they did not provide appreciably more punch, quantitatively or qualitatively. Some GDC officers later admitted that unification of the Army and Navy air forces would have been the best improvement to make, by far. But even if there had been a consensus (which did not exist at the time), it was much too late to have introduced unification. Establishing new tiers of command and revamping conventional tactics of engagement could accomplish little unless the interceptor units themselves were reinforced. Since this was becoming unfeasible, an unrealistic increase in assigned defensive tasks became the rule.<sup>62</sup>

Evidence of the relative impotence of the Japanese air defenses occurred when General LeMay sent 334 B-29s from Guam, Saipan, and Tinian to bomb Tokyo by night and at low altitude on March 9, 1945. Taken by surprise by these new tactics, Japanese radar installations failed to detect aircraft not appearing at the usual high altitudes. As soon as it learned of the raid in progress, the 10th Air Division sent up 90 fighters, which were to work with the anti-aircraft and searchlight units. By the light of the enormous fires that illuminated the skies over Tokyo, the interceptors climbed to engage the B-29s from below, but soon afterward the rising clouds of smoke obscured the visibility, and further attacks became impossible. The first U.S. bombers reported encountering "nil" fighter opposition; later B-29s called it "weak." Throughout the 3-hour raid, B-29 crewmen noted only 76 sightings and 40 passes by Japanese fighters, usually conducted when a bomber was caught in searchlight rays. While

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the 10th Air Division believed that their interceptors brought down a total of 15 B-29s, no bombers were actually lost to fighters. Several returning Japanese pilots were killed in crashes while trying to find their air bases that night.

In theory, the Japanese interceptors should have done better against the low-level bombers. Instead, according to Japanese air veterans, the decrease in altitude of engagement did little to improve the fighters' record. Flying at a night-time height of less than 10,000 feet, the B-29s could increase their operational radius, strike in larger numbers, and select targets more easily. This, in turn, forced the Japanese pilots into piecemeal and even more dispersed action. Hampered by insufficient early warning, at night the fighters were obliged to link up with the narrow-beam search-light units, a fact which constricted the pilots' ability to locate and engage the bombers.<sup>63</sup>

The B-29s reported that Japanese flak was moderate in general and varied in accuracy and severity. Automatic-cannon batteries tended to fire too low, while heavy AA guns fired too high. The intensity of fire diminished greatly as the raid progressed. In all, flak hit forty-two B-29s, bringing down fourteen, five of whose crews were saved at sea. The loss ratio in terms of sorties was computed as 4.2 percent, which the Americans regarded as a moderate price in terms of the catastrophe visited on Tokyo by the bombers.<sup>64</sup> Though it lost its administration building and quarters, the 10th Air Division still retained its operational headquarters; but the staff realized that another such raid would raze the capital, paralyze the core of the government and the military, and un hinge the people's resolve to go on with the war.<sup>65</sup>

### **The Japanese Forfeit Air Superiority Contest over the Homeland**

The ineffectiveness of the Japanese air defense system in coping with the disastrous B-29 offensive caused very real concern at the highest levels of government. There was fear, in particular, that portions of the country might be isolated from the remainder as the result of air bombardment of the vulnerable transportation network. Nevertheless, in spite of the trauma caused by the raid of March 9, the Japanese High Command adopted only minimal air defense countermeasures. For example, from the other air divisions in Japan a mere twenty fighters were transferred to the defense of Tokyo, and even those planes were released in about two weeks when no second B-29 offensive had materialized by then.<sup>66</sup>

It is apparent that defense of the endangered Pacific approaches to Japan took precedence, even at this late stage of the war in the spring of

1945, over the requirements of the homeland itself. Assigned to the defense of Japan between January and March 1945 were only about 375 interceptors—slightly less than 20 percent of the entire IJAAF and IJNAF combined inventory. The 450 fighters allocated in April constituted the largest percentage of fighters used to defend Japan during the entire war, but still amounted to merely 26.5 percent of the operational total available. Indeed, by the time the absolute number of assigned fighters finally exceeded 500 in July and August, the percentage of the fighter inventory they represented had declined to about 16.5 percent.<sup>67</sup> It was largely a matter of priorities, and Imperial General Headquarters had essentially opted to allow the cities to be reduced to ashes and the civilian populace to be terrorized, in favor of the employment of precious fighter assets on the fronts east and south of Japan.

Provided with a small number of fighters, replete with qualitative shortcomings and frugally committed to battle, Japanese air defense units could only mount a low-scale effort against the B-29 raids. According to XXI Bomber Command data, in the authoritative U.S. Strategic Bombing Survey (Pacific), the average number of Japanese fighter attacks per bombing mission fell off from a high of 7.9 in January 1945 to 2.2 in February, and to considerably less than 1 thereafter: March—0.2, April—0.8, May—0.3, June—0.3, July—0.02, August—0.04.<sup>68</sup>

The Japanese interceptors' combat performance against the B-29 was consequently unimpressive. The loss rate of the Twentieth Air Force in the Pacific theater was approximately one-third of the rate incurred by the U.S. Eighth Air Force against German interceptors. Again, according to the U.S. Strategic Bombing Survey (Pacific), the worst rate of loss of Eighth Air Force heavy bombers, in April 1943, was more than 3.5 times that of the Twentieth Air Force.<sup>69</sup> The highest number of B-29s lost to fighters occurred in January and April 1945, when 13 bombers were brought down per month. But the percentage as a factor of sorties flown was only 1.29 percent of 1,009 sorties and 0.37 percent of 3,487 sorties respectively. The 8 B-29s lost to fighters in May and June were 0.18 percent and 0.14 percent of 4,562 and 5,581 bomber sorties, respectively. In the first half of August, when hostilities in the Pacific War were finally terminating, only 1 B-29 was lost to interceptors—0.03 percent of 3,331 sorties. In all, the Twentieth Air Force attributed 74 of its B-29 losses to enemy fighter action between June 1944 and August 1945, a loss of 0.24 percent out of 31,387 sorties.<sup>70</sup> The fact that B-29 losses to fighters remained well under 1 percent from February 1945 until war's end caused American analysts to judge that "the final measure of the effectiveness of the Japanese fighter defense system was no more than fair on paper and distinctly poor in practice."<sup>71</sup>

Once the Japanese abandoned the contest for air superiority over the homeland and husbanded their remaining planes for use against a land

invasion, they relied more on antiaircraft artillery. But the batteries could only cover the main industrial concentrations, and resistance to the air offensive was meager elsewhere. In view of the greatly enhanced number of B-29s in action, the damage rate attributable to flak did not increase. In fact, combat damage stemming from flak was trifling when bombers attacked through overcast or were unilluminated by searchlights at night. The U.S. Strategic Bombing Survey concluded that in “both fighters and antiaircraft artillery, the Japanese proved weak. Not only were these defenses inadequate, but certain technological advances used by the Germans and ourselves were not evident. In the most vital defensive effort, that against air attack on his homeland, [the Japanese] failed.”<sup>72</sup>

### **Unconventional Response: The *Kamikazes***

The Japanese manufactured 65,000 military and naval aircraft during the Pacific war, but their wastage was staggering: 54,000 planes from both services. Of the losses, 20,000 occurred in combat, 10,000 in training, 20,000 for other noncombat reasons, and 4,000 in ferrying flights. During frontline operations, the 2 services lost 40,000 aircraft to all causes. (See Table 8-1) Production could not keep up with destruction.<sup>73</sup>

The Japanese lavishly expended the veteran, highly trained pilots with whom they started the Pacific war. IJNAF data show a loss of 17,360 flight personnel between the Pearl Harbor period and May 1945: in 1941 there were 171 losses; in 1942 there were 2,468 losses; in 1943 there were 3,638 losses; in 1944, 7,197 losses; and Jan-May 1945, 3,886 losses. The 3 highest monthly rates of IJNAF losses occurred in October 1944 (1,802), June 1944 (1,528), and April 1945 (1,510).<sup>74</sup>

When the replacement training program had to be escalated, the Japanese underestimated the difficulties and emphasized numbers over quality. With respect to quantity, the Japanese were outclassed as early as 1943, when the Americans turned out 82,714 pilots compared to 5,400 Japanese pilots. In that same year of 1943, the Americans manufactured 85,433 planes; the Japanese, 16,693. Qualitatively, the new Japanese aviators were a poor match for the improved Allied air forces, and indeed for their own seniors. The most advanced Japanese wartime planes proved too “hot” for the novices to handle. One of the last IJNAF veterans, Lt. Toshio Shiozuru, who had survived air battles in the East Indies, the Philippines, and off Taiwan, in March 1945 advised against using his undertrained ZEKE fighter unit at Kokubu in the homeland for combat operations, but he was overruled by his superiors.<sup>75</sup>

It was largely the weakness of the Japanese in orthodox air actions which caused them to go over to “special attack” forces—the suicidal sacred warriors known as *kamikazes* (Divine Wind). Including some one-

TABLE 8-1  
**Japanese Aircraft Losses during Frontline Operations**

Dec 1941–Apr 1942	1,100	Central Pacific	3,000
Dutch East Indies	1,200	Southeast Asia	
Midway/Aleutians	300	(after May 1942)	2,200
China/Manchuria	2,000	2d Philippines	
Solomons/Bismarcks/ New Guinea	10,000	Campaign homeland defense	9,000 4,200
Total			40,000

man *baka* guided missiles, *kamikazes* attacked ships, rammed B-29s in midair individually, and crash-landed on enemy airfields. American analysts have called the *kamikazes* “the single most effective air weapon developed by the Japanese,” and have assessed the decision to ascribe so much emphasis to special-attack tactics as “a coldly logical military choice.”<sup>76</sup>

For suicide missions, the Japanese Army deemed that at least 70 flying hours were necessary for pilots. Yet, in practice, some of the Army’s *kamikaze* pilots had less than 10 hours of experience aloft. The Japanese Navy felt that 30 to 50 hours were sufficient if training planes were used for the attacks. Dive bombing was the tactic nearest to orthodox instruction. During the winter of 1944–45 and the spring of 1945, all regular training was halted in favor of suicide-pilot preparation. Expendable, low-powered trainers proved maneuverable, cheap to build, and fairly easy to fly. Because the training planes carried bomb loads of merely 50 to 250 kilograms, however, they were often loaded with extra gasoline to enhance flammability, and hand grenades were sometimes heaped around the pilot in the cockpit. The Japanese failed to heed the advice of technicians who recommended that a more powerful explosive weapon was needed to sink large warships.<sup>77</sup>

In the second Philippines campaign in 1944–45, the Japanese launched 650 suicide missions against ships, with a 26.8 percent effective rate of hits or damaging near misses (2.9 percent sinkings). As the fighting progressed, the scale of the suicide effort increased steadily. But the *kamikaze* campaign was still experimental, and the Divine Wind losses amounted only to approximately 16 percent of the total of IJAAF and IJNAF aircraft losses in combat.<sup>78</sup>

After American forces invaded Okinawa on April 1, 1945, it became apparent that the Japanese would counter by trying to saturate the skies

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over the Ryukyus with as many airworthy *kamikaze* planes as could be drawn directly from training units. U.S. Army intelligence officers observed that, since the assault on Okinawa, the enemy "has committed himself to a bitter, all-out, sustained air counter-offensive; he is expending air strength recklessly in recurrent massed air attacks regardless of cost."<sup>79</sup> Between March 26 and April 30, 1945, *kamikaze* planes sank 15 Allied ships and seriously damaged 59. Before the Okinawa campaign was over, IJNAF had flown 1,050 suicide sorties; the IJAAF, 850. The grand total was thus 1,900 sorties, a wastage rate of 63 percent of the 3,000 Japanese planes lost in combat. Twenty-six Allied ships were sunk. Allied vessels were hit 182 times, suffering damaging near misses 97 times. Calculating the number of sinkings, hits, and near misses, against the total loss of *kamikazes*, yields an effectiveness rate of 14.7 percent. Despite the 3-fold increase in *kamikaze* sorties at Okinawa vis-à-vis the Philippines campaign, the effectiveness rate had decreased by almost 50 percent. In the category of sinkings alone, the effectiveness rate at Okinawa (1.3 percent) had also diminished to nearly half of the *kamikazes*' success rate in the Philippines.<sup>80</sup>

From October 1944 until the close of the struggle for Okinawa, the Japanese sacrificed 2,550 *kamikaze* pilots in order to achieve 474 hits (an 18.6 percent effectiveness factor). Against Allied naval forces, the *kamikazes* hit or scored damaging near misses on 12 fleet carriers, 16 light or escort carriers, 15 battleships, and hundreds of lighter vessels. In all, between 45 and 57 ships of all categories were sunk, none larger than an escort carrier. Destroyers took the worst pummeling, by far. In 10 months, *kamikazes* accounted for 48.1 percent of all U.S. warships damaged, and 21.3 percent of all warships sunk.<sup>81</sup>

### Coping with the *Kamikazes*

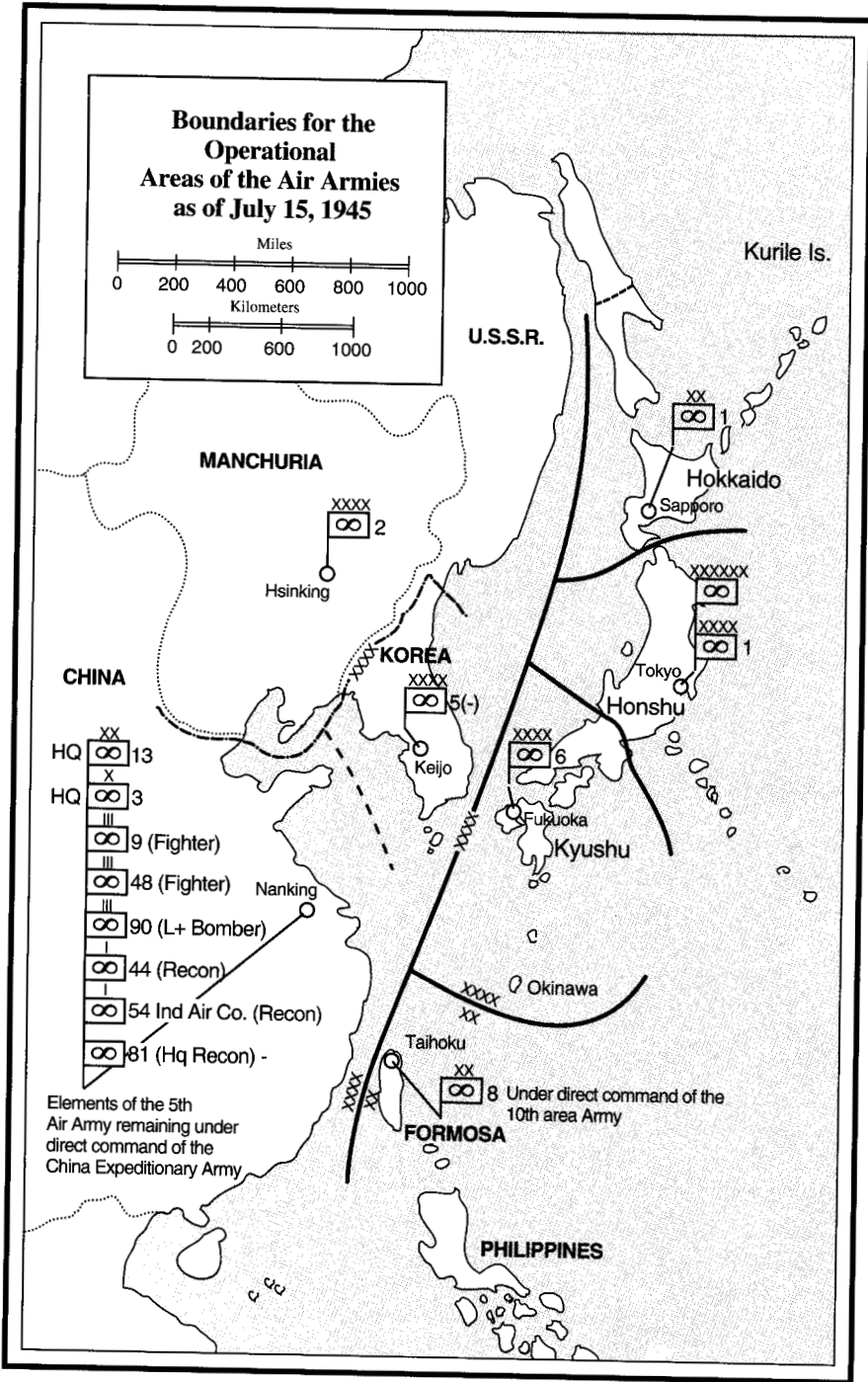
The spectacular activities of the suicide attackers posed a real threat to the success of the Allied campaign for Okinawa. Within easy range, the Japanese possessed dozens of air bases in the homeland, Formosa, the Sakishima archipelago, and China. Since no other important military operation was distracting them at the time, the Japanese could concentrate their aerial strength in the Okinawa area. Even before the first American landings at Okinawa, the U.S. Navy wanted Japanese aircraft to be smashed in their lairs, or at least as far from Okinawa as possible. Admiral Spruance recommended to Admiral Nimitz "all available attacks with all available planes, including Twentieth Air Force, on Kyushu and Formosa fields." The U.S. Navy launched its own preinvasion offensive operations with fast carrier strikes against the Inland Sea and Kyushu region on March 18 and 19, in good weather for a change. Although Japanese snooper aircraft had

picked up Task Force 58 late on the 17th, 1,400 USN and USMC planes struck from early morning on March 18, ranging as far as Shikoku and Wakayama. About 45 Japanese air bases came under attack, with much better results farther inland in later strikes. The first day's results were tallied as 102–125 Japanese aircraft shot down and 200 destroyed, plus at least 100 damaged on the ground. But, having been alerted well in advance of the offensive, 50 IJNAF *kamikaze* and conventional bombers struck Task Force 58, hitting three carriers.

With respect to the USN claims, Morison understood that Japanese authorities admitted “staggering” losses of 161 out of 193 planes committed, apart from those destroyed on the ground—losses which prevented the Japanese air forces from intervening effectively in defense of Okinawa till April 6. Recent Japanese military historians doubt that many IJAAF planes were downed in combat.<sup>82</sup> One element of Army fighters had been sent to reinforce Tokyo's defenses, 2 squadrons of scout planes had been evacuated to Seoul, and various fighter aircraft had been ordered to take cover at their bases. The Japanese also say that their losses on the ground were relatively negligible because dispersion and concealment were handled well. They admit that antiaircraft fire accomplished little since only automatic cannon batteries provided direct defense of the airfields under attack.

Inasmuch as the Americans adjudged so many of the Japanese airfields to have been knocked out on March 18, the next day the anchorages at Kure and Kobe, well defended by antiaircraft units, became the primary targets for 1,100 U.S. carrier planes. Airfields in the Osaka-Kobe area and on Kyushu were secondary targets. In actions waged all day on the 19th, 75–97 Japanese aircraft were reportedly shot down, and another 75–225 destroyed on the ground, at a cost of 22 American planes. But *kamikaze* aircraft remained extremely active against the U.S. task force, causing serious damage to two more carriers. When the Americans were retiring on the 21st, they scrambled 150 Hellcat fighters, 24 of which intercepted 18 twin-engine BETTY bombers and 30 single-engine fighters that were pursuing the task force. The U.S. fighters reported shooting down all the Japanese planes, losing 2 or 3 Hellcats in the process. It was discovered that the downed BETTYS were carrying rocket-powered *baka* flying bombs, each manned by a *kamikaze* pilot.

From March 18–21 during U.S. naval operations, 273 enemy aircraft were estimated to have been shot down over the targets in Japan or by combat air patrols (CAP) and naval antiaircraft artillery; 255–275 planes destroyed on the ground; and 175 aircraft probably destroyed or damaged. Heavy damage was inflicted on airfields, hangars, installations, ships, power plants, oil storage facilities, warships and civilian shipping. USN and USMC aircraft losses totalled 53, not including those ruined by enemy attacks on the carriers.<sup>83</sup>





Two U.S. Navy task groups returned to Kyushu on March 28-29. Secondary targets—airfields—were hit, “a familiar story” now, in Admiral Sherman’s words. About 130 carrier planes hit air facilities at Kanoya and eastern Kyushu and shipping at Kagoshima on the afternoon of the 28th. Next day, from early morning, some 600 carrier aircraft struck targets from Miyazaki and Kagoshima to Sasebo, Matsuyama, and Kochi. The rising power of the American forces was demonstrated by the fact that 2 U.S. Navy seaplanes, escorted by fighters which beat off enemy interceptors, were able to scoop up and haul to safety 2 U.S. pilots whose aircraft had crashed inside Kagoshima Bay. On April 16 the U.S. Navy task groups launched new fighter sweeps north to Kanoya, where 30 Japanese planes were downed; another 6 were splashed near the carriers.<sup>84</sup>

Having encountered *kamikazes* in the autumn of 1944 in the Philippines and in early 1945 at Iwo Jima, the Americans had anticipated suicide attacks to be a standard Japanese tactic. Nevertheless, as Seventh Air Force historians wrote: “For many men who had survived every other kind of fantastic battle experience, [*kamikaze*] was the most bewildering and terrifying experience of the war. It was...like being surrounded every minute of the day and night by a forest fire.” Particularly unnerving was the fact that “there was no defense against [*kamikaze*] pilot short of blowing him up in the air. ‘The son of a bitch dives straight at you, and what are you going to do about it?’ ”<sup>85</sup>

The sheer magnitude of the *kamikaze* effort also vastly exceeded expectations. Admiral Spruance later admitted that “none of us...foresaw the scope of the suicide plane threat while we were making our plans for Okinawa.” American postwar analysts asserted that the *kamikaze* assaults caused serious losses and were regarded with great concern by the United States; “had the Japanese been able to sustain an attack of greater power and concentration, they might have been able to cause us to withdraw or to revise our strategic plans.”<sup>86</sup>

Spruance, in fact, had had to ask Nimitz for all the air power he could proffer. Such help was forthcoming in support of Admiral Nimitz’s command, including 2,000 B-29 sorties (75 percent of XXI Bomber Command’s total effort during the period) diverted from bombing attacks against strategic targets in Japan to tactical strikes until May 11 against *kamikaze* fields in Kyushu, where AAF judged the greatest threat existed.<sup>87</sup>

VII Fighter Command also launched counteroffensive fighter sweeps from Iwo Jima and, beginning on May 14, from Okinawa. Between April 1 and June 30, the AAF fighters flew a total of 436 sweeps, those in the latter phase being strafing, bombing, and rocketing strikes against 50 airfields in southern Kyushu and the Amami and Sakishima Gunto archipelagoes. AAF analysts regarded the total P-51 effort as “not very fruitful.” Although VII Fighter Command claimed to have destroyed 64 and damaged 180 Japanese planes on the ground and to have shot down

10, at a cost of only 18 (of which 11 were lost in combat), the desired objective of "widespread destruction" was not achieved. The weather was poor, and the enemy planes were hard to find, either on the ground or in the air.<sup>88</sup>

## U.S. Bomber-Escort Missions Materialize

In early 1945, the American fighter planes in the western Pacific acquired a new and important mission: to escort B-29 bombers in raids against the enemy's homeland. On April 7, each of the 6 P-51 Mustang squadrons on Iwo Jima first sent four 4-plane sections to protect B-29s heading for targets on Honshu. By the end of June, the Seventh Air Force had flown 426 escort sorties.<sup>89</sup>

Although the Japanese may have expected eventually to encounter AAF fighters in such a role, they were taken by surprise when the P-51s showed up. From Japanese sources we learn of the initial IJAAF and IJNAF experiences. At about 10 in the morning on April 7, an estimated 90 (actually 101) B-29s were reported approaching the industrial zone of Musashino in western Tokyo at an altitude of 4,000 meters, usually ideal for IJAAF fighters. From Sagamihara, 24 *Hayate* (FRANK) Army fighters scrambled. Corporal N. Naitō, operating one interceptor at 7,000 meters over Oshima, detected about 30 small planes, sharp-pointed with liquid-cooled engines, flying above the B-29s. Since there had been no reports of enemy fighter-escorts, Naitō guessed that the strange planes were of the Japanese Type 3 *Hien* (TONY) family, the only operational IJAAF liquid-cooled fighter, though the rounded belly differed from that of the *Hien*. Naitō's supposition was soon disabused after he saw tracers spew from the fighters, and bullets began to hit his plane. When he went into a spin and got away, he saw the star insignia on the planes' right underwing. So these were the P-51 Mustangs, which he had heard of but never seen! When Naitō was about to enter the attack mode, P-51s came at him. Since he was low on fuel, he disengaged promptly. Eleven IJAAF planes were lost, 3 allegedly by ramming. Ground batteries fired 1,325 rounds (70-mm, 80-mm, and 120-mm).<sup>90</sup>

Similarly unaware of the presence of enemy fighter escorts, approximately one hundred IJNAF fighters also scrambled against the raiders. Once again, the Japanese mistook the P-51s for the *Hien*. An IJNAF squadron commander flying a two-seater *Suisei* (JUDY) fighter was shot down, as were three *Gekkō* (IRVING) night fighters and five other Japanese interceptors. The officer pilot of a *Saiun* (MYRT) scout plane was patrolling over Sagami Bay when his observer discerned what he thought were IJAAF planes to his rear. Shortly afterward, the MYRT was hit

by seventeen rounds, which ruptured a fuel tank, wounded the pilot, and killed the observer. The pilot managed to bring his plane down safely at Atsugi.<sup>91</sup>

On the afternoon of April 7th, 153 B-29s, escorted by about 100 Mustangs, went after Mitsubishi's Nagoya factory, striking with precision from an altitude of 4,500 to 6,000 meters. Three B-29s and 2 P-51s were lost in the raid. Japanese records confirm the loss of 2 of their interceptors, the pilots ejecting safely, in battles between the IJAAF 246th Air Group and about 30 P-51s. Japanese ground batteries at Nagoya fired 1,914 rounds.<sup>92</sup>

According to Japanese records, the IJAAF 246th Group commander at Nagoya, Maj. T. Ishikawa, expected fighter planes to accompany the B-29s, which was why he deployed his 8 Type-4 interceptors in 2 layers at 6,000 and 8,000 meters over Ise. It became apparent that the P-51s were preceding the bombers in order to weed out interceptor defense beforehand. Ishikawa detected and attacked about 30 Mustangs approximately 1,000 meters below him, but the P-51s were superior in climb and zoomed about the IJAAF flight. One Japanese fighter was set afire, and the pilot bailed out. Ishikawa's plane was shot up. Since he could neither adjust his propeller's pitch nor fire his guns, he dived from 6,000 to 700 meters and escaped to his base. Another of his fighters had had to crash-land and was badly damaged.<sup>93</sup>

That B-29s could dare to conduct medium-altitude raids in the daytime was entirely due to the P-51 escorts, say the Japanese. Flying at altitudes where Japanese fighters were ordinarily at their best, the bomber formations sustained a loss of only five aircraft in the strikes on April 7 against both Tokyo and Nagoya; as a percentage of the total number of B-29s committed, this amounted to less than two percent.<sup>94</sup>

American analysts point out the effectiveness of the fighter escorts on April 7, noting that over the Tokyo target the last 2 bomber formations, which were unescorted, sustained 62 percent of all the Japanese interceptor attacks. U.S. sources state that the 15th and 21st Fighter Groups destroyed 21 Japanese planes that were encountered, as well as damaging 8 out of 135-160 airborne interceptors. "The Mustangs were knocking Japs down all over the sky," a B-29 gunner remembered. "For awhile . . . during the fight there were Japs parachuting down all around us. I'll never forget it."<sup>95</sup>

Since the Americans' round trip always entailed some 1,400 miles from Iwo Jima, about 500 miles short of the maximum range for a Mustang carrying two 108-gallon drop tanks per plane, the escorts could linger over Japan for no more than an hour, including the critical period of the B-29 bomb run. The flights were not easy for the airmen: "Pilots spent 8 hours and more in the air, and the monotony of the long over-water flights and confined conditions of the cockpits brought many fatigue problems."<sup>96</sup>

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On the morning of April 12, five days after the initial fighter-escorted bomber raids, 119 B-29s accompanied by 102 Mustangs struck Tokyo in 3 waves from medium altitude while another 50 bombers hit the chemical factory at Koriyama and the Nakajima factory at Musashino again. This time the main target, the Nakajima plant, was damaged critically. The Japanese sent up a total of 185 Army and Navy fighters, hit 36 enemy bombers, but did not bring down even one. Seventeen interceptors were lost. The Koriyama raid failed as a diversion; Japanese fighters would not leave Tokyo, 120 miles to the south, and only 10 passes were made against the Koriyama bombers.<sup>97</sup>

Japanese sources explain that the advent of the P-51s fatally set back the defensive capability of the interceptors. Previously, the U.S. Navy's agile F6F aircraft, a superb bomber escort, had nullified the use of Japanese night fighters, which could "do little more than run away" when they met the Grumman Hellcat (whose record was 5,000 Japanese kills in 2 years of air combat).<sup>98</sup> But the night fighters could be employed well, even in daylight hours, against the B-29s, which were not as maneuverable. Now, only if there were no P-51 escorts could the night fighters, which had oblique-firing guns and were slower than single-engine interceptors, be sent against the Superfortresses. The same was true of Japanese bombers and armed scout planes that had been converted quickly into ultra high-altitude interceptors. If they were not sent up against unescorted bombers, they were useless to the Japanese defenses; and if they were committed against escorted bombers, they were doomed. But how to foretell whether the Americans were dispatching escorted or unescorted formations? Radar could not make the distinction, especially where the fighters were concerned; and it was too late when visual contact was established. Therefore, the Japanese had to regard every raid as fighter-escorted, and they would not employ night-fighter formations by day. The situation was complicated further when P-51s, guided by B-29s as far as offshore points, launched raids of their own, starting on April 19, in the Tokyo area.

If the unusable Japanese aircraft were left in the open because they could not be allowed to scramble, they would invite enemy attack, and their worth would be reduced even more. Hence it was decided to conceal them in nearby woods or to evacuate them to safer refuges, since there were few concrete hangars. For example, in mid-May 1945, Lt. Comdr. T. Minobe moved the three IJNAF fighter squadrons of his 131st Air Group from the battered Kanoya airfield to Iwakawa, also located on Kyushu but in a mountainous district. Minobe dispersed his planes and had his men plant trees, bring in cattle, erect movable dummy houses all over the area, and strew the runways with vegetation. U.S. aircraft caused few problems for the 131st Air Group at Iwakawa. Whenever enemy daytime intruders had left the region, the Japanese would quickly bring back their dispersed planes and get them ready for night action. At the forward base at Kojinya

on Amami Oshima Island, Japanese engineers scooped a concealed facility, designed to support night operations, from the side of a mountain.<sup>99</sup> Japanese airfield battalions also boasted about the speed with which they were able to repair cratered runways.

Despite the pride that Japanese airmen retain regarding the effectiveness of their efforts at camouflage and concealment, they still feel that the Americans did not sufficiently comprehend the hardship inflicted on the defenders. The Japanese had to deal with a reduction in the number of interceptors that could scramble, the wastage of manpower and fuel, and the psychological exhaustion generated by the need for strenuous countermeasures. As for coping with fighter-escorted bombers, single-engine interceptors had a very difficult time. Few pilots could manage to combat the U.S. fighters, and those that could found it nearly impossible to shake the P-51s and close with the B-29s. The Mustangs, fast and agile, were regarded as the most powerful reciprocal-engine fighters in the enemy's arsenal; they were detested by interceptor pilots flying the outclassed Japanese night fighters. It was the feeling of IJNAF pilots that the *ZEKE* fighter was about equal to the Curtiss P-40 and Grumman F4F Wildcat, but no match for the powerful Vought F4U Corsair and the Grumman F6F, which was particularly disliked. One veteran Japanese flyer admitted after the war that IJNAF pilots became convinced that they were flying very inferior planes, and they "had a horror of American fighters."<sup>100</sup>

Not surprisingly, AAF sources are in complete agreement with the potency of fighter escorts during B-29 daylight bombing operations. It was estimated that the use of escorts reduced enemy interception by as much as 70 percent. The Japanese, it was concluded, would not press attacks against bombers in the face of the threat of P-51s and P-47s. It has also been pointed out that, "in addition to saving many B-29s from attack by enemy aircraft, the protection provided by [U.S.] fighters served to increase the confidence and morale of B-29 combat crews, thereby resulting in increased bombing efficiency." The risk that could be faced when fighter escorts were not provided for daytime bombing operations is illustrated by the events of April 24. Coming in at the unusually low altitude of 4,000 meters, 101 B-29s wrecked the radial-engine plant at Yamato outside of Tokyo, but encountered heavy resistance by fighters and flak. Though B-29 gunners claimed 14 fighters destroyed and 24 probably downed, 4 American bombers were lost and 68 were damaged.<sup>101</sup>

With LeMay's emphasis on low-level night raids against cities, however, the U.S. fighters were called on less frequently for escort duty than had been originally anticipated. When VII Fighter Command did provide escorts, the numbers of committed aircraft remained impressive. Thus, during the B-29 raid of May 29 against Yokohama, 101 P-51s accompanied 517 bombers by day and at high altitude. The U.S. fighters claimed to have shot down 26 and damaged 31 of some 150 Japanese interceptors they met

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that day; 3 Mustangs were lost. On June 10th, 107 P-51s escorted about 500 B-29s that attacked the Tokyo Bay area; and on June 26, a total of 148 P-51s covered 510 bombers that struck targets in southern Honshu and Shikoku. Against nighttime bombing operations, interceptions by Japanese fighters were never effective. Most passes occurred when bombers were illuminated by ground conflagrations or by searchlights.<sup>102</sup>

In scarcely more than 4 months, VII Fighter Command flew over 1,700 sorties in support of B-29s, destroyed or probably destroyed 497 Japanese planes (276 airborne), and damaged 567. The previously mentioned effectiveness of Japanese camouflage and concealment of aircraft on the ground became so pronounced, however, that "strafing of airfields yielded little return." It was evident that "the enemy's constant shifting of planes from field to field and his increased use of dispersion, dummies, and camouflage left few fat targets." Grounded Japanese aircraft did not ignite when hit by P-51s, indicating that fuel tanks had been emptied.<sup>103</sup>

By war's end, the B-29 bomber formations were daring to fly consistently without fighter escort. According to Gen. Henry H. Arnold, during the summer of 1945:

... we bombed Japan actually at will, at altitudes of our own choosing (as low as 8,000 or even 5,000 feet) with practically no losses. In the last phase, before Hiroshima, we used B-29s without armor, and with almost no guns. When it came time to drop the atomic bomb, we were so sure that any B-29 would reach its objective without opposition that we sent the second of these precious laden planes without escort.

General LeMay later said "the record will show that in the last 2 months of the war it was safer to fly a combat mission over Japan than it was to fly a B-29 training mission back in the United States."<sup>104</sup>

## The Torment of the Japanese Air Forces

It should not be thought that Japanese pilots were reconciled to the High Command's decision in the spring of 1945 to preserve fighter strength for the all-out campaign that was to be waged against the expected enemy landings in the homeland. One IJAAF air defense officer remarked that "our pilots' spirit was squelched and the brilliant feats of our fighters almost vanished. We became eagles without wings." Another IJAAF officer lamented: "The enemy planes in silvery formations flew virtually unimpeded over the homeland, and the Japanese people began to wonder if their air force still existed. This eventually led to the populace's distrust of the military." War Minister Korechika Anami apologized formally to local

military commanders in Tokyo on July 16, 1945, for allowing enemy task forces to dominate the area around the homeland.<sup>105</sup>

At some point, the Japanese High Command had to face up to the consequences of having abdicated the battle for air superiority over the homeland. In June 1945, Japan was struck 36 times by an aggregate of about 4,600 USAAF, USN, and USMC planes of all types operating from the Marianas, Iwo Jima, Okinawa, and aircraft carriers. Arguments raged between Japanese staff officers, who insisted that all of the country's cities should not be allowed to die, and those who responded that it was impossible to defend the whole nation, lest the remaining fighter assets be expended even before the enemy's ground invasion began. In late June, IGHQ finally decided to adopt an air defense policy of engaging enemy planes. Even so, Japanese interceptors were only to go after bombers, because they were deemed to be most dangerous to the country as a whole, and because Japanese fighters could be expected to suffer far fewer losses in combat against bombers than against fighters. Enemy fighters should be engaged only when circumstances were "especially advantageous or absolutely necessary." It was not thought that this selective type of air defense would prevent the weakening of the people's will to resist, but it was hoped that even local successes by the Japanese air forces would exert favorable psychological effects on the populace and concomitantly adverse effects on the resolve of the enemy.<sup>106</sup>

On July 9, 1945, the three air divisions defending Japan were transferred from the jurisdiction of the ground armies and placed under the direct control of the Air General Army. Although that force was directed to cooperate closely with the Navy, the Army was explicitly given responsibility for the overall air defense of the country. IJAAF staff officers admit that the latest steps merely amounted to another paper plan, and that the air divisions were unable to concern themselves with the interception of raiding aircraft, but had to conserve what was left of their strength for the decisive last battle against land invasion. Given the Japanese emphasis on *kamikazes* in 1945, few fighters were left to handle the conventional air defense role. The 10th Air Division at Tokyo, for example, had only ninety-five serviceable IJAAF interceptors in five air groups as of late July.<sup>107</sup>

To cover the Osaka-Kobe and Nagoya districts, the 11th Air Division assembled several dozen Type 3 *Hien* (TONY) and Type 4 *Hayate* (FRANK) fighters at Kameoka, west of Kyoto. Learning on July 19 that a B-29 raid impended, 11th Air Division Headquarters at Osaka ordered interception at full strength. Too late, the division heard that the enemy raiders had been identified as fighter aircraft, and the Japanese interceptors were ordered to avoid contact. The radioed messages never got through to the IJAAF fighter units. The 16 TONYs of the 56th Air Group, patrolling at 14,000 feet, were surprised by a like number of P-51s operating 5,000 feet

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above them and lost 2 TONYS before they could get away. The commander of the 246th Air Group, with 16 FRANK fighters, observed the melee from a distance of 6 miles, but by the time the FRANKS could climb from 4 miles, the P-51s were gone.<sup>108</sup> It is noteworthy that 2 IJAAF air groups had been able to scramble a total of only 32 operational fighters at full strength, and that the air division would not authorize them to engage U.S. fighter inroads.

The cheerlessness and despair of their situation drove Japanese military and naval pilots to distraction and even to occasional rebelliousness. A case in point was the IJAAF's 244th Air Group, which had been pulled back from Kyushu to the Osaka area in mid-July 1945 to prepare for the decisive operations expected in that region. Equipped with the Army's newest single-seat fighter—the Kawasaki Ki-100 Type 5, a smooth-handling, reliable plane—Maj. Teruhiko Kobayashi and his flyers craved action against the U.S. fighters that swarmed daily over central Honshu Island. On July 16, Major Kobayashi took off from Yokkaichi with a dozen of his Type 5 interceptors, ostensibly to conduct training aloft. Inevitably, the Japanese pilots encountered the fighting that they wanted when they ran into Mustang formations. The Americans found the Type 5 to be “a complete and unpleasant surprise.”<sup>109</sup> But though the initial combat was inconclusive, Kobayashi's immediate superiors at the 11th Air Division promptly ordered the 224th Air Group to be grounded.

Major Kobayashi's men were understandably frustrated. One IJAAF flying sergeant complained: “Why can't we use our 'hot' new planes? We fighter pilots aren't afraid to die in battle.” Kobayashi bided his time. When he received information in the early morning of July 25 that hundreds of USN carrier planes were on the way to attack the Kansai region, Kobayashi assembled his unit. “We have been told not to attack enemy fighters,” he said. “So why don't we just conduct battle training today?” Ordering all available planes to take off, Kobayashi led the way into the air. His 30-plus pilots followed separately, there being no time for the usual orderly takeoff sequence. F6F Grummans were already over Wakayama, heading for Osaka, but they were preoccupied with ground-strafting missions, and Kobayashi's fighters got above them. The 3d Squadron commander, Capt. Kozo Fujisawa, recalls what happened next:

From an altitude of 4,000 meters [14,000 feet] we swooped down on one cluster of 24 enemy aircraft. Yet though we engaged them in swirling individual dogfights, the Grummans never broke formation. I set one USN plane on fire but had no time to confirm the kill. Our Type 5 fighters had the edge over the F6F in climbing and circling, but the Grummans were far better in diving and acceleration, so they could pult away from us easily. On balance, however, I think the Type 5 fighter was more than equal to the Grumman.

In this air-to-air battle of July 25, another IJAAF captain rammed a Grumman head-on. Ejecting on impact, the captain was already dead when his parachute opened. The 244th Air Group lost one more pilot in combat



that day but claimed to have shot down twelve USN carrier planes. According to Japanese sources, the 343d Air Group had also sortied over the Bungo Strait the day before and had brought down twelve enemy carrier aircraft at a cost of six IJAAF interceptors. These air battles, say the Japanese, represented the last successes by their fighter planes in the defense of the homeland.<sup>110</sup>

U.S. records indicate that Task Force 38 launched 1,747 sorties on July 24 and 25, but that bad weather halted the round-the-clock strikes at midday on the 25th. The clash of Major Kobayashi's unit with USN fighters must have involved VF-31, which noted the rare experience of being jumped by a superior number of Japanese interceptors while its Hellcats were strafing an airfield near Nagoya on July 25. A twenty-four-year-old American officer, Lt. Comdr. Cornelius Nooy, saved an F6F from an enemy fighter. Thereupon Nooy climbed to draw off other Japanese aircraft, rejoined his flight, shot down two more enemy planes, and claimed one probable kill.<sup>111</sup>

As for Major Kobayashi, that IJAAF group commander had been promptly ordered to report to 11th Air Division Headquarters in Osaka, where he was reprimanded for disobeying his instructions forbidding fighter sorties and was warned that his action ran counter to the command's intention to conserve the remaining Japanese air strength. It was intimated to Kobayashi by his superiors that not only might he be demoted for his breach of military discipline but that he also faced court-martial proceedings. The major returned to Yokkaichi in a rage, drank a defiant toast to "victory," and was heard to say, "It's all O.K. with me." That very night, an official telegram of commendation arrived from Imperial General Headquarters, dissipating any thought of punishing Kobayashi. Nevertheless, the 11th Air Division sent a staff officer to the 244th Air Group with instructions to keep a watchful eye on the unit. The staff officer "stuck to Major Kobayashi like a leech," allowing him no chance for further arbitrariness.<sup>112</sup>

### **Allied Victory in the Pacific**

By June 1945, the Seventh Air Force possessed a total of 1,492 planes, of which 1,006 were fighters. Most of its tactical units had reached Okinawa by July. VII Bomber Command was based at Yontan, Kadena, and Machinato. VII Fighter Command had the 4 groups of its principal force, the 301st Fighter Wing, based on Ie Shima, offshore from Okinawa itself. On July 14, the Seventh Air Force, under its new commander, Maj. Gen. Thomas D. White, was officially transferred from the Navy Tactical Air Force, Ryukyus, to the Far East Air Forces (FEAF). Having worked for years under the control of USN and USMC commanders, the Seventh Air

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Force was finally able to operate as an "integrated air force" under strictly Army Air Forces command. But since the last component of the Seventh Air Force's headquarters only arrived at Okinawa on July 28, and since the staff had never before been able to direct their own elements in combat, by their own admission they were "slow to get under way." Nevertheless, they now had the novel experience of operating tactical units belonging to another service, in this case the 2d Marine Air Wing, which was responsible for the air defense of the Ryukyu Islands.<sup>113</sup>

FEAF assigned top priority to the neutralization and destruction of Japanese air power by attacking planes and installations, particularly the dispersal zones of the main airfields on Kyushu. In July and August 1945, Seventh Air Force fighters and bombers flew 4,442 sorties, losing only 2 planes to interceptors and 10 to anti-aircraft fire. In the last 4 months of action, VII Fighter Command claimed to have destroyed or probably destroyed 497 enemy aircraft (including 276 in the air) and to have damaged 567. On July 3, V Fighter Command joined the air offensive against Kyushu, eventually building up its strength to 4 fighter groups and 2 night fighter squadrons. By war's end, V Fighter Command had lost only 1 plane to enemy interceptors and 4 to anti-aircraft fire. In the absence of significant resistance by the Japanese air forces, Seventh Air Force and Fifth Air Force fighter pilots indulged in what they termed "general hell raising," attacking bridges, railroads, rolling stock, fuel storage tanks, shipping, and other targets of opportunity. Additionally, AAF fighters supported heavy bomber raids against what little was left from B-29 attacks on Japanese industry and urban centers. For example, 97 P-47s and 49 P-51s participated in an attack by 179 B-25s, B-24s, and A-26s from the Seventh Air Force and the Fifth Air Force against Tarumizu on August 5. Two days later, 18 P-47s accompanied a B-24 raid against Omuta. Kumamoto and Kurume were similarly hit by the Seventh Air Force on August 10-11. U.S. fighters still escorted the B-29s when needed. On August 10th, 102 P-51s covered strikes by 165 Superfortresses against targets from Amagasaki to Tokyo.<sup>114</sup>

Japanese fighters returned to the fray after the war was actually over. Four U.S. B-32s on a reconnaissance mission were attacked over the Tokyo area by fifteen interceptors on August 17, and again on the 18th; three of the Japanese fighters were shot down in the two days of clashes.<sup>115</sup> Japanese official combat records end with the capitulation on August 15, but it is known from oral testimony and secondary sources that for several days a number of IJAAF and IJNAF pilots, from flag rank down in the case of the Navy, deliberately sortied singly or in small formations on arbitrary, one-way suicide missions against the erstwhile enemy. The flyers' motives were frustration, grief, and humiliation. It is highly probable that the unauthorized Japanese fighter actions of August 17-18 fall into this category, originating among airmen similar to those of Major Kobayashi's defiant 244th Air Group.

Indeed, the Japanese admit that many of their own airmen had lost heart even before hostilities ended. On August 9, the chief of staff of the Air General Army had telephoned 10th Air Division Headquarters in Tokyo to stress that, although there was talk of ending the war, vigorous efforts should still be made to go on fighting and to intercept enemy raiders. Nevertheless, on August 13, when the Tokyo district was hit by USN carrier planes and Japanese fighters were scrambled effectively, the 10th Air Division commander "failed to urge his men to press the attack to the utmost [because] it seemed absurd to incur additional losses with the war obviously lost and its termination due in a matter of days."<sup>116</sup>

Meanwhile, the U.S. Navy had been continuing its own devastating strikes against the Japanese mainland. American warships, unchallenged from the air, had boldly shelled targets ashore since mid-July. USN and USMC carrier planes launched especially powerful attacks against camouflaged airfields in northern Honshu and Hokkaido once typhoon conditions eased up after the first week of August. Aircraft from Task Force 38 struck in force on August 9, 10, 13, and 14. The carriers' CAP fighters shot down 22 enemy aircraft, including numerous Japanese Navy B6N *Tenzans* (JILLS) and D4Y *Suisa* (JUDYS) flying singly, during the raids of August 13. Two final USN carrier strikes sortied on the morning of the 15th, the last day of the war—103 planes in the first wave, which proceeded with its attack, and 73 in the second wave, which was recalled. A flight of four F6Fs from the first wave, over Sagami Bay on their way back to the USS *Hancock*, was attacked by 7 Japanese fighters, 4 of which were shot down without loss to the Americans. Another USN flight consisting of 6 Hellcats from the USS *Yorktown*, separated from the rest of the first wave by cloud cover, was attacked near Tokyo, from behind and above at 8,000 feet, by 17 enemy fighter pilots who either did not yet know the war was over or else were mounting a last defiant challenge. In a hard-fought battle, 9 of the Japanese planes were shot down, but the Americans lost 4 of the 6 Hellcats and all 4 pilots. It was apparently the final dogfight of the Pacific War, though USN fighters downed 8 more Japanese intruders near the task force on August 15, in response to Admiral Halsey's famous order to "investigate and shoot down all snoopers . . . in a friendly sort of way."<sup>117</sup>

Mention should also be made of the combat contribution made by the Royal Navy (RN) to the final air and sea offensive against homeland Japan. In November 1944, a new British Pacific Fleet had been constituted under Adm. Bruce Fraser. By the spring of 1945, the British had formed a task force under the tactical command of Vice Adm. H. B. Rawlings. Rear Adm. P. L. Vian, in turn, commanded the 1st Carrier Squadron, made up of 4 aircraft carriers (later reinforced to 5). The peak British air strength available aboard 5 carriers totaled 259 fighters, including USN-type

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Hellcats, Corsairs, and Avengers, as well as RN-type Seafires (a counterpart of the RAF Spitfire) and Fireflies (a heavy fighter). These fighters were employed in constant strikes against Japanese airfields and other targets on Formosa and then Sakishima Gunto in particular. British-flown Hellcats scored 47.5 air-to-air kills during their participation in the Pacific War.<sup>118</sup>

The crescendo of the Allied air offensive against Japan had quickened in July and early August 1945. On the 1st and 2d of August, 766 B-29s—the biggest number to date—hit Nagaoka and other targets. The largest and last series of bombing raids occurred on August 14 when 833 B-29s struck industrial and urban targets all over Japan. In the meantime, a “special unit” (to use an AAF euphemism of the time) had obliterated Hiroshima with the first atomic weapon on August 6 and Nagasaki with the second A-bomb on August 9. The fact that in each case a single B-29 could get through so easily to deliver the awesome atomic bomb unnerved the Japanese air commands. What, they were compelled to wonder, was the point of having conceded air superiority over the homeland to the enemy and of having “conserved” the remnants of the Army and Navy air forces to cope with an envisaged invasion that had become academic?

The Japanese air staffs realized, at this late hour in the war, that they would have to give up the passive practice of engaging only large formations of enemy bombers. An 11th Air Division officer remarked that “regardless of the consequences, it was clear that not even a single B-29 could [now] be ignored.” The division therefore assigned its best surviving pilots and planes to patrol the skies over northern Kyushu whenever one hostile bomber was reported to be approaching. But this meant that, in practice, each lone enemy plane would have to be engaged. This was patently impossible, said a 10th Air Division staff officer. After all, by the end of the war, 2 of the 3 air divisions in the homeland had been assigned only about 50 frontline fighters each, and the third division about 100; no organic air group possessed over 34 operational aircraft. In fact, the 3 air divisions disposed of a combined total of little more than 200 operational, front-line interceptors, with another 150 in mobile reserve.<sup>119</sup>

## Operation DOWNFALL

By July 1945, the U.S. air offensive against the Japanese home islands had devastated about forty percent of the built-up regions in sixty-six major cities, causing some thirty percent of the urban populace of the whole country to lose their dwelling places. That American bombers and fighters were freely crisscrossing Japanese skies in the absence of significant

opposition from the ground or air, for whatever reason, portended the last crisis for Japan. Indeed, a number of U.S. planners and commanders became convinced that the combined impact of direct air attack and blockade could compel the final decision without an invasion. Japan had been brought to such dire straits despite the fact that the weight of the American air offensive in general "had as yet reached only a fraction of its planned proportion," as U.S. Strategic Bombing Survey analysts later observed. For example, air assaults against Japan's rail and transportation network were merely getting underway at the outset of August.<sup>120</sup>

Allied decisionmakers, however, were still uncertain about the decisiveness of the air and naval offensive in convincing the Japanese government and high command to negotiate an early termination of hostilities. Strategic planning therefore proceeded on the basic assumption contained in directives issued by the Joint Chiefs of Staff on April 3, 1945, that ground armies would have to be used to invade Kyushu and Honshu in order to compel Japan to capitulate unconditionally. On May 28, 1945, General MacArthur's headquarters in Manila drafted the first edition of a comprehensive "strategic plan for operations in the Japanese archipelago." The Kyushu invasion (Operation OLYMPIC, scheduled for November 1945) and the Honshu invasion (Operation CORONET, set for March 1946) were grouped under the collective code name of DOWNFALL.<sup>121</sup>

The OLYMPIC operation was particularly designed to project U.S. land-based air forces into southern Kyushu, with a view to supporting the second, "knock-out blow to the enemy's heart" in the Tokyo-Yokohama region. American planners had no illusions regarding the intensity or tenacity of the Japanese response. The landings were expected to be opposed by all of the enemy's available military forces using every means, and by a "fanatically hostile population" resisting to "the utmost extent of their capabilities." Once the Allies had secured control of Kyushu, the invasion forces committed to Operation CORONET would be able to draw upon a minimum equivalent of 40 land-based Army and USMC air groups and upon naval elements for direct support and blockade. The land-based "air garrison" of about 2,800 planes would specifically include 16 fighter and fighter-bomber groups and 4 night-fighter squadrons.<sup>122</sup>

The OLYMPIC landings would require intensive air preparation, the heaviest practicable neutralization of enemy air, ground, and naval forces capable of interfering with or limiting the success of the invasion. Attacks by carrier task groups would be coordinated with prolonged action by land-based units of the Twentieth Air Force and other air forces striking massively from the Marianas and the Ryukyus. All-out effort would peak during the ten days preceding the invasion, bringing about offensive air superiority from the outset. It was intended therefore to destroy hostile air power in Kyushu and nearby, to isolate the objective areas of Miyazaki,

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Ariake Bay, and Kushikino, to overcome the ground defenses, and to cover the preliminary amphibious operations.<sup>123</sup>

Why the Japanese, after losing Okinawa, had been keeping their air forces on a tight leash, withholding commitment or strictly avoiding losses, could easily be surmised by the Americans: the enemy seemed unwilling to accept a reduction in reserves below the level deemed necessary for the final defense of the country. It was believed by MacArthur's headquarters that, through rigid economy, the Japanese would strive to replace their severe losses to date and to rebuild their inventory, not only by careful control of attempted interception of U.S. air strikes but also by concentrating in Japan all planes that could be spared from other areas. Indeed, there was evidence that the Japanese were already heavily tapping into their field forces in Manchuria to reinforce the homeland, despite the risk of weakening the Manchurian front in the face of Russia's potential entry into the war against Japan. By the time Operation OLYMPIC was to be launched, the Japanese could be expected to have had time to increase the number of planes immediately available in the homeland area to 2,000–2,500, of which 1,500–2,000 would be first-line aircraft and the rest training planes and obsolete or obsolescent models. The number, distribution, and types of Japanese airfields and landing grounds, estimated at 200 and supplemented by facilities in Korea and China, were deemed to be entirely adequate for the number of aircraft at hand or likely to come on line in the foreseeable future. According to U.S. intelligence, there was a possibility that the Japanese would withdraw their land-based aviation to the Asian mainland for protection from the neutralizing attacks. The relocated force would then operate against the enemy armies invading Kyushu by staging through fields in Japan.<sup>124</sup>

Initial air opposition to OLYMPIC was expected to be "as intense and violent as [the Japanese] can make it," according to U.S. intelligence, even before the actual landings. The counterattacks would emanate from northern Kyushu, southwest Honshu, Shikoku, and South Korea. American strategists, however, believed that the enemy would be quickly compelled to curtail the air defense of Kyushu, lest the all-important Tokyo area be left entirely or inadequately protected. Hence, quite early in the fighting, just as soon as it became apparent to the defenders that success on Kyushu was unlikely, the Japanese would abandon mass air attacks, after having expended no more than 500 to 800 planes in efforts to prevent U.S. landing and consolidation operations. Thereafter the Japanese would go over to the strictly defensive mode, and the scale of air effort would be reduced to intermittent sorties, involving a small number of aircraft, emphasizing suicide crashes of "uncertain proportions," mainly during hours of darkness.<sup>125</sup>

Though the Japanese Navy would employ its last large and midget submarines and small assault demolition or suicide craft to contest the landings

during the approach and afterward, the only important naval counterthrust in defense of Kyushu might be mounted by a suicide force built around a carrier task force, if the nine aircraft carriers and two converted battleships still afloat in mid-1945 had not been destroyed in the interim. Nevertheless, in view of the reduction in the strength of the Japanese fleet, American planners judged that whatever course the Japanese Navy might choose would have had little effect on Allied operations. As for ground-launched V-type weapons, similar to the German jet-propelled V-1S, it was known that the Japanese had been trying to obtain German help in their development. Though none had appeared in the Far East to date, they might be introduced prior to the implementation of Operation OLYMPIC. Suicide-pilot “*Baka* bombs” had seen action at Okinawa, and they would undoubtedly be used in even greater numbers during the defense of the homeland.<sup>126</sup>

Though U.S. prognostications of Japanese response to the projected invasion of the homeland were generally accurate with respect to the intensity of reaction, they were considerably below the mark regarding the quantity of Japanese Army and Navy aircraft that had been hoarded and the proportion that would be allocated to *kamikaze* action in the last campaigns. By focusing attention on the number and length of runways and landing grounds operated by the enemy, U.S. intelligence tended to lose sight of the ubiquitous capabilities of Japanese suicide-crash aircraft. General Masakazu Kawabe, the Air General Army Commander, later said:<sup>127</sup>

We believed that, despite your destruction of our major fields, we could very easily construct fields from which *kamikaze* planes could take off. Everywhere we had built little fields capable of launching *kamikaze* planes. As long as there was only a question of launching them and not getting them back, there was no question . . . We knew you would do everything in your power to destroy all our airfields, but we believed the airfields necessary for [*kamikazes*] were such simple affairs that they could be mended very quickly. We believed that by taking advantage of weather, heavy overcast, and intervals between your . . . raids, we could repair the airfields enough to keep them serviceable. Also we could use stretches of beach. . . .

Lt. Gen. Michio Sugawara, the 6th Air Army Commander, added that the battlefield in the homeland would not be 600 or 700 kilometers away from Japanese home bases, as in the Ryukyus, and that defending pilots would be “at the point of combat anywhere along the coast.”<sup>128</sup>

While American intelligence’s estimate of the Japanese stock of first-line planes was good, the analysts did not take into account the ability and willingness of the Japanese to launch *every* plane that could fly on one-way *kamikaze* missions. Yet, as the Operation DOWNFALL planners noted, the experience at Okinawa had already shown how Japanese air power would be used in all-out combat. It would feature “liberal employment of all available classes of aircraft including obsolescent types, trainers, and carrier-based planes operating shore-based . . . [supplemented by] with-

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drawal of aircraft from all other sectors...in order to participate in the action."<sup>129</sup> Japanese Air General Army staff officers asserted subsequently that the Army intended to commit "the full air force led by the commanding general. We expected annihilation of our entire air force but we felt that it was our duty."<sup>130</sup> Once the last designated *kamikazes* were expended, the remaining first-line conventional fighter pilots, who until then had been used to escort and shepherd the Special Attack planes, would be assigned suicide missions themselves. It is probable that at least two-thirds of the Japanese air forces' planes and pilots would have been consumed as *kamikazes*.<sup>131</sup> It should be noted, however, that the Japanese did not hope to win the war at this late date; they intended to inflict such fearful casualties on the foe that better than unconditional terms could be secured.

By August 1945, Japanese air units were amassing "every type of plane [they] could find, no matter how obsolete or how long in storage." The final air potential of both services in Japan and in areas of practicable reinforcement (Korea, Manchuria, north and central China, and Taiwan) was much higher than Allied intelligence's tally. The IJAAF alone possessed a maximum number of 7,800 aircraft: 2,650 ready for the *kamikaze* role (900 combat types, 1,750 advanced trainers), 2,150 suitable for conventional use, and 3,000 available but not currently effective—that is, undergoing repair or modification, still assigned to training units or in storage, etc. The last inventory of IJNAF (which was regarded as ahead of the Army in preparations, dispersal, and level of maintenance) included a maximum number of 10,100 planes; 2,700 primary trainers ready for *kamikaze* use, 3,200 orthodox aircraft, and 4,200 available but not fully effective. The two services thus had a combined total of 10,700 operational planes, of which 5,350 had been prepared as *kamikazes* and an equal number as conventional combat aircraft. If the 7,200 additional IJAAF and IJNAF planes available but not deemed currently effective were counted, the maximum number of aircraft carried in the inventories of both services' air forces would reach a grand total of 17,900.<sup>132</sup>

It goes without saying that the statistics for effective air potential were seriously vitiated by Japan's fundamental weaknesses, rendered irreversible by war's end. For example, with the isolation of the Japanese homeland from the Asian continent and Southeast Asia, the importation of fuel as well as natural resources dwindled seriously. Substitute aviation fuels, some bordering on desperation, were introduced (alcohol) or tested (pineroot oil, isopropyl ether, camphor oil). Since mid-1944, the Japanese had had to reduce military aviation fuel consumption at the very time that air combat was becoming crucial; the effects were felt greatly in the area of training. Even the program of orthodox air training in the Navy had to be cut to fifteen hours per pilot per month by the end of the war.<sup>133</sup>



TABLE 8-2  
**IJAAF Order of Battle, Homeland, August 1945**

Unit	Commander	Location of Hq
Air General Army	Gen. Masakazu Kawabe	Tokyo
1st Air Army	Lt. Gen. Takeo Yasuda	Tokyo
10th Air Division	Lt. Gen. Kametoshi Kondō	Tokyo
11th Air Division	Lt. Gen. Kumao Kitajima	Osaka
6th Air Army	Lt. Gen. Michio Sugawara	Fukuoka
1st Air Division	Lt. Gen. Sho'ichi Sato	Sapporo
12th Air Division	Maj. Gen. Hideharu Habu	Ozuki
51st Air Division	Lt. Gen. Ai Ishikawa	Gifu
52d Air Division	Lt. Gen. Shigeru Yamanaka	Kumagaya
53d Air Division	Lt. Gen. Yutaka Hirota	Ota
20th Fighter Group	Maj. Gen. Takezo Aoki	Komaki
30th Fighter Group	Maj. Gen. Yasuyuki Miyoshi	Kumamoto

*Source: Homeland Operations Record, Japanese Monograph 17, Japanese Research Division, HQ USAFE/Eighth U.S. Army (Rear); corrections by the author.*

Qualitatively, Japanese military planes had deteriorated by 1944-45. They already had a history of poor performance at high altitude, unsatisfactory air-to-ground communication, short range, lack of powerful armament, chronically weak landing gear, and poor brakes. Now Japanese plane output suffered from material deficiencies and substitute components, inferior workmanship, reduced precision, and insufficient testing (many trainers received no flight testing). Other problems stemmed from clumsy flying and ferrying, rendered costly by navigational mistakes, mechanical failures, defective materials, poor upkeep, and pilot error. The ferry flight often became the test flight. IJNAF found itself rejecting thirty to fifty percent of the planes produced since summer 1944; repair of the rejected aircraft might take a precious month. In addition, the logistical and maintenance system was inadequate. Facilities for repair and engine change were few and scattered. Refueling was primitive, and spare parts were in constant short supply. There was poor technical coordination between the services and industry; duplication and secretiveness were rife.<sup>134</sup> The practical effects of these limitations and deficiencies had an inevitably adverse bearing on Japan's handling of the last stages of the air war and her prospects for coping with the OLYMPIC and CORONET onslaughts.

## Conclusions

This chapter has emphasized the quest for air superiority in the war against Japan. But, as the official U.S. Air Force historians Wesley Frank Craven and James Lea Cate pointed out in 1953, "to win a victory over the enemy air forces was but part of the mission" of aviation in the Pacific. "It was the versatility of the AAF," added Craven and Cate, "rather than its accomplishments in any one department, which deserves principal emphasis. . . ." <sup>135</sup> The Seventh Air Force, for example, was tasked with a threefold mission in the final offensive against Japan. Its highest priority until the end of the war was to neutralize and destroy Japanese air power by bomber as well as fighter attacks on enemy air installations and aircraft. The second mission was to destroy Japanese shipping; and the third, to disrupt transportation and communications on Kyushu, preparatory to Operation OLYMPIC. <sup>136</sup>

The war against Japan was not a sea war or a ground war or an air war, but, as the Strategic Bombing Survey stressed, "a combined sea-ground-air war in three dimensions." Admiral King spoke of a "partnership of accomplishment" with the U.S. Army's ground, air, and service forces. USN and USMC carrier planes played a large part in the reduction of island objectives, particularly in the preinvasion stages. In the Marianas and Ryukyus operations, the initial strikes were carrier-borne. The Seventh Air Force joined naval aviation in the first land-based reconnaissance of the Marianas. AAF bombers and fighters, from the various commands, operated in concert to bring the air war to Japan. <sup>137</sup>

In addition, it should be remembered that the air war was fought by Allies in several theaters of Asia and the Pacific. Though this chapter has stressed the role of the Americans, important contributions to the victory over Japan were also made, prior to the Hiroshima and Nagasaki atomic bombings, by air elements of Great Britain (RAF), Australia (RAAF), New Zealand (RNZAF), the Netherlands (RNEI Air Force), and the Republic of China (CAF and Chinese-American Composite Wing). <sup>138</sup>

The achievement of Allied air superiority in Japanese skies owed much to the synchronization of U.S. offensive planning with the buildup of strength. Thus the Seventh Air Force attained its peak in terms of size and activity during the last stage of operations against the Japanese home islands. Indeed, the Seventh Air Force's maximum effort took place during the final month of the war. Whereas, until the campaign against Okinawa, U.S. air strikes had been largely focused on the neutralization of specific enemy bases such as Truk and Iwo Jima, the last offensive embraced a far-ranging effort to interdict hundreds of well-developed airfields or minor strips then within range in the homeland and environs, from Kanoya, Omura, and Oita, to Nagasaki, Kumamoto, and Kagoshima, and even Shanghai. Second- and third-priority shipping and transportation targets were already coming under U.S. air attack by war's end. <sup>139</sup>

In the process of winning air superiority, AAF units had to cope with a large number of limiting factors: enormous distances between islands in the central Pacific, posing difficulties in communication, liaison, and reconnaissance; lack of bases within reach of the enemy; limited range of aircraft; and problems of navigation and navigational aids. The small size of the islands in the central Pacific constituted a chronic challenge. Even when atolls or small reef islands proved suitable as forward bases, their limited capacity usually rendered them useful only for staging operations. As Seventh Air Force officers recalled, not until the Marianas were reached “[did we have] a base which was much larger in effect than an anchored aircraft carrier. Saipan, with an area of 46 square miles, seemed tremendous in comparison with our previous bases.”<sup>140</sup>

The AAF in the Pacific faced still other limiting factors: a lack of supplies and a lack of shipping to haul them forward; the need to move into advanced bases before adequate facilities became available; a dearth of radar-equipped aircraft; shortages of planes, parts, and equipment; and the need to create an air-sea rescue capability. There was a lack of maintenance facilities, especially in the early phases of the war, when U.S. flying personnel often had to service their own planes. Aircraft crews were in short supply until 1944; in some months, replacement crews were not received. The Seventh Air Force, detecting inadequate training in crews that did arrive from the United States, established its own schools to teach navigation and gunnery.<sup>141</sup> Despite the many and vexing difficulties encountered by the AAF in the course of the air war in the Pacific, “one by one these problems were overcome,” USSBS analysts concluded. The program for the final air offensive against Japan itself, they added, was “soundly conceived and executed.”<sup>142</sup>

The Japanese, of course, contributed significantly to their own inability to control the air over their homeland. Apart from the severe technological weaknesses of their antiaircraft ordnance and interceptor planes (even when committed), the basic capabilities of Japanese air opposition and countermeasures did not impress the Americans by 1945. In the words of U.S. postwar analysts:<sup>143</sup>

... the over-all effectiveness of Japanese defenses never constituted a serious threat to the accomplishment of the mission of strategic air warfare. It is apparent after survey that even had more substantial numbers of fighters been disposed in defense of the home islands, the Japanese air strategy and concept was distinctly limited, and little appreciable effect would have been felt [by the U.S. air offensive effort]. . . . Throughout hostilities the tactics of the [Japanese pilot] displayed little variation, and his techniques and skill did not improve appreciably.

The larger reasons for Japanese defeat in the air encompassed geostrategic, economic, technological, demographic, and psychological factors that lie beyond the purview of this chapter. However, several specific explanations can be adduced to account for the loss of air superiority by the IJAAF and the IJNAF to the Seventh Air Force and other components of

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Allied air power. Their early successes lulled the Japanese into a false sense of security. For much too long they tended to think in terms of the feeble, outclassed Allied aviation originally encountered in Southeast Asia and China. The Japanese doctrinal approach to air power was narrow and uncoordinated. The IJAAF was typically subordinated to ground forces. Neither the IJAAF nor the IJNAF (which had a somewhat broader conception) could ever mount sustained and heavy strategic attacks at long range against economic targets or rear zones. Both services underestimated the Allies' ability to conduct such operations against Japanese industry and urban centers.<sup>144</sup>

The Japanese did not exploit the advantages of interior lines of communication. When time was already working against them, they frittered away their best air units in piecemeal fashion around their far-flung perimeter of strategic defense—the consequence of envisaging a relatively short and victorious war. Japanese tactical aviation was committed in dribbles; operations entailing more than a hundred aircraft were few. Toward the end of the war, certainly, the low quality of Japanese planes and pilots would have prevented the massing of disciplined formations, but it was also the belief of the IJNAF that the Army Air Forces would only cooperate with it if operations were conducted over land. Navy officer Minoru Genda, the man who helped to plan the Pearl Harbor operation, later remarked that each service sought to conduct operations on its own and lacked understanding of the other branch. Not only did the IJAAF and the IJNAF fail to cooperate effectively, but the Army and the Navy competed frantically for allocations of Japan's limited supplies of raw materials and production facilities. Realistically speaking, unification of the separate military and naval air forces was an impossibility.<sup>145</sup>

In sheer quantities of aircraft, the Japanese manufactured a formidable number for both services during the Pacific war—65,000 of all types. But they lost a similarly formidable number of planes, over 50,000 to all causes—a catastrophic price to pay for negligible results. By war's end, it is no exaggeration to state, only hundreds of Japanese aircraft could be maintained and only scores could be operated effectively by conventional measures of military serviceability.<sup>146</sup> By 1944–45, it was largely the weakness of the Japanese in orthodox air operations against the newest AAF bombers and fighters, as well as against USN and USMC aircraft, that spawned two deliberate decisions on the part of the Japanese: to abandon the contest for air superiority over the homeland, and to stake everything on *kamikaze* defense of the main islands against Allied invasion. Though the former decision may be arguable politically and militarily, there can be no doubt that the *kamikaze* option was fearsome. Wrote the U.S. naval historian, Samuel E. Morison:

Although the Navy had met the *kamikaze* by radar warning, CAP, and the proximity fuze for antiaircraft shells, and although average effectiveness of the suicide planes diminished, the prospect of thousands of them being used against our invasion forces... was disquieting.<sup>147</sup>

From first-hand experience, Morison described "the hideous forms of death and torture" inflicted by the *kamikazes*. Suicide attacks remained 3 to 4 times more effective against surface vessels than conventional torpedo and bomb attacks.<sup>148</sup>

The basic problem, as many a survivor of the *kamikazes'* attacks recalled, was that mere crippling of a suicide plane was not enough. As a task unit commander, Rear Adm. W. D. Sample, recounted events at Ormoc and Mindoro, where U.S. warships and AAF fighters repeatedly hit *kamikazes* without stopping them: "For this reason, all gunners . . . should be schooled to shoot for the plane's motor. Hit the fuselage and it keeps on coming."<sup>149</sup> No radical solution to the menace of the *kamikazes* was ever found, however, although the U.S. Navy detached one of its best flag officers, Vice Admiral Willis A. Lee, to establish a research and experiment unit in Maine, and specifically directed him to "devise a remedy for the *kamikaze* disease."<sup>150</sup> The legacy of the *kamikazes* was an expendable weapon and awesome tactics that remain relevant to air warfare in today's equivalent environment of the guided missile, and to terrorist suicide bombings.

For the Japanese of 1945, however, the *kamikazes* could not and did not affect the fundamental struggle for air superiority. Simply put, the Japanese high command had not envisaged

the ability to achieve general and continuing control of the air . . . as a requirement in their basic war strategy, as was the planned destruction of the United States Fleet. Had this basic requirement been well understood, it is difficult to conceive that they would have undertaken a war of limited objectives in the first place. Once started on a strategic plan which did not provide the means to assure continuing air control, there was no way in which they could revise their strategy to reverse the growing predominance in the air of a basically stronger opponent who came to understand this requirement and whose war was being fought accordingly.<sup>151</sup>

It is true that Allied aviation could not and did not *destroy* the Japanese air forces which, for all of their qualitative debilities and numerical attrition, at war's end still possessed an intact, partly masked inventory of 17,900 to 18,500 planes of all types and all conditions. Even the seasoned carrier admiral, Frederick C. Sherman, reflected a degree of disbelief when he observed that, as late as mid-1945, "despite the many devastating attacks on their bases, the Japanese somehow were able to continue sending planes on their desperate missions."<sup>152</sup> But the combined and mighty efforts of the U.S. Army Air Forces, of the U.S. Navy and Marine Corps, and of their allies kept the skies open over Japan and wreaked havoc on targets below. They also contributed to the elimination of the need for a frightfully expensive ground invasion.

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In achieving *de facto* air superiority, through a combination of Allied power and Japanese default, the ultimate victors were able, as General Arnold asserted, to dispatch a lone aircraft carrying an atomic bomb into enemy airspace, during broad daylight and without fighter escort, on its fateful mission to Nagasaki. Japanese commanders, holding back 10,700 operational planes, half of them *kamikazes*, from a total stock of nearly 18,000 aircraft, had had another ending in mind. The impressive statistics of Japanese military and naval assets at such a late date, however, do not detract from the achievements of the Allies in having knocked out 20,000 enemy aircraft in combat, but they shed decisive light on the indispensability of having finally projected air power deep into the innards of Japan's last perimeter of strategic defense.

## Notes

1. John Morton Blum, *From the Morgenthau Diaries*, Vol 2: *Years of Urgency, 1938–1941* (Boston, 1965), pp 366–67. Morgenthau and Hull met on Dec 10, 1940. The China Lobby advocates followed a route in Washington that proceeded from Chennault and Joseph Alsop through Soong to Morgenthau to Hull. See Michael Schaller, *The U.S. Crusade in China, 1938–1945* (New York, 1979), p 73.
2. Wesley Frank Craven and James Lea Cate, eds, *The Army Air Forces in World War II*, Vol 1: *Plans and Early Operations, January 1939 to August 1942* (Chicago, 1948; reprint, Office of Air Force History, 1983), pp 174–92.
3. David Kahn, "The United States Views Germany and Japan in 1941," in Ernest R. May, ed, *Knowing One's Enemies: Intelligence Assessment Before the Two World Wars* (Princeton, 1984), p 476.
4. "That's Navy thinking," added Mitchell. Emile Gauvreau, *The Wild Blue Yonder: Sons of the Prophet Carry On* (New York, 1944), p 171, citing Gauvreau's notes of a conversation.
5. *Ibid.*, p 221.
6. Issue of Sept 1941, cited by Clive Howard and Joe Whitley, *One Damned Island After Another* (Chapel Hill, NC, 1946), pp 22–23.
7. Fletcher Pratt, *Sea Power and Today's War* (New York, 1939), pp 178–79, cited by Kahn, "The United States Views," pp 476–77.
8. *Ibid.*, p 477.
9. Nobutaka Ike, trans and ed, *Japan's Decision for War: Records of the 1941 Policy Conferences* (Stanford, 1967), p 225 (Nov 5, 1941).
10. *Ibid.*, pp 275, 281 (Dec 1, 1941).
11. Tojo's statement of Nov 4, 1941, *Homeland Air Defense Operations Record*, Japanese Monograph No. 157 (JM 157), HQ USAFFE/Eighth U.S. Army (Rear) (Tokyo, 1952), pp 2–3; Sugiyama's statement of Nov 5, Ike, *Japan's Decision*, p 227.
12. *Homeland Operations Record*, Japanese Monograph No. 17 (JM 17), HQ USAFFE/Eighth U.S. Army (Rear) (n.d.), pp 2, 6–7.
13. *Ibid.*, pp 2–5.
14. JM 157, p 2; JM 17, pp 4, 6–8.
15. United States Strategic Bombing Survey (USSBS), *Air Forces Allied with the United States in the War Against Japan* (Washington, 1947), p 3; USSBS, *Japanese Air Power* (Washington, 1946), pp 1, 4–9; USSBS, *The Campaigns of the Pacific War* (Washington, 1946), pp 49–51.
16. Lt Col Carroll V. Glines, Jr., USAF, *The Compact History of the United States Air Force* (New York, 1963), p 165.
17. Winston S. Churchill, *The Second World War*, Vol 3: *The Grand Alliance* (New York, 1950), pp 518, 522.
18. Roger Dingman, "American Policy and Strategy in East Asia, 1898–1950: The Creation of a Commitment," in *The American Military and the Far East, Proceedings of the Ninth Military History Symposium, U.S. Air Force Academy, October 1980*, Joe C. Dixon, ed (Washington, 1981), p 33.
19. Gen of the Air Force H. H. Arnold, *Global Mission* (New York, 1949), p 276. The

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strategic alternatives are discussed by Alaskan Delegate Anthony J. Dimond in Gauvreau, *Yonder*, pp 207–9.

20. Lt Col Carroll V. Glines, USAF, *Doolittle's Tokyo Raiders* (Princeton, 1964), pp 5–7, 13; Arnold, *Global Mission*, p 298.

21. Arnold, *Global Mission*, pp 276–77.

22. For the genesis of the Doolittle operation and details of the White House conference of Jan 18, 1942, see Glines, *Raiders*, pp 14–19, 24–31. Also see Arnold, *Global Mission*, p 298.

23. Grace Person Hayes, *The History of the Joint Chiefs of Staff in World War II: The War Against Japan* (Annapolis, Md, 1982), pp 40–42. For earlier planning, see *ibid.*, chaps 1–2; James C. Gaston, *Planning the Air War: Four Men and Nine Days in 1941: An Inside Narrative* (Washington, 1982), *passim*.

24. Maj Gen Haywood S. Hansell, *Strategic Air War Against Japan* (Maxwell AFB, Ala., 1980), pp 10–14; Hayes, *JCS*, p 42.

25. Hayes, *JCS*, pp 51–52; Hansell, *Strategic Air War*, p 12.

26. Samuel Eliot Morison, *History of United States Naval Operations in World War II*, Vol 3: *The Rising Sun in the Pacific, 1931–April 1942* (Boston, 1948), pp 257, 260–65, 268, 387–89; present author's interviews with IJN and JMSDF officers, Tokyo, 1983–84, 1985; and BBKS, *Kaigun kōkū gaishi* (Tokyo, 1976), vol 95, pp 237–38. Also see John B. Lundstrom, *The First Team* (Annapolis, Md, 1984), *passim*.

27. JM 17, p 7.

28. Tanaka Ryūkichi, *Taiheiyō sensō no haiin o tsuku* (Tokyo, 1984), pp 72–73.

29. *Ibid.*, pp 73–74.

30. Arnold, *Global Mission*, pp 298–300; Vern Haugland, *The AAF Against Japan* (New York, 1948), p 78; Craven and Cate, *AAF in WW II*, Vol 1: *Plans and Early Operations*, pp 440–44; Cdr Walter Karig and Lt Welbourn Kelley, *Battle Report: Pearl Harbor to Coral Sea* (New York, 1944), pp 297–98; Glines, *Doolittle's*, chap 6; Morison, Vol III: *Rising Sun in the Pacific*, pp 387–98. Also see BBKS, *Kaigun*, vol 95, pp 241–42; Watanabe Yōji, *Nihon hondo bōkūsen* (Tokyo, 1982), pp 38–49; BBKS, *Hondo bōkū sakusen* (Tokyo, 1968), vol 19, pp 121–24.

31. Tanabe, *Taiheiyō*, pp 74–76; Watanabe, *Nihon*, p 49.

32. Watanabe, *Nihon*, p 49.

33. JM 157, p 33.

34. Watanabe, *Nihon*, p 50; JM 157, pp 6–9, 33–34.

35. Hansell, *Strategic Air War*, p 15.

36. USSBS, *The Seventh and Eleventh Air Forces in the War Against Japan* (Washington, 1947), p 16; Robert Frank Futrell, *Ideas, Concepts, Doctrine* (Maxwell AFB, Ala., 1974), p 81. The wartime commanders of VII Bomber Command were Maj Gen Hale, Feb 1942; Col Albert F. Hegenberger, June 20, 1942; Brig Gen William E. Lynd, June 25, 1942; Brig Gen Truman H. Landon, Jan 20, 1943; and Brig Gen Lawrence J. Carr, Dec 11, 1944. The heads of VII Fighter Command were Brig Gen Davidson, Feb 1942; Brig Gen Robert W. Douglass, Jr., Oct 1942; and Brig Gen Ernest Moore, May 1944. Maurer Maurer, ed, *Air Force Combat Units of World War II* (Washington, 1961), pp 444–45, 462–63; Howard and Whitley, *Damned Island*, pp 40–41.

37. USSBS, *Seventh AF*, pp 16, 22.

38. USSBS, *Seventh AF*, pp 4–6, 17–18, 22; Glines, *Compact History*, pp 189–92; BBKS, *Kaigun*, vol 95, pp 323–24.

39. USSBS, *Seventh AF*, pp 6–8, 17, 22; BBKS, *Kaigun*, vol 95, pp 325–26; BBKS, *Okinawa Taiwan Iwō Jima hōmen rikugun kōkū sakusen* (Tokyo, 1970), vol 36, pp 27–28.

40. USSBS, *Seventh AF*, pp 8–9, 11–12, 22; BBKS, *Kaigun*, vol 95, pp 403–04; BBKS, *Okinawa*, vol 36, pp 56, 280–86.

41. Fleet Adm Ernest J. King, *U.S. Navy at War, 1941–1945: Official Reports to the Secretary of the Navy* (Washington, 1946), p 104.

42. Vice Admiral E. P. Forrestel, *Admiral Raymond A. Spruance, USN: A Study in Command* (Washington, 1966), p 171; King, *Reports*, p 130.

43. Samuel Eliot Morison, *History of United States Naval Operations in World War II*, Vol XIV: *Victory in the Pacific* (Boston, 1960), pp 20–25; King, *Reports*, pp 130–32; Thomas B. Buell, *The Quiet Warrior: A Biography of Admiral Raymond A. Spruance* (Boston, 1974),



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44. BBKS, *Hondo*, vol 19, pp 476–78.
45. *Ibid.*, pp 478, 480–81.
46. Dai-ichi Fukuinkyoku, *Hondō bōkū sakusen kiroku: Kantō chiku* (Tokyo, 1950), pp 665–67; Kimata Jiro, *Rikugun kōkū senshi: Marē sakusen kara Okinawa tokkō made* (Tokyo, 1982), pp. 245–46; BBKS, *Hondo*, vol 19, p 480.
47. Sherman, *Combat*, pp 341–42.
48. Morison, Vol XIV: *Victory in the Pacific*, pp 57–59; Sherman, *Combat*, p 342; King, *Reports*, p 132; Forrestel, *Spruance*, p 183; Buell, *Warrior*, p 38; Sherrod, *MC*, pp 357–58; BBKS, *Hondo*, vol 19, p 484; Dai-ichi Fukuinkyoku, *Hondo*, pp 667–68.
49. Arnold, *Global Mission*, pp 290, 371; USSBS, *Japanese Air Power*, pp 1–2. The Joint Intelligence Committee had considered targeting Japan from the Aleutians, Chengtu, Calcutta, Broome, Darwin, and Port Moresby, as well as the Marianas. JIC, "Optimum Use, Timing, and Deployment of V.L.R. Bombers in the War Against Japan," Jan 18, 1944 (Office of Air Force History).
50. Futrell, *Ideas*, pp 77, 79, 84; USSBS, *The Strategic Air Operation of Very Heavy Bombardment in the War Against Japan (Twentieth Air Force): Final Report* (Washington, 1946), pp 19–20.
51. Gen Curtis E. LeMay, *Mission with LeMay: My Story*, with MacKinlay Kantor (Garden City, NY, 1965), pp 325, 329–31, 342–43, 345–47, 350; Futrell, *Ideas*, p 84; USSBS, *Strategic Air*, pp 11, 26–28. Also see Kimata, *Rikugun*, pp 243–45; Shimoshizu Kōsha Gakkō Shūshinkai, *Kōsha senshi* (Tokyo, 1978), chap 8, sec 1, and chap 11, sec 1; BBKS, *Manshū hōmen rikugun kōkū sakusen* (Tokyo, 1972), vol 53, pp 543–48.
52. Arnold, *Global Mission* p 291.
53. Craven and Cate, *AAF in World War II, Vol V: The Pacific: Matterhorn to Nagasaki, June 1944 to August 1945*, pp 521–36; Maurer, *AF*, pp 444–45, 453, 470–71; USSBS, *Seventh AF*, pp 16, 23.
54. Craven and Cate, *AAF in WW II, Vol V: Matterhorn to Nagasaki*, p 539.
55. Roger A. Freeman, *Mustang at War* (Garden City, NY, 1974), pp 145, 148; Craven and Cate, *AAF in WW II, Vol V: Matterhorn to Nagasaki*, 593–94.
56. BBKS, *Rikugun kōkū no gunbi to unyō (3): Daitōa sensō shūsen made* (Tokyo, 1976), vol 94, pp 35–36; BBKS, *Kaigun*, vol 95, p 46; JM 17, pp 12–13, 16.
57. *Air Defense of Japan*, Japanese Monograph No. 23 (JM 23), HQ USAFFE/Eighth US Army (Rear) (Tokyo, 1956), pp 11–16, JM 17, pp 12, 16–21, 40–53; JM 157, pp 6, 9–11, 28, 159–60, 162; Watanabe, *Nihon*, p 235.
58. JM 157, pp 11, 60–61, 132–33; JM 17, pp 88, 115–17, 206; Watanabe, *Nihon*, pp 110, 154, 251, 253; BBKS, *Hondo*, vol 19, pp 547–48, 615, 621–24. Also see Alvin D. Coox, "The Rise and Fall of the Imperial Japanese Air Forces," *Aerospace Historian*, June 1980, 27, p 83; and Alvin D. Coox, "The B–29 Bombing Campaign Against Japan: The Japanese Dimension," Research Memorandum (May 1982), pp 7–10, 26–28, adapted by Keith Wheeler, *et al.*, *Bombers Over Japan* (Alexandria, Va., 1982), pp 135–36.
59. USSBS, *Strategic Air*, pp 20–21.
60. Author's interviews with Ikuta, Toga, M. Hattori; Watanabe, *Nihon*, pp 155–57, 248–51; JM 157, pp 11–12, 40–42, 63, 65, 109–12; JM 17, pp 36–38; Coox, "B–29 Bombing," pp 20–22; Coox, "Rise and Fall," p 82; USSBS, *Japanese Air Power*, pp 2–3, 47–48.
61. Author's interviews with Toga, Ikuta; JM 157, pp 61, 63–68, 75–78.
62. Author's interviews with Imaoka, Ikuta, Kono; Watanabe, *Nihon*, pp 204–5, 259, 268; USSBS, *Japanese Air Power*, pp 2, 26; Coox, "Rise and Fall," p 84, citing Minoru Genda.
63. USSBS, *Strategic Air*, pp 12–15; Craven and Cate, *AAF in WW II, Vol V: Matterhorn to Nagasaki*, pp 614–15; JM 157, pp 72–74; Wheeler, *Bombers*, pp 168–69; JM 17, p 40.
64. Craven and Cate, *AAF in WW II, Vol V: Matterhorn to Nagasaki*, pp 615–17.
65. JM 157, p 74.
66. *Ibid.*

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67. USSBS, *Japanese Air Power*, pp 26, 47–48, 55. Also see JM 157, pp 10–11, 81, 124, 128; Watanabe, *Nihon*, p 110.
68. USSBS, *Japanese Air Power*, pp 48–49; USSBS, *Strategic Air*, pp 19–20, 27.
69. USSBS, *Japanese Air Power*, pp 27, 48.
70. USSBS, *Japanese Air Power*, pp 48, 55; USSBS, *Strategic Air*, pp 19–20.
71. USSBS, *Japanese Air Power*, p 51.
72. USSBS, *Strategic Air*, p 21.
73. USSBS, *Japanese Air Power*, pp 30, 32–34, 74; USSBS, *Summary Report (Pacific War)* (Washington, 1946), p 9; Coox, “Rise and Fall,” p 81.
74. BBKS, *Rikugun*, vol 94, pp 225, 277; Coox, “Rise and Fall,” p 83.
75. Author’s interviews with Kono, Ikuta; Watanabe, *Nihon*, pp 236–37; USSBS, *Japanese Air Power*, p 2.
76. USSBS, *Japanese Air Power*, pp 60, 73.
77. Author’s interviews with Kono, Ikuta; JM 157, pp 14–16; USSBS, *Summary*, pp 9–10; USSBS, *Japanese Air Power*, p 71; Coox, “Rise and Fall,” p 82; Watanabe, *Nihon*, pp 236–37.
78. JM 157, p 39; USSBS, *Japanese Air Power*, pp 60–65, 76; Coox, “Rise and Fall,” p 82.
79. “G–2 Estimate of the Enemy Situation with Respect to an Operation Against Southern Kyushu in November 1945,” GHQ, U.S. Army Forces in the Pacific, MIS/GS, Apr 25, 1945, p 5 (NARS).
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81. USSBS, *Summary*, p 10; USSBS, *Japanese Air Power*, pp 74–79; Coox, “Rise and Fall,” p 82; Dennis and Peggy Warner, with Sadao Seno, *The Sacred Warriors: Japan’s Suicide Legions* (New York, 1982), pp 234, 323ff.; LeMay, *Mission*, pp 370–72. For the USN dimension, see HQ CINC, US Fleet, *Antiaircraft Action Summary, World War II* (Navy Department, Oct 1945); and Air Intelligence Group, DNI/CNO, “Defense Against Japanese Aerial Suicide Attacks on U.S. Naval Vessels, Oct–Dec 1944,” 1st Suppl, Jan 1945. Also see Inoguchi Rikihei and Nakajima Tadashi, *Kamikaze tokubetsu kōgekitai no kiroku* (Tokyo, 1963), pp 40–174; BBKS, *Okinawa*, vol 36, pp 305–25; Okumiya Masatake, *Kaigun tokubetsu kōgekitai: tokkō to Nihonjin* (Tokyo, 1980), pp 1–122; *Shōwa shi no tennō* (Tokyo, 1970), vol 12, pp 4–32; BBKS, *Kaigun*, vol 95, pp 422, 445–48; Ikuta Makoto, *Rikugun tokubetsu kōgekitai shi* (Tokyo, 1983), *passim*.
82. BBKS, *Hondo*, vol 19, pp 537–39; Kimata, *Rikugun*, pp 273–74.
83. Morison, *Victory*, vol 14, pp 94–101; Sherman, *Combat*, pp 353–55; Forrestel, *Spruance*, pp 189–97; Buell, *Spruance*, pp 344–47; Toliver and Constable, *Aces*, p 170; Sherrod, *MC*, pp 359–63; Reynolds, *Carriers*, pp 337–39. Also see BBKS, *Hondo*, vol 19, pp 537, 539; Kimata, *Rikugun*, pp 273–74.
84. Sherman, *Combat*, pp 355–56, 360–61; Morison, Vol XIV: *Victory in the Pacific*, pp 112–13; Kyushu Kaigun Kokūtai, *Senkun sokuhō*, May 13–14, 1945 (BBKS Archives).
85. Howard and Whitley, *Damned Island*, pp 350, 355.
86. USSBS, *Summary*, p 10; Forrestel, *Spruance*, p 204.
87. LeMay, *Mission*, pp 370–72, 374; USSBS, *Strategic Air*, p 6; USSBS, *Summary*, p 10; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp 627–35.
88. USSBS, *Seventh AF*, pp 12–13; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp 634–35; Howard and Whitley, *Damned Island*, pp 372–80. Also see Kimata, *Rikugun*, p 303.
89. USSBS, *Seventh AF*, p 23; Freeman, *Mustang*, p 148; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp 647–48.
90. Watanabe, *Nihon*, p 231; BBKS, *Hondo*, vol 19, p 542.
91. Watanabe, *Nihon*, pp 231–32.
92. BBKS, *Hondo*, vol 19, p 542.
93. *Ibid.*, pp 542–44.
94. Watanabe, *Nihon*, pp 232–33; Dai-ichi Fukuinkyoku, *Hondo*, p 672.
95. Howard and Whitley, *Damned Island*, pp 341–47; Freeman, *Mustang*, pp 148–49; USSBS, *Strategic Air*, p 20.
96. Freeman, *Mustang*, p 149. Writes Kevin Herbert: “Upon return to base after over six hours in the cramped confines of the fighter, some of the men had to be lifted out of the

plane, so stiff and exhausted were they from their immobility for that length of time." *Maximum Effort: The B-29's Against Japan* (Manhattan, Kans., 1983), p 54. Also Watanabe, *Nihon*, pp 244-45; and author's interviews with Kono and Ikuta.

97. Watanabe, *Nihon*, p 234; BBKS, *Hondo*, vol 19, p 544; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, p 648-49, Fukuinkyoku, *Hondo*, p 672.

98. See Barrett Tillman, *Hellcat: The F6F in World War II* (Annapolis, Md, 1979), pp xi, 228-29. Also see Watanabe, *Nihon*, p 233.

99. Watanabe, *Nihon*, pp 233-34, 239-40, 242-43; BBKS, *Hondo*, vol 19, pp 545-46; Kimata, *Rikugun*, pp 256-57; author's interviews with Toga, Ikuta, and Kono.

100. Author's interviews with Nomura, Ikuta, and Kono; Watanabe, *Nihon*, p 234; Kimata, *Rikugun*, p 245.

101. Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, p 649; USSBS, *Strategic Air*, pp 20, 23. The B-29 crews appreciated their P-51 "little brothers." One bomber commander praised the Mustangs' performance on the first escort mission of April 7, 1945: "Thirty Mustangs swept the area ahead of us, and only two Jap fighters got in to us. Both of them went down smoking." Wheeler *et al.*, *Bombers*, p 174. The "P-Five-Ones" are touchingly lauded by a grateful B-29 crewman, Kevin Herbert, in *Maximum Effort*, pp 53-54.

102. USSBS, *Strategic Air*, pp 20, 23; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp xix, 651, 652.

103. USSBS, *Strategic Air*, pp 20, 23; USSBS, *Seventh AF*, p 23; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp 635, 696; USSBS, *Evaluation of Photographic Intelligence in the Japanese Homeland*, Part 9, *Coast and Anti-Aircraft Artillery* (Washington, 1946), pp 1-4. Also see Morison, *Victory*, vol 14, p 311.

104. Arnold, *Global Mission*, p 371; Futrell, *Ideas*, p 85.

105. BBKS, *Hondo*, pp 554, 584; Coox, "B-29 Bombing," pp 21-22; Watanabe, *Nihon*, p 157.

106. BBKS, *Hondo*, pp 576, 584-87; JM 157, pp 77-78; JM 23, pp 25-26.

107. Watanabe, *Nihon*, p 253; JM 157, p 81; JM 23, pp 25-27; JM 17, pp 245-46.

108. BBKS, *Hondo*, pp 609-10.

109. R. J. Francillon, *Japanese Aircraft of the Pacific War* (New York, 1970), pp 130-31.

110. Watanabe, *Nihon*, pp 260-61.

111. Tillman, *Hellcat*, p 224; Morison, *Victory*, vol 14, pp 330-31.

112. Watanabe, *Nihon*, pp 261-62.

113. USSBS, *Seventh AF*, pp 13-14, 16, 23; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp 692-95, 701.

114. USSBS, *Seventh AF*, p 13; USSBS, *Strategic Air*, p 20; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp 655-56, 696-99; Coox, "Rise and Fall," p 83.

115. Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, p 699.

116. JM 157, p 82; and author's interview with Toga.

117. Morison, Vol 14: *Victory in the Pacific*, pp 310-16, 330-35; King, *Reports*, pp 188-90; Sherman, *Combat*, pp 366-68, 372-74.

118. Morison, Vol 14: *Victory in the Pacific*, pp 102-7, 211-14, 249-50, 264-65, 314-16, 388; Tillman, *Hellcat*, pp 222-23; Reynolds, *Carriers*, pp 310-17, 339-40, 344-46, 366, 369-70, 372-75; King, *Reports*, pp 176, 183, 188-89; Sherman, *Combat*, pp 346, 369.

119. JM 157, pp 81-82, 125-27, 164-65; JM 23, pp 69-72; and author's interview with Toga.

120. USSBS, *Summary*, pp 16-17, 29; USSBS, *Strategic Air*, pp 1, 13-15, 30-31; Craven and Cate, *AAF in WW II*, Vol V: *Matterhorn to Nagasaki*, pp 643, 674-75, 703, 748-49, 754; Hansell, *Strategic Air War*, pp 68-69, 90-91; Hayes, *JCS*, pp 701-10; LeMay, *Mission*, p 381.

121. "DOWNFALL: Strategic Plan for Operations in the Japanese Archipelago," GHQ, U.S. Army Forces in the Pacific, May 28, 1945, NARS.

122. *Ibid.*, pp 2, 9; and Annex 3d (1) (c). Also "Brief of Staff Study OLYMPIC," Strategy Section, Strategy and Plans Group, Operations Division, War Department General Staff, Jun 23, 1945, pp 1-2, NARS.

123. "Staff Study OLYMPIC: Operations in Southern Kyushu," GHQ, U.S. Army Forces in the Pacific, May 28, 1945, pp 3-7, NARS.

124. *Ibid.*, p 4. Also see "G-2 Estimate," Apr 25, 1945, pp 1, 3-7, 13-14.

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125. "G-2 Estimate," pp 28-29, 32.
126. *Ibid.*, pp 5, 7-8.
127. General Masakazu Kawabe in USSBS, *Japanese Air Power*, pp 69-70. Also see "G-2 Estimate," Encl. 10.
128. Lt Gen Michio Sugawara in USSBS, *Japanese Air Power*, p 71.
129. "G-2 Estimate," p 5. Also see "Staff Study CORONET: Operations in the Kanto Plain of Honshu," GHQ, U.S. Army Forces, Pacific, Aug 15, 1945, Annex 2a, pp 24-27, NARS; and USSBS, *Japanese Air Power*, p 68.
130. Lt Gen Noboru Tazoe and Col Minoru Miyashi in USSBS, *Japanese Air Power*, p 69.
131. *Ibid.*; author's interviews with Kono and Ikuta; BBKS, *Hondo*, vol 19, p 582; BBKS, *Kaigun*, vol 95, p 444. Also see USSBS, *Japanese Air Weapons and Tactics* (Washington, 1947), p 30.
132. USSBS, *Japanese Air Power*, pp 24, 36, 70-72, 74, 80; USSBS, *Summary*, pp 9-10, 26; Hoyt, *Kamikazes*, p 291; Warner and Warner, *Warriors*, pp 292-94. Also see Saburo Hayashi in collaboration with Alvin D. Coox, *Kogun: The Japanese Army in the Pacific War* (Quantico, Va., 1959), pp 160-61; Kamata, *Rikugun*, pp 317-22; JM 17, p 139; Watanabe, *Nihon*, p 267; BBKS, *Kaigun*, vol 95, p 422.
133. USSBS, *Japanese Air Power*, pp 23-25, 34-45, 68-69; USSBS, *Summary*, p 9; Coox, "Rise and Fall," p 84. Also see JM 157, pp 40-46, 90-91; BBKS, *Hondo*, vol 19, pp 576-77, 582; BBKS, *Rikugun*, vol 94, p 400; Watanabe, *Nihon*, p 247.
134. USSBS, *Japanese Air Power*, pp 3, 30-31, 33-34, 36; USSBS, *Summary*, pp 9-10, 18; Coox, "Rise and Fall," pp 84-85; Kimata, *Rikugun*, pp 296-302; Watanabe, *Nihon*, pp 247-48.
135. Craven and Cate, *AAF in WW II, Vol V: Matterhorn to the Pacific*, pp xxv-xxvi, 747-48.
136. USSBS, *Seventh AF*, p 13. Also see USSBS, *The War Against Japanese Transportation, 1941-1945* (Washington, 1947), p 120.
137. USSBS, *Japanese Air Power*, p 1; Craven and Cate, *AAF in the Pacific, Vol V: Matterhorn to Nagasaki*, pp 746-47; King, *Reports*, pp 103, 167, 232; USSBS, *Seventh AF*, pp 18-19.
138. See USSBS, *Air Force Allied, passim*.
139. USSBS, *Seventh AF*, pp 13-15; Craven and Cate, *AAF in WW II, Vol V: Matterhorn to Nagasaki*, p 743. Also see USSBS, *Japanese Transportation*, pp 95-96, 98, 119-30.
140. USSBS, *Seventh AF*, p 19.
141. *Ibid.*
142. USSBS, *Strategic Air*, p 32.
143. *Ibid.*, pp 11, 19.
144. USSBS, *Japanese Air Power*, pp 1-3, 26-27; Coox, "Rise and Fall," pp 83-84; author's interviews with Imaoka, Ohmae, M. Hattori, Toga, Kono, Ikuta.
145. USSBS, *Japanese Air Power*, pp 2-3, 26, 50; Coox, "Rise and Fall," p 84. Also Watanabe, *Nihon*, pp 128, 268; and author's interviews with Kono, Ikuta, Imaoka, Ohmae.
146. USSBS, *Japanese Air Power*, pp 28-34, 36; USSBS, *Summary*, p 9.
147. Morison, Vol V: *Victory in the Pacific*, pp 280-82.
148. CINC/USF, *Antiaircraft*, p 11.
149. DNI/CNO, "Defense," Task Unit 77.12.7 (Dec 7-17, 1944), pp 38-39.
150. Morison, Vol V: *Victory in the Pacific*, pp 280-81; Hoyt, *Kamikazes*, pp 283-302.
151. USSBS, *Summary*, p 10.
152. Sherman, *Combat*, p 361. Also see USSBS, *Summary*, pp 27-28; USSBS, *Japanese Air Power*, p 27.

## Bibliographical Essay

The student of the air war against Japan finds that the subject has drawn the attention of relatively few historians, and that, where it has, the attention is ancillary to other themes. One feature pervades the literature: the Allied quest for air

superiority is generally subsumed in accounts of the strategic bombardment campaign, instead of the other way around. Several reasons account for this phenomenon: Japanese homeland targets possessed a special vulnerability to aerial bombing; air and ground defenses encountered in Japan were relatively weak; and Allied ground strategy in World War II accorded priority to the European theater of operations. There was another uniqueness to the war against Japan: the spatial and geographical dimensions of the Pacific meant that carrier-based naval and Marine aviation played a major share in offensive operations, especially in the phases before land-based VLR bombers and long-reach fighters could get within effective range of Japan via the central Pacific Ocean.

The starting point for serious study of the struggle to achieve air superiority against Japan remains the durable series edited by Wesley Frank Craven and James Lea Cate in the seven-volume official history, *The Army Air Forces in World War II* (Chicago: University of Chicago Press, 1948–58; reprint: Office of Air Force History, 1983). Of particular relevance are Volume I, *Plans and Early Operations, January 1939 to August 1942* (1948); Volume IV, *The Pacific: Guadalcanal to Saipan, August 1942 to July 1944* (1950); and Volume V, *The Pacific: Matterhorn to Nagasaki, June 1944 to August 1945* (1953). Robert Frank Futrell examines doctrinal underpinnings in *Ideas, Concepts, Doctrine: A History of Basic Thinking in the United States Air Force, 1907–1964* (Maxwell AFB, Ala.: Air University, 1974).

Strategic planning is authoritatively detailed in Grace Person Hayes' recently declassified *The History of the Joint Chiefs of Staff in World War II: The War Against Japan* (Annapolis, Md: Naval Institute Press, 1982). Maj. Gen. Haywood S. Hansell provides an insider's memoirs in *Strategic Air War Against Japan* (Maxwell AFB, Ala.: Air University, 1980), and in *Offensive Air Operations Against Japan* (Air University, Jan 27, 1953). Promising more than it delivers is James C. Gaston's breezy pamphlet, *Planning the Air War: Four Men and Nine Days in 1941: An Inside Narrative* (Washington, DC: Government Printing Office, 1982).

Useful though limited sections of relevance to air superiority will be found in general histories of military aviation, such as Basil Collier, *A History of Air Power* (New York: Macmillan, 1974), and Lee Kennett, *A History of Strategic Bombing* (New York: Charles Scribner's Sons, 1982). The AAF dimension *per se* is treated briefly by Carroll V. Glines, Jr., in *The Compact History of the United States Air Force* (New York: Hawthorn Books, 1963); Alfred Goldberg, ed., in *A History of the United States Air Force, 1907–1957* (New York: Van Nostrand, 1957); and James F. Sunderman, ed., *World War II in the Air—the Pacific* (New York: Franklin Watts, 1962). *The AAF Against Japan*, by Vern Haugland (New York: Harper, 1948), is an early, still very helpful account. The U.S. Strategic Bombing Survey (USSBS) brought out many detailed monographs bearing on the Pacific theater in general and the air war in particular (Washington: Government Printing Office). Especially useful are *The Campaigns of the Pacific War* (1946); *Summary Report (Pacific War)* (1946); *Air Forces Allied with the United States in the War Against Japan* (1947); and *Strategic Air Operation of Very Heavy Bombardment in the War Against Japan (Twentieth Air Force): Final Report* (1946).

Important information on the air superiority mission is embedded in the memoirs of senior AAF officers: H. H. Arnold, *Global Mission* (New York: Harper, 1949); and Curtis E. LeMay, *Mission with LeMay: My Story*, with MacKinlay Kantor (Garden City, NY: Doubleday, 1965). Supplementing the published reminiscences are Office of Air Force History transcripts of interviews with Generals Curtis LeMay, Carl A. Spaatz, and James H. Doolittle. The Army's view from the top is briefly detailed in *Biennial Report of General George C. Marshall, the Chief of Staff of the United States Army, July 1, 1943 to June 30, 1945 to the Secretary of War*

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(Washington, DC, 1946). Declassified American strategic plans for the invasion of Japan reveal data as of 1945 concerning Allied air strength, actual and projected, and evaluations of Japanese air capabilities. Thus, GHQ U.S. Army Forces in the Pacific (USAFP) produced "G-2 Estimate of the Enemy Situation with Respect to an Operation Against Southern Kyushu in November 1945" (Apr 25, 1945); "DOWNFALL: Strategic Plan for Operations in the Japanese Archipelago" (May 28, 1945); and various Staff Studies for Operations OLYMPIC and CORONET respectively, directed against Kyushu and the Kanto Plain of Honshu.

Resources pertaining to the AAF campaign to win control of the skies over Japan are disappointingly slim. In a brief monograph published in 1947, the Military Analysis Division of USSBS described *The Seventh and Eleventh Air Forces in the War Against Japan*. Clive Howard and Joe Whitley prepared an officially sanctioned but highly journalistic history of the Seventh Air Force in *One Damned Island After Another* (Chapel Hill: University of North Carolina Press, 1946). *Mustang at War* (Garden City, NY: Doubleday, 1974), by Roger A. Freeman, is short on the exploits of the P-51 fighter in the Pacific. Insightful information on the value of AAF fighter escorts appears occasionally in a bomber history such as Kevin Herbert, *Maximum Effort: The B-29's Against Japan* (Manhattan, Kans.: Sunflower University Press, 1983). Editor Maurer Maurer includes data on all AAF groups, wings, divisions, commands and air forces that fought in the Asiatic-Pacific Theater in his comprehensive compendium on lineage, *Air Force Combat Units of World War II* (Washington: Government Printing Office, 1961).

The role of the U.S. Navy in the Pacific war has received extensive coverage. Admiral Ernest J. King did not provide depth in his *U.S. Navy at War, 1941-1945: Official Reports to the Secretary of the Navy* (Washington: U.S. Navy Department, 1946); but Samuel Eliot Morison's multi-volume *History of United States Naval Operations in World War II* (Boston: Little, Brown and Co.) has become a classic. Particularly relevant to the story of USN carrier aviation are Morison's Volume 3, *The Rising Sun in the Pacific, 1931-April 1942* (1948), and Volume 14, *Victory in the Pacific* (1960). Clark G. Reynolds supplies finer detail in *The Fast Carriers: The Forging of an Air Navy* (New York: McGraw-Hill, 1968).

Autobiographies and biographies of carrier admirals abound: Frederick C. Sherman, *Combat Command: The American Aircraft Carriers in the Pacific War* (New York: E. P. Dutton, 1950); E. P. Forrestel, *Admiral Raymond A. Spruance, USN: A Study in Command* (Washington: Government Printing Office, 1966); Thomas B. Buell, *The Quiet Warrior: A Biography of Admiral Raymond A. Spruance* (Boston: Little, Brown and Co., 1974); and J. J. Clark with Clark G. Reynolds, *Carrier Admiral* (New York: McKay, 1967). E. B. Potter has written *Nimitz* (Annapolis, Md.: Naval Institute Press, 1976).

Barrett Tillman treats USN aircraft in *Hellcat: The F6F in World War II* (Annapolis, Md.: Naval Institute Press, 1979), while Raymond F. Toliver and Trevor Constable recount the deeds of the airmen in *Fighter Aces* (New York: Macmillan, 1965). USN aviation is extolled by John B. Lundstrom in *The First Team: Pacific Naval Combat from Pearl Harbor to Midway* (Annapolis, Md.: Naval Institute Press, 1984); and by Wilbur H. Morrison in *Above and Beyond* (New York: St. Martin's Press, 1983). John A. DeChant recorded the USMC air war in *Devilbirds: The Story of United States Marine Corps Aviation in World War II* (Washington: Combat Forces Press, 1952). A more recent account is Peter B. Mersky, *U.S. Marine Corps Aviation: 1912 to the Present* (Annapolis, Md.: Nautical & Aviation Publishing, 1983).

In most English-language works on the Pacific war, the Japanese foe is depicted indistinctly, if at all. Useful background will be found in such USSBS monographs

as *Japanese Air Power* (1946), *Japanese Air Weapons and Tactics* (1947), *The Japanese Aircraft Industry* (1947), *The War Against Japanese Transportation, 1941–1945* (1947), *Oil in Japan's War* (1946), and *Evaluation of Photographic Intelligence in the Japanese Homeland*, Part 9, *Coast and Anti-Aircraft Artillery* (1946). The present author investigated “The Rise and Fall of the Imperial Japanese Air Forces” in *Aerospace Historian*, Volume 27, No. 2 (June 1980), pp. 74–86; and developed a monograph on Japanese fighter and anti-aircraft actions in the Pacific War, “The B–29 Bombing Campaign Against Japan: The Japanese Dimension—A Research Memorandum Prepared Exclusively from Japanese Materials” (1982), for use by Keith Wheeler *et al.*, in *Bombers Over Japan* (Alexandria, Va.: Time-Life Books, 1982).

In the past few years, there has been new interest in the *kamikaze* pilots. An ambitious but rambling study was prepared by Dennis and Peggy Warner, with Sadao Seno, *The Sacred Warriors: Japan's Suicide Legions* (New York: Van Nostrand Reinhold, 1982). *The Kamikazes* (New York: Arbor Books, 1983), by Edwin P. Hoyt, is a journalistic account. Authentic documentation on the *kamikaze* threat can be obtained from declassified U.S. Navy sources, such as Air Intelligence Group, DNI/CNO, “Defense Against Japanese Aerial Suicide Attacks on U.S. Naval Vessels, Oct–Dec 1944” (Jan 1945); and Hq U.S. Fleet, *Antiaircraft Action Summary, World War II* (Navy Department, Oct 1945).

A few postwar recollections by surviving Japanese military and naval officers are available in English translation. Col. Saburō Hayashi wrote a succinct but carefully researched military history, *Kōgun: The Japanese Army in the Pacific War*, in collaboration with the present author (Quantico, Va.: Marine Corps Association Press, 1959). Japanese aviators' accounts will be found in Saburo Sakai, with Martin Caidin and Fred Saito, *Samurai!* (New York: E. P. Dutton, 1958); and Masatake Okumiya and Jiro Horikoshi, with Martin Caidin, *Zero!* (New York: E. P. Dutton, 1956). In the 1950s, Japanese Army and Navy consultants prepared many original monographs for use by the American military, under the aegis of the Japanese Research Division of Hq. USAFFE/Eighth U.S. Army (Rear). Particularly valuable are *Air Defense of the Homeland*, Japanese Monograph 23 (1956); *Homeland Air Defense Operations Record*, JM 157 (1952); *Homeland Operations Record*, JM 17 (n.d.); *Outline of Preparations Prior to Termination of War and Activities Connected with the Cessation of Hostilities*, JM 119 (1952); *Central Pacific Air Operations Record*, JM 50 (1953).

The most important newly available Japanese-language sources include the definitive 102-volume official military history series (*Senshi Sōsho*) written by the historians of the Japan Defense Agency (Bōeichō Bōei Kenshūsho: BBKS), as well as unsponsored works. Items in neither category have been translated from the Japanese language yet. The most pertinent official JDA volumes, published between 1968 and 1979, treat such topics as the air battles for the central Pacific, Iwo Jima, Taiwan, and Okinawa (volumes 13, 36, 62); homeland air defense measures (volumes 19, 37, 51, 57); Japanese naval aviation operations (volumes 37, 95); the air defense of Manchuria and Korea (volume 53); air base construction and operation (volume 97); and the development, production, use, and supply of aerial ordnance (volumes 87, 94). The JDA's National Institute for Defense Studies has also prepared authoritative research monographs (*Kenkyū Shiryō*), appearing between 1977 and 1983, on specific topics dealing with homeland air defense preparations. Secondary Japanese-language sources that have been of greatest application to the study of air superiority include works by Makoto Ikuta, Rikihei Inoguchi, Tadashi Nakajima, Jirō Akiyama, Kei Mitamura, Jō Toyoda, Takeo Tagata, and the Kōkuhi Hōsankai, eds.

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While carrying out research in Japan in 1983–84 and 1985, the author conducted extensive personal interviews on the topic of air superiority in the Pacific war with former officers of the Imperial Army and Navy, with serving officers of the present-day Japanese Self-Defense Forces, and with Japanese historians and writers. Special acknowledgement is made of assistance rendered by Yutaka Imaoka, Masanori Hattori, Shin Itonaga, Hideyuki Tazaki, Shirō Konō, Hiroshi Toga, Ikuhiko Hata, Makoto Ikuta, Teiji Nakamura, Fumio Maruta, Katsuo Satō, and Hiroyuki Agawa. The author's earlier respondents included Ryōsuke Nomura, Toshikazu Ohmae, Sadatoshi Tomioka, Muraji Yano, Takushirō Hattori, and Saburō Hayashi. Unpublished Japanese primary documentation was also located concerning IJA and IJN air defense measures in the homeland, specifically once-classified wartime reports prepared by the Kyushu Navy Air Unit and by the 10th Air Division. A privately printed postwar military history of anti-aircraft operations (*Kōsha Senshi*), dated 1978, was made available by the Shimoshizu Anti-aircraft Artillery School Comrades' Society (Shimoshizu Kōsha Gakkō Shūshinkai).

Predictably, the Japanese and the Western materials teem with irreconcilable features. Still, there are sufficient points of resemblance to prove that we are studying the same struggle for air superiority, though viewed from the two sides of the hill.