Aviation and Amphibian Engineers in the Southwest Pacific

by William C. Baldwin

In 1944, General Douglas MacArthur told the Chief of Engineers, who was touring the general's Southwest Pacific theater, "this is an air and amphibious war; because of the nature of air and amphibious operations, it is distinctly an engineer's war." From the beginning of the war in the Pacific, engineers played a critical role in stopping Japan's stunning offensive into the South Pacific toward Australia and then slowly and painfully pushing the tenacious Japanese forces back across the island of New Guinea and into the Philippines. By October 1944, on the eve of the landings on Leyte, 100,000 of the 700,000 troops in the Southwest Pacific were engineers. The strategic and tactical problems encountered in the more than two years of fighting on New Guinea not only dictated a large role for engineers, but also demonstrated the value of two new, specialized types of engineer units, which responded admirably to the demands of MacArthur's air and amphibious war.

In 1939, the War Department asked the Corps of Engineers to submit plans for organizing engineer construction units to support the Army Air Corps. The Chief of Engineers proposed the formation of engineer aviation regiments and, in June 1940, made the 21st Engineer Regiment the first experimental aviation unit, the parent unit for aviation engineers who, at their peak in early 1945, would number almost 120,000 officers and men.

During the early years of the war, the engineer aviation battalion (EAB) of 27 officers and 761 enlisted men became the standard and most common aviation unit. Designed to be able to build an airfield independently in a reasonable period of time, the aviation battalion contained more and heavier construction equipment than other engineer battalions and was staffed to permit two and three shift operations. By December 1941, the hurriedly trained 12 new battalions

of aviation engineers were scattered from the Philippines and Hawaii to Alaska and the Caribbean.

After the German army rapidly overran France in 1940, the War Department also began to think more seriously about amphibious warfare and the probability of a cross-channel invasion to liberate the European continent. Although traditionally a Navy and Marine Corps mission, extensive amphibious operations in both the Atlantic and the Pacific would require heavy Army participation. In early 1942, the War Department, with the reluctant agreement of the Navy, inaugurated its own amphibious warfare training program and in June established the Engineer Amphibian Command (EAC) at Camp Edwards, Massachusetts.

Initially the EAC had the task of providing and training the crews of the landing craft which would conduct shore-to-shore operations; but under the aggressive leadership of Brigadier General Daniel Noce and his staff, the EAC soon broadened its mission to include most aspects of Army amphibious warfare, including doctrine, organization, and equipment. After numerous experiments, the EAC developed the engineer amphibian brigade, later renamed the engineer special brigade, as the basic unit. Composed of three engineer boat and shore regiments and supporting units such as boat maintenance, quartermaster, and signal, the special brigade would transport troops, equipment, and supplies in a fleet of small landing craft, land them on enemy beaches, organize the beachheads, and provide them with logistical support.

Ultimately the Army formed six engineer special brigades. Three brigades, operating entirely as shore units, participated in landings in North Africa, Sicily, Italy, and Normandy. The other three, operating as boat and shore units, went to General MacArthur's Southwest Pacific theater and played an important role in most of his operations against the Japanese.

When the Japanese attacked Hawaii and the Philippines in early December 1941, engineer aviation battalions had already arrived in both locations. The 804th EAB immediately began repairing Hickam Field on Oahu, and the 803d exerted valiant efforts in Bataan and on Corregidor before its survivors surrendered to the Japanese.

Diverted from the Philippines after the Japanese attack, the first American reinforcements for the Southwest Pacific arrived in Australia in late December; and by January 1942, the first engineer officers, including Major George T. Derby and Major Elvin R. Heiberg, Jr., began organizing the American construction effort there.

On 2 February 1942, the first engineer troops—the 808th Aviation Battalion under Captain Andrew D. Chafin, Jr.—landed in Melbourne and set off on a trip by truck and rickety rail across the continent to Darwin on the north coast. Activated in September 1941, the battalion had received scant training before its deployment. Operating in complete isolation from the American Army, it began building airfields near Darwin in the combat zone without most of its equipment.

In late February, two engineer general service regiments, the 43d and the 46th, arrived in Melbourne. One battalion of the 43d prepared camps for the arriving American divisions in southern Australia, while the other battalion joined the 808th near Darwin. The 46th moved to the vulnerable northeastern coast and began airfield construction. Trained and equipped for general construction in the communications zone, the general service units had inadequate equipment, and the engineers often labored with hand tools to build the primitive but serviceable airfields as rapidly as possible. One company cleared a site and laid a pierced steel plank runway, 2,500 by 100 feet, in five days.

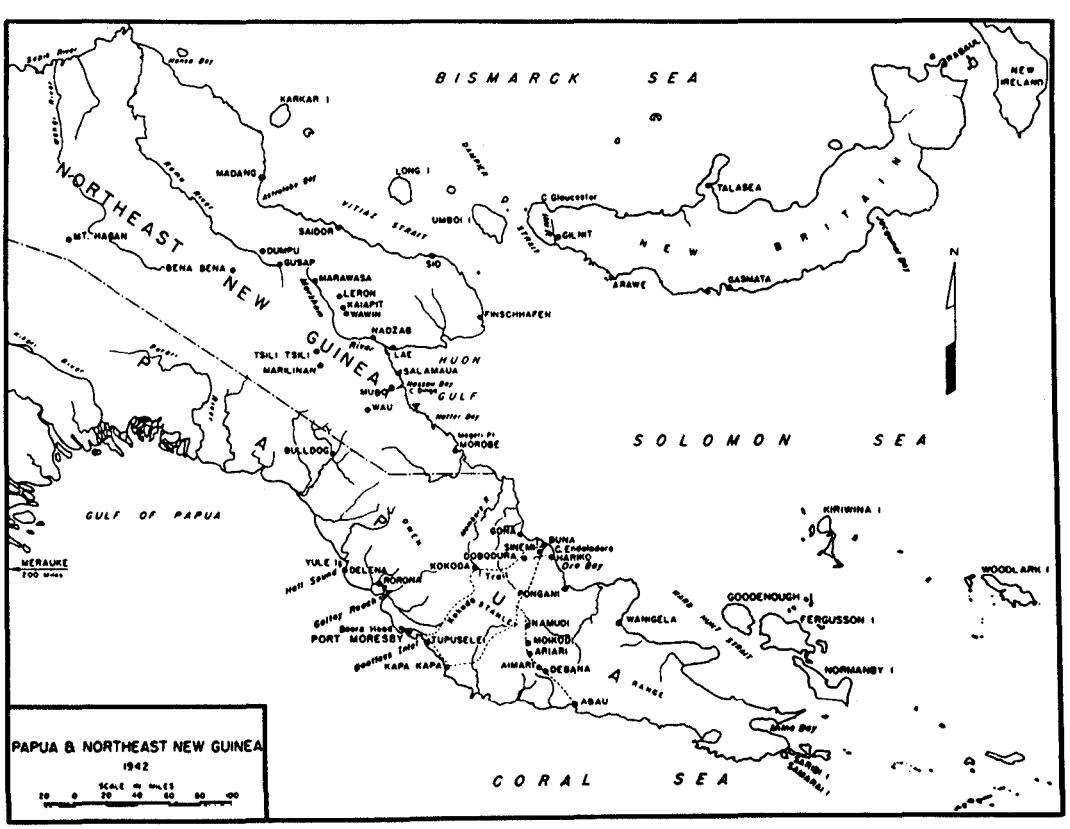
As the Japanese threat to northern Australia intensified, the need for airfields grew faster than Australian or American engineers could respond. The situation improved somewhat in early April when two separate battalions, the 91st and 96th, arrived. Composed of black troops, the separate battalions were designed primarily to support other units and had little organic equipment. Even with the small engineer reinforcements, the military situation in the Southwest Pacific remained grim in the spring of 1942.

Confronted with the imminent defeat of American and Filipino forces holding Bataan, President Franklin Roosevelt had ordered their commander, General Douglas MacArthur, to leave the Philippines and take charge of defending Australia—the last major Allied outpost in the Southwest Pacific. The Japanese were threatening to sever the lines of

communication with the United States and isolate Australia. In a desperate struggle waged in New Guinea and the Solomon Islands during 1942, the small, ill-prepared, and ill-equipped American and Allied forces managed to blunt the Japanese offensive and begin a long and hard campaign to push them back toward their home islands.

Shortly after MacArthur arrived in Australia, the Joint Chiefs of Staff (JCS), with Allied concurrence, divided the Pacific into two theaters, both under American commanders. MacArthur's Southwest Pacific Area (SWPA) included Australia, New Guinea, the Philippines, and most of the East Indies. Most of the Pacific lay within Admiral Chester Nimitz's Pacific Ocean Area (POA). Guadalcanal and the southern Solomons were part of the South Pacific Area, a subdivision of POA. The campaigns of the two theaters were closely related, but until the landings on Leyte in October 1944, SWPA's attention was focused primarily on New Guinea and nearby islands.

MacArthur soon decided that Australia's first line of defense and the base for an eventual Allied offensive should



Papua and Northeast New Guinea

be New Guinea. By early 1942, the Japanese had established large bases on the northern coast of the island, but a small Australian force still held the southeastern territory of Papua. When MacArthur sent reinforcements to the Papuan village of Port Moresby in April 1942, the first American ground troops to reach the island were members of the 96th Engineer Battalion. American engineers began building and improving the airfields, port facilities, and warehouses that would turn the remote village into the first major Allied base on New Guinea.

The world's second largest island, New Guinea, is located just south of the equator. Its northern coastline, scene of most of the campaign, is about 1,500 miles long. In the middle of the island, stretching virtually its entire length, are mountain ranges which rise to heights of 16,000 feet. New Guinea has a monsoon climate with rainfall reaching 130 inches a year. The lowlands along the coast are covered with rain forests and swamps. In addition to the hot, humid climate and the almost impassable terrain, the island and its indigenous population had scarcely been affected by modern developments. It quickly became apparent that a campaign in New Guinea would require a huge engineer effort both to move Allied forces and supplies over the long and difficult distances involved and to construct the numerous facilities and bases that modern warfare required.

The Japanese also recognized the strategic significance of New Guinea and launched an invasion force to capture Port Moresby in May 1942. In the Battle of the Coral Sea, the Allies thwarted the invasion. Convinced that the Japanese would try again, MacArthur sent Australian troops and a company of the 46th General Service Regiment in June to Milne Bay, near the southeastern tip of New Guinea. A base on Milne Bay would not only help protect Port Moresby but would also provide a staging area for an Allied offensive. In July the Japanese succeeded in landing a large force at Buna on the northern coast and moved across the island toward Port Moresby. Australian troops tried to block the Japanese advance over the Kokoda Trail which crossed the rugged Owen Stanley Mountains, but by mid-September the Japanese were just 30 miles from Port Moresby. The crisis in New Guinea led MacArthur to transfer most of the American

engineers to the island, including two companies of the 43d to Milne Bay.

Meanwhile, in late August, a second Japanese force attacked the Allied troops at Milne Bay. Companies D and F of the 43d Engineer General Service Regiment along with an American antiaircraft battery joined the Australians in holding defensive lines on the edge of an airfield and became the first American ground troops in SWPA to engage in combat. The Allies defeated the Japanese at Milne Bay, and by late September the Australians began pushing the Japanese back over the Kokoda Trail. SWPA had stopped the Japanese attempt to conquer Port Moresby, but it would take two more years of bitter and bloody fighting to defeat or isolate the large Japanese forces that held the northern coast of the island.

By November 1942, Australian troops and the American 32d Infantry Division were converging on the Japanese strongholds at Buna. Engineers, using only hand tools at first, built airstrips at Dobodura, just south of Buna, to support the Allied attack and eventually developed the Dobodura–Oro Bay area into a major base. Taking advantage of the swamps and jungle around their strongholds, the Japanese built coconut log bunkers and other well concealed and well sited positions. Largely untrained and poorly equipped for jungle warfare, the Allies suffered heavy losses from both combat and disease before Buna fell in early January 1943. The Allied victories at Buna and at Guadalcanal in the South Pacific Area represented the first decisive defeats of the Japanese ground forces in World War II.

During the first six months of 1943, neither SWPA nor the South Pacific Area launched any offensives. Because the European theater had first priority, few troops or supplies arrived in the Southern Pacific. No new engineer units reached SWPA from June 1942 until February 1943. As the theater rebuilt its strength after the heavy demands of the Buna campaign, the Pacific commanders and the Joint Chiefs of Staff agreed on a campaign plan for late 1943. MacArthur would continue his drive up the northern coast of New Guinea, and South Pacific forces would attack Bougainville in the Solomons. These operations would put pressure on the great Japanese base at Rabaul on the eastern end of New Britain Island. In 1943 and early 1944, the Pacific theater forces would gradually isolate and then bypass Rabaul.

In late June 1943, the Allies seized islands just east of New Guinea and built airfields which allowed Allied air forces to launch heavy air attacks on Rabaul. At the same time, SWPA began a series of operations designed to capture the next Japanese bases up the coast of New Guinea—Salamaua and Lae. Amphibian engineers carried out their first operation in SWPA during this campaign.

General MacArthur had requested amphibian engineers for his theater at an early date because of the Navy's reluctance to risk its ships in the dangerous and confined waters off the New Guinea coast and because the combination of boat and shore units under engineer control solved the knotty problem of whether the Army or the Navy would be in charge of amphibious operations in SWPA. Under the command of Brigadier General William F. Heavey, the 2d Engineer Special Brigade arrived in Australia in February and March 1943. Its first task was to assemble landing craft shipped from the United States.

During the early stages of planning the deployment of amphibian engineers to SWPA, Colonel Arthur Trudeau, chief of staff of the EAC, discovered that it would take months to ship the brigade's landing craft to the theater. Trudeau devised a plan that called for prefabricating the 36-foot LCVPs (landing craft, vehicle and personnel) in more easily shipped sections and assembling the boats in Australia. The 2d Brigade built an assembly plant in Cairns and began producing its own landing craft.

In late June, the amphibian engineers participated in their first SWPA operation. During the night, landing craft of the 532d Engineer Boat and Shore Regiment transported a small force through heavy seas to a landing beach at Nassau Bay, just south of the Japanese base at Salamaua. Although the troops landed safely, most of the landing craft were swamped by the heavy surf. In addition to unloading equipment and supplies, the shore engineers helped to establish and man defensive positions, which the Japanese attacked the next night. The 532d lost an officer and six men who were killed and another eight who were wounded in repelling the Japanese assault.

As part of the developing Allied assault on Lae and Salamaua, General MacArthur ordered aviation engineers

After rolling and compacting an airstrip in the Markham Valley, New Guinea, aviation engineers place pierced steel plank on the 7,000-foot runway.

to build airfields in the isolated Markham River valley, just to the west of the Japanese strongholds. In early July, a company of the 871st Engineer Airborne Aviation Battalion under the command of Lieutenant Colonel Harry G. Woodbury, Jr., began work on a fighter and a transport field. The small airborne battalion of 530 officers and men had equipment which could be transported in C-47s or gliders. By the end of the month, the battalion with the assistance of native laborers had completed the fields. Australian and American forces, including aviation and amphibian engineers, continued to exert pressure on the Japanese bases, which finally fell in early September 1943.

Before the Japanese could recover from these losses, MacArthur ordered an attack on Finschhafen, another Japanese base east of Lae. In late September 1943, the 2d Engineer Special Brigade landed Australian troops near the village, which fell on 2 October. Strong Japanese forces remained in the area, however, and threatened the tenuous Allied beachhead. A detachment of the brigade's 532d Boat and Shore Regiment remained on the beach to help the Australians defend it from seaborne counterattack.

As dawn approached on 17 October, the defenders heard the faint sound of boats gliding toward the beach. Private

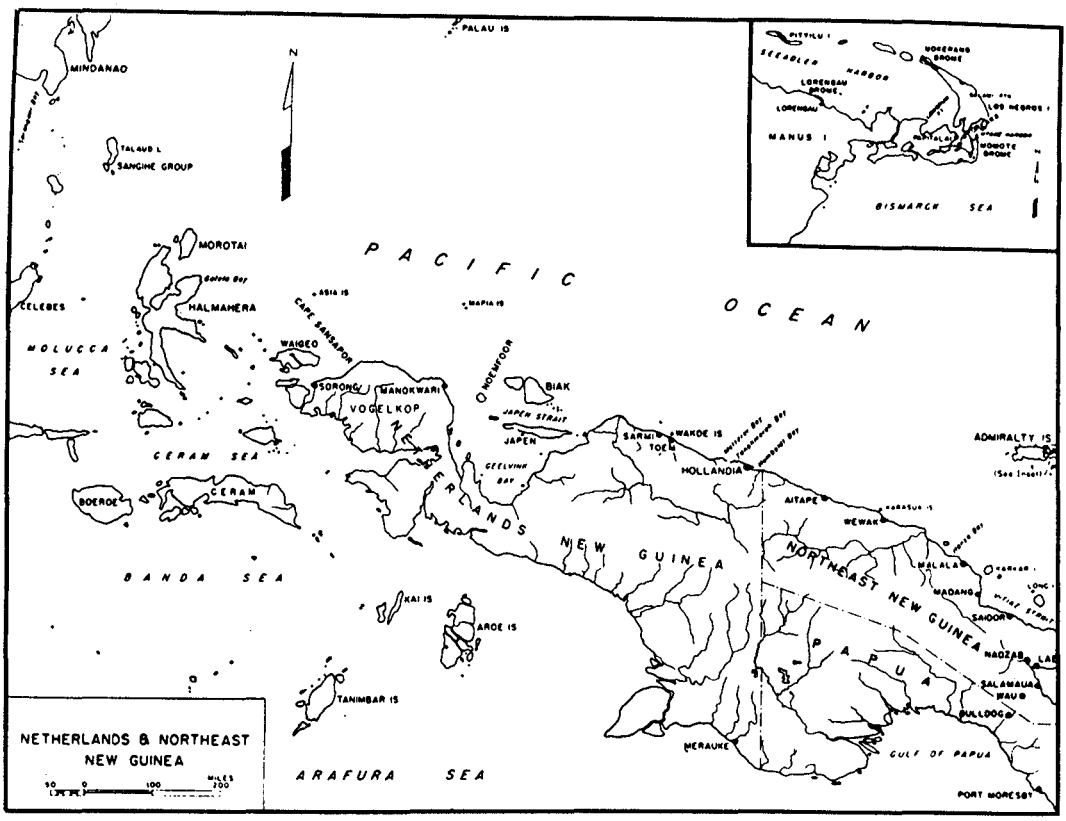
Nathan Van Noy, Jr., and Corporal Stephen Popa rushed to their .50-caliber machine gun position just a few yards from the water line. Slowly the silhouettes of Japanese landing barges came into view. The Australians and American engineers farther up the beach opened fire, but Van Noy, the gunner, waited until the barges dropped their ramps. As the Japanese stormed onto the beach, Van Noy opened fire, killing many of the invaders. A hail of Japanese grenades shattered Van Noy's leg and wounded Popa. In spite of their wounds, the two engineers continued to fire.

After the Allied troops had repulsed the Japanese raid, they found Van Noy dead, his finger still on the trigger of his empty machine gun, and Popa severely wounded. Popa received a Silver Star and Private Nathan "Junior" Van Noy became the first engineer enlisted man in World War II to receive the Medal of Honor.

During 1943, the strength of the U.S. Army and Army engineers in the Southwest Pacific theater grew dramatically. At the beginning of the year, the 7,500 engineers comprised 7 percent of the Army forces, but by the end of the year the more than 42,000 engineers comprised 14 percent of the SWPA Army strength. Headquarters, Sixth Army, under Lieutenant General Walter Krueger had arrived in SWPA in February 1943 but did not take control of major operations until the end of the year. The Engineer Section, Sixth Army, was under Brigadier General Samuel D. Sturgis, Jr., who was Chief of Engineers from 1953 to 1956. Sixth Army provided the troops for the task forces that conducted most of the remaining operations in New Guinea. Each task force had an engineer who was responsible not only for combat support, but also for the initial phases of base development and airfield construction, which often began before combat operations had ceased.

In late December and early January, American troops under the control of the Sixth Army continued their pressure on the important Japanese stronghold at Rabaul by landing on western New Britain Island and at Saidor on the New Guinea coast. Amphibian engineers supported the landings on New Britain using newly developed rocket DUKWs, which were 2 1/2-ton amphibian trucks equipped with 120 rocket tubes. As soon as the American troops had cleared the

areas, 6 engineer aviation battalions, including the 808th, began building airfields. By January 1944 MacArthur had 17 engineer aviation battalions and 3 airborne aviation battalions in the theater.

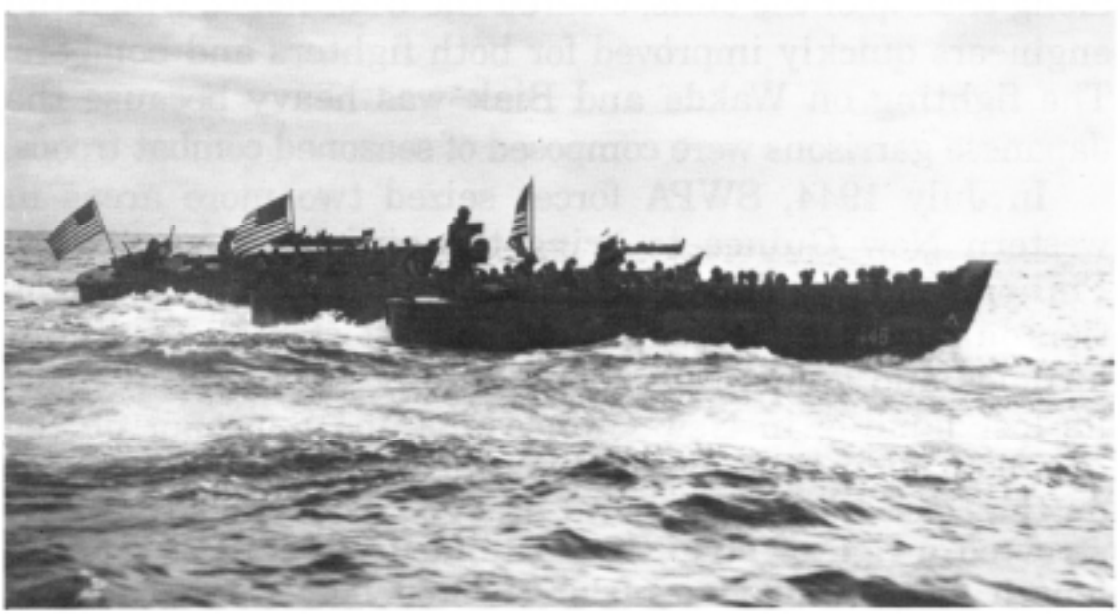


Netherlands and Northeast New Guinea

In order to complete the isolation of Rabaul and provide bases for the advance in New Guinea, MacArthur ordered an American task force to capture the Admiralty Islands, north of the New Guinea coast. Supported by amphibian engineers, American troops quickly seized the islands, and aviation engineers began building airfields. With the Admiralties under American control, the JCS and MacArthur decided to speed the advance along the New Guinea coast by avoiding a direct assault on large Japanese troop concentrations at Hansa Bay and Wewak and instead attacking the lightly held Hollandia area some 200 miles west of Wewak. On 22 April 1944, the 532d and 542d Boat and Shore Regiments of the 2d Engineer Special Brigade landed the largest task force assembled thus far in SWPA on two beaches separated by 25 miles of rugged coastline. Of the

Engineer LCVPs and LCMs load into the well deck of a landing ship, dock, just before the Hollandia landings 22 April 1944.

60,000 troops who participated in the landing, 41 percent were engineers. Initial plans called for developing the Hollandia area into a major American base, and four aviation battalions under the command of Headquarters, 931st Engineer Aviation Regiment, began rebuilding three inadequate Japanese



Landing craft of the 2d Engineer Special Brigade head toward the beach during the Hollandia operation. The prominently displayed American flags helped Army Air Force pilots identify the craft as friendly forces.

airfields. In spite of the efforts of the aviation engineers, which included surfacing one field with a combination of sand and iron ore from a nearby deposit, the difficult terrain precluded the construction of airfields for heavy bombers and prevented Hollandia from becoming as large a base as SWPA had envisioned.

The need for bomber fields led MacArthur to move up the schedule for the next landings on the western New Guinea coast. In mid-May, the 593d Engineer Boat and Shore Regiment of the newly committed 3d Engineer Special Brigade landed a task force on Wakde Island, 125 miles west of Hollandia. Although the Japanese offered surprisingly heavy opposition on Wakde, the 836th Engineer Aviation Battalion had an airfield ready to support the next operation by 21 May.

Supported by amphibian engineers, the landings on Biak Island, 75 miles to the west, on 27 May encountered little resistance; but when the task force began moving toward the airfields, it ran into heavy fire from Japanese defenses in caves along the coral cliffs. With airfield construction at a standstill and rumors of Japanese plans to reinforce Biak, the task force commander ordered aviation engineers to build an airfield on the small island of Owi, just south of Biak. In less than two weeks, the Owi field was operational; and shortly thereafter the task force, using a flanking movement along the top of the cliffs, cleared the Biak fields, which the engineers quickly improved for both fighters and bombers. The fighting on Wakde and Biak was heavy because the Japanese garrisons were composed of seasoned combat troops.

In July 1944, SWPA forces seized two more areas in western New Guinea to bring the airfields closer to the Philippines. On 2 July, a task force landed with little opposition on Noemfoor Island, 90 miles west of Biak, and built airfields and a small base. On 30 July 1944, SWPA made its last landing in New Guinea at Cape Sansapor on the Vogelkop peninsula. Aviation engineers built a bomber base on the coast and, using coral dredged from the ocean, constructed a fighter strip that extended virtually the entire length of tiny Middelburg Island just offshore. Cape Sansapor, however, was still 600 miles from Mindanao in the Philippines. Before MacArthur returned to the Philippines, his forces, now including the 4th Engineer Special Brigade,

Aviation engineers construct an airfield stretching the entire length of Middelburg Island, September 1944.

captured an intermediate base at Morotai Island in the Moluccas in September. By this time, the last airfields in New Guinea were in operation and the long New Guinea campaign was over. MacArthur was now in a position to redeem his pledge, made more than 2 1/2 years earlier, to return to the Philippines.

Prom the arrival of the first American ground troops, who were engineers, until the final landing in July 1944, engineers played a critical role in New Guinea. General MacArthur acknowledged this role in 1944 when he referred to the war in the Southwest Pacific as "an engineer's war." The New Guinea terrain and the bypassing strategy required a large engineer effort in amphibious operations and in airfield and base construction. The number of engineer troops in SWPA indicates the significance of their mission. In January 1943, there were

General MacArthur's strategy 1943-1945

7,500 engineers in SWPA; in January 1944, there were 42,000; and by October 1944 on the eve of Leyte, 100,000 of the 700,000 troops in SWPA were engineers.

The two new types of engineer units played an especially important role in the Southwest Pacific. In the ten major landings conducted from December 1943 to September 1944, amphibian engineers comprised an average of 26 percent of the task forces' engineer strength. In the largest landing in New Guinea—in Hollandia—the 24,600 engineers comprised 41 percent of the total task force strength. More than 4,000 were amphibian engineers and more that 7,500 were aviation engineers. By the summer of 1944, SWPA had 3 engineer special brigades, each with an authorized strength of 7,200 officers and men, 31 engineer aviation battalions, 6 airborne engineer aviation battalions, and 2 engineer aviation regimental headquarters.

On the eve of war, the engineers had responded to the new challenges of amphibious and air warfare by developing new types of engineer units. These units received their most extended test and performed some of their most critical work in the Southwest Pacific. The difficult terrain of New Guinea and MacArthur's strategy for defeating the Japanese gave amphibian and aviation engineers an important role to play. Although many difficult operations lay ahead of them in the Philippines, SWPA engineers, in the summer of 1944, had reason to be proud of their accomplishments in the New Guinea campaign.

Sources for Further Reading

For an account of the origins and training of amphibian engineers, see Blanche D. Coll, Jean E. Keith, and Herbert H. Rosenthal, *The Corps of Engineers: Troops and Equipment, United States Army in World War II* (Washington, DC: Office of the Chief of Military History, 1958).

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Brigadier General William F. Heavey's post-war history, *Down Ramp! The Story of Army Amphibian Engineers* (Washington, DC: Infantry Journal Press, 1947), covers all six special brigades.

The Office of History, Headquarters, U.S. Army Corps of Engineers, reprinted another detailed post-war history of one unit and published it in 1988 as *Put 'Em Across; A History of the 2d Engineer Special Brigade, 1942–1945*, Studies in Military Engineering, Number 2.

Any discussion of engineer activities in the Southwest Pacific Area must rely heavily on the indispensable, richly detailed, and comprehensive seven volumes of *Engineers of the Southwest Pacific, 1941–1945*, written by the Office of the Chief of Engineer, General Headquarters, Army Forces, Pacific (Washington, D.C. Government Printing Office, 1947–1959).