The Pacific Submarine Strategy in World War II

by Edward C. Whitman
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Part II: Winning Through

The Man of the Hour

Although he was born in Virginia in 1890, Charles Andrews Lockwood, Jr. was raised in Missouri. He entered the United States Naval Academy in 1908, joined the Submarine Force two years after graduation, and rose to command the old gasoline-powered A-2 (SS-3) and B-1 (SS-10) in the Philippines during World War I. Later, he led the First Asiatic Submarine Squadron and served as the Assistant Naval Attaché in Tokyo. Subsequently, he commanded the Simon Lake boats G-1 (SS-19-1/2) and N-5 (SS-57), took the ex-German submarine minelayer UC-97 into the Great Lakes on a Victory Bond drive, and commissioned R-25 (SS-102), S-14 (SS-119), and V-3 (SS-165). In his varied career, Lockwood also commanded the venerable monitor USS Monadnock (BM-3) and two gunboats on the Yangtse Patrol, served on the U.S. Naval Mission to Brazil, held down both headquarters and naval shipyard jobs, and headed SUBDIV THIRTEEN at San Diego from 1935 to 1937. Before his assignment as COMSUBSOWESPACE at Fremantle, he had been the U.S. Naval Attaché in London from January 1941 until May 1942. Thus, Lockwood's accomplishments were extraordinary even before the untimely death of RADM English brought him to COMSUBPAC in February 1943.

Fremantle and Brisbane - Early 1943

Two months before Lockwood took up his new position at Pearl Harbor, CAPT James Fife, then a Navy liaison officer at GEN MacArthur's new headquarters at Port Moresby, was ordered to replace the recently-reassigned Ralph Christie at Brisbane. In the aftermath of RADM English's
death, however, Christie - now a rear admiral - was hurriedly brought back from the Newport Torpedo Station to replace Lockwood at COMSUBSOWESPAC in Fremantle.

In response to the demands of the Solomons campaign in late 1942, Brisbane was by then home to three submarine squadrons - some 20 boats and their associated tenders and support facilities. Between the build-up to the invasion of Guadalcanal in August 1942 and its final pacification in February 1943, the Brisbane boats mounted nearly 60 war patrols, including forays into the Solomon Islands and inter-force transfers to Pearl Harbor by way of Truk and Rabaul. This offensive - largely steered by ULTRA cues into heavily-defended areas - accounted for only two-dozen enemy ships, nearly half of those near Truk. Moreover, three of the five boats that left Brisbane in February were lost to enemy action, leading to an internal investigation of Fife's leadership. In any event, with the Solomons campaign winding down and the war moving north and westward, Fife's command would be reduced to only one squadron by mid-1943.

During their last several months under Lockwood, the small Fremantle force mounted just over 15 war patrols, but a third of these had been devoted to minelaying off Siam and Indochina, and another third had been associated with transits to Pearl Harbor. Postwar analysis credited 16 enemy ships to this effort, but as the only submarines well positioned to interdict the flow of petroleum - only lightly protected - from the Dutch East Indies to the Japanese operating bases and home islands, the Fremantle boats lost a significant opportunity. With Christie, in the first half of 1943, this pattern began to change, and half of the Fremantle sorties targeted Japanese convoy routes to the north and west. 23 sinkings were eventually confirmed - about one per patrol - but two more boats were lost to the enemy.

**Seizing the Initiative from Pearl Harbor**

With their failure to retake the eastern Solomons in late 1942, the Japanese turned in 1943 to defending what remained of their earlier conquests. Thus, with new war materiel arriving daily from the United States, the Allies quickly regained the initiative, took back Attu and Kiska in May and August and - under GEN MacArthur - attacked the northern Solomons and "leap-frogged" westerly along the coast of northern New Guinea while isolating and bypassing Rabaul. Late in the year, ADM Nimitz's island-hopping campaign across the central Pacific got under way in earnest with the invasion of Tarawa and Makin in the Gilbert Islands in November.

Accordingly, during 1943 the COMSUBPAC submarine force at Pearl Harbor - now under RADM Lockwood - gradually came to predominate over their counterparts in Australia. Because the Solomons action had drawn so many submarines to SOWESPAC, SUBPAC could only muster 28 war patrols for the first three months of 1943, and over half were sent to Truk, Palau, and the Marianas.
A notable exception was the first penetration of the Yellow Sea in March by USS Wahoo (SS-238) under "Mush" Morton, with a total bag of nine enemy ships. Unfortunately the other Pearl Harbor patrols for that same period saw only limited success, at least partially because of the high priority placed on hard-to-target enemy capital ships. By mid-spring 1943, however, Lockwood's force had grown to 50 submarines. Between April and August, he was able to send an average of 18 to sea each month for war patrols of 40-50 days, with over half targeted at enemy shipping in Empire waters and the East China Sea. A significant innovation occurred in July, when Lockwood and his brilliant Operations Officer CAPT (later RADM) Richard Voge sent three submarines into the Sea of Japan, entering from the north through the La Pérouse Strait. The three boats only managed to sink three small freighters in four days before withdrawing, and two subsequent patrols the next month - one under "Mush" Morton - did little better. In September, however, Morton returned to the Sea of Japan a second time and apparently sank four ships before Wahoo was lost to a Japanese anti-submarine aircraft in early October while attempting to come back out.

**Tackling the Torpedo Problem**

Much of Lockwood's command attention during 1943 was consumed by several nagging materiel problems that had crippled U.S. submarine effectiveness early in the war. Foremost among these was torpedoes - not only a shortage of numbers, but continuing evidence of the design defects the admiral had already encountered during his tenure as COMSUBOWESPAC.

Lockwood's earlier investigations at Fremantle had established that U.S. torpedoes were running too deeply, but even when this deficiency was corrected, torpedo performance continued to be suspect. Following an increasing number of attacks foiled by premature warhead explosions apparently due to a too-sensitive magnetic influence exploder, Lockwood prevailed on ADM Nimitz in June 1943 to order the magnetic "pistol" disabled on COMSUBPAC torpedoes and to rely solely on the contact exploder. But even with the magnetic feature disabled, Pearl Harbor submarines continued to experience a significant percentage of "duds," and it soon emerged that there were also major defects in the contact exploder. This led Lockwood to a series of careful experiments in Hawaii in which torpedoes were fired against underwater cliffs to determine potential causes of failure. These revealed that the firing pin was too slender to withstand the shock of a 90-degree encounter without buckling and "dudding" the torpedo. When this last piece of the puzzle fell into place in September 1943, performance of the Mark XIV submarine torpedo finally reached acceptability, but it had taken literally half the war to get there. That the problem had to be solved in the field by the operators themselves - and in spite
of a technical community that only wanted to minimize the deficiencies - still evokes bitter memories.

Moreover, the dubious reliability of the H.O.R. main-propulsion engines - apparent from the beginning of the war - became even more critical in May 1943 when the twelve boats of SUBRON TWELVE arrived at Pearl Harbor, all fitted with H.O.R. diesels. In both shakedown cruises and their European service with the Atlantic Fleet, all of the SUBRON TWELVE submarines revealed engine problems. These only became worse under combat conditions in the Pacific, where virtually all the H.O.R. boats were handicapped by catastrophic breakdowns that often required curtailing war patrols and returning to base for repairs. One by one, the H.O.R. submarines were shuttled back to Mare Island for new Winton engines, but it was nearly a year until all had been returned to duty and the H.O.R. maintenance problems eliminated.

**Japanese Supply Lines - a New Focus**

For the bloody, but successful, invasion of the Gilbert Islands in November, a dozen submarines provided direct support: conducting reconnaissance, landing commandos, performing "lifeguard" duty to pick up downed U.S. pilots, and blockading Truk. During this same period, however, Lockwood and Voge introduced two additional tactical innovations: deploying small, coordinated submarine "wolf-packs" as tactical units; and concentrating more anti-shipping efforts in the Luzon Strait between the northern Philippines and Formosa, where several Japanese north-south convoy routes from the conquered territories converged. The first three three-boat wolf-packs departed Pearl Harbor in September, October, and December - the first for the East China Sea; the others for the Marianas. Results were mixed. The first Marianas effort sank seven ships, but the total score for the other two was only four. Even as tactics and techniques improved, communications and coordination among wolf-pack members at sea remained difficult, and "blue-on-blue" engagements were a worrisome possibility. Nonetheless, in 1944, wolf-packing became increasingly common, particularly for commerce-raiding north of Luzon.

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Although both Fremantle and Brisbane maintained a steady level of activity throughout 1943, the latter steadily lost importance as a submarine base in the later stages of the conflict. Early that year, the number of submarines stationed in Australia had been fixed at 20, nominally with 12 at Brisbane under CAPT Fife and eight at Fremantle under RADM Christie. As the war moved up the Solomons chain and westward into New Guinea, the boats were reapportioned in favor of Fremantle, and when the total number of Australia-based submarines was increased to 30 late in the year, Fremantle was allocated 22 and Brisbane the rest. Fife made the best of this disparity by establishing an advance base at Milne Bay, New Guinea, 1,200 miles closer to his operating areas off Truk, Rabaul, and Palau. In the latter half of the year, his 33 war patrols resulted in 29 confirmed sinkings along the supply lines linking the three Japanese bases. During that same period, after Japanese tankers were moved up the priority list, Christie's growing force at Fremantle turned aggressively to attacking the oil traffic from Borneo and Sumatra. Nearly 50 enemy ships were sunk by the Fremantle force between June and December, and a dozen of
these were oil tankers.

**1943 - the Year of Transition**

For all of 1943, the Submarine Force was credited with sinking 335 Japanese targets - or 1.5 million tons of shipping - essentially twice the corresponding figures for 1942. More importantly, after diminishing only slightly in 1942, the total tonnage of the Japanese merchant marine (including oil tankers), dropped 16 percent in 1943, despite a vigorous shipbuilding program not yet disrupted by Allied air attacks. Correspondingly, the importation of bulk commodities (not including petroleum products) into Japan had diminished by the end of 1943 to 81 percent of the pre-war level. Surprisingly, though, Japanese tanker tonnage actually increased by nearly 30 percent over the year due to need to transport oil from the East Indies.

Starting in mid-1943, the gradual introduction of the Mark XVIII electric torpedo into the theater brought substantial relief from the persistent torpedo shortages of the early war years. Although slower than the Mark XIV by 10 to 15 knots and somewhat limited in range, the Mark XVIII left no tell-tale wake that could give away a submarine's position, and it was much easier to manufacture in quantity. By the middle of 1944, when all their teething problems had been solved, Mark XVIII torpedoes constituted three-quarters of the standard patrol load-out. Despite the large percentage of U.S. war patrols targeted specifically at major Japanese bases or cued against Japanese combatants by ULTRA information, U.S. submarines sank only one major Japanese warship in 1943 - the light aircraft carrier IJS *Chuyo*. That same year, fifteen U.S. submarines were lost in the Pacific - plus two in the Atlantic. The Japanese lost 23.

**Thrusting Westward - Early 1944**

By the time ADM Nimitz's cross-Pacific thrust reached the Marshall Islands at the beginning of 1944, over 60 submarines were assigned to Pearl Harbor and 36 to Australia. Moreover, in recognition of the submarine contribution to the war effort, RADM Lockwood had been promoted to vice admiral just before the turn of the year. He quickly took advantage of the capture of Kwajalein and Majuro in the Marshalls in January 1944 to establish an advance submarine base on the latter in April, which put his Pearl Harbor boats 2,000 miles closer to Japan. Even before the fall of Eniwetok in February, and with Truk coming under increasing carrier-based air attacks, Japanese commander-in-chief ADM Mineichi Koga, had ordered his heavy units to abandon Truk and fall back on the Palaus. Then, under further pressure in late March and early April, Koga ordered a further dispersal of his fleet to Davao and Tawi Tawi (in the southern Philippines), Surabaja, and Singapore.
Accordingly, Lockwood's and Christie's submarines at Pearl Harbor and Fremantle were kept busy supporting both the Marshalls campaign and U.S. carrier air strikes. With ULTRA intercepts to give advanced warning of the resulting Japanese withdrawals, numerous attempts were organized to intercept both enemy men-of-war and supply ships. Although a number of Japanese freighters and auxiliaries were sunk, the only major warships destroyed during this period were three light cruisers. Simultaneously, however, Lockwood increased pressure on the Empire, East China Sea, and Kurile Island supply routes, and in March and April sent two more wolf-packs to the Luzon Strait. Only the first of these produced significant results - seven freighters confirmed for about 35,000 tons - but all told, U.S. submarines sank 183 ships or nearly three-quarters of a million tons of shipping in the first four months of 1944.

**Decision in the Philippine Sea**

In the SOWESPAC area, GEN MacArthur's forces continued their advance westward across New Guinea, and by June 1944 the entire northern coast of the island had been secured. Simultaneously, Nimitz moved on toward the Mariana Islands with the intention of seizing Saipan, Guam, and Tinian as staging bases for the push toward Palau and the Philippines. To soften up those objectives, the 15 carriers of Task Force 58 under RADM Raymond Spruance mounted a series of powerful air strikes, while Lockwood sent a new wave of submarines westward to interdict any Japanese attempts to reinforce the islands and to provide lifeguard services for downed airmen.

To defend the Marianas and Palaus, ADM Soemu Toyoda, replacing ADM Koga, had earlier concentrated the Japanese fleet at Tawi Tawi, and he sortied a powerful force under ADM Jisaburo Ozawa on 13 June in an attempt to thwart the gathering attack on the Marianas. The result was the Battle of the Philippine Sea a week later, pitting Spruance's 15 carriers against Ozawa's nine. Subsequently dubbed "the Great Marianas Turkey Shoot," in which Ozawa lost nearly 350 aircraft without sinking a single American ship, the encounter on 19 and 20 June also cost the Japanese three large aircraft carriers, including two - IJS Taiho and IJS Shokaku - sunk by U.S. submarines. By the time Ozawa broke off the engagement and retreated northward, Japanese naval aviation had suffered a devastating loss that would never be redressed. Instead, Japan began training kamikaze pilots. Meanwhile, Saipan had been invaded on 15 June, to be followed by Guam and Tinian later in the summer. By 10 August, the entire Marianas had been taken, and additional advance submarine bases were promptly established at Saipan and Guam.

The emphasis on attacking Japanese shipping continued to grow. An analysis of submarine patrol assignments from the beginning of 1944 until the end of the war shows a steady increase in the percentage targeted at Japanese supply lines - rising from approximately 40 percent at the beginning of that period to more than double that by August 1945. Consequently, Lockwood began sending wolf-packs into the Luzon Strait on a regular basis, redirecting a group of three boats that
had participated in the Battle of the Philippine Sea, and dispatching three more wolf packs by mid-July. All told, these four efforts netted 17 enemy ships. Additionally, COMSUBPAC increased his emphasis on the East China Sea and also established a series of so-called "polar routes" that vectored submarines northward past the Aleutians and westward to the Kurile Islands and the Sea of Okhotsk, where they could prey on Japanese fishing fleets and coastal traders before slipping southward to patrol off Hokkaido and Tokyo Bay.

With Brisbane's importance steadily diminishing in early 1944, CAPT Fife was re-assigned to staff duty in Washington, and overall command of the Australia-based submarines devolved on RADM Christie. Meanwhile, the Fremantle operation was approaching a peak of activity in September and October, when a total of 38 boats - most in wolf-packs - joined patrols against the Japanese oil "pipeline" from Sumatra and Borneo and enemy attempts to shore up the defenses of the Philippines. These COMSUBSOWESPAC operations were facilitated by establishing two new advance bases north of New Guinea in mid-year: at Manus in the Admiralty Islands, and at Mios Woendi, just east of Biak. In July through October alone, Christie's boats sank nearly 100 enemy ships, joining over 150 more destroyed by their counterparts at Pearl Harbor. Exacerbated by the growing toll exacted by air attacks, the effect on the Japanese war effort was catastrophic. Total Japanese importation of bulk commodities for 1944 was half the pre-war level, and by the end of the year, their merchant tonnage (again including tankers) had dropped to 47 percent of the pre-war figure.

The trail of submarine advance bases established by COMSUBPAC westward from Pearl Harbor - and by COMSUBSOWESPAC northward from Australia - clearly marks the convergence of the Allied offensive on the Japanese homeland in the last years of the war. Japanese defeats in the Battles of the Philippine Sea and the Leyte Gulf marked the beginning of the end.

The Beginning of the End

In preparation for the ensuing invasion of the Philippine Islands, GEN MacArthur's forces invaded
the island of Morotai, northwest of New Guinea, in September 1944, and ADM Nimitz moved on Peleliu and Angaur in the Palau group. When U.S. troops came ashore on eastern Leyte on 20 October, however, ADM Toyoda had already initiated a series of countermoves. His overall plan was to bring VADM Ozawa's carriers down from Japan to lure VADM William Halsey's Task Force 38 away from Leyte Gulf so that a powerful surface fleet, including the super-battleships IJS Yamato and IJS Musashi, could come up from Singapore, penetrate the San Bernardino and Surigao Straits, and catch the invasion forces at Leyte Gulf in lethal pincers. The result was the Battle of the Leyte Gulf, 23-25 October 1944, perhaps the largest naval encounter ever fought.

To support the U.S. invasion, RADM Christie positioned a dozen submarines southwest of Luzon to interdict Japanese forces coming up from the south, while VADM Lockwood deployed over twenty boats off Japan's Inland Sea and near the Luzon Strait to counter enemy moves from the north. Christie's submarines drew first blood early on the morning of 23 October by sinking two Japanese heavy cruisers and severely damaging two others west of Palawan. Then, on the 24th, U.S. carrier aircraft badly mauled the enemy surface forces in the San Bernardino and Surigao Straits - sinking Musashi - and then turned northward to find Ozawa's carriers. In subsequent surface actions, VADM Thomas Kinkaid annihilated the Surigao Strait force, but found himself badly outmatched at the San Bernardino Strait to the north, where the debouching Japanese battleships sank two escort carriers, two destroyers, and a destroyer-escort before withdrawing inexplicably - without attacking the landing force.

Then, on the morning of the 25th, Halsey found the approaching Japanese carriers and sank all four of them, leaving only two hybrid carrier-battleships, IJS Ise and Hyuga, and their escorts to run a gauntlet back to Japan through several scouting lines of U.S. submarines deployed to intercept the "cripples." Among these, the U.S. boats managed to pick off a light cruiser and a destroyer. In addition to guaranteeing the successful invasion of the Philippines, the Battle of the Leyte Gulf reduced the Japanese Navy to a mere remnant of its former self, almost entirely bereft of carrier aviation. The Submarine Force played a key role in the victory - not only by providing crucial sighting reports, but by sinking or heavily damaging six enemy combatants.

The re-conquest of the Philippines continued with the invasions of Mindoro and Luzon in December 1944 and January 1945, leading to the recapture of Manila in early February. Meanwhile, with the remains of the enemy war fleet withdrawn into home waters, U.S. submarines were free to concentrate almost entirely on Japanese shipping. During all of 1944, more than 600 Japanese ships - or 2.7 million tons - were eventually credited to the U.S. boats, including a battleship, seven aircraft carriers, nine cruisers, and numerous smaller combatants. In the same period, the Pacific boats rescued 117 downed airmen from the sea in lifeguard missions. On the negative side, 19 U.S. submarines were lost to enemy action during 1944 - plus one sunk in a training accident - but in contrast, the Japanese sacrificed 56.

**Final Victory in the Pacific**

1944's anti-shipping campaign was so successful that by the beginning of 1945, virtually nothing was left to sink. Few enemy targets remained outside the Sea of Japan, the Yellow Sea, and narrow coastal lanes plied only by day. Nonetheless, U.S. submarines pursued their remaining quarry wherever it could be found, patrolling up and down the Japanese coast and often penetrating deep into their harbors, while performing lifeguard duty in support of a crescendo of air attacks on mainland targets by both carrier-based and long-range bombers. In February, the Australia-based Submarine Force - now under newly-promoted RADM James Fife - established another advance submarine base at Subic Bay north of Manila, and within a few months, VADM Lockwood had moved his own headquarters forward to Guam. By then, more than 120 U.S. submarines were operating in the Pacific.

By the time of the invasions of Iwo Jima and Okinawa in February and April 1945, Japan's war-making capacity had been virtually eliminated, and continuing air-raids on the major cities and
military complexes were wreaking horrendous destruction on the civil and industrial infrastructure. Although detailed planning had begun for a massive invasion of the Japanese home island of Kyushu in November 1945, the unleashing of atomic weapons on Hiroshima and Nagasaki in early August brought a merciful end to the conflict on the 14th of that month. The formal surrender instrument was signed on the deck of USS *Missouri* (BB-63) in Tokyo Bay on 2 September. Appropriately, VADM Lockwood participated in the ceremony, and a dozen submarines and the tender USS *Proteus* (AS-19) were anchored nearby.

Reflecting how completely the Japanese merchant marine had been swept from the seas, U.S. submarines sank only 190 enemy ships - most of them quite small - in the seven and one-half wartime months of 1945, equivalent to half the monthly average achieved in 1944. Since 1941, the Pacific Fleet Submarine Force had sunk over 1,300 enemy vessels - or 5.3 million tons of shipping - approximately 55 percent of all Japanese ships lost during the conflict. (The remainder was lost to aircraft, mines, and other causes.)

Although this destruction was wrought by less than two percent of U.S. Navy personnel, our undersea victory in the Pacific exacted a heavy toll of ships and men. A total of 52 U.S. submarines were lost in World War II, most with all hands. Over 3,500 officers and enlisted men sacrificed their lives - 22 percent of those who went on patrol - the highest casualty rate in the U.S. armed forces. Lest we forget.

"There is a port of no return, where ships
May ride at anchor for a little space
And then, some starless night, the cable slips,
Leaving and eddy at the mooring place...
Gulls, veer no longer. Sailor, rest your oar.
No tangled wreckage will be washed ashore."

- Leslie Nelson Jennings ("Lost Harbor")

**Bibliography. Most useful among the many references consulted in the preparation of this article and its predecessor have been:**

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