Elite

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The US Navy in World War II

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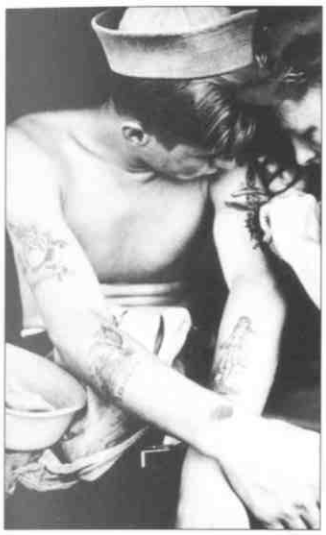


December 1944: touching up the tattoos. These were normally acquired while on liberty; indeed, a sailor sometimes only discovered a new tattoo when he awoke on the ship the morning after. These men are from the crew of the new Iowa Class 16in. battleship USS *New Jersey*, which joined the Pacific fleet in January 1944.

PRESIDENT ROOSEVELT, as a former Undersecretary of the Navy, had always considered himself a Navy man; and unlike the Army, the peacetime sea service retained something of its World War I strength. The capital ships of the 1939 fleet consisted of 14 battleships and two carriers, with several more soon to be delivered. In July 1940 the Congress and President Roosevelt passed the 'Two Ocean Act', authorizing the Navy to significantly expand its ships and manpower to cover both the Atlantic and Pacific oceans. By 1941, with war imminent, the USN had 17 battleships, four carriers, and manpower including reservists reached 340,000 men. The escorting of supply convoys on the western leg of their voyage to Britain meant that the USN was already fighting a quasi-war in the North Atlantic; it had activated all its old World War I four-stack destroyers for convoy escort duty or for Lend-Lease to the British.

After the shocking losses suffered at Pearl Harbor in December 1941, the American shipbuilding industry went into overdrive to repair damaged ships and lay down new hulls. The Navy was slow to counter the Atlantic U-boat menace; but by 1944 the Allied navies had won a decisive victory, and Allied shipping was able to cross the Atlantic and Mediterranean and to land invasion forces with impunity. Theoretically, the Allies had decided on a 'Europe first' strategy; but, the Battle of the Atlantic not withstanding, there was of course a full-scale naval shooting war going on in the Pacific from 7 December 1941. Admiral Ernest King, the US Chief of Naval Operations (CNO), shifted the majority of Navy strength and production into that theater until the imminent 1944 D-Day landings in France demanded some rebalancing of resources.

Japanese Admiral Yamamoto had warned his government in vain of America's industrial might and manpower reserves. By 1943 US yards were turning out 'Liberty' cargo ships in less than 30 days, and destroyers in 60 days[1]. US aircraft savaged Japanese forward areas; in 1944 the enemy's overstretched ocean supply lines were strangled by US submarines[2], and the Navy transported Marine and Army divisions to seize forward bases at will (though often at considerable cost). Regardless of losses, however, the Navy continued to increase dramatically in size and power. In 1943–44 the US military was able to sustain two simultaneous

1 'Liberty' ships had a cargo capacity of about 9,000 tons, and could carry e.g. 440 tanks. By 1944 US yards were launching cargo vessels at a rate of three per day. By VJ-Day, 2,700 Liberty and 534 of the faster Victory ships had been built; about 200 had been lost to enemy action.

2 In 1945, while most Japanese shipping had been swept from the open ocean, shallow water and enemy mine-fields inhibited US submarine operations in Japan's coastal and Korean sealanes. In 18 weeks from April 1945, US Air Corps B-29 bombers air-dropped some 12,000 acoustic, magnetic and pressure-sensitive mines, which sank an extraordinary 1.1 million tons of Japanese shipping in these areas.

The pre-war Navy, May 1939: the ceremony marking Rear Adm. Nimitz's handing over command of the battleship USS *Arizona*. The officers (left) still wear the cocked hats and frock coats of the 1900s. Brothers were encouraged to enlist and serve together on the same ship, and the *Arizona*'s crew had 36 sets of brothers; 61 of these 75 men would be killed during the attack on the ship at Pearl Harbor. Recalled from duty in Washington DC, Adm. Nimitz was placed in command of the Pacific Fleet on 31 December 1941.

drives for Japan: one by Adm. Chester Nimitz across the islands of the Central Pacific, the other by Gen. Douglas MacArthur across the South-West Pacific and into the Philippines.

By 1945 the US Navy had approximately 99 carriers and 41,000 aircraft, and a strength of over 3.3 million men. The spent Imperial Japanese Navy was a skeletal shadow of its former strength, and sacrificial delaying action was the only response a desperate Japan could muster. Shaken but undeterred by *kamikaze* tactics, the American naval leviathan weathered the 'Divine Wind' and braced itself for the final struggle. Iwo Jima and Okinawa were a preview of the bloodbath which the Battle of Japan would surely bring. Thankfully, the atomic bombs finally brought the war to an end in September 1945 – and thus saved many hundreds of thousands of Allied and Japanese lives.

The average 19-year-old US sailor who fought this war was generally brave, intelligent and quick to learn. After the first six months of hostilities his leaders learnt to fight aggressively, to adapt, to take chances and embrace technology. With the industrial might of America behind them, they created and wielded an unrivaled and unstoppable naval power.

CAMPAIGN SUMMARY

Pearl Harbor

In 1938 exercises in the Pacific showed the USN base at Pearl Harbor, Hawaii, to be very vulnerable to air attack. In 1940 an admiral was fired for protesting over the forward basing of the Pacific Fleet at Pearl Harbor. By December 1941 the base and the fleet, including three carriers and nine battleships (eight of them at Pearl), had been on a 'war alert' for some weeks; but although certain precautions were taken the Navy was still really in peacetime mode. Scout planes were not systematically scouring the ocean, and the new experimental radar sets were not actively looking for approaching enemies.

The Pacific Fleet lost all eight of its battleships sunk or seriously damaged to the Imperial Japanese Navy's carrier air attack on 7 December 1941.

Seeking Pacific hegemony to provide them with the imported resources which their industrializing home islands desperately needed, the Japanese had tried a daring gambit. They believed that the shock to the decadent and fragile Americans would convince the US government to seek terms. This misreading of the American national character was accompanied by both bad luck, and an astonishing failure of nerve on the part of their task force commander. The first ensured that the vital US carriers were safely at sea during the attack on Pearl Harbor; the second, that no follow-up attack was made to destroy the Navy's fuel storage tanks, repair facilities and submarines which had been overlooked by the first wave. Hawaii would remain the forward base for the US fleet. The USA had underestimated the skill and aggressiveness of the Japanese; the Japanese had underestimated America's willingness to fight. The first mistake was costly – the second, fatal.

North Atlantic

After embarassing shipping losses to German U-boats along the eastern seaboard in the first half of 1942, the Navy steadily increased its anti-submarine warfare (ASW) assets and competence, and adopted the convoy system. With more naval and air units becoming available early in 1943, Adm. King instituted the 10th Fleet to control the approaches to the eastern US and to co-ordinate ASW.

One edge the Allies enjoyed was the pre-war development of both asdic/sonar and radar by the British – the former to detect submerged boats, the latter to detect objects on the surface. Early in the war the 'pinging' sonar had limited range; and all wartime sonar was directional – i.e. it was used like a flashlight, not for rapid circular sweeps of the compass. Escort ships had difficulty detecting the small contact of a surfaced submarine's conning tower – especially if it penetrated a crowded convoy formation at night, the U-boat aces' favored tactic. As the war progressed the US and British significantly improved these systems,

April 1943: the Treasury Class US Coast Guard cutter USS *Spencer* depth-charges U-175 in the North Atlantic, forcing it to the surface. A large number of Coast Guard vessels were used for convoy escort and amphibious operations under the command of the Navy.

Depth charges ('ash cans'), which detonated at a pre-set depth, were initially simply rolled off stern rails as the escort vessel passed above the suspected position of a submarine. As the war progressed more powerful charges were produced, and projection systems using Y-gun or K-gun launchers. They could also be dropped by aircraft.

and listening for submarine engine noise with hydrophones was used in conjuction with active sonar.

By the middle of the war radar was becoming a common fixture on naval escorts and long-range patrol aircraft. In 1943 the new centimetric radar sets could at last pick up the previously invisible U-boats at night, when they surfaced to recharge their batteries, or by day in the thickest Atlantic fog. Old-fashioned radio direction-finding and signals intelligence was also used. The tight control Adm. Doenitz maintained over his 'wolfpacks' demanded regular radio traffic; the Allies located signaling boats with direction-finders codenamed 'Huff/Duff', and 'Ultra' information from the compromised German naval codes was also judiciously used.

Sailors in standard shipboard fatigue uniform of 'dixie cup' hats, chambray shirts and dungaree trousers loading a 'Hedgehog'. By 1943 these forward-firing projectors were deployed on destroyers to allow quicker engagement of submarines. This device had six rows of spigot mortars with 24x 65lb. projectile warheads which could be fired in a pattern 200 yards in front of a destroyer as it approached a submarine's suspected position, instead of having to wait to drop depth charges as it passed overhead. The sinking warheads detonated if they struck a hull; a miss allowed sonar operators to stay on their phones, tracking the contact. A smaller eight-warhead device called a 'Mousetrap' was installed on some vessels.

Together with these new detection systems, the steady closing of the 'mid-Atlantic gap' by escort carriers and long-range land-based aircraft brought all surfaced U-boats under constant threat of air attack, while 'hunter-killer groups' with improved ASW weapons groped for them under water with increasing success. The tide turned decisively in May 1943. By 1944 the combined efforts of the US, British and Canadian navies had made active U-boat operations in the Atlantic extremely risky. Advanced U-boats with greater endurance appeared in small numbers in 1945, but they were too few and too late.

ABDA

Under the Japanese onslaught of 1941/42 the small US Asiatic Fleet scrambled to evade the powerful IJN and play for time. It linked up with surviving Dutch and British Commonwealth warships to form the ABDA (American, British, Dutch, Australian) squadron. On 27 February 1942 the ABDA ceased to exist, losing half of its ships to superior Japanese gunnery and torpedoes in the Battle of the Java Sea, and inflicting little damage on the enemy.

Battles of the Coral Sea & Midway

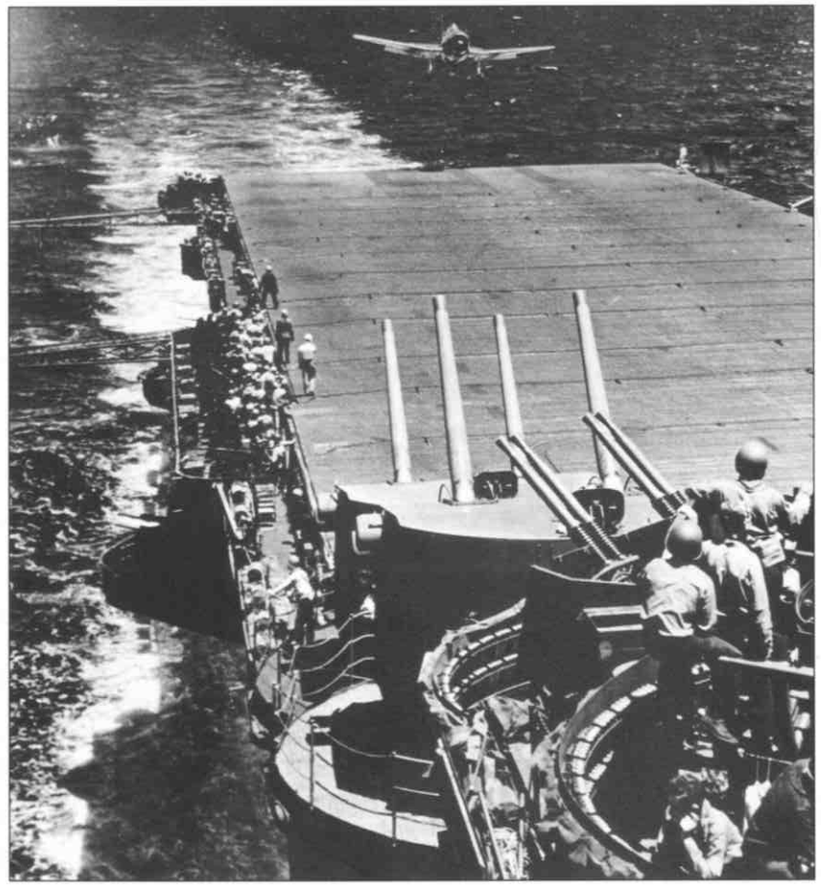
Alerted to Japanese moves on Port Moresby, New Guinea, and the consequent threat to northern Australia, the US carriers stopped them in May 1942 in the Coral Sea. Each side lost a carrier, in the first naval battle in history in which the opposing fleets never saw one another. Although this was tactically a Japanese victory, they withdrew after losing precious aircraft and pilots.

Deceived by their consistently poor naval intelligence into believing that all the US carriers in the Pacific had now been sunk, the IJN closed in on US-held Midway Island in June 1942. When the fleets clashed, USN torpedo bombers attacking at wavetop height were massacred by Japanese fighters, but this drew them out of position to intercept the US dive-bombers, which caught the IJN carriers refuelling and re-arming their attack squadrons. Ultimately the IJN lost four carriers, a cruiser and 275 aircraft; the US lost one carrier and 130 aircraft. Japan no longer held an advantage in carrier numbers or in pilot quality.

Guadalcanal

Aggressively, in July 1942 the US seized the half-finished airfield on Guadalcanal to forestall a Japanese build-up. In the narrow waters of the Solomon Islands the fleet supported the invasion somewhat nervously, until a midnight action off Savo Island on 9 August cost it four cruisers. The Navy then withdrew, leaving the Marines to bring the airfield into operation by 20 August. Thereafter the opposing attempts to land reinforcements and supplies on Guadalcanal brought on naval engagements roughly every three weeks in the channel known as 'The Slot', where the IJN's superiority in night fighting told; daylight usually saw aircraft from both sides joining in. On 15 September the USN lost a carrier and a destroyer. The fight on 11 October (Cape Esperance) cost a US destroyer and damage to others and a cruiser, but the IJN lost a cruiser, three destroyers and an admiral. An action on 26 October (Santa Cruz) cost a US carrier but more than 100 IJN aircraft. Learning painful lessons, the Navy began to improve its use of radar[1]. In an action on 12 November (First Battle of Guadalcanal) the USN lost two cruisers and seven

1 By 1940 the British and US were experimenting with ship-mounted radar (Radio Direction Finding). The sets in use in 1942 were primitive and unreliable, and captains unsure how to employ them effectively; failure to master their potential for early warning and ranging in night battles against the well-trained Japanese off Guadalcanal cost the Navy dear. However, improved equipment and techniques soon gave the USN a rapidly increasing edge in gunnery, early warning, and vectoring defending aircraft onto incoming attacks. With commanders increasingly monitoring and controlling the battle by radar, sonar and radio, they spent more time in their shipboard Combat Information Centers than on the bridge with binoculars. All these techniques were vital during the massive kamikaze attacks off Okinawa in 1945. Another advantage came with the mounting of radar in night-fighter aircraft, allowing long range vectoring by the ship's radar and short range interception by the aircraft radar.



June 1944: an F6F Hellcat comes in for a landing on the USS *Lexington* (CV-16) during the 'Marianas Turkey Shoot'. Note the large number of AA guns, and particularly the twin 5in./38 turrets.

By the late 1930s the USN was experimenting with miniature sideways-looking radar sensors mounted in shells, to detonate them when nearby objects were detected. Setting fuzes when firing at fast-moving aircraft was mostly guesswork; this new proximity or Variable Time (VT) fuze removed the guesswork. After its electronics were hardened to survive the initial firing shock, the VT fuze came into combat use in late 1942; steadily improved, from 1943 the VT-fuzed 5in. was the common AA shell, with a hit ratio four times better than conventional warheads.

destroyers, the IJN a battleship, a cruiser and two destroyers. After two more short fights which cost it another battleship, a cruiser and two destroyers, the IJN cut its losses and abandoned major attempts to reinforce Guadalcanal. Both its warships and its carrier- and land-based aircraft had extracted a heavy toll in these battles; but the Japanese were losing ships and trained pilots which they could never replace. From now until VJ-Day they would remain on the strategic defensive.

Island-hopping

By mid-1943 the USN was receiving light carriers (CVL/CVEs) in increasing numbers, and the new Essex Class fleet carriers were appearing. Fast (30 knots-plus) ships were split off to form Carrier Task Forces (CTFs) and conducted practice air raids on isolated Japanese island garrisons. Standard tactics now evolved for supporting amphibious landings. The fast CTF would approach the main enemy island/airbase in the area and launch multiple attacks to crater its runways and destroy its aircraft; the slower bombardment ships and transports would then hit the targeted island.

Though the heavy USMC losses on Tarawa in November 1943 briefly cast the amphibious doctrine into doubt, lessons were learned there by both the Navy and Marines, and the ever-growing amphibious juggernaut moved on to Guam, Saipan and Tinian.

February 1945: a wounded Amtrac driver is helped into an LCVP for evacuation from Iwo Jima to a nearby medical LST or ship. These Coast Guardsmen wear the kapok life vest; the lieutenant on the right wears the CO2 life belt, Marine Corps fatigues, and a knife and .45 Colt on a pistol belt.

OPPOSITE **February 1945: Marines help move supplies across the black sand beaches of Iwo Jima. The amphibious ships are a modified LCT (Landing Craft, Tank) in the foreground with larger LSTs (Landing Ship, Tank) beyond. The 328ft.-long, smooth-bottomed LST, designed to British specifications, could land 18 to 20 tanks or 160 troops directly onto the beach through its 14ft.-wide bow doors; it was also converted for a variety of other roles. Of some 940 LSTs, only 39 were lost to enemy action.**

Despite limited pre-war exercises with the USMC, the Navy had shown an uneven interest in amphibious tactics and equipment; the Marines and Army took the initiative in developing landing craft, and continued to provide significant manpower to crew landing vehicles until 1945. By the middle of the war the USN was beginning to master the amphibious role, though as late as 1944 in Europe inter-service rivalry would continue to bedevil operational planning. However, by late 1944–early 1945 Navy amphibious operations were a well-oiled machine. The invasion of Okinawa saw two Army and two Marine divisions landed almost simultaneously in a textbook operation. The US Navy's ability to project power against a hostile shore was unprecedented in history.

Off the Marianas in June 1944 the Japanese concentrated their carrier- and land-based aircraft for a last ditch conventional attack on the fleet. US fighters took on the poorly trained Japanese pilots in what became known as 'The Marianas Turkey Shoot', destroying 480 enemy aircraft for the loss of 104 – and unlike the Japanese, the Navy recovered many of its downed pilots.

Gen MacArthur's sweep of the SW Pacific had been aimed at the major Japanese base of Rabaul, but as he drew closer he decided to isolate and by-pass it and press on to the Philippines. Admiral Nimitz, too, had been leaving many Japanese-held islands in his wake; without aircraft, and mostly starving, these toothless garrisons could safely be ignored. Nimitz favored Formosa as the next step towards Japan, but MacArthur finally won the argument.

Normandy

So many troops, tanks, guns and supplies were assembled for the first step in the liberation of NW Europe that it was said that the barrage balloons were the only thing keeping Britain afloat. Before first light on 6 June 1944 some 5,300 Allied vessels anchored off the coast of Normandy. Since about two-thirds of the force was provided by the Royal Navy, the British Adm. Sir Bertram Ramsey was in command of the seaborne phase (Operation Neptune). The USN provided the aging battleships *Texas*, *Nevada* and *Arkansas*, three cruisers, 34 destroyers and innumerable smaller vessels. After a short but massive one-hour bombardment the first waves of landing craft went in. The US Army's 4th Division were landed on the westernmost Utah Beach, out of position but successfully and for few casualties.

The much more stoutly defended Omaha Beach was assaulted by the 1st and 29th Divisions. Naval demolition engineers (NCDUs) took heavy losses and only partially cleared the beach obstructions for the following infantry. The air and naval bombardment had inflicted little damage on

KAMIKAZE

The US Navy took its first organized suicide attacks (*kamikaze* – 'Divine Wind') on 25 October 1944 when a straggling air attack on the escort carriers and ships of the 7th Fleet's Philippines task force was punctuated by the impacts of eight bomb-laden suicide planes. The CVE *St Lô*, hit by a Zero carrying a 500lb bomb, was wracked by multiple secondary explosions and went down in 30 minutes; six other CVEs also absorbed kamikaze damage. Before the landings in Lingayen Gulf the 7th Fleet bombardment group and CVEs were hit again on 4 January 1945, losing the CVE *Ommaney Bay* and some 100 sailors. The next day the cruisers USS *Louisville* and HMAS *Australia*, the CVE *Manila Bay* and DE *Stafford* were all damaged by 16–20 kamikazes.

Attacked off the beachhead on 6 January, the battleship *New Mexico* was hit in the superstructure; the captain and 27 others were killed and 87 men wounded. After 'splashing' three aircraft the DE *Walker* was hit by a fourth; severely burned, the captain stayed at his post until the danger passed, dying of his wounds that evening. A minesweeper, the battleship *California* and the destroyers *Sumner* and *Barton* were damaged, and the minesweeper *Long* was sunk. The light cruiser *Columbia*'s deck was penetrated, knocking out two turrets. The HMAS *Australia* was hit again, with 40 men killed or wounded; so was the USS *Louisville*, and an admiral and 31 other men were listed as killed in action.

The next day two minesweepers were lost to kamikazes. On the third day off the beach the *Australia* was hit twice and the CVE *Kitkun Bay* was disabled. On 9 January, the day of the landings, the USS *Columbia* was hit again, losing 92 more men. Small suicide boats attacked the fleet that evening, sinking two LCIs and damaging four LSTs. In the following days a DE, a CVE and four transports were hit.

Despite this lesson, it would take disabling kamikaze hits on the 3rd Fleet's CVs *Langley* and *Ticonderoga* (21 Jan) and the 5th Fleet's CVs *Yorktown*, *Wasp* and *Franklin* (21 March) before the Navy fully awoke to the implications of the Divine Wind. Off Okinawa, the 5th Fleet wove a tight net of early warning radar picket destroyers, carrier air patrols and AA defenses. Massed conventional and kamikaze attacks began on 6 April, sinking several picket destroyers, transports and LSTs. Numerous ships were damaged, including the carriers *Hancock*, *Bunker Hill* and *Enterprise*. Ultimately, 21 ships were sunk and 67 severely damaged by kamikazes, which caused 9,700 Navy casualties including some 5,000 sailors killed. The Navy was shocked by the loss of life and the damage to ships during the Okinawa operation, and Adm. Nimitz censored the release of these figures. Nevertheless, the Navy's AA defenses had held, and the attacks finally abated. The Japanese began husbanding their kamikazes to resist the coming invasion of their home islands.

The Fletcher Class destroyer USS *Braine* (DD-630) was hit by two kamikazes off Okinawa in August 1945, suffering 67 men killed and 102 wounded. Amazingly, she returned to the USA under her own power and was rebuilt, remaining in US service until after the Vietnam War before being sold to the Argentine Navy.

the concrete bunkers whose guns commanded the beach in enfilade; the infantry and the few tanks which got ashore were savaged at the waterline; and many landing craft came to grief, under enemy gunfire or on the mined beach obstacles. Heavy smoke and dust obscured the defences; few radios or forward observers survived the landing, and the USN destroyer captains, desperate to strike back, were left blind. More than one destroyer scraped the bottom as it closed right in to the beach to spot and destroy targets through the murk. The US destroyers fired an average of 800 rounds of direct fire 5in./38 ammunition; some GIs reported 5in. and 40mm rounds flying just over their heads to take out German machine gun posts. At the end of the day the senior Army general on the beach signaled his commander, 'Thank God for the US Navy'.

June 1944: men of the 2nd Infantry Division approach the Normandy beaches shortly after D-Day; this LCT (Landing Craft, Tank) was specially designed to carry vehicles directly onto the beach. The USN was slow to master the training of landing units, and in the December 1942 North African operation about 50 per cent of the landing craft were lost due to inept boat handling in choppy water. By 1944 skills had improved considerably; the Navy was able to land over 21,000 troops and 1,700 vehicles over Utah Beach on D-Day alone.

The Philippines

Naval support for the landings of October 1944 went like clockwork. As the US fleet closed in, the Japanese took advantage of its proximity to Japan and to their naval bases in Borneo and Singapore. From the home islands, what was left of the IJN carrier force was dangled as bait for the main US 3rd Fleet (Adm. Halsey), which was covering the 7th Fleet's landings at Leyte Gulf. The fast carriers and battleships took off towards this prey; simultaneously an IJN surface group came up from its Indonesian bases heading for Leyte, while another force did the same from the north.

Alerted to the IJN southern force, the US 7th Fleet bombardment group of battleships, cruisers and destroyers intercepted and destroyed them in a flawless night action in the Surigao Straits. The IJN northern force was also spotted, and was thought – incorrectly – to have been driven off by air attacks. But, as the 3rd Fleet was absent killing off the last of Japan's carriers, the 7th Fleet's Task Force 'Taffy 3' of escort carriers, destroyers and transports was surprised by this IJN northern force. Hopelessly outmatched by the enemy cruisers and battleships (including the 18in. guns of the huge *Yamato*), the 'jeep' carriers and little destroyer escorts made smoke and charged among the enemy, radioing frantic signals for help. Aircraft armed with depth charges,

January 1945: two veteran boatswains cast a line (*not* a 'rope'!) to a cruiser. Notice that the line remains untangled; a padded, weighted ball was often tied to the end to get more distance on the throw. Latterly, cruisers were used primarily for carrier AA escort and shore bombardment – though in 1942 US cruisers and destroyers did provide much of the muscle and blood in the vicious ship-to-ship actions off Guadalcanal.

A turret with elevated twin 5in./38 dual purpose guns is clearly visible. Radar-assisted fire control and the VT proximity fuze allowed incoming aircraft to be knocked down and formations broken up well beyond range of the 40mm and 20mm automatic cannons.

ground attack bombs and rockets also threw themslves on the hulking Japanese warships. Convinced that they were facing the main US fleet, the Japanese turned away. Admiral Halsey hurried back; and the following day US aircraft caught and gutted the retreating IJN ships.

Kamikaze suicide aircraft put in their first formal appearance off the Philippines, sinking an escort carrier and damaging several cruisers in a preview of things to come.

Iwo Jima & Okinawa

Admiral Spruance's US 5th Fleet supported the invasion of Iwo Jima island in the Bismarck Sea, some 650 miles from Japan. Despite a 72-day preliminary air bombardment its capture took more than a month's savage fighting (19 February–27 March 1945), and cost 25,000 USN and USMC casualties including 7,000 killed. On 21 February one US carrier was sunk and another damaged by suicide pilots.

Okinawa, a much larger island in the Ryukyu chain, was regarded as a test case for the eventual invasion of Japan itself, and 1,457 US and British warships were gathered for Operation Iceberg. The 80,000-strong garrison did not oppose the US 10th Army's initial landings on 1 April, but later fought back stubbornly from strong defensive positions inland; by late June, capturing the defended southern end of the island would cost almost 40,000 US ground casualties including 7,400 killed.

Starting during the preparatory air raids in late March, the kamikazes swarmed over the Allied fleet; on 6–7 April alone 28 ships were hit and three sunk. In ironic contrast, the mighty *Yamato*, sailing from Kyushu to attack the Okinawa invasion fleet, was sunk on the 7th by US carrier aircraft. The suicide pilots continued to take a toll of US picket destroyers, transports and LSTs in the weeks to come, and seriously damaged several carriers. The US Navy could only look forward to the coming invasion of Japan with a fatalistic dread.

Sunday 2 September 1945: Adm. Chester W.Nimitz signs the Japanese surrender document aboard the USS *Missouri* in Tokyo harbor; Gen. MacArthur and Adms. Halsey and Sherman stand behind him. Amazingly, the only USMC officer of note who was present for the ceremony was Gen. Geiger. This apparent snub to the Marines' mercurial senior Pacific commander, Gen. 'Howlin Mad' Smith, was both outrageous and perhaps understandable. During the surrender ceremony all the ships in the fleet had their guns loaded and manned to forestall any last-ditch kamikaze assault by a desperate Japanese military.

The order to wear khakis without neckties was a deliberate if mild insult to the defeated enemy.

THE SHIPS

There are many specialist reference books on US Navy vessels, and for space reasons only brief notes can be given here.

Battleships

Three battleships came back into limited service within months of the losses at Pearl Harbor. In 1942/43 two new North Carolina and five South Dakota Class BBs came into commission; and battleships were divided between fast (28 knots-plus) and slow groups. The fast ships, with heavy AA protection, escorted carriers in Fast Attack Carrier groups and provided gunfire support for island raids; the slower, older ships mounting 14in. or 16in. guns were attached to invasion groups for shore bombardment. As the war progressed, ever more AA guns would be mounted on battleships, destroyers and cruisers in the fast attack groups.

The 33,000-ton USS *California* (BB-44) was typical of the older ships, with 2,300 crew and main armament of 12x 14in. guns. Refloated a year after Pearl Harbor, she participated in the Philippines, Iwo Jima and Okinawa landings. The premier battleships of the war were the four 48,000-ton Iowa Class ships, with crews of 2,800 and a top speed of 33 knots. Their complete armament was 9x 16in., 20x 5in., 19x quad 40mm and 50x 20mm guns. Ironically, none ever fought a ship-to-ship action.

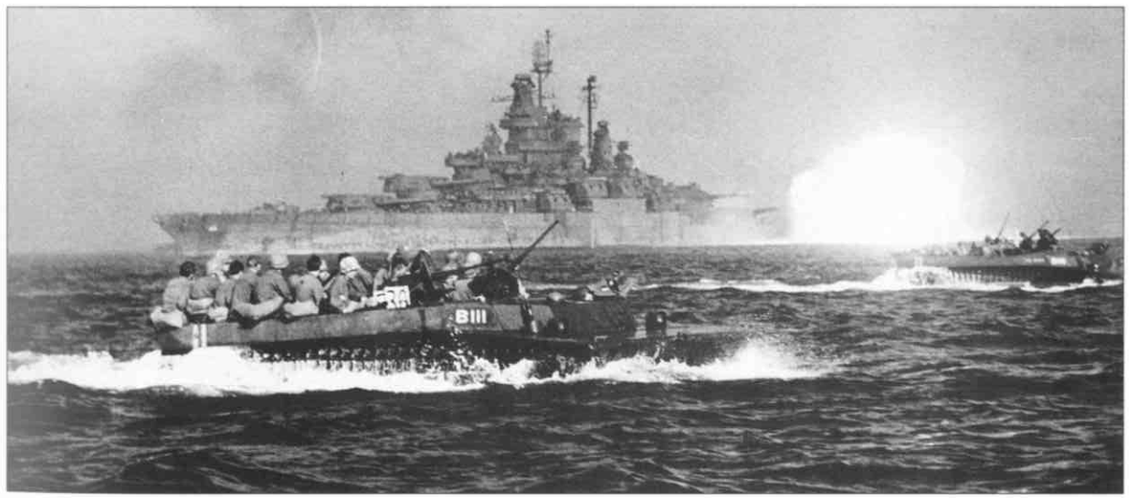
April 1945: Amtracs carrying Army soldiers to the beaches of Okinawa as the battleship USS *Tennessee* fires her massive 14in. guns in support. Using optics and radar, range and type of target were determined by fire control specialists housed separately from the guns, who fed angles, correct propellant charge and shell information to the crews. By the latter half of the war radar was the key to the USN's extremely effective fire control; crews could concentrate on serving the gun while all the 'thinking' was done by fire controllers (though guns could still be fully directed and controlled by the crews if required).

Damaged at Pearl Harbor, the *Tennessee* rejoined by February 1942, and served in the bombardment role during most of the Central Pacific landings; she also saw surface action at Surigao Straits in October 1944, retiring after the war with ten battle stars.

Aircraft Carriers

The first US carrier was the 1,290-ton converted collier USS *Langley*, which served from 1923 until sunk in 1942. To save cost the 33,000-ton *Saratoga* and *Lexington* used surplus battle-cruiser hulls. Further experiments with size and flight deck design resulted in the 15,000- to 20,000-ton *Ranger* and *Wasp* and the 20,000-ton *Yorktown*, *Enterprise* and *Hornet*; the Yorktown Class could operate 85 aircraft. These carriers sustained the war in the Pacific until 1943.

In 1940 ten Essex Class carriers were ordered, displacing 27,000 tons (33,000 tons loaded); the first was layed down in April. Making 33 knots and carrying 3,300-plus crew and 103 aircraft, the USS *Essex* reached the



November 1944: stripped for action like their forebears in the days of fighting sail, a crew serve the 16in. guns of the battleship USS *New Jersey*. (The most powerful battleship guns were the USS *Iowa*'s 16in./50s – the longer the barrel, the more powerful the gun.) The 3in. and 5in. naval guns used self-contained loads combining warhead and propellant charge in brass shell cases. For 6in. guns and above the warhead was loaded into the breech separately with the correct number of pre-measured powder bags placed behind, as here; the breech was then closed, primed and fired. Ammunition was stored in magazines separate from the guns, and mechanically hoisted from below or out of circular galleries ('merry-go-rounds') into the turret for immediate use. The normal warheads used were armor-piercing, high explosive and smoke.

Most ships mounted their main armament in one- to three-gun turrets, but some of the smaller guns were set in open mounts, especially on destroyer escorts. For battleships' three-gun turrets it was found that the middle gun should be fired a fraction later than the outer guns; if fired simultaneously, the three shells interfered with one another ballistically and degraded accuracy.

war zone in March 1943, and 14 of this class would see action in the Pacific. Overloaded and riding so low that the anti-torpedo 'belt' was too deep under water, they were especially vulnerable to torpedoes. Initial AA was provided by 8x 5in. guns in four turrets next to the island, 8x quad 40mm and 46x 20mm; by 1945 this had been increased to 17x quad 40mm and 61x 20mm.

The Navy received the first of eight 11,000-ton Independence Class CVLs in March 1943 and the rest later that year. They were based on cruiser hulls and carried 33 aircraft; a 32-knot top speed allowed them to keep up with the fleet.

Designed to provide air cover for convoys, smaller, slower escort carriers arrived in the latter half of 1942. The 15 Bogue/Sangamon Class CVEs, based on cargo ship hulls, made 17 knots and carried about 29 aircraft; they were followed in late 1943 by the first of the 10,000-ton Casablanca (Island & Bay) Class, of which 50 were in service by the end of 1944. A 19-knot top speed kept them out of the fast carrier groups, but their numbers and their ability to support amphibious landings freed up the big carriers for offensive action; and their contribution to ASW was important. The class's lack of compartmentalization was its major shortcoming – the CVE USS *Liscombe Bay* sank with two-thirds of her crew less than 30 minutes after being torpedoed. Produced in large numbers by the Kaiser Steel shipyards, the CVEs were nicknamed by the crews 'Kaiser's Coffins', and 'Combustible, Vulnerable and Expendable'.

Cruisers

Light cruisers (CL) carried 5in. or 6in. guns, heavy cruisers (CA) 8in. guns; US cruisers soon dispensed with their secondary torpedo tubes in

December 1944: decks crowded with folded-wing aircraft, the carriers USS *Langley* and *Ticonderoga* lead the 3rd Fleet's Task Force 38.3 into Ulithi harbor in line ahead, followed by the battleships *Washington, North Carolina* and *South Dakota*, and the cruisers *Santa Fe, Biloxi, Mobile* and *Oakland*. This tiny island had a huge reef-protected harbor, and soon became an amazingly capable forward repair and supply base.

OPPOSITE **March 1945: the cruiser USS *Santa Fe* comes to the aid of the Essex Class carrier USS *Franklin*, hit by two bombs during enemy reaction to a major raid on Japan, when Adm. Spruance's carrier force hit airfields on Kyushu in preparation for the Okinawa landings. The *Franklin* suffered multiple secondary explosions among her refuelling aircraft; but thanks to valiant damage control parties and help from her escorts she survived the attack, and limped back to the US for repair – though no less than 724 of her crew were killed and 265 wounded. Although they were severely hammered by kamikazes, no Essex Class carrier was lost during the war.**

An officer being transferred from a carrier to a destroyer in a rope chair gets a dunking – strangely, an accident commonly suffered by unpopular junior officers.

The single 5in./38 gun turret of a Fletcher Class destroyer is evident in this photo – the most numerous and effective gun used by the Navy (a 5in./38 was a 5in. caliber gun with a barrel length of the caliber multiplied by 38, = 190 inches). The 5in./38 Mk 12 was specially designed for use by destroyers, in both single and twin mounts; the projectile weighed 55lbs and the entire loaded cartridge 85lbs; maximum range was over 18,000 yards (more than 10 miles), and a rate of fire of 15 to 21 rounds per minute could be maintained. The greatest value of the 5in./38 was its dual purpose capability, for both surface action and the increasingly important AA defense. It could be elevated and loaded at an angle of 85 degrees and, with VT-fuzed ammunition and radar-guided fire control, it became a deadly long-range plane-killer.

favor of more AA armament. The USN began the war with CAs primarily of the Northampton Class and CLs of the Brooklyn Class (both 9,400 tons). The Northamptons – known as 'Treaty Cruisers', since they were built under the terms of the Washington Naval Treaty – made 32 knots and carried 9x 8in. and 8x 5in. guns. The last CAs to be built were the Baltimore Class, with 9x 8in. and 12x 5in. guns, and impressive AA armament of 12x quad 40mm and 28x 20mm. Two 12in. cruisers, USS *Alaska* and *Guam*, also saw service in 1944–45. The Brooklyn Class CLs made 33 knots and had 15x 6in. guns in five turrets. The Atlanta and later Oakland Class specialized in AA defense, initially with 16x 5in. and 16x 1.1in. guns. The first 10,000-ton Cleveland Class reached the fleet in 1942; 27 of these workhorses were built, mounting 12x 5in. and 12x 6in. guns.

Destroyers

Destroyers mounted three to six 5in. guns, AA defenses, ASW equipment, torpedoes and smoke generators; unarmored, they were known as 'tin cans'. Fleet destroyers (DD) screened or led attacks, depending on speed and firepower to survive. Convoy duty did not require speed or size and smaller destroyer escorts (DE) were used for this duty. Of several classes of DDs in service in 1941 the 3,000-ton, 36-knot Fletcher Class were the most important. With a crew of 320, they mounted five turreted 5in. guns, torpedo tubes, 14x 20mm AA, depth charges and radar; by 1944 the torpedoes were discarded and AA armament was 7x 20mm and 10x 40mm. Over 170 were built during the war, and they stayed in service around the world into the 1970s. Half the Fletchers lost in the war were sunk by kamikazes off Okinawa in 1945. The even better Sumner and Gearing Class DDs began to join the fleet in 1944. In 1941/42 the need for large numbers of convoy escorts in the Atlantic brought the old World War I Clemson Class 'four-stackers' back into service. During the war six classes of DE were built, all entering service in 1943/44. The typical DE was 140 feet long and had a crew of 200; it was armed with 3x 3in. guns, 8x 20mm, a twin 40mm, and depth charges/Hedgehogs, and top speed was 20–24 knots. Twenty-nine DEs were sunk due to enemy action. Riding the giant swells of the freezing North Atlantic in these small ships was thankless duty. A sailor on one

CONVOYS

In the Pacific, Japanese submarines were directed against warships and merchant convoys were not significantly employed. In the Atlantic, the US Navy at first ignored convoy tactics for east coast shipping, thus giving the U-boat commanders their famous 'Second Happy Time' in early 1942. Since the outbreak of war in 1939 trans-Atlantic convoys had been formed by the British and Canadian navies off Newfoundland. US ships provided escorts even before Pearl Harbor, from June 1941; originally they handed over convoys to the Royal Navy in mid-ocean, but later convoys retained most of the same escorts throughout. US troop convoys were always escorted by US Navy vessels, and US escorts were more numerous than British or Canadian.

Convoys were formed by grouping ships of similar speed together in columns; large convoys had an average frontage of five miles, the columns spaced to avoid collisions. Most escorts sailed at the front or flanks, and the most valuable transports in the center. As the war progressed aircraft played an increasing role in convoy escort (and even 'blimps' were found useful in coastal waters); the smaller 'jeep carriers' (CVEs) came to provide vital mid-ocean air cover.

Most U-boat attacks took place at night. When a vessel was torpedoed no other ship could stop to pick up survivors without serious risk; standing orders required them to keep station and keep moving. Rafts and supplies might be tossed overboard; but it was only by daylight, when the attack was definitely over, that specific ships might be assigned to return and search for survivors. In the cold waters of the North Atlantic many seamen died of exposure as friendly ships passed by. During the war one in every 26 US Merchant Marine seamen was lost – more than 8,000 men.

April 1944: on convoy escort in the Mediterranean, the destroyer USS *Lansdale* was sunk by German aircraft, with 47 men dead. USCG cutters quickly picked up the survivors; here Coast Guardsmen begin the process of cleaning the clogging, stinging oil off one of them.

THE AIRCRAFT

Space forbids more than the briefest notes on USN aircraft types; readers are directed to the Osprey Aviation list of titles. Apart from patrol and rescue craft, combat aircraft fell into three main categories: fighters, dive-bombers, and torpedo-bombers. The main combat types were:

Single-seat fighters

Grumman F4F Wildcat Delivered in December 1940, this small, robust, radial-engined fighter was the mainstay of the carrier force in 1942. With a comparable top speed of 330mph, it was less maneuverable and slower-climbing than its adversary, the Japanese A6M 'Zero', and had a much shorter range; but it could survive far more punishment in combat, and its 4x .50cal MGs gave it a heavy punch. The F4F proved its worth at the Coral Sea and Midway; and Lt. Edward H.'Butch' O'Hare of VF-42 flying from the *Lexington* became an ace in a single mission when he shot down five G4M 'Betty' twin-engined bombers near Rabaul on 20 February 1942. Although the F6F Hellcat took over its place with the fleet during 1943, the Wildcat continued to serve effectively on the small escort carriers until the end of the war.

Grumman F6F Hellcat The longer-ranging, higher powered Hellcat began to appear on the fleet carriers in mid-1943. Its top speed of 370mph, climb and dive rates and ceiling were all superior to those of the Zero; these, its 6x .50cal armament and good protection gave it a clear advantage despite the Zero's maneuverability. Its first action was with VF-5 from the *Yorktown* on 31 August 1943, and by 1944 the main fleet carrier fighter groups of TF38/58 used Hellcats exclusively. It was credited with 4,947 of the total 6,477 aerial kills claimed by USN carrier pilots; it could also carry a useful rocket and bomb load (2,000lbs) for ground attack. During the 'Marianas Turkey Shoot' of 19–20 June 1944 Hellcats accounted for over 160 Japanese aircraft.

Vought F4U Corsair The F4U had a big engine and propeller, and thus tall landing gear; although issued to (or dumped on ...) land-based USMC and later USN squadrons from February 1943, excessively 'bouncy' landings required modifications, preventing clearance for carrier use until spring 1944. With a top speed of 430mph, a 1,600-mile range, 6x .50cal MGs and strong-points for 2x 1,000lb bombs or 8x rockets and an external 'drop' tank, the gull-winged Corsair excelled in both the fighter and ground-attack roles.

Dive-bombers

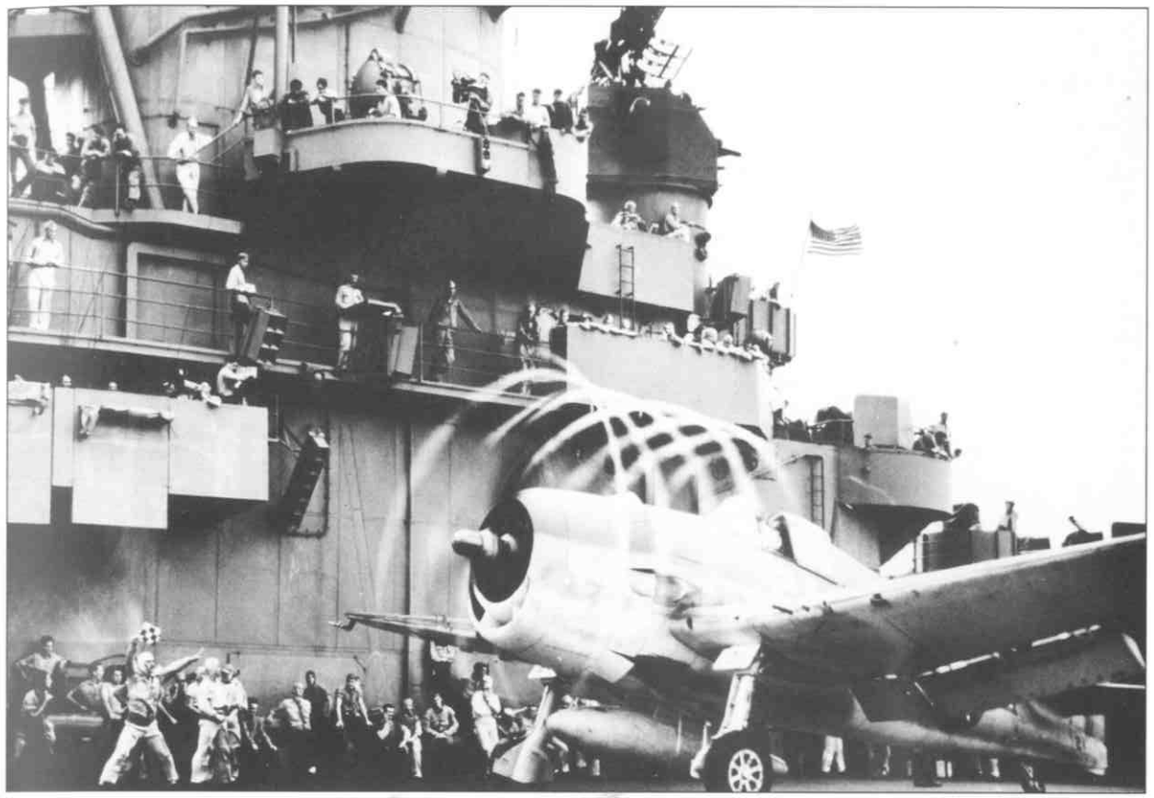
Douglas SBD Dauntless In service before Pearl Harbor, this purpose-designed two-seat dive-bomber had a speed of 270mph and a range of 770 miles. Armed with 2x .50cal wing guns and a twin .30cal for the rear gunner, it could carry 1,600lbs of bombs under the fuselage and 600lbs more under the wings. The early failure of USN torpedoes and torpedo aircraft put the burden of carrier attack missions squarely on the Dauntless squadrons during the first half of America's war, and it was responsible for the majority of Japan's crippling carrier losses at Midway. The 'Speedy-D', 'Barge' or 'Slow-but-Deadly' was sadly missed when supplanted by the Helldiver.

Curtiss SB2C Helldiver Plagued with teething problems, this heavier two-seat dive-bomber reached the fleet in late 1943 still overweight, underpowered, and with wobbly airbrakes that compromised bomb-aiming. Difficult to fly at slow landing speeds, it was nicknamed 'the Beast' or the 'Son of a Bitch 2nd Class', and one Navy pilot said it had 'more bugs than an oriental flop house'. With a range of 1,100 miles and a top speed of 290mph, and carrying a single 1,000lb bomb, it was an inadequate replacement for the Dauntless, but by late 1944 it was the only dive-bomber in the fleet. Nevertheless, it eventually destroyed more Japanese shipping than any other aircraft type.

Torpedo-bombers

Douglas TBD Devastator The USN's first monoplane, the three-man TBD entered fleet service in 1937. Top speed was 200mph, range 440 miles, and armament a cowling-mounted .30 or .50cal MG with a rear-facing .30cal for the gunner; it could carry a Mk XIII torpedo or a 1,000lb bomb. To drop the warload the bombardier had to lie on his stomach sighting through a belly window behind the engine. The Devastator was state-of-the-art in 1937; by 1942 it was living on barrowed time. Devastator torpedoes did help to sink a Japanese carrier at the Coral Sea, but at Midway its crews were slaughtered, taking 90 per cent losses.

Grumman TBF/TBM Avenger This big three-man torpedo/bomber aircraft first reached the fleet by Midway; top speed was 278mph and range 1,100 miles. Armament was a .30cal in the nose, another in a powered rear turret, and a .50cal in a belly position. Its internal weapons bay carried a torpedo or 2,000lbs of bombs. Reliable and rugged, it became the fleet's workhorse bomber, participating in every subsequent naval air campaign of the war. Bad torpedoes, tactics and losses had soured the USN on low-level torpedo attacks, so the TBF spent much time as a dive-bomber, ASW and long-range search plane. Armed with improved torpedoes in 1944, Avengers sank the carrier *Hiyo* at the battle of the Philippines Sea; at Leyte Gulf the battleship *Musashi* went down after an impressive 18 torpedo hits, and Avengers also put at least 10 fish into the *Yamato* during her final cruise on 7 April 1945.



November 1943: with engine at maximum revs, an F6F Hellcat waits for the 'go' signal from deck crew on the *Essex* Class carrier USS *Yorktown* (CV-10). The Navy gave letter/number designations to squadrons; and also to aircraft types, the first letter indicating its mission and the last its manufacturer. For instance, squadron VF-2 flew Grumman F4F Wildcat fighters: 'V' meant a heavier-than air craft, 'F' fighter, and '2' the pennant number of its parent carrier, the USS *Lexington* (CV-2). An F4F was a Fighter, 4th model, manufactured by Grumman (final 'F'). Names like Wildcat were given by the manufacturer.

The nature of carrier warfare forces certain limitations on aircraft design. Catapult launches and landings into arrestor wires put extra strain on the structure; US carrier aircraft were strong, durable and heavily armed, but initially paid for this in maneuver-ability and range. They usually featured armor for the cockpit and self-sealing fuel tanks.

bobbing DE, noticing the smooth ride of a nearby 33,000-ton battleship, shouted to the battlewagon's crew to ask 'How they liked shore duty?' Proud DE crews said that the 'E' stood for 'expendable'.

USCG cutters/frigates

The Coast Guard operated a large number of smaller vessels including landing craft and landing ships, light 'sub-chasers' and escorts. The pride of the USCG fleet was the Treasury Class cutter, of which seven were launched in 1936–37; 327ft. long, they were sometimes called '327s'. Equivalent to DEs, they were comfortable ships, well suited to escort/ASW duties. Top speed was 20 knots, and potential range 7,000 miles; they had crews of about 230, and were armed with 2x 5in./38s, 3x quad 40mm, 4x 20mm and depth charges/Hedgehogs. In 1944 they were converted into amphibious task force flagships for invasion commanders.

Patrol Torpedo Boats

The average PT ('mosquito boat') was an 80-foot wooden craft of about 55 tons; powered by three aircraft-type engines, it could accelerate to 40 knots in about 12 seconds, and top speed was closer to 48 knots. The all-volunteer crew consisted of two officers and 12 ratings, who were generally cross-trained in several jobs, especially gunnery. Typical armament was one 40mm, 2x twin .50cal machine guns, one 20mm, one 37mm and four torpedoes; smoke generators, rockets and small arms were also carried. The USN received about 500 before the war ended. Of a variety of wartime roles, the most notorious was torpedo attacks on

Ship Designations

Each warship carried a designation and a unique pennant number, e.g. DE-210 was the destroyer escort USS *Otter*.

BB	Battleship
CV	Aircraft Carrier
CVL	Light Carrier
CVE	Escort Carrier
CL	Light Cruiser
CA	Cruiser
DD	Destroyer
DE	Destroyer Escort
DMS	Destroyer/MineSweeper
PT	Patrol Torpedo Boat
PC	Patrol Craft
AK	Cargo
AO	Oiler/tanker
APA	Attack Transport
APD	Fast Attack Transport
AGC	Amphibious Operations Command Ship
AM	Minesweeper
SS	Submarine

Landing Ships/Craft

LCVP	Landing Craft, Vehicle & Personnel
LCA	Landing Craft, Assault
LCI	Landing Craft, Infantry
LCI(L)	Landing Craft, Inf (Large)
LCG(L)	Landing Craft, Gun (Large)
LCM	Landing Craft, Mechanized
LCT	Landing Craft, Tank
LCT(A)	Landing Craft, Tank (Armored)
LCT(R)	Landing Craft, Rocket
LSI	Landing Ship, Infantry
LST	Landing Ship, Tank
LSD	Landing Ship, Dock
AMTRAC	Amphibious Tractor

Sailors relax in a torpedo storage shop. The USN began the war with a serious shortage of both the old World War I contact-fuzed 'fish' and the new Mk XIV, designed to run deep and detonate under the keel when sensing the magnetic signature of the target vessel. The Mk XIV was fielded by the Ordnance Bureau essentially untested (despite the fact that Dr Albert Einstein, shown one before the war, had casually remarked that it wouldn't work). US submariners soon reported close-range strikes on enemy hulls producing nothing but an impotent thud. During the battle of Midway the USS *Nautilus* fired four Mk XIVs at the Japanese cruiser *Kaga*: one wouldn't launch, two ran too deep, and one bounced off the target. The Mk XIV also routinely wandered off course, detonated prematurely, or – most distressingly – circled back towards the user (at least two US subs were confirmed as lost to their own torpedoes). PT boats and aircraft had similar problems with their Mk XIII versions. However, the Ordnance Dept refused to believe outraged skippers, and only the career-risking intervention of submarine Adm. Charles Lockwood finally highlighted the problem.

By late 1943 old contact fuzes were mounted in torpedoes and firing pins were hardened; copies of German patterns were also rapidly put into production. By 1944, US torpedoes were finally beginning to take a heavy toll of enemy shipping; during that year subs accounted for seven Japanese carriers, and the much vaunted naval aviation only four. Compared with the magnificent Japanese Type 95 'Long Lance', however, even the best American 'fish' generally had a light warhead, was shortwinded, slow, and left a discernible wake.

enemy vessels, in which PTs had limited success. Other missions included search and rescue, scouting, picket duty and inshore fighting. In the Pacific their work in destroying Japanese resupply craft is little known but was important in strangling the enemy's island garrisons.

1944: the 'scoreboard' of the destroyer USS *Ward*, which opened her inning by sinking a Japanese miniature submarine at Pearl Harbor; she herself would be lost to kamikaze attack off the Philippines. The sailor hats seem to be in a wide range of colors, from white, through medium (khaki?) shades, to what looks like quite a strong blue – cf Plate I3.

Submarines

The Navy leadership had wanted what they called 'fleet boats', with a long range and a speed of over 21 knots, so that they could work in concert with the main fleet by screening and protecting surface warships. Three large boats – USS *Argonaut* (2,700 tons), *Narwhal* and *Nautilus* (2,900 tons) – were built, but were judged too slow and converted into minelaying/transport vessels; they proved useful in deploying Marine Raiders and running supplies to the occupied Philippines. Though the failure of the 'fleet boat' concept would allow submariners their essential freedom to hunt the enemy and lie in ambush on his main supply routes, it would be 1944 before the right boats, torpedoes and leaders came together to make a success of the USN's submarine arm.

In 1941 the most common subs were the small 'S' Class (900 tons) dating back to soon after World War I, of which 55 were built. Partly intended for coastal defense, S-boats had a short cruising range and by 1941 should have been used only for training; however, the shortage of subs sent 22 S-boats out on (undistinguished) combat patrols, until they were retired from combat in 1943. Based on the earlier 'P' Class, the outstanding subs of the war were the Gato/Balao/Tench (Fish) Class. These had radar, 6x forward and 4x aft torpedo tubes and a 3in., 4in. or 5in. deck gun; top surface speed was 20 knots, and 9 knots submerged. The 80-man crews of these 311ft. subs had luxury accommodations by the standards of other navies, with bunks, showers, some air-conditioning and relatively fresh and high quality food. Unlike German U-boats, US boats wanted bigger and better deck guns; they would commonly sink Japanese shipping with gunfire, and the explosive Borneo oil which enemy tankers transported would detonate with just one hit.

A black US Coast Guardsman loading a 20mm Oerlikon cannon. He wears an M1 helmet with white 'U.S.C.G.' stencil, and the kapok lifevest – see Plate I1.

ORGANISATION

Bureau of the Navy

The civilian Secretary of the Navy was the political head of the Navy; unlike today, he answered directly to the President and not to the Secretary of War. The senior serving Navy officer was Commander-in-Chief, US Fleet (CINCUS). The Chief of Naval Operations (CNO) held the next highest office, and was more concerned with day-to-day operations. Admiral Ernest King served simultaneously in both offices during World War II. The sub-sections of the Navy were broken down into Bureau: Navigation (1942, Personnel), Medicine & Surgery, Judge Advocate General, Ships, Ordnance, Yards & Docks, Supplies & Accounts, Aeronautics, and the Marine Corps.

US Marine Corps

The Commandant of the Marine Corps answered directly to the CNO and Secretary of the Navy. His job was to raise, train and organize the Corps for war under the auspices of the Navy. By late 1944 the Marines had six combat divisions in service, and five Marine Air Wings of fighter-bombers intended for island defense and ground attack; occasionally, Marine air squadrons served aboard Navy carriers. During the war members of the Fleet Marine Force served aboard the larger ships; normally, any ship larger than a destroyer had a Marine complement – a battleship had about 100 aboard. They were intended to serve as the backbone of any landing force, and to provide security on shipboard; they normally ran the brig, but also manned some of the secondary or AA guns. Leathernecks serving in the Fleet Marine Force (FMF) wore standard USMC combat/service uniforms and a seahorse & anchor patch. (See Elite 59, *US Marine Corps 1941–45*, for fuller details.)

Numbered fleets

As the war progressed, fleet numbers were assigned to the rapidly growing naval deployments of the US Navy. The 10th Fleet controlled all US naval vessels in the Atlantic. The 8th Fleet covered N.Africa and part of the Mediterranean, and the 12th Fleet covered NW European waters. The naval forces assisting the Army in the Pacific (Gen. MacArthur) were assigned to the 7th Fleet.

Admiral Nimitz hit upon the novel idea of numbering the main Pacific fleet as both the 5th and the 3rd. This was not intended to confuse the Japanese; rather, as Nimitz used two fleet commanders, he assigned the command as the '3rd Fleet' to Adm. Halsey and as the '5th' to Adm. Spruance. When Halsey commanded the 3rd Fleet at sea, Spruance stayed behind with his staff to plan the next operation. When Spruance came forward to command, the fleet would be redesignated 5th Fleet. Sub-divisions of the fleet were organized as Task Forces or Groups, given decimal numbers of the fleet – i.e., TF 38.7 or 34.1 of the 3rd Fleet. 'Divisions' were two or more ships, 'squadrons' eight or more vessels. Destroyer squadrons were called Desrons.

Navy Reserve

Retired Navy men were usually carried on the Reserve lists for several years after their service. Prior to the war, newly recruited reservist sailors would go through 'boot camp' and perhaps advanced training. They then usually served a year on shipboard before being released back to civilian life. Though organized regionally for refresher training, wartime reservists went to the fleet as individuals and not in units.

US Coast Guard

In peacetime the Coast Guard ('Coasties' or 'Freshwaters') are a part of the Treasury Department, guarding and protecting the coastline of the USA. In wartime they are attached to the US Navy. President Roosevelt ordered the USCG attached to the Navy in November 1941, and they were not returned to the Treasury Dept until January 1946. During the war they (with the USCG Auxiliaries) provided foot, canine, horseback and boat patrols of US beaches, and were responsible for port security. (The US Army handled coastal artillery – 'Harbor Defense'). By the end of the war the USCG was manning approximately 351 ships and boats of all descriptions, and had a strength of 241,000. The major USCG vessels were cutters – warships equivalent to USN destroyers. They also manned a significant number of transports and landing ships. A high percentage of landing craft were also manned in combat by Coast Guardsmen.

The USCG wore normal USN uniforms except for the addition of the USCG shield to officers' visored caps, shoulder boards and sleeves. Enlisted men wore 'U.S. Coast Guard' hat ribbons on their flat caps, and a cloth woven shield opposite their rating badge on the uniform sleeve.

March 1944: this WAVE has supposedly taken over this sailor's mailroom job to 'Free a Man to Fight'. Her tunic has the distinctive collar/lapel shape of the WAVES and SPARS, flapped top pockets and black plastic buttons. Note her diamond-'M' mail specialist version of a Petty Officer 3rd Class rating badge. Also visible on her lapels is the white anchor on Reserve blue propeller insignia of the WAVES. The sailor wears dress blues with 'Donald Duck' hat, and carries his seabag and hammock - cf Plate G1.

Seabees

In 1941 the admiral in charge of the Civil Engineers Corps (CEC) received permission to greatly expand the organization by directly recruiting engineers and skilled workmen between the ages of 18 and 50 years. Given a three-week Navy boot camp training, they were then given rank commensurate with their civilian skills. Later, Seabees (CB, 'Construction Battalion') went through Navy boot camp plus six weeks of military construction schooling and weapons and tactics training. Seabees were usually formed into 1,000-man Naval Construction Battalions (NCBs), divided into four companies of 220 men each. The companies were furthur divided into construction, stevedore, blasting and excavation, pipes and tanks, and maintenance and operations platoons. There were 150 NCBs operational by VJ-Day. Special stevedore (Seabee Special) battalions, maintenance and demolitions units were also created. Where multiple battalions

worked together they were combined into regiments and brigades. After the capture of Okinawa in 1945 the island was inundated with no fewer than 55,000 Seabees (11 regiments in 4 brigades).

The wonder weapons of the Seabees were bulldozers, float pontoons, steel ('Marston') matting, corrugated steel sheeting, and some brains and elbow-grease. Coming in right behind the Marines, the skilled hands and bulldozers of the Seabees proved utterly critical to the waging of the Pacific War. Acknowledging the Seabees' 'Can Do' attitude, Adm. Halsey said of them during the Iwo Jima operation that they had constructed three airfields on the island – 'and if necessary, they'll build another island and put four or five more airfields there'. Just under 325,000 sailors served as Seabees during the war.

The Marines lacked their own combat engineers, so Seabee units were attached to each of the six Marine divisions. Like Hospital Corpsmen, they could wear Marine service dress, initially with a red 'CB' cuff patch. Later, they used Navy-style rating badges in USMC green and red.

Female auxiliaries

Women were allowed to become US Navy auxiliaries in 1942. They were enlisted as WAVES (Women Accepted for Volunteer Emergency Service). In the Coast Guard the term SPARS was used (from the USCG motto Semper Paratus, 'Always Ready'). In 1944 the WAVES became part of the Naval Reserve. WAVES served in a large variety of support and clerical positions in the USA, freeing more men for sea duty. To be eligible for service, women had to be 21 years old, single, high school graduates, and volunteers. Black women were allowed to enlist in 1944. Female members of the USMC Womens' Reserve were referred to as Women Marines (WMs); male Leathernecks joked that this actually stood for 'wide-assed Marines'. In total about 82,000 WAVES, 18,000 WMs, 11,000 members of the Navy Nurse Corps and 10,000 SPARs served in the Navy during WW2. (See also Men-at-Arms 357, *World War II Allied Women's Services.*)

US Navy pay, c1942

Grade	Monthly	Class/Rating
Off	$150	Ensign
1	$138	CPO
1A	$126	Acting CPO
2	$114	Petty Off 1Cl
3	$96	Petty Off 2Cl
4	$78	Petty Off 3Cl
5	$66	Seaman 1CL
6	$54	Seaman 2Cl
7	$50	Apprentice Seaman

For special skills or dangerous duties sailors were paid extra:
$5 – messman, gun rangefinder, sonar operator
$3 – expert rifle or pistol shot
(+$1 for sharpshooter)
$2–$5 gun captain, gun pointer
$10–$30 mail clerk
$10–$20 diver
$35 a year for uniform upkeep after first year of service.

In 1940, sailors serving on submarines received $5 extra pay per month, or $20 if submarine-qualified. CPO and Petty Off 1Cl received $25 extra after a year as a qualified submariner. Active flyers received an additional 50 per cent of base pay. Officers received additional allowances over base pay for housing & subsistence. After three to five years in a rate, sailors received extra longevity pay. Holders of the Medal of Honor, Navy Cross, Distinguished Service Medal and Distinguished Flying Cross were paid an additional $2 per month.

SERVICE

Officers

Officers were commissioned either through graduating from the US Naval Academy at Anapolis, or a kind of OCS training at college, then termed Midshipman's School. The college men generally received 90 days' military training before receiving reserve commissions. Some promising enlisted men (e.g. pilots and technicians) received direct commissions.

Academy graduates were commissioned into the regular Navy; they received a custom-designed gold ring for their year's class upon graduation (an Anapolis graduate is a 'ring-wearer' or 'ring-knocker'). He might receive some priority in the type of assignment he got, and was always sent initially to a major warship (cruiser, battleship or carrier). He was in the Navy for the long haul and was, potentially, an admiral in training. (Academy graduate aviators initially had to serve with the fleet for two years before attending flight school, though this was relaxed during the war.) The class of 1941 graduated four months early; the class of 1942 was commissioned on 19 December 1941, and later classes were accelerated to graduate a full year early. About 5 per cent of wartime naval officers were academy graduates; there was some resentment among officers in general that ring-wearers received preferential treatment.

Until 1942, black sailors were restricted to working as cooks/stewards. Oddly, this Cook 1st Class petty officer wears the steward's coat with plastic buttons and his rating badge, but has a CPO's visored cap and cap badge. Perhaps he is acting Chief of the Officers' Mess; or perhaps he has recently 'got his cap' – been promoted to CPO. Black cooks commonly served as AA gunners as the war continued.

Enlisted men

It is surprising to note that conscription for the Navy was not introduced until December 1942, a full year after Pearl Harbor; for the first year of the war all enlistees were volunteers.

In 1940, Navy recruits had to be unmarried, 17–25 years old and no less than 63ins. tall; if under 21 years, they had to have written permission from a parent or guardian. They had to be high school graduates, white or hispanic, of good moral character, with a letter of reference from their local police or high school principle. The pre-war 'boot camp' training had lasted 16 weeks, and a full enlistment was six years. During the war recruits served for the duration plus six months (US Navy Reserve) and the upper enlistment age was raised to 35 years. Boot camp was shortened to just four weeks in the rush of 1942, though it was eventually lengthened to six weeks.

Seaman Recruit Bowerman recalls that he and his fellow 'boots' were immediately issued 'uniforms, underwear (skivvies), socks, shoes and kerchiefs, a mattress, a hammock, seabag, ditty bag and a *Blue Jacket Manual*. We were then shown how to pack everything into the seabag and lash the hammock around the seabag. Instruction then commenced on how to march with the seabag on one shoulder. We then dumped it all out and repacked it all over again'. Basics like marching, physical training, military courtesy and 'jumping to' when the Chief wanted something done were drilled until they became second nature. Scrubbing and cleaning was seemingly the most common activity. Having been tested before graduation, the new sailors were then detailed to furthur schooling in their new specialities, or were forwarded to the fleet as unrated seamen.

Race

Backtracking after World War I, the Navy only allowed African-Americans to enlist as mess stewards and cooks until 1942. During the war the Navy slowly opened its ranks to black sailors. Twelve black officers were commissioned in 1944, and a handful of ships with black crews and mostly white CPOs and officers were put into service in that year, among them the warships USS *Mason* (DE-529) and USCG sub-chaser PC-1264. The Coast Guard seems to have been a bit more open to black enlistment, and the first black officer to serve on an ocean-going vessel joined it in 1943 (USS *Seacloud*). Four black captains commanded Liberty cargo ships during the war. The Navy had its first black Naval

Academy graduate and first black aviator in 1949; it would not see its first black warship captain until 1962. The Marine Corps enrolled its first black Marine in 1942/43. (By contrast, the US Army had black units during the Civil War and after, had its first black Academy graduate in 1877, and its first black general by mid-World War II.)

Most commonly, black sailors served in stevedore, Seabee, cook/steward and other support jobs. By the end of the war about 5 per cent of the Navy (167,000 men) were black.

Liberty and shore leave

Sailors were normally granted a day or two off their base (or, when in harbor, their ship) on weekends, and this was known as 'liberty'. The sailor was to stay in uniform and keep his authorized 'liberty card' in his jumper pocket, available for inspection at all times. Pre-war, some towns had locker clubs where an enlisted man might keep a set of civilian cloths. Men were sometimes granted extended leave (for visits home, Christmas, etc.), but for most, serving far from the USA, this was rare in wartime. Sailors who survived the sinking of their ship were normally granted 30 days' survivors leave, counted from their return to the USA.

Shipboard life: food, sleep & washing

Navy food ('chow') was generally well prepared and plentiful; galley facilities on carriers, battleships, cruisers etc. were extensive, though much less so on smaller warships. Breakfast commonly featured toast, coffee, powdered eggs ('hen's fruit'), chipped beef and gravy on toast ('SOS' – 'shit on a shingle'), pancakes or waffles ('collision mats'). Other frequent shipboard fare included bean soup, beans in tomato sauce, and fried Spam. Catsup (ketchup) seemed the condiment of choice, nicknamed 'red lead' after the universal naval primer paint. On Thanksgiving and Christmas holidays the cooks went all out, trying to serve special menus featuring turkey. The enlisted men ate in large messhalls, while officers had their own wardroom. Men on critical duties or at action stations often had to make do with sandwiches and coffee.

November 1942: the 'gedunk' on the USS *Yorktown* (CV-10), which served ice cream, soda pop and candy for the crew. The term 'gedunk' – meaning the canteen, and by extension the ice cream it served – is variously explained as being a Chinese word for idleness, a 1920s cartoon story candy store, or the sound made by a vending machine when dispensing a drink in a cup.

Meals were served in stainless steel compartmentalized trays and white china bowls and coffee cups; Navy chinaware had a distinctive light blue line around the rim and were rather base-heavy for stability. Many coffee cups were made without a handle, as they stored and washed easier.

At sea, milk and eggs were soon replaced by the powdered version as resupply or refrigeration was always limited; servicemen on shore in Pacific ports of call such as Australia and Hawaii were to be seen gulping down fresh milk. During long cruises smaller ships sometimes ran short of food and Army K-rations might be served out. Submarines were considered to have the best chow in the Navy.

Most ships had a 'gedunk' – essentially a soda fountain that served ice cream, soda pop and candy ('pogey bate') to all comers. Smaller ships commonly couldn't keep ice cream, so whenever possible they traded with larger vessels for this commodity. When destroyers or submarines rescued downed aircrew they often 'traded' these survivors back to their carriers for ice cream.

August 1943, USS *Capelin*: pin-up girls were a common sight in some crew quarters and ready rooms. Machine noises could make some bunk spaces almost unendurable. On crowded ships and submarines, men on different watches would alternate in using the same bunk ('hot bunking').

The US Navy has been 'dry' – teetotal – since 1914. Small amounts of alcohol were often smuggled aboard, however; and sailors on long cruises fermented their own, commonly using raisins as the base ('raisin jack'). As torpedoes were partly fueled by grain alcohol, 'torpedo juice' was also a common libation.The most important liquid on shipboard was certainly coffee. Many duty sections had their own coffee pots running 24 hours a day. As the Navy had been decreed dry by Secretary of the Navy Joseph Daniels, coffee was referred to as 'joe' in remembrance of that infamous act.

The normal sleeping accommodation for enlisted ranks featured two- and three-high bunks ('racks') of various metal and canvas configurations; older ships still used the pre-war canvas and rope hammocks. Sleeping quarters ('berths') came in many sizes to maximize the use of space on ships. Each man usually had some form of locker for his personal effects. CPOs and junior officers shared their tiny cabins with one or two others; only senior officers had single cabins.

At sea, fresh water was always a critical item. In order to conserve water, men taking showers would 'wet down' first, then lather up with soap, and then rinse off. It was common in the Pacific and other warm seas for men to trot out on deck with a bar of soap during a rain squall.

Naval medicine

The Navy had a full array of doctors, nurses and Hospital Corpsmen – medical orderlies – to serve its own needs and support the Marine Corps. Doctors were commissioned officers. Members of the Navy Nurse Corps actually served as quasi-civilians under contract to the Navy, and wore their own white or blue Navy-style uniforms. (They were regularized and commissioned as Navy officers only in 1948.) Female nurses only served at sea on hospital ships; on all other vessels the medical personnel were men, and 'Corpsmen' served on all Navy ships as well as with all Marine

Watches of the naval day

The term 'watch' is used to signify different portions of the duty day:
0000–0400 Mid Watch
0400–0800 Morning Watch
0800–1200 Forenoon Watch
1200–1600 Afternoon Watch
1600–1800 1st Dog Watch
1800–2000 2nd Dog Watch
2000–2400 Evening Dog Watch

A watch was marked on shipboard by the chiming of a brass bell, rung every half-hour until 8 bells signifying the end of a four-hour watch. A dog watch is broken ('dogged') into two-hour increments to allow the crew time to eat or take care of personal matters during the evening. The term 'watch' also refers to a man's duty section or shift. Usually half the crew formed the Starboard Watch and the other half the Port Watch.

Corps combat units. Small ships rarely had doctors, and the fabled appendectomies conducted by Corpsmen really did occur.

On land, Corpsmen had a well-earned reputation for courage in recovering and treating wounded Marines in the front lines; they were invariably nicknamed 'Doc', and the Leathernecks adopted their Bluejacket medics with a fierce loyalty. Hospital Corpsmen received seven Medals of Honor during the war, of which no less than four were awarded for service on Iwo Jima. It is symbolically fitting that among the famous five 'flag-raisers' on Iwo Jima one was a Navy Corpsman. Corpsmen attached to the USMC usually wore Marine green service dress with special green and red Navy-style rating badges.

SPECIAL DUTIES

Shore Patrol

The Marine Corps normally provided front gate, brig and base security on Navy installations. Sailors temporarily designated Shore Patrolmen, detailed from crews in harbor and base personnel, were used for everyday policing duties. Apart from patrolling the base they were heavily employed to maintain the peace in downtown areas, ticketing or apprehending the often rowdy sailors on liberty. Identified by a dark blue brassard with dull yellow 'SP', worn on the opposite arm to the sailor's rating badge, they also wore Army-style khaki canvas leggings, a web belt and a nightstick (truncheon).

On shipboard, the brig was administered by the Marine detachment (if any) but the top cop was a CPO designated the 'master-at-arms'. Sailors in the brig were sometimes put on bread-and-water rations, though visiting shipmates would try to slip them extra food.

OPPOSITE **February 1945: a quad 40mm AA mount on the carrier USS *Hornet* in action during the raid on the Japanese homeland. The gun – essentially the same Swedish-designed Bofors automatic cannon which was the standard light AA weapon throughout the British armed forces, though with some external differences – was hand-fed with four-round clips and fired with a foot pedal. The quad 40mm ate ammunition at a ferocious rate – note the empty shells cluttering the gun position, and the racked clips. There were so many AA guns on ships by 1945 that they had to be manned by sailors of many different ratings. The full battle station uniform was dungarees, helmet and lifevest, though these sailors have discarded the latter.**

In the 1930s the USN had responded to the perceived air threat by fielding specialized AA cruisers of the Atlanta Class; but like most other navies, it started the war with inadequate AA protection. Shocking ship losses to aircraft at Taranto, Pearl Harbor and off Malaya made AA firepower a priority. In 1941/42 short-ranged 1.1in. and water-cooled .50cal MGs were the primary AA weapons, but the USN rapidly refitted with the excellent Swiss-designed Oerlikon 20mm and the Bofors 40mm cannon in single and quad mounts. By VJ-Day almost every spare deck space and weight allowance was taken up by AA guns, including quad .50cal mounts. Battleships, cruisers and destroyers were arrayed around the carriers to provide a wall of flak.

Naval Armed Guards

The decision was made in 1941 to arm some US merchant ships with both deck and AA guns. In addition to the merchant crewmen, US Navy sailors were assigned to such ships to man these weapons. Signalmen might also be attached to help with communications duties. These men were referred to as 'Naval Armed Guards'. Such duty could be quite hazardous, particularly in the North Atlantic during the war against the U-boats; six of these men received the Navy Cross, and 1,800 of them were killed in action.

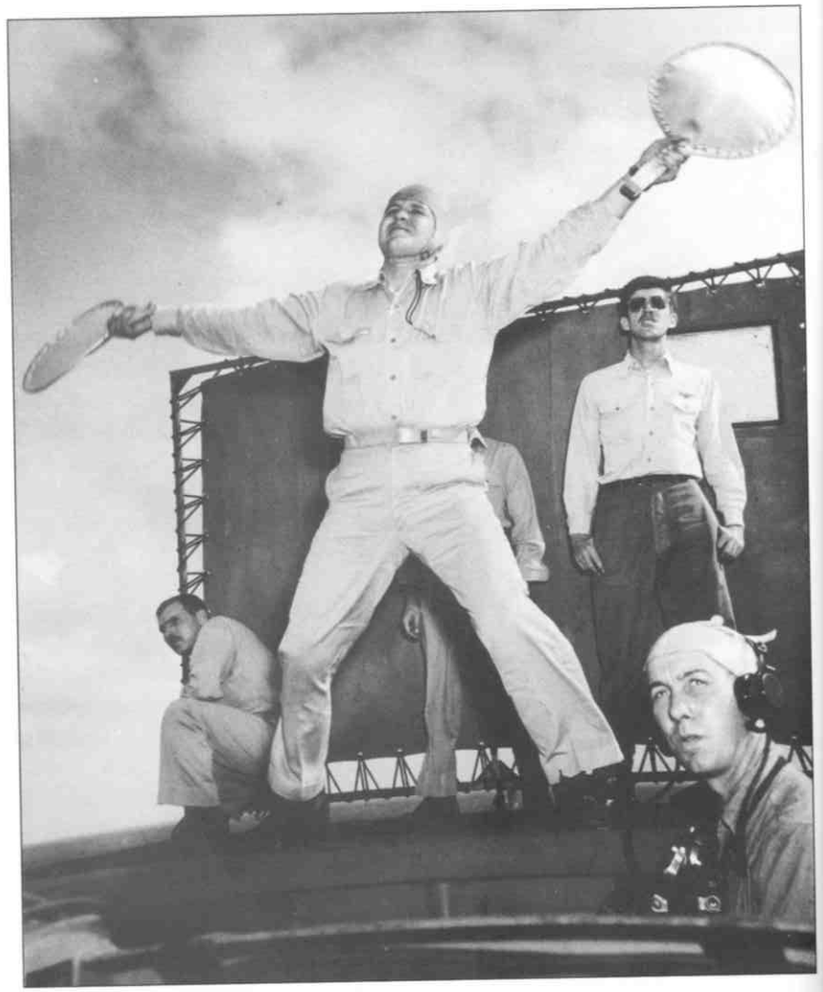
Flight deck gangs

Running aircraft off the deck of a carrier has been aptly described as a sort of ballet. A plane had to be fueled and armed down in the hangar deck, then moved by elevators up to the flight deck. There it would be positioned for launch, or shifted to an unused portion of the deck for temporary parking. As all this was going on, other aircraft would be moving across the crowded, noisy, confusing flight deck, taking off or landing, crammed with aviation fuel and bombs – each one a potentially catastrophic explosion. The senior squadron commander on board was designated the Carrier Air Group Commander (CAG). It was his job to plan and oversee all flight operations and, together with the deck officer, to control what was happening on the flight deck. The urgent needs of circling aircraft low on fuel, perhaps damaged or with wounded pilots, had to be balanced with the launching of others or their movement across the flight deck. Add to this scenario crash-landing planes and the threat of Japanese attack, and the makings of a disaster always hovered over air operations. When the worst did happen, the casualty figures could be appalling.

The numerous deck crewmen who nursemaided the planes were ever present, scampering among the meat-grinding propellers of waiting aircraft. These men usually wore color-coded shirts and cloth helmets so that their function could be determined at a glance (see Plate C1). Also standing by were the 'Hot Pappas' – fire rescue crews in fireproof silver 'Buck Rodgers' suits. All US ships used the same basic color code, though each might have some minor variations: *deck handling ('pushers')* – blue; *ordnance* – red; *technicians & catapult/arresting gear handlers* – green; *plane captain* – brown; *aviation fuel* – purple; *medical/safety* – white; *supervisory officers & senior rates* – yellow.

On the stern of the carrier deck was the Landing Signals Officer (LSO), a veteran pilot of one of the ship's squadrons whose job was to wave on or off the incoming planes. He normally used colored hand paddles to motion pilots to change height or alignment. If the plane was out of position for a landing the LSO waved him off to fly by and try again. In many cases it was the LSO and not the pilot who could truly

March 1945: an experienced ensign acting as Landing Signals Officer (LSO) on the stern of the USS *Enterprise* (CV-6) brings in a plane for landing by signaling with his colored bats; the canvas screen makes him more visible, and cuts the wind. A pit or protected catwalk would be nearby in case these men needed to dive for cover. The 20 or so British carriers of the Royal Navy's Pacific and East Indies fleets used the same signaling conventions as American LSOs, so that they could accept each others' aircraft for emergency landing during joint operations.



determine if a plane was ready to make its 'controlled crash' on the pitching flight deck; he literally held the lives of the pilots in his hands as his paddles brought them aboard.

Under Water Demolitions

Navy swimmers were originally employed to survey enemy beaches to determine their suitability for landing operations. First used in the North African landings in December 1942, these swimmers were soon tasked with detonating and clearing enemy beach obstacles. These Under Water Demolitions teams (UDT) were heavily employed at Iwo Jima and Okinawa. On Iwo, their support boats triggered a gun battle with shore batteries which cost the Navy one gunboat LCI, 44 men killed and 152 wounded. Nevertheless, they left a sign on the beach welcoming the first wave of Marines ashore in the name of the US Navy. The main Okinawa landing was unopposed and the obstacle clearing went like clockwork. UDT men commonly worked in swimming trunks, the same CO2-charged lifebelt issued to crews and landing troops, rubber fins and a mask, and a belt with perhaps a knife or pistol; tennis shoes or some other kind of foot protection were important when swimming over coral.

They carried pre-cut primercord/TNT demolition charges, though UDT men sometimes disarmed enemy mines by hand. In cold water the swimmers greased their bodies for insulation.

January 1942: only a few weeks after Pearl Harbor, a Signalman 1st Class from a USN destroyer escort is photographed in harbor at Londonderry, Northern Ireland. On convoy duty radio silence was the norm, so signal flags and signal lights were used to communicate. This 'skivvy waver' wears the wool undress working blues typical of Atlantic service, with a knit watch cap. Since his duties are performed 'on deck' rather than 'below decks' he is classed as a member of the Seamen's branch. Note the petty officer's rating badge consequently worn on his right sleeve, incorporating the forward-facing white eagle, the crossed flags of his specialty, and the three red chevrons of PO 1st Class. The single red diagonal on his left forearm marks four years' service.

UNIFORMS: ENLISTED MEN

The dark blue Navy pullover ('jumper') was a waist-length garment of a dense, smooth-surfaced 12oz Pendleton-style wool, with a broad sailor collar; the Navy blue color was so dark as to appear almost black. The undress or working jumper was plain, with a single inset left breast pocket and no white trim or buttons. This was worn both in offices on base and on shipboard; as directed by the local commander, it was usually worn without the black silk-effect neckerchief.

The dress jumper was very similar to the undress except for 5mm white ribbon trim on the cuffs and collar (it was sometimes known as the 'Crackerjack' uniform, after the sailor on the label of a well-known brand of caramel popcorn.) Unlike the undress jumper, it had separate 3in.-deep cuff bands closed with two black plastic 'anchor' buttons. The lowest ranking seamen recruits and seamen had one, two or three white cuff lines based on their rank. All petty officers had three cuff lines; but all sailors below the rank of chief petty officer (CPO) had three white lines around the edges of the jumper collar, and a white star in each bottom corner. The black silk neckerchief was always worn with this uniform. White- and red-on-blue rating/rank patches and service stripes were worn on both undress and dress jumpers.

The matching wool trousers had broad bell-bottom cuffs and a 13-button fall flap at the front (contrary to legend, these did not recall the first 13 colonies). The black plastic buttons bore an impressed anchor. The back of these pants had a drawstring for adjusting the fit; they had no pockets except for a small waist watch pocket. They were simply cut so that they only had a single (inside) seam.

For hot climates or summer wear, a white cotton jumper and pants were worn; cut similarly to the blue undress jumper, this also lacked the three rows of trim on the cuff and collar. (The 1941 Navy regulations still showed blue cuffs and collar for the dress whites, but they were dropped that year.) The white jumper usually featured an exterior left breast patch pocket, and a (rarely used) small sewn-down loop at the V of the front to hold down the neckerchief. The black neckerchief was worn except for shipboard fatigue duty. The white pants were only mildly bell-bottomed and had a regular fly-buttoned front; again, they had no pockets. Whites were worn both as a fatigue and a dress uniform. Black-on-white rating badges and service stripes were worn with whites.

February 1945: two sailors off LST-1110 lift the first of many during liberty in New Orleans. The Seaman 1st Class (left) has qualified as a Signalman Striker; and note the white trim round the right shoulder seam of his blue dress jumper. His buddy sports the yellow-on-red shoulder patch of the amphibious forces, authorized for wear in late 1944 – see Plate E4. Like many sailors on liberty, they wear their hats defiantly on the back of their heads. (Courtesy R.Sullivan)

Overall, the EMs' uniform was worn tight, and sailors sometimes struggled to get into the pullover jumper. Some sailors had theirs even more closely tailored than regulation demanded, with the trouser bell-bottoms slightly widened, and perhaps a hidden pocket sewn into the pants or jumper. Sailors rolled back the cuffs of their blue wool jumpers to cool off. This gave libertymen – particularly veterans of the pre-war Asiatic Fleet who had seen service in China – a chance to show off the dragons or other fanciful designs which were sometimes embroidered or sewn onto the underside of the jumper cuffs (see Plate D2). Sailors liked their distinctive uniform, but the lack of pockets was always a problem; they sometimes wore their wallets under the jumper, opened up to hang over the trouser waistband.

Hats ('covers')

The traditional sailor's flat-topped blue wool 'Donald Duck' hat – hereafter, 'flat hat' – was worn in full dress with the blue jumper uniform only, with a 'U.S. NAVY' ribbon tally. Generally considered as a winter issue, it was most commonly seen on US sailors in England. The preferred white sailor hat was, however, worn universally with almost all orders of dress; it was known as a 'dixie cup', due to its resemblance to white paper cups made by the Dixie company. It was commonly worn instead of the flat hat with blues, and was said to be safer to wear during blackouts. Worn as a fatigue hat, it was sometimes dyed dark blue from the mid-war years onward. Ship's captains might also order it dyed in other colors for quick shipboard identification of the sailor's duty station (e.g., red for ordnance). On flight decks or in cold weather a tight-fitting cotton canvas lined toque or cloth helmet might be worn at sea. Khaki or blue baseball-style caps were also worn, especially by officers and aviation personnel.

At battle stations the M1917A1 'dishpan' helmet was used in 1941/42 until its replacement by the rounded M1 helmet, finished in either the

(continued on page 42)

HAWAII & PHILIPPINES, 1941/42

1: Carpentersmate 1st Class; Hawaii, late 1941
2: Lieutenant; Hawaii, 1941
3: Petty Officer; shore party, Philippines, 1942
4: US Navy brass button

UNITED STATES, 1942–43

1: Lieutenant (Junior Grade), WAVES, 1942–43
2: Ensign, Admiral's aide, 1942–43
3: Yeoman 2nd Class, 1943

NAVAL AVIATION, 1943–44

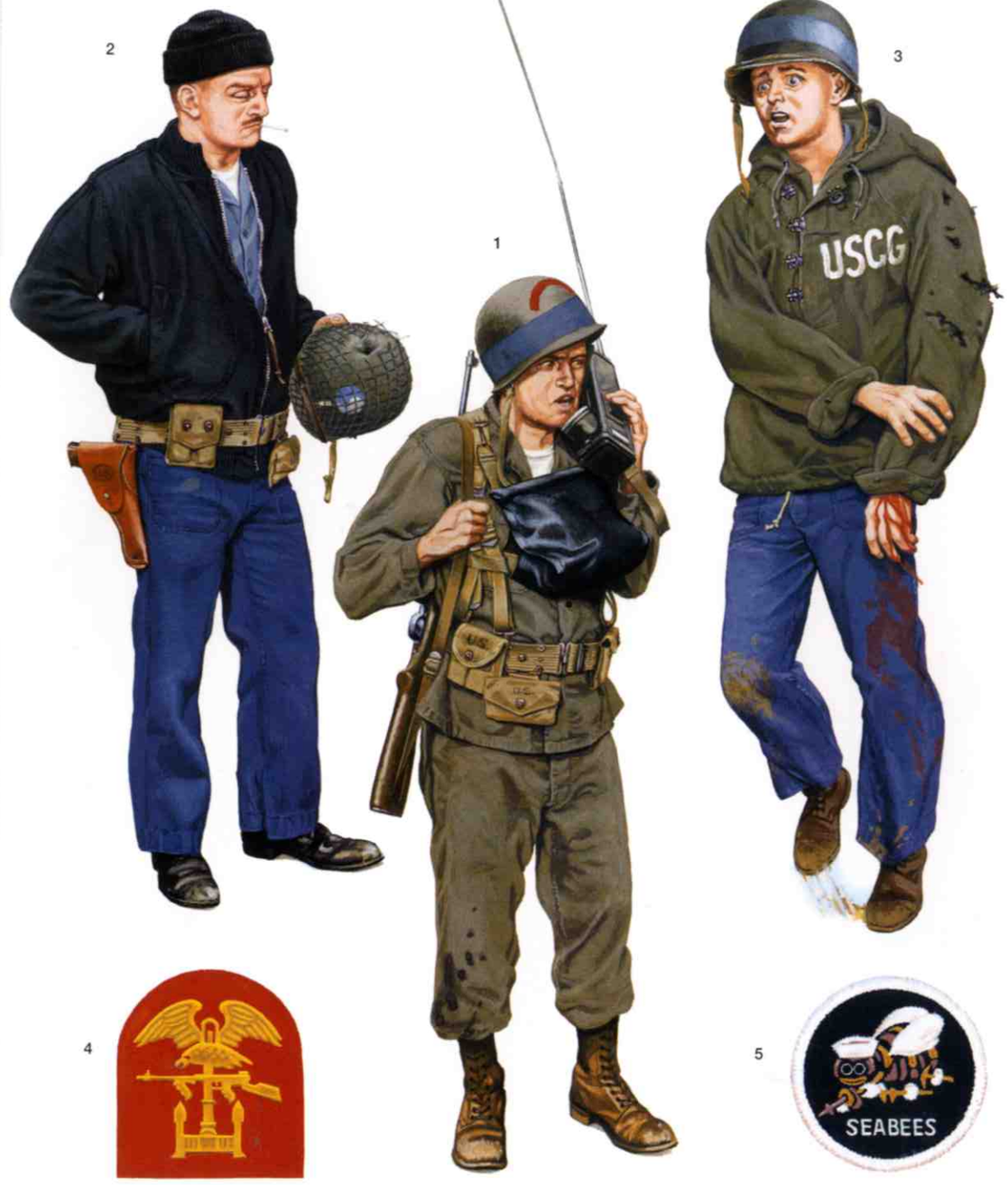
1: Ordnanceman, Pacific, 1943–44
2: Lieutenant pilot, Pacific, 1943
3: Lieutenant pilot, 'aviation greens', 1943

LIBERTY, 1942–44

1: Seaman 1st Class Striker; USA, 1942–43
2: Hospital Corpsman 2nd Class; Australia, 1943–44
3: Gunnersmate 1st Class; Shore Patrol, USA, 1943

OMAHA BEACH, NORMANDY, 6 JUNE 1944

1: Chief Petty Officer, 6th Naval Beach Battalion
2: Petty Officer, LST
3: Coxswain, US Coast Guard
4: USN amphibious forces patch, post-June 1944
5: Seabees patch, 1944



4

5

OFFICERS' SERVICE UNIFORMS

1: Lieutenant-Commander, submarines; Hawaii, 1944
2: Captain, battleships; England, 1944
3: Ensign, Supply Corps; England, 1944

1

2

3

PETTY OFFICERS' SERVICE UNIFORMS

1: Boatswainsmate 3rd Class; England, 1943
2: Chief Petty Officer, submarines; USA, 1944–45
3: Submarine sleeve badge, enlisted ranks
4: CPOs' rating badges – see commentary for details

1

3

4

2

OFFICERS' KHAKIS, PACIFIC

1: Ensign, PT boats, 1944
2: Rear Admiral, 1944–45
3: Lieutenant, Admiral's aide, 1944–45

ENLISTED MEN'S SHIPBOARD DRESS

1: Petty Officer 'talker', AA gun crew; Pacific, 1945
2: CPO, Pacific, 1942–44
3: Petty Officer, submarines, 1944
4: Seaman, PT boats; Pacific, 1943

Summer whites are worn in this 1941 photo of a pilot lieutenant with members of his air and deck crew on a battleship or cruiser – behind them is a catapult-launched aircraft. The enlisted Radioman 1st Class (right) surprisingly also wears pilot's wings, and an elaborate wristwatch. Pre-war it took considerable determination and talent for an enlisted man to qualify as a pilot. On whites all sleeve insignia were in black.

original OD green or repainted Navy deck blue. Officers sometimes had their ranks and/or titles painted on the fronts in white or red (e.g. CO, XO); usually short painted bars represented the cuff rank stripes, though collar oakleaves, bars etc. were also to be seen. Much of this was at the captain's or wearer's discretion. Landing craft sailors sometimes had 'USN' or 'USCG' painted on their helmet fronts. Oversized 'talker helmets' were developed for crewmen who had to wear headphones on duty (see page 62); a 1945 version featured hinged metal earflaps.

Fatigue uniform (dungarees)

By pre-war regulation, only sailors wearing whites or blues were to be seen 'above deck' when in harbor; 'below deck' – i.e. in the turrets as well as the engine compartments – a common work uniform of blue jean/denim 'dungaree' trousers and a light blue chambray work shirt was authorized. After the first few months of the war, ships' captains allowed enlisted men to wear the dungaree uniform when 'underway', throughout the ship and into combat. The buttoned-fly dungaree trousers (named from the Hindi *dungari*, after an Indian town famed for this type of cloth), were made in a rather dark shade but soon faded with use and laundering to a salty medium blue. They had slightly wide trouser cuffs and two hip front patch pockets; various narrow leather civilian belts were often substituted for the issue black web with a slide-through brass buckle. A denim five-button jacket was also issued for fatique wear, but it was not particularly well liked or widely used.

The thin cotton chambray shirt had long sleeves, though these were often seen shortened, or occasionally even removed to the shoulder seam. It was worn unbuttoned at the neck, with a white T-shirt or blue sweater sometimes showing beneath. The two breast pockets had buttoned flaps, or in some cases were flapless button-through types. Brand new shirts showed fine white threads along the seams, but after a washing these disappeared. No rank or other insignia were worn, though a sailor's name might sometimes be inked or stenciled above the pocket or on the back.

Sailors wore dungarees with the sailor hat, and CPOs with a (usually dirty) khaki or white visored cap as their mark of rank. The average shipboard sailor wore his faded (and sometimes a little ragged) dungarees with his sailor hat on the back of the head (instead of 'squared' as per regulations), shirt tucked in and sleeves rolled up.

Cold and foul weather gear

In the Atlantic/European theater, sailors supplemented their dungarees with additional clothing. Cooler temperatures called for the wear of short, wool-lined cotton canvas **deck jackets**, initially of blue and later OD green. One early model was similar to the Army 'tanker's jacket' and featured knit cuffs, collar and waist; it was usually seen in medium blue canvas with patch handwarmer pockets. Another was a copy of the Army's 'Parsons' field jacket ('M1941') in sage/OD green; this was a short zippered jacket with a five-button fly flap, and inset 'slash' handwarmer pockets. Unlike the Army jacket, the Navy version had no epaulettes, and was usually stamped 'USN' on the left breast. A beefed-up version (N1) of the Parsons jacket was also made, of stouter canvas with alpaca lining and collar. Wool-lined bib-front overalls were sometimes worn with deck jackets, likewise with 'USN' stamps. Navy beach personel and Seabees also used USMC/Army issue green and olive drab clothing, usually prominently marked 'USN'.

In cold weather the heavy double-breasted **pea coat** of 18oz wool was authorized for wear both aboard ship and on liberty. (The name derives from 'peak coat' – the coat worn by lookouts in the peak or bow of the ship.) This plain thigh-length coat was closed by six 1in. plastic anchor buttons; during the war no rating badges were worn on it. Officers wore a below-the-knee version termed a watchcoat, with brass Navy buttons and their rank displayed by black mohair cuff trim.

Special **foul weather clothing** was issued as ships' stores for service in extreme weather, e.g. North Atlantic convoys. It usually consisted of a long or short waterproof oilskin coat, bib-fronted overall trousers, and a broad-brimmed sou'wester hat with ear flaps fastened by a buckled chinstrap. Both coats had deep fly flaps and stand-up collars; the long version had buttoning wrist tabs, and two large flapped patch pockets at the hips. This gear could be supplemented with long woolen underwear, sweaters, a parka, peacoat, gloves, rubberized shoes or 'arctic' boots,

March 1943: Capt. Mansergh of the Royal New Zealand Navy light cruiser HMNZS *Leander* strides past the white-clad sideboy honor guard of the USS *Enterprise*. The Officer of the Deck (left) wears khakis with a black necktie; the pistol belt was a sort of badge of office of the officer who pulled temporary duty as the OOD. A boatswain would also be standing nearby to pipe the visitor aboard.

February 1944: an ocean-going sailor is rarely without his claspknife; this man typically has his hanging from his belt on a metal clip. He is dressed for work in chambray shirt, dungarees and the dark blue-dyed 'dixie cup' sailor hat. His black web belt has the standard US military slide-through buckle.

goggles, face mask, and dark blue toque (padded cloth helmet) or black knitted watch cap. *The Naval Officer's Guide* illustrates 'submarine clothing, outer' as a shorter hip-length jacket with a fly flap extended upwards into a buttoning stand collar, loose drawstring overtrousers fastening at the cuffs, and a sou'wester with a full face and neck section. 'Submarine clothing, winter woolen' is also illustrated: a short coat with two buttoned-flap patch pockets at the hips, stand collar and six-button front flap, and matching trousers with belt loops and fastening cuffs.

Insignia & ratings

As noted above, the recruits and seamen 2nd Class and 1st Class were identified by one to three white ribbon lines on the blue dress jumper cuff. They also wore a 9mm-wide stripe around the jumper shoulder seam, sometimes known as a 'watch mark'. Seamen wore a white stripe round the right shoulder on the blue jumper or a black stripe on whites, except for those who worked in the engine compartments, who wore a 'fireman's' red stripe round the left shoulder seam.

Upon qualifying for a certain job by schooling or 'striking', a seaman was usually raised in rank to petty officer and given a title appropriate to his job, e.g. Gunnersmate. The US Army had experimented with combining both rank and job assignment, but generally made these two areas distinct. The Navy, with its heavy emphasis on technical skills, combined ranks and ratings (jobs). So a sailor would say that his rank was Petty Officer 1st Class, but his rating was Gunnersmate. His sleeve badge would show both his rank and rating symbol, and he was formally called by his combined rank and rate – Gunnersmate 1st Class.

All petty officers' arm patches featured a forward-looking eagle ('crow') with wings outstretched, a rating symbol, and one to three red chevrons. The patch was worn on one sleeve only, between the shoulder seam and the elbow. Pre-1941 rating badges, with the eagle sometimes facing rearward, were to be seen well into the war. Unlike soldiers, Navy men had their sleeve patch placed slightly forward of the outside center of the sleeve.

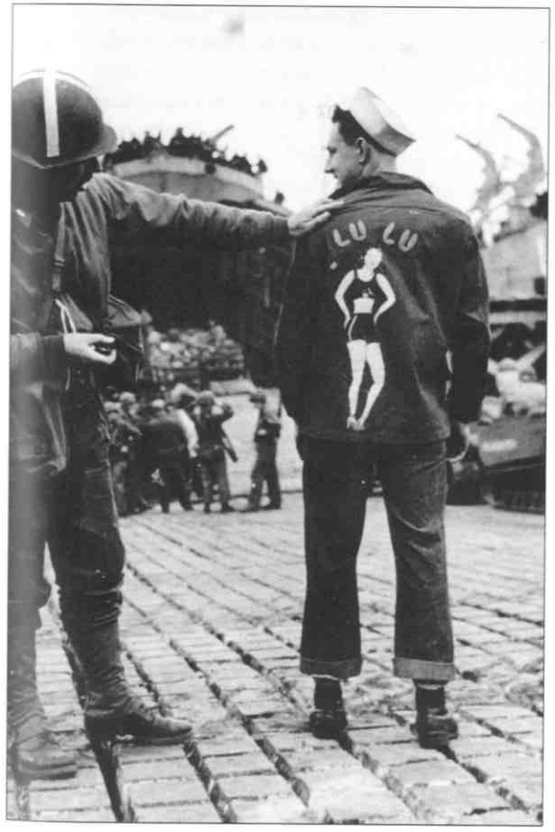
Sailors in the Seamen's branch wore their patch on the right arm. These were the men who served the guns or on deck, and ratings included Boatswain, Quartermaster, Signalman, Gunnersmate, Turret Captain, Fire Controlman (Rangefinder), Torpedoman and Mineman. All other sailors wore their rating patch on the left arm, with the 'crow' still facing forward. Thus, e.g., a Signalman (Semaphore) worked on deck, was a member of the Seamen's branch, and wore his rating badge of crossed flags on his right sleeve; but his Radioman counterpart who worked below decks wore his rating badge of lightning bolts on the left sleeve. Aviation sailors also wore their rating badges on the left arm. Sailors used abbreviated titles; e.g. GM1c or RM2c would be a

June 1944: a Normandy-bound Army officer admires this LST sailor's jacket artwork; smaller ships were more relaxed about enforcing uniform regulations. The jacket appears to be the plain blue dungaree type, not very often seen in photographs. He also wears the ankle-high shoes which became Navy standard issue after the war.

Gunnersmate 1st Class or Radioman 2nd Class respectively. There were too many of these rating symbols to list here; a few examples are Gunnersmate (crossed cannon barrels), Turret Captain (gun turret in right profile), Torpedoman (horizontal torpedo in right profile) Machinistsmate or Engineman (three-bladed propeller, two blades up), Boatswainsmate or Coxswain (crossed anchors), Yeoman (crossed quills), Storekeeper (crossed keys), etc.; (see Rosignoli, Select Bibliography).

Chief petty officers displayed a single overstripe ('rocker') and three chevrons on their rating patch. CPO patches were in black on white or khaki backing respectively for the appropriate uniforms; on blues the eagle and rating symbol were white and the chevrons and overstripe red. Those CPOs and petty officers who had 12-plus years of continuous good conduct used gold rank and service stripes and a silver/white embroidered eagle on their blue uniforms.

The Navy found that its selection of ratings did not cover all the jobs that it would require. Diamond-outlined specialist badges were therefore developed, with letters representing particular jobs. These diamond/letter designations were integrated into the 1–3 stripe petty officers' badges (e.g. see page 23). Some 26 were developed during the war, including e.g. A = Athletics Instructor, CB = Construction Bn (Seabee), F = Firefighter, G = Aviation Gunnery Instructor, I = IBM Operator, PS = Port Security, Q = Communications Security, V = Transport Airman, etc.



Service stripes

Service stripes were worn by enlisted men on the left forearm only, at a diagonal angle; each represented four years' service. On blues service stripes were in red, on whites they were black. Twelve years of continuous service and good conduct was represented by the sailor's or chief's rating badge and three-plus service stripes in gold; most sailors considered that gold stripes indicated undetected crime rather than unbroken good conduct.

'Striking'

More than 50 per cent of new men assigned to ships would have no specialty. In order to gain a trade or specialty, they would train and study in a particular field – e.g., a seaman who showed interest and promise in radio work would seek sponsorship by a petty officer or CPO in that section, where he would be reassigned, or allowed to spend some of his duty time training. He was then said to be 'striking' for a rating. If this 'striker' could satisfy the section leader and pass an exam, he would be awarded the rating badge (e.g. 'sparks' – see Plate D1) of his new specialty and be reassigned permanently to e.g. the radio section. A seaman graduating from an advanced school was automatically made a striker even if not immediately promoted to PO 3rd Class.

Shoulder patches

Only four colored shoulder patches were authorized for wear on the enlisted jumper: those of Amphibious forces, PT boats, Minelayers and Seabees. These were all approved in 1944 for wear on the left shoulder. In addition, Navy engineers and Hospital Corpsmen were authorized to wear the formation patches of the USMC units to which they were attached (see Plate D2). A handful of unauthorized patches were also worn, of which the alligator patch or cuff insignia of amphibious forces was the most common.

Distinguishing marks

Distinguishing marks were proficiency badges worn – in white or black depending on the uniform – on the lower sleeve, to show a special skill that was distinct from the normal ratings. Examples were Marksman (a circle within a square), Submarine Qualification (see Plate G), Gun Pointer (a gunsight graticule) and Diver (a diver's helmet). Soundman (sonar operator – a pair of headphones crossed by a right-facing arrow) was originally one of these skills, but was made a rating in 1943.

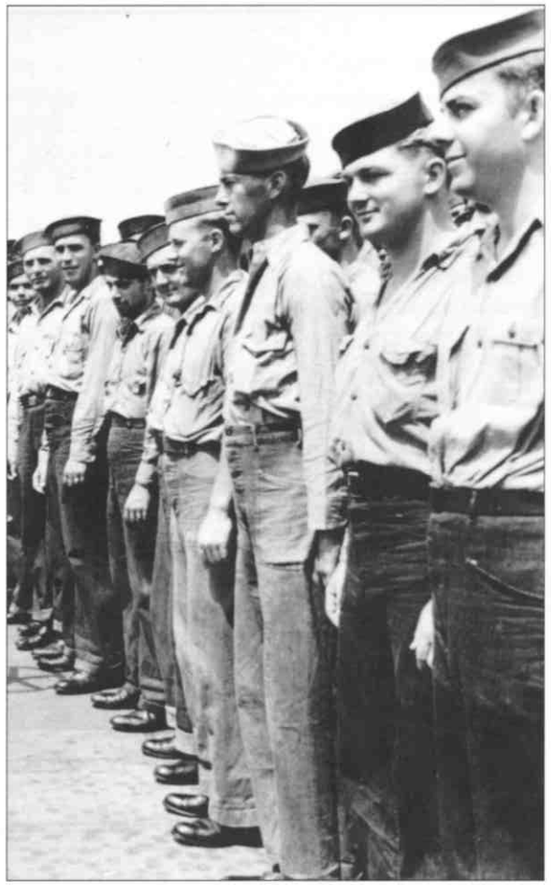
Boatswainsmates

The sailors assigned to the daily running of the deck and ship were in the Boatswain's (pron. bosun's) rating. Petty officers in this rating were referred to as Bosunsmates or simply Bosuns. Bosuns in charge of small boats and landing craft were called Coxswains (pron. cox'ns). The senior boatswain in charge of details and sections of sailors in the deck division (sometimes also called coxswains) were usually authorized to wear the traditional bosun's whistle ('pipe' or 'call'), carried in the breast pocket at the end of a white braided neck cord. Various calls were made by bugle and bosun's pipe across the PA system of a ship to announce daily activities and pronouncements. When senior officers or other dignitaries came on board they were also 'piped aboard' by an honor guard of 'sideboys'. The wearing of the bosun's whistle and cord was by tradition, and is not mentioned in naval regulations.

Aviators' wings

During the war officers wore gold metal or embroidered badges on the left chest above any ribbons or pockets, signifying qualified pilots, observers, navigators, 'blimp' (airship) pilots and flight surgeons. In 1943 enlisted air gunners and radiomen were authorized silver aircrew wings, also worn on the chest; this had an arc above for displaying up to three stars for combat engagements. Enlisted pilots wore the aviator wings in addition to normal rating badges featuring gold/yellow pilot's wings.

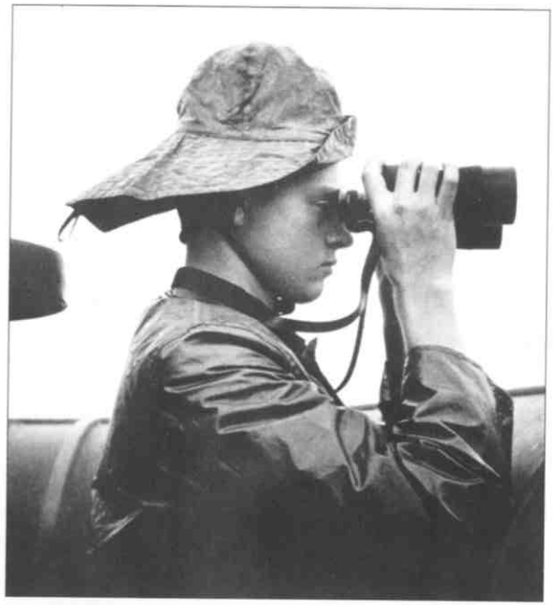
August 1943: crewmen of the Fletcher Class destroyer USS *O'Bannon* (DD-450) display the variety, and careless manner of wearing, the dungaree uniform. Again, the sailor hats seem to be dyed a variety of shades. The *O'Bannon* ('Little Mike') was second in her class, and reached Guadalcanal in October 1942. Her wartime career would bring 17 battle stars and a Presidential Unit Citation; it included taking on a Japanese battleship and sinking at least one submarine. With two sister ships, she would finally escort the USS *Missouri* into Tokyo Bay to take the Japanese surrender.



Submariners' badges

The Submariner's Badge featured the bow of a sub running on the surface, flanked by dolphins, and was awarded to officers and men who had specially qualified as submariners. To qualify for the badge a sailor had to (1) serve for six months aboard a submarine; (2) present a notebook detailing his training on all parts of the boat, as specified by the *Submarine Instructions*; (3) pass an oral and practical test. Officers wore the badge in gold metal on the left breast on all uniforms including khaki shirtsleeve order. Enlisted men wore it as a cloth badge on the right arm midway between the cuff and elbow, in white or black depending on uniform. A submarine surgeon's badge was created in 1944; based on the officer's badge, it featured an acorn on an upright oakleaf in a central oval.

The Submarine Combat Insignia was instituted in 1943 for award to all crew members after a successful combat patrol – success was judged based on tonnage sunk or equivalent missions accomplished. The gunmetal badge showed a sub running on the surface in profile, with a bottom central arc for displaying 1–3 bronze or silver stars; each bronze star represented a successful patrol, and a silver star, five patrols. It was worn on the chest either above (EMs) or below (officers) any ribbons.



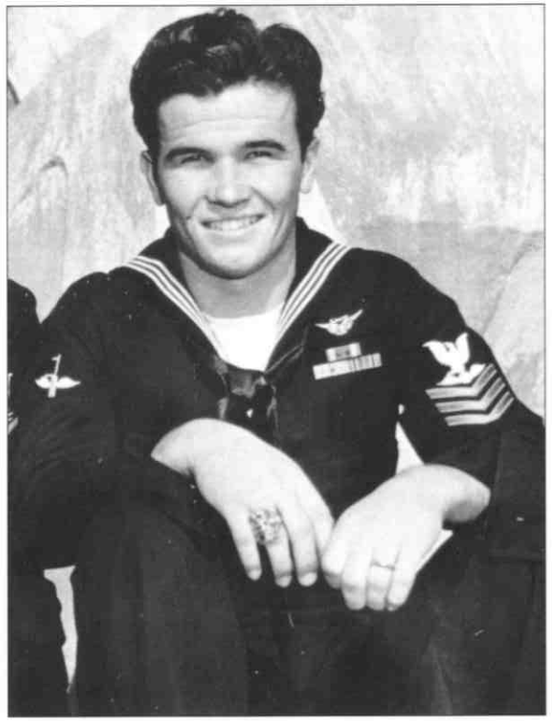
October 1943, North Atlantic: a lookout aboard the USS *Nassau* scans the ocean for U-boats, wearing the classic New England-style foul weather sou'wester hat and coat. His ship is one of the new 'jeep carriers' (Bogue Class CVEs), quickly built on a merchant ship hull, which played a key role in protecting convoys and winning the U-boat war. One destroyer crewman described North Atlantic winter service thus: 'Four hours on and eight hours off, the watches stretched interminably. At the end of the first hour every man on deck was soaked to the skin and freezing cold. Salt spray stung the lips, cracked by the cold wind. The next three hours crawled along.'

Medals and ribbons

Medals are awarded in the US Navy for bravery, campaigns and service; medals and their associated ribbons are worn above the left breast pocket. In World War II deep ribbon bars were used, half-an-inch high. Oakleaves on ribbons represented multiple awards; stars represented particular campaigns, and letters had specific meanings. The precedence of medals/ribbons placed the highest bravery awards at the wearer's top right, followed by campaign ribbons, service ribbons, and any foreign awards worn last.

The *Medal of Honor (MoH)* is the highest decoration that can be awarded for bravery in the face of the enemy. The Naval MoH is worn at the neck and can be distinguished by the suspension of the medal from the ribbon by an anchor. During the war 33 sailors, one Coast Guardsman and 66 Marines were awarded the MoH (of the 33 sailors, seven were Hospital Corpsmen).

The *Navy Cross* was created in 1919 and is the Navy's second highest award for bravery. The *Distinguished Service Medal* and the *Legion of Merit* are the two senior awards for distinguished service. The *Silver Star* was granted for acts of heroism in the face of the enemy rated below those qualifying for the Navy Cross. The *Navy & Marine Corps Medal* is awarded for heroism connected with life-saving. The *Bronze Star* was created in 1942 to recognize acts of bravery or service rated below those qualifying for the Silver Star. The *Distinguished Flying Cross* is roughly the equivalent of the Silver Star and is awarded for acts of heroism involving aviation of either a combat or non-combat nature; it was first authorized for award

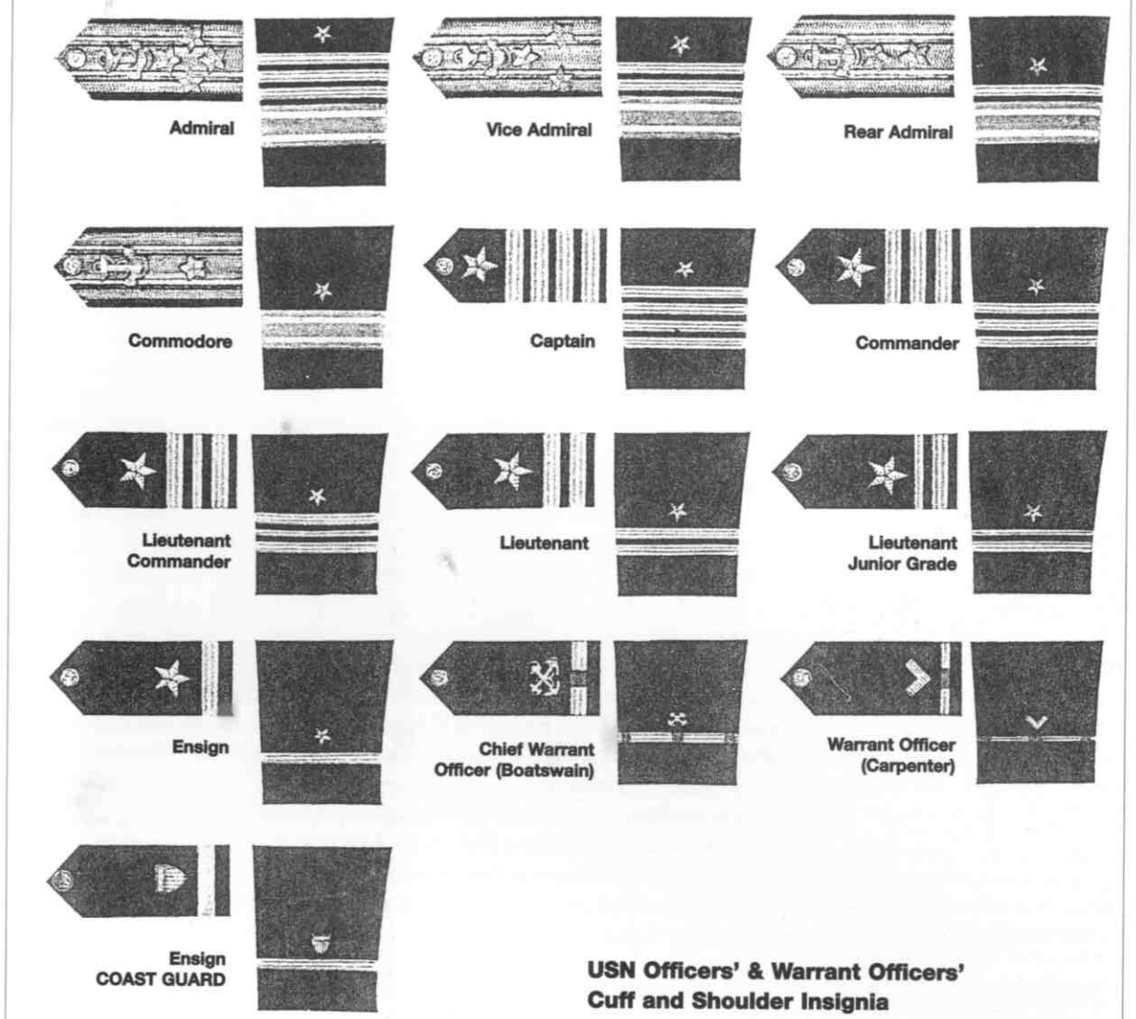


February 1944: this Petty Officer 1st Class Air Ordnanceman (AOM1c) from a TBF Avenger squadron wears his dress blues. On his right upper sleeve is the white winged machine gun distinguishing mark of an aerial gunner; his left arm rating badge incorporates the wings symbol, and he wears the metal wings of an aircrewman pinned above his medal ribbons. Note the depth of the ribbon bar, larger than post-war practice. He has the cuffs of his jumper rolled back, hiding his triple white trim.

October 1940: sailors in undress jumpers aboard the USS *Arkansas*, posed to mimic a well-known photo of old sailors telling sea stories. The two boatswains sport the whistle and white cord. The 'Arky' was a World War I 12in.-gun battleship which served in the Atlantic, at Normandy, the South of France landings, Iwo Jima and Okinawa. She would meet her end as a nuclear weapons target at Bikini Atoll in 1946.

by the Navy in 1942, retroactive to December 1941. The *Air Medal* is roughly the equivalent of the Bronze Star and is awarded for acts of bravery involving aviation of either a combat or non-combat nature. The *Purple Heart* was instituted in 1932 to recognize wounds received in combat; oakleaves represent additional wounds received in different actions – three wounds in one action would gain only one Purple Heart. The next of kin of those killed in action receive a Purple Heart. The *Good Conduct Medal* was awarded for exemplary conduct (a 'clean rap sheet') during an enlistment; additional awards were shown as slides to the GCM ribbon.

The *Navy Presidential Unit Citation* was a unit award given to all personnel of that unit for its superior service in combat. The 1st Marine Division received this award three times during the war, for Guadacanal, Saipan and Okinawa. An entire destroyer squadron commanded by Arliegh Burke (DesRon 23) received it for actions around Guadacanal. Its blue-yellow-red ribbon colors, distinctively, run crosswise instead of vertically. Stars represent multiple awards.



USN Officers' & Warrant Officers' Cuff and Shoulder Insignia

Sailors serving on duty between September 1939 and Pearl Harbor day were authorized the *American Defense Medal* in 1942; those serving overseas (Hawaii) wore a star on the ribbon. To recognize service in the Atlantic during the quasi-war against the German U-boats prior to Pearl Harbor, a bronze 'A' was worn on the ribbon to signify Atlantic service from June to December 1941. The *American Theater Medal* was instituted in 1942 for war service in the USA including Alaska; one battle star was authorized for ASW/convoy work.

The *European-African-Middle Eastern ('ETO') Medal* was instituted in 1942 for war service in those theaters, and nine bronze battle stars were authorized for different actions. The *Asiatic-Pacific ('A&P') Medal* was instituted in 1942 for war service in that theater, and 43 battle stars were eventually authorized. A silver battle star represented five bronze stars.

UNIFORMS: OFFICERS

Officers' hats

Officers wore either visored caps or overseas hats (sidecaps) in all orders of dress. The visored cap frame came with white, dark blue or green top covers, interchangeable as required; khaki and grey tops were later added. The cap had a black leather visor and a black cloth headband. The officer's or warrant officer's badge was worn on the front with a black backing; the former was a silver eagle and shield superimposed on gold crossed anchors, the latter a pair of gold crossed anchors only. Though a black leather chinstrap was authorized for sea duty, the gold braid chinstrap was invariably preferred. Full commanders and captains had gold embroidered oakleaves and acorns ('scrambled eggs') around the edge of the dull leather visor; admirals had a second, inner row of this braid. Chiefs wore essentially the same hat, with a black leather chinstrap, and the CPO badge – a vertical gold fouled anchor, the cable forming a circle, surmounted by 'USN' in silver – without the black backing.

The overseas hat was available in khaki, green, and later blue and grey. Rank was worn on the right front and the USN crest (or, briefly, miniature aviator's wings – see 'Greens' below) on the left front.

Blues

The traditional nautical doubled-breasted, open-lapel 'reefer jacket', with matching creased trousers, was the normal dress uniform worn ashore, and was also common shipboard wear in northern waters. The jacket had six brass front buttons in two rows, slash skirt pockets, and a single inset left breast pocket; it was available in both a lighter-wearing cotton/synthetic mixed material and a somewhat heavier wool. A white shirt without insignia and a black tie were worn with this uniform; black shoes and socks were regulation wear.

Rank was displayed only by the use of wide and narrow gold cuff braid in straight rings. 'Line' or executive branch officers were identified by a gold embroidered five-point star above the rank stripes on each cuff, with a single point downward. The staff corps and warrant officers used gold embroidered branch symbols instead: e.g. the acorn and oakleaf for medical officers, or an oakleaf spray for supply officers; crossed anchors for boatswain warrant officers, a three-blade propeller for machinist warrant officers, etc. Unlike the British practice, the US Navy made no insignia distinctions between regular and reserve officers.

The visored cap was the authorized headgear for use with both blue and white uniforms, with dark blue (winter) or white (summer or tropical) crown covers. In 1944 a dark blue overseas cap was also authorized with blues.

Whites

The standard summer uniform of the pre-war Navy was a white cotton tunic with a closed stand collar and patch breast pockets, and matching trousers. (In 1941 it was supplemented by the wear of khakis for normal shipboard use.) The white 'choker' fastened with two hooks-&-eyes at the collar and five brass buttons down the front. Rank was displayed on dark blue/black shoulder boards. The uniform was completed with the white-topped visored cap and white shoes. After the first few months of the war whites were only seen ashore or during special ceremonies.

Lt.Douglas Fairbanks Jr (USNR) was on a cruiser in the Atlantic when the war broke out. He later served as a liaison officer with the British Combined Operations (Commando) command, taking part in several operations and raids. Based on his experiences with the British, he received permission to form a USN deception/psyops unit eventually known as 'Beach Jumpers'; equipped with small boats armed with machine guns, they specialized in laying smoke and distressing the Germans in the Mediterranean by faking amphibious landings, and other inshore work. He is shown here in November 1945 wearing the typical officer's blue reefer jacket and white-topped cap, in his then rank of full commander; cf Plates B2 & F2. His decorations include the US Legion of Merit and the British Distinguished Service Cross; he received an honorary knighthood from King George VI in 1949, in part for his war service.

Khakis

Khaki cotton uniforms were first authorized for use by submarine officers in the 1930s, and soon afterwards by aviators; by mid-1941 they were authorized for all officers and CPOs. The uniform consisted of a khaki jacket, shirt, trousers, and both a visored and an overseas cap. The jacket was single-breasted, with open lapels and three brass front buttons; it had four patch pockets, and a distinctive integral belt-like feature at the waist. Rank was displayed only on the dark blue/black shoulder boards, as usually worn with whites. Though intended for shipboard and base use, by mid-war the khakis complete with the jacket were considered a suitable walking-out uniform; full ribbons and badges could be worn on the jacket. The khaki cotton shirt with a black tie and small collar insignia were always worn with this jacket, as were khaki creased pants.

The light khaki shirt had two flapped breast pockets but no epaulettes. The pants had both hip and rear inset pockets and were worn with a 1.25in.-wide khaki web belt and slide-through flat brass buckle. (Admiral Nimitz had a small submarine badge on his buckle; the wearing of insignia on this buckle slowly came into style, especially after the war.) The matching khaki overseas hat bore a small rank badge on the wearer's right front and the USN crest on the left; warrant officers wore their crossed anchors on both sides. The standard Navy officer's visored cap was also worn, with a khaki cover and gold braid or black leather chinstrap.

A khaki short-sleeved shirt and bermuda shorts uniform combination, with pith helmet and knee socks, was also authorized but rarely seen. On shipboard, the long-sleeved khaki shirt and pants were almost universally worn in the Pacific and were also common in the South Atlantic and Mediterranean. CPOs generally preferred dungarees to the khaki uniform, except when going ashore complete with the jacket. Black shoes were worn with this uniform, or russet brown shoes by aviators. Aboard ship, officers also wore issue brown leather 'rough-out'/'boondockers' as used by the USMC.

Greys

In 1943 the Navy decided that the officer's khaki uniform and the sailor's whites and dungarees needed to be replaced. The reasons given were the need for shipboard camouflage, and a better fatigue uniform which did not show up stains so easily. That a 33,000-ton battleship might go unnoticed until somebody spotted white- or khaki-clad figures moving on deck seems dubious. However, the greys were authorized in May 1943 and were slowly phased in over time.

February 1944: Vice Adm. Charles Lockwood wearing the white 'choker' with three-star admiral's shoulder boards, submarine officer's badge and ribbons, for the ceremony at which he was admitted into the Legion of Merit; cf Plate A2. Lockwood helped solve the torpedo problem, and his aggressive fighting outlook fitted the submarine fleet perfectly; his support and care for his submariners earned him the nickname 'Uncle Charlie'. In the acronym-heavy US Navy his official 1944 title was COMSUBPAC (Commander Submarines Pacific Fleet).

The new officer's uniform was essentially a slate grey cotton version of the khaki uniform, with the addition of grey shoulder boards and black or brass Navy buttons. The contrasting light grey shirt, worn with a black tie, usually bore collar insignia. Both a grey-topped visored cap with a black cloth chinstrap and a grey overseas hat were available. Badges were worn in both subdued grey gunmetal and the previous gold/silver style. A woman's grey uniform also began to become available in 1944.

Essentially, this new grey uniform was hated by the sailors. Some officers did buy and wear the greys; the wearing of the enlisted men's version, except for testing, is almost unknown. By the end of the war it was clear that the grey uniform was not being accepted by the men; one sailor said simply, 'It ain't Navy'. A special Shore Patrol grey cotton uniform was also created and issued in very limited quantities in 1945/46, apparently consisting of plain grey cotton trousers and a button-down collar cotton shirt. In 1947 the greys were eliminated in favor of the previous khaki uniforms.

Flying Greens

In World War I, US Navy aviators were allowed to replace their unsuitable whites with Marine officer's greens, worn with Navy insignia and brown shoes. Flyers liked the distinctive uniform and it became part of their normal wear. By 1941 the four-pocket, open-lapel, single-breasted jacket featured a bi-swing or gusseted back panel. Normal creased green trousers had replaced the earlier breeches. Rank was displayed as black cuff rings, and embroidered or metal aviator's wings were worn above the left pocket, backed in black felt for the first part of the war (see Plate C3). Both a green-topped visored cap and a green overseas cap were approved headgear. On the latter, rank insignia and a small version of the pilot's wings were worn; the wings were replaced in mid-war by the usual USN eagle, shield and anchors crest. CPO pilots and non-aviator officers assigned to air squadrons were also authorized to wear aviation greens. Aviators were required to retain the Navy dress blue uniform, and in formal situations greens were frowned upon. Though aviation greens were generally retired in the early 1980s, the russet brown leather shoes still distinguish Navy aviators in the black-shoe Navy.

Officers' insignia

Officers and warrant officers are separated into 'line' or 'staff' corps. Line and staff officers both display rank by wide and narrow gold rings around the cuffs, with black rings on the overcoat and the aviator's green jacket. On white or khaki jackets, rank was shown by gold-striped detachable dark blue/black shoulder boards; the grey uniform had black-striped grey shoulder boards. Admirals used 2in.-wide gold cuff braid below one, two and three 0.5in. rings; all others used combinations of wide (0.5in.) and narrow (0.25in.) braid. Warrant officers used gold cuff braid broken by blue transverse sections. (See chart on page 49.)

Line officers wearing khaki shirts wore the standard American military rank sequence of gold and silver bars, oakleaves, eagles and stars on both points of the collar (see commentaries Plates H1 & H2). Staff officers wore rank on the right collar and their branch insignia on the left. Chief warrant officers wore silver branch insignia on both collars, and regular warrant officers, gold insignia.

Uniforms: Chief Petty Officers

'Chiefs' essentially wore the same or variations of officers' uniforms. The white or blue service uniform had a double-breasted jacket with eight front buttons in two rows of four. Chiefs were also authorized to wear khaki shirts, and a khaki-topped visored cap with the CPO insignia. On the khaki overseas hat CPOs wore their fouled anchor badge on the left front. The officer's single-breasted khaki jacket was authorized, with black-on-khaki rank patches, as were the later greys; CPO pilots were authorized to wear the aviation green uniform. The most common shipboard uniform for the CPO, however, was sailor's dungarees and shirt and the CPO khaki visored cap.

Flying clothing

For cold weather flying pilots had fleece-lined jackets, bib-fronted trousers and boots similar to those of Air Corps bomber crews. For normal flight operations Navy pilots wore the A/N-S-31 summer flying

July 1943: posed against a photo of TBF Avengers, Lt.Cdrs. Nielsen and Dickson from the USS *Yorktown* (CV-5) wear the khaki cotton service uniform in the summer heat of Washington DC. Note the characteristic 'belted' effect of this tunic; and the flat wartime shoulder-boards, which did not curve with the top of the shoulder like post-war examples. Both sport gold aviator wings and the ribbon for the Navy Cross; and note the small rank insignia worn on the shirt collar with this uniform, and on the right side of the overseas hat – see commentary Plate H1.

The basic building block of Navy aviation was the 18-plane squadron; two or more squadrons made up a group. All the aircraft on a carrier were referred to as the Air Group or Wing; an Essex Class carrier had some 100 aircraft in six squadrons. In peacetime, Navy squadrons were given numbered designations based on the parent ship: thus the USS *Enterprise* (CV-6) had fighter squadron VF-6, bombing squadron VB-6, etc. During the war the cross-posting of squadrons and the sheer numbers involved made this system untenable, but the Navy tried to maintain it by frequent changes of squadron designations. This makes the tracing of squadron lineage a nightmare for historians to this day.

September 1943: later that month Lt.(jg) Gregg, an SBD Dauntless dive-bomber pilot flying off the USS *Yorktown*, was killed in action during a raid on Wake Island. Here he wears normal khaki shirtsleeve order with his 'Mae West' and a .38 revolver in the preferred shoulder rig, with cloth ammo loops sewn onto the strap; the pouch on his belt is for his issue sunglasses. Cf Plate C2.

suit (see Plate C2). This Army/Navy (A/N) khaki cotton coverall suit was zippered from crotch to neck and featured several pockets, including two on the shins. A yellow B-3 'Mae West' lifevest inflated by a CO_2 cartridge was also standard issue. The vest had a pouch of colored dye to help mark the downed pilot's location in the water, and later versions had flashlights, mirrors and shark repellent (of dubious value). A sheath knife and a revolver in a shoulder holster were commonly carried. The russet brown leather holster usually had cotton loops sewn on the strapping to hold additional cartridges. Though the Smith & Wesson M&P (Military & Police) .38in. revolver was favored, Colt .45in. automatics were sometimes preferred (traditionally, aviators had carried revolvers since World War I, so that when fired in flight expended cases wouldn't be ejected to roll around the cockpit floor and jam controls). Rough-out brown leather laced ankle shoes were common footwear. Khaki cotton flying helmets were standard issue headgear, sometimes marked or dyed with symbols and colors to identify certain 'green' pilots or the flight leaders at a glance.

During 1944 there was a gradual issue of the first scientifically designed 'G-suits', made to help pilots sustain the forces of gravity by controlling blood flow around the body by the selective pressure of inflatable sections.

In the 1930s a short leather flight jacket (M422-A) was authorized for Navy aviators. Made of brown goatskin leather with a lambswool (mouton) collar, it had knit cuffs, two lower patch pockets, a gusseted/bi-swing back panel and an integral half-belt in the small of the back. In World War II this model was referred to as a G-1 jacket. Pilots usually had a square leather name tag sewn onto the left front; the squadron's colored patch was also sometimes painted onto the chest of the G-1.

Womens' uniforms

The WAVES uniform (see Plate B1) consisted of either a blue or white single-breasted jacket with a matching skirt and black shoes. The jacket had short, rounded upper lapels above pointed lower lapels, four brass front buttons for officers and black plastic for enlisted women. The WAVES officer's short-brimmed hat had a blue or white cover, and displayed the standard USN officer's badge; the enlisted women's version had a 'U.S. NAVY' tally. The petty officers' badges used by WAVES were smaller than the USN pattern; and officers wore light 'Reserve blue' cuff braid without any branch devices. WAVES CPOs used officers' hats with the standard male CPO badge. A white shirt (with officers' collar rank badges as appropriate), a feminine fold-over tie, a dark brown purse, and gloves were also worn. Under no circumstances were dungarees to be worn, though blue coveralls or dark blue matching service dress style trousers were eventually issued. The device worn on lapels was a white fouled anchor on a three-blade propeller in Reserve blue. By the end of 1943, WAVES officers were to wear the appropriate staff corps cuff badges in white/Reserve blue. The new grey uniform was also authorized for women in 1943. In late 1944 blue overseas hats were authorized, as was the display where appropriate of the line officer's cuff star symbol in Reserve blue. (See also Men-at-Arms 357, *World War II Allied Women's Services.*)

October 1944: Rear Adm. Trexel of the Seabees, wearing the grey uniform authorized in 1943 (cf Plate F3); note the grey shoulder boards with black anchor and star insignia. The cap chinstrap was black by regulations of July 1943, but was gold or black optionally from March 1944. Since he is not a line officer he wears his Construction Corps symbol on his left shirt collar and his two stars on the right. Normally only line officers could hold commands, but an exception was made for Seabee officers, who sometimes led large numbers of land-based construction units.

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(Editors), *National Geographic Magazine,* 06/1943

THE PLATES

A1: Carpentersmate 1st Class; Hawaii, late 1941
Like most sailors of late 1941, this Petty Officer 1st Class no longer sports the old dark blue collar and cuffs on his summer 'whites'; he also has the new rating badge with the forward-facing eagle above the crossed axes of his specialty, worn on the left arm as his duty was 'below decks', and one four-year service stripe on the left forearm. The white trousers were only slightly bell-bottomed, less so than those of the 'blues'. He wears his cleanest uniform with the sailor's black neckerchief, to stand a ceremony or go off base; by removing his neckerchief he would be in normal summer working uniform. As a Carpentersmate ('chips') he would be fully employed working wood even on an armored warship. He would also play a role in damage control. By the mid-war years the USN put great emphasis on damage control; some ships were lost in 1941/42 which need not have been, and this more aggressive policy later saved many from total loss.

A2: Lieutenant; Hawaii, 1941
This veteran lieutenant displays ribbons for service in Nicaragua and China on his white service dress 'choker'; since he wears no Naval Academy ring, he is almost certainly a Reserve Officer (USNR) who has come back on active duty during the expansion of 1939–41. His cap badge has the pre-1941 eagle, facing to its left, which was still authorized for wear after the change. His naval officer's sword is virtually unchanged from Mexican/Civil War days, and remains the oldest pattern sword still in continuous use in the US armed forces. Though the sword was retained in the 1941 regulations, the officer's old 'Gilbert & Sullivan-style' double-breasted frock coat and feathered cocked hat were retired. The Navy eagle and anchor brass button **(A4)** has also remained essentially the same since before the Civil War – though this eagle also 'faced about' to its right in 1941.

A3: Petty Officer; shore party, Philippines, 1942
This sailor wears the fatigue uniform of chambray shirt and dungaree trousers. Usually, the only personal equipment a sailor would have is a claspknife; this petty officer has been issued an M1917A1 helmet, web field gear based on the ten-pocket cartridge belt, and an M1903 Springfield bolt-action rifle. (Marines have always been concerned about rifle-toting sailors; on Midway Island, Leathernecks were chided by their NCOs for leaving the protection of their entrenchments with the warning that there were 'armed sailors about'). Sailors were left stranded on many US islands and in the Philippines in early 1942 and were detailed to join the infantry. Most of the sailors on Bataan were under the inspirational command of aviator Cdr. Francis J.Bridget, and in fact gave a good account of themselves fighting beside the doomed 'China Marines' of the 4th Regiment.

B1: Lieutenant (Junior Grade), WAVES; USA, 1942–43
College graduates could apply for officer candidate status when they enlisted. This organization – like the female volunteers of the WAAC – were originally considered as military auxiliaries only, but in 1943 they were formally enrolled into the Navy. Note this WAVES officer's 'Reserve blue' cuff rank braid, at this date without line or staff insignia above. A hat, white gloves and a dark brown leather purse were invariably worn except when on fatigue duty. Make-up was allowed in moderation. WAVEs never served aboard ships, and went overseas only to Hawaii and Great Britain.

B2: Ensign, Admiral's aide; USA, 1942–43
This officer of the most junior commissioned rank wears a double shoulder cord in gold and blue which marks him as a rear admiral's aide; an aide to a more senior admiral would be of higher rank and would wear additional cords, and officers serving as Presidential Aides sported a much more elaborate arrangement. His ribbons – American Service and ETO – indicate that he has had a short tour aboard ship before reassignment, and has crossed the Atlantic. Being an aide was considered a cushy assignment, and the shoulder cord was referred to as a 'lazy loop'. His gold finger ring announces his status as a Naval Academy graduate. His blue 'reefer' jacket and trousers are the standard dress uniform for all naval officers worn throughout the war.

November 1944: a Lt.(jg) of the WAVES with a group of enlisted women on a flight to Hawaii; cf Plate B1. In the uncropped photo all wear white gloves; some have white, others dark blue blouses. WAVES officers were authorized to use the star or staff corps insignia on the cuff in 1943–44, though they kept their Reserve light blue cuff trim. While Navy nurses served in some forward areas, WAVES were rarely allowed anywhere near the front lines.

29 March 1945, aboard the USS *Hancock*: Hellcat pilots Ens. Roland H.Baker (left), Lt. Robert L.Klinger (second left) and Ens. Willis H.Moeller (right) relive a dogfight, during which five Zeros were credited to the VF-6 pilots while they covered the rescue from Kagoshima Bay of a baled-out Helldiver pilot, Lt.(jg) Somerville (second right). Klinger, who wears one of the first 'G'-suits, was awarded the Navy Cross for this mission, and Moeller and Baker – who himself had to ditch beside the destroyer USS *Stemble* on the way back to the 'Hanna' – the Distinguished Flying Cross. 'Slim' Somerville, who was scooped to safety by an OS2-U Kingfisher from the cruiser USS *Astoria*, wears the G-1 flight jacket with a squadron patch on the right chest, and a khaki baseball cap.

Pilots often survived baling out or ditching, to face an uncertain fate. By mid-war the USN began to deploy destroyers, PT boats, floatplanes and submarines along the route of outgoing and returning air strikes, and the losses among veteran aircrew were significantly reduced. There were cases of Kingfishers and PBY Catalinas snatching up pilots within rifle range of Rabaul and later from Tokyo Bay. Submarines would partially surface to grab them before returning to the safety of the deep; by VJ-Day, 380 flyers (including the future President George Bush Sr) had been rescued by submarines. (Courtesy Roland H.Baker family)

B3: Yeoman 2nd Class; USA, 1943
The Navy's standard winter work uniform was this plain blue wool undress jumper without white trim, and matching trousers with a fall front and bell-bottom cuffs. Worn in the slightly more formal setting of an office or HQ, the neckerchief might also be worn. This Yeoman wears a sleeve badge with the crossed quills representing his rating and the two red chevrons denoting his rank of Petty Officer 2nd Class. Yeoman was an administrative rating; he would handle correspondence and personnel paperwork – many women filled Yeoman shore billets for the Navy during both World Wars. It was said that due to the coming war, the Navy had all the rating badge eagles facing forward after 1940 'to see the oncoming enemy', and the officer's hat eagle was changed to face the wearer's sword arm.

C1: Ordnanceman, aircraft carriers; Pacific, 1943–44
All members of the deck gang wore color-coded cloth helmets and shirts; though the colors were standardized, each ship might issue either a long-sleeved shirt or jumper or a T-shirt. A deck man's duty section job or number might be stenciled on the back. Sometimes only the colored cloth helmet was used, and some of the 'jeep' carriers seem not to have followed the system at all. This red clothing marks an ordnanceman handling bombs, rockets, torpedoes and

machine gun ammunition. Everyone in the deck gang would help with emergencies or in moving aircraft. In the heat of battle severely damaged aircraft were pushed over the side – as were even undamaged planes, if deck space were needed for aircraft from a sunk or damaged carrier which could not land them back on. Bomb shrapnel could take a heavy toll of the exposed AA gunners and deck gang, and accidentally walking into an aircraft's spinning propeller in the noisy confusion was also a real danger.

C2: Lieutenant pilot, aircraft carriers; Pacific, 1943

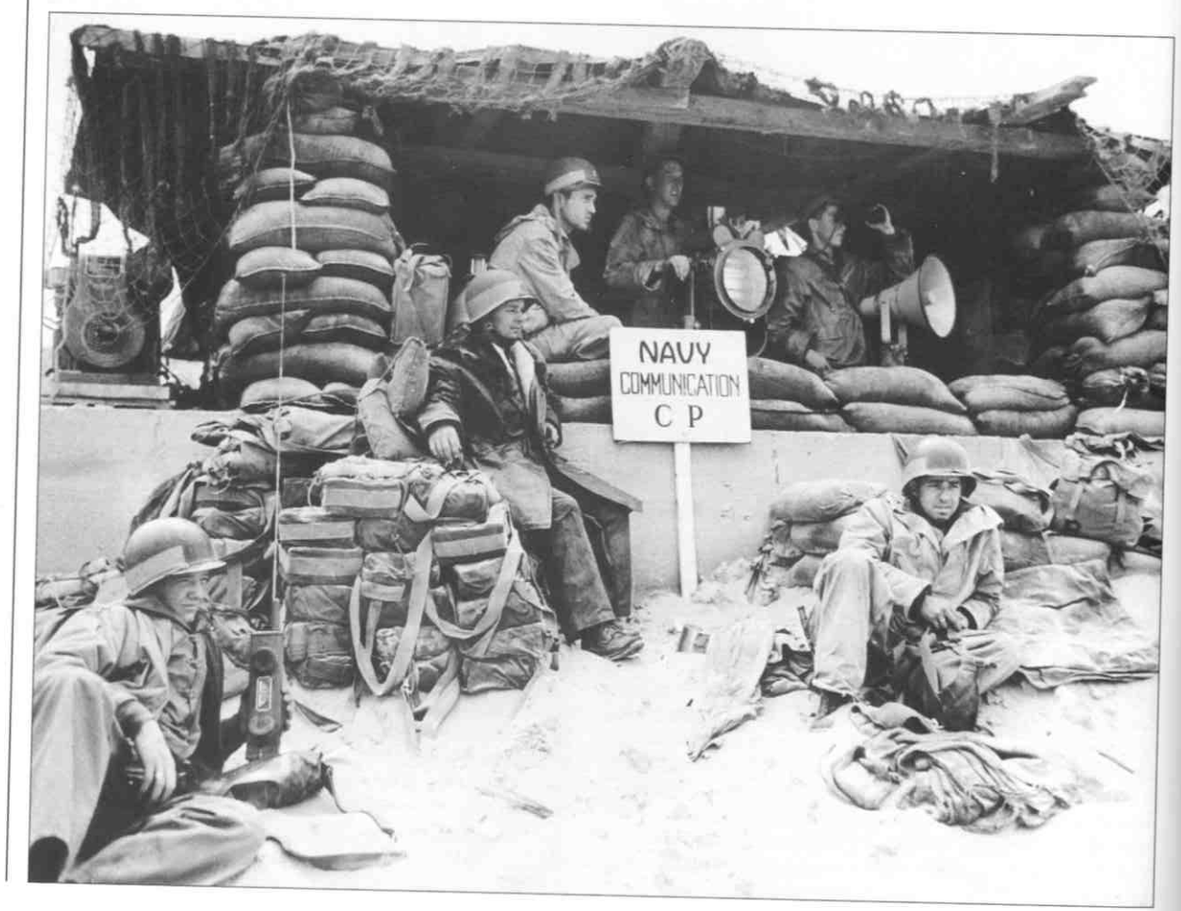
The Navy's most common flying clothing was this khaki cotton A/N-S-31 flying suit (M426-A), worn here with a khaki cloth M450 flying helmet with leather earphone covers and chin cup, and Wilson Mk II goggles. Over the one-piece suit he wears an inflatable B-3 life vest with packets of dye marker attached to the chest, a sheath knife, and a .38 revolver in a shoulder holster. On his back, strapped over the life vest but under the harness of his QAS (Quick Attachable Seat) parachute pack, is a survival pack; attached to the seat pack itself is a small inflatable life raft. Apart from the other perils of baling out over the Pacific, floating for more than 48 hours endangered the blood circulation in the legs and could ultimately lead to amputation. By 1944 the rescue of downed pilots was a priority, and successful pick-up of the lost sheep by floatplanes and submarines became almost routine.

It took five confirmed kills to be designated an 'ace'. The Navy's leading ace was the CAG (Commander Aviation Group) of the USS *Essex*, Cdr David McCampbell. A pre-war flyer, he did not see combat until 1944; nevertheless, flying a Hellcat from the 'Marianas Turkey Shoot' until VJ-Day, he shot down 34 Japanese aircraft – nine of them in the course of a single mission.

C3: Lieutenant pilot, 'aviation greens', 1943

Based on the US Marine Corps officer's uniform, 'aviator's greens' had been worn by USN flyers since 1918, with the russet brown shoes which remain even today a distinguishing feature of Navy aviators. Like the initial 1939 pattern khaki jacket, the greens show rank on the cuff, in black braid. Medal ribbons might be worn, but gold pilot's wings **(inset)** always were; examples were made both from gold-colored metal on a black backing, or from gold bullion embroidery – the black backing disappeared in 1943. With this uniform officers could wear either this green-covered visored cap or a green overseas hat. The distinctive green uniform was quite popular among flyers, but on formal occasions whites or blues were to be worn.

June 1944: men of the 2nd Naval Beach Bn on Utah Beach, Normandy. The Navy normally provided the link between ships and shore; here they use radios, blinker lights, semaphore flags and a loudspeaker. The sailor at second left is sitting unconcerned on a stack of canvas bags of explosive charges. They appear to be wearing green canvas rain gear and typical USN grey-banded helmets; cf Plates E1 & E3.



D1: Seaman 1st Class Striker; USA, 1942–43

This young sailor is out of boot camp and has already successfully qualified (by 'striking') as a Radioman; the lightnings badge of this specialty was worn on the left forearm until 1944, when it was shifted to the rating patch on the upper arm. Here 'Sparks' is dressed as the Navy intended the enlisted walking-out uniform to look, complete with liberty pass in his breast pocket. His junior status is marked by the white trim worn by seamen around the right shoulder seam, and his exact rank by the three white lines on the cuffs of his blue dress jumper. No patch or hat tally was worn by sailors to show to what ship they belonged. After the USS *San Diego* gave liberty in the port of the same name, the police were trying to return a drunken sailor to the Navy. Asked where he came from, he responded 'the San Diego'. When asked from which part of San Diego he came, he replied 'the engine room'.

D2: Hospital Corpsman 2nd Class; Australia, 1943–44

Enjoying his liberty, perhaps in Melbourne, this PO 2nd Class is a member of the 1st Marine Division and is entitled to its left shoulder patch; he would be authorized to wear either the Marine Corps green service uniform or his Navy 'blues'. On the left forearm of his jumper 'Doc' has two stripes, showing eight years' service; he has rolled back the cuffs of his dress jumper to cool off, revealing inside 'liberty cuffs' embroidered with the dragons or other symbols popular with pre-war China sailors of the Asiatic Fleet. Liberty sailors also invariably wore their 'dixie cup' sailor hats on the back of their heads, and longer-than-regulation neckerchiefs seem to have been popular. Spotted by a Shore Patrolman, he would probably be written up for improper dress – though the SP's heart may be touched by the Navy Cross and Presidential Unit Citations among his medal ribbons. After the war the Corpsman's red cross badge was changed to a caduceus symbol. In combat in the Pacific, Corpsmen would not wear an identifying red cross brassard or helmet insignia (though some wore a small white disc painted on helmet, shoulder and hip); they would also normally carry a carbine or pistol – the Japanese deliberately targeted medics and aid stations.

D3: Gunnersmate 1st Class; Shore Patrol, USA, 1943

The Navy maintained a large force of Shore Patrolmen in liberty towns like Honolulu, San Francisco and San Diego. They had their hands full riding herd over rowdy sailors with six months' back pay in their pockets. Most SPs were regular sailors temporarily assigned to policing duties. This petty officer is a member of the Seamen's branch, so wears his rating badge on his right arm, but service stripes were worn only on the left forearm. Members of the Shore Patrol wore the 'SP' brassard on either sleeve, opposite the rating badge. He wears the undress jumper usually reserved for on-base or fatigue use. His leggings and web belt are the issue khaki drab color; the better known whitened gear was not normally seen until after the war. SPs were armed with a nightstick on a white cord and, on rare occasions, a .45in. pistol in a brown flap holster. The most common instruction they received was, 'If you use your nightstick, don't hit'em in the head'.

E1: Chief Petty Officer, 6th Naval Beach Battalion; Normandy, 6 June 1944

Naval Beach Battalions were responsible – up to the high tide line – for co-ordinating the clearing of beach obstacles and the movement of personnel into the beachhead. Averaging 400 strong, they were split into communications, demolitions and medical sub-units. The battalion commander was termed the Beachmaster. This CPO wears a US Army herringbone twill fatigue uniform, web equipment and assault gasmask; his red arc battalion helmet marking and USN grey stripe are his only Navy identification. He is armed with an M1 carbine and carries a short-range handie-talkie radio. He wears paratrooper boots like most beach personnel – they were found convenient for keeping out sand and pebbles.

The 6th and 7th Navy Beach Bns were landed on Omaha Beach in support of the 1st and 29th Infantry Divisions; the 2nd Bn landed on Utah Beach in support of the 4th Infantry Division. Many of the D-Day beach battalion veterans were later redeployed to the Pacific and took part in the Iwo Jima and Okinawa landings.

E2: Petty Officer, amphibious forces; Omaha Beach, Normandy, 6 June 1944

Probably a crewman off an LST, this petty officer has come ashore at the end of 'the longest day' to look around. D-Day was quite cool, and with his dungaree work uniform he wears the Navy black knit watch cap, and a blue deck jacket very similar to the Army's 'tanker jacket'. Several patterns of deck jackets were produced during the war, the blue ones being the earlier patterns; this color was changed to Army drab in 1943, presumably to ease production. He has a web pistol belt with a holstered .45in. M1911A1 – landing craft crews were required to be armed. Most sailors at Normandy displayed no rank on their uniforms, though insignia were sometimes painted on the helmet. Known as 'Large Slow Targets', 100 US Navy Landing Ships, Tank, were used on D-Day, and several were deployed in support of the British beaches; German E-boats sank two of them on the night of 8 June.

E3: Coxswain, US Coast Guard; Omaha Beach, Normandy, 6 June 1944

The Navy's landing craft were manned by both USN and Coast Guard sailors. The only Medal of Honor given to a Coast Guardsman was won by an LCVP driver during the Guadalcanal campaign. During the Normandy landings these men wore a combination of Army green fatigues and Navy dungarees; many wore all-Army clothing but most had their helmets and jackets stencil-painted 'USN' or 'USCG'. This 'Coasty' wears the Navy issue hooded rainjacket, which had metal clip fasteners and a drawstring hood. His helmet has the broad grey-blue stripe commonly used on D-Day to identify sailors. The boatswainsmates who drove the landing craft were referred to as coxswains. They stood at the rear of the craft, with only the distant metal front ramp for protection. The standard LCVP had a crew of three and carried approximately 34 troops. Artillery, anti-tank guns and obstacle mines took a heavy toll of LCVPs and crews on Omaha Beach. The USCG also operated 10 LSTs and 24 LCIs on D-Day.

January 1945: Vice Adm. John McCain on board the carrier USS *Hancock* of TF 38, planning operations with his Ops officer, Cdr. John Thach (right). Thach was a squadron leader who helped develop defensive tactics for the Wildcat when facing the more maneuverable Zeros (the 'Thach Weave'). McCain was a carrier sailor who distinctively wore his visored admiral's cap pulled back and without any stiffening. Both men would attend the Japanese surrender ceremony in Tokyo Bay on 2 September 1945, but McCain would die of a heart attack a week later.

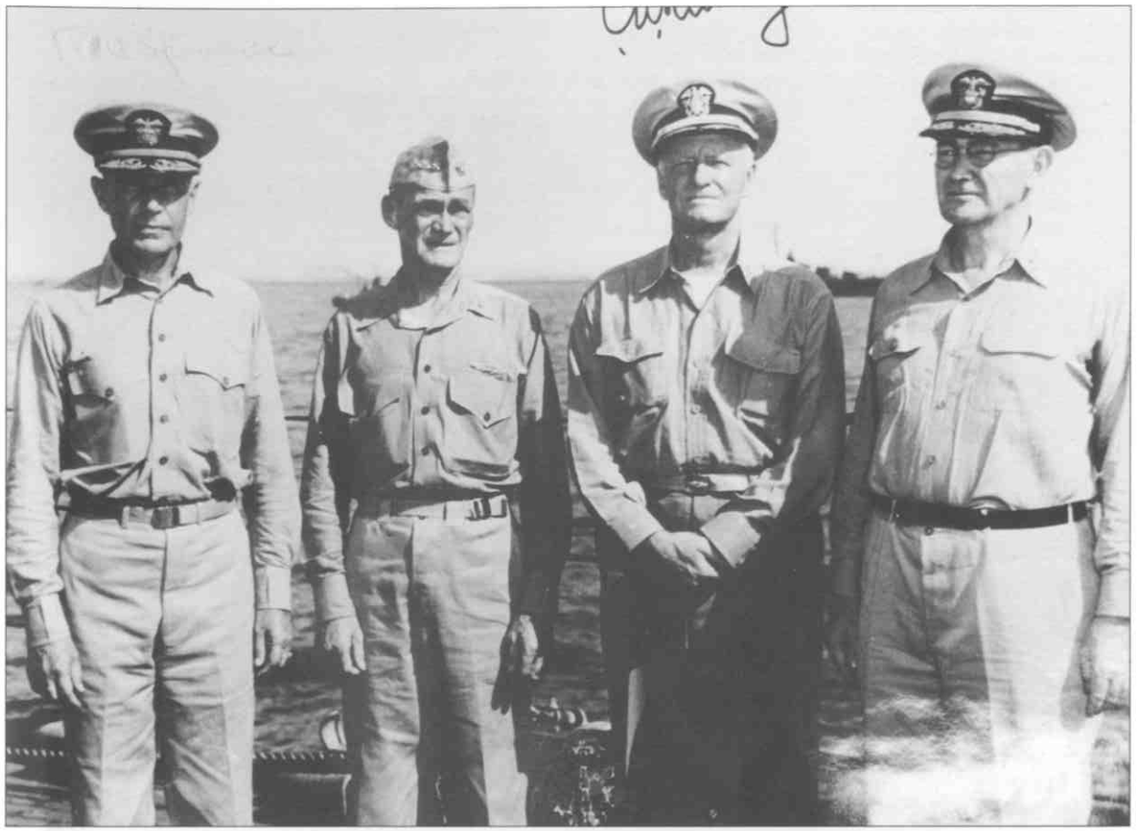
E4, E5: Amphibious forces & Seabees patches
After D-Day, the yellow-on-red version of the British red-on-blue Combined Operations patch was worn on the left shoulder of the jumper by Navy amphibious personnel. The blue Seabee patch also began to be worn in 1944.

F1: Lieutenant-Commander, submarines; Hawaii, 1944
The khaki uniform with jacket was used for walking-out dress by officers and CPOs. Officers' rank was shown on both the shoulder boards and the shirt collar; CPOs wore khaki-backed black rating badges. The jacket was normally made of medium weight cotton but a light gaberdine/wool version was also used.

The Navy sought daring and aggressive skippers for their submarine fleet, as the sub was the epitome of an offensive weapon. A submarine was normally captained by a lieutenant-commander. This skipper wears both the officer's submarine badge, and (below) the combat patrol badge authorized in 1943. Also visible are the ribbons for the Navy Cross and the Purple Heart.

F2: Captain, battleships; England, 1944
US battleships served in the Atlantic/European theater throughout the war, and three World War I era BBs supported the Normandy landings with their massive firepower. The commander of a ship, regardless of his rank, would be referred to as 'captain' on board his vessel, and remained in command even if an admiral 'flew his flag' on board. This battleship captain – in both function and rank – wears the standard European theater Navy uniform of a double-breasted blue reefer jacket with the blue 'winter' hat cover. The four half-inch gold cuff stripes beneath the star of a line officer show his rank. The prominent Academy finger ring denotes his regular Navy status; and his ribbons include the American Defense Medal with the letter 'A' representing 1941 Atlantic service. His cap visor is embellished with the gold embroidered oakleaves and acorns worn by lieutenant-commanders, commanders and captains.

F3: Ensign, Supply Corps; England, 1944
This staff officer wears the new grey uniform authorized in 1943/44. The coat is essentially a grey version of the cotton khaki pattern with the addition of special grey shoulder boards. Like all non-line officers, the ensign wears his corps symbol – here the Supply Corps oakleaves – on his left shirt collar balanced by his rank bar on the right. If he were wearing the blue reefer jacket, the same corps badge would be worn just above the cuff rank stripes in place of the line officers' star. This veteran wears both the ETO and the Pacific theater ribbons, and his Good Conduct ribbon identifies him as a commissioned former enlisted man. Supply Corps officers were commonly based on larger vessels or on shore. Either the old gold/silver or new gunmetal cap badge was worn with the grey hat cover. Throughout the war both the khaki and the grey uniform were authorized for wear. Grey uniforms for WAVES, CPOs and Shore Patrolmen, with matching grey/black insignia, were also authorized. Joking reference was made to the Confederate Navy, and the grey uniform was slow to catch on.



February 1945: Admirals Spruance, Mitscher, Nimitz and Lee gather for a photo aboard the ill-fated cruiser USS *Indianapolis*. Nimitz was the US naval commander in the Pacific throughout the war; Spruance and Halsey commanded the dual 5th/3rd Fleet; Mitscher was the premier carrier admiral of the war, and Lee a stalwart battleship leader. Cf Plate H2.

G1: Boatswainsmate 3rd Class; England, 1943
Surprisingly, this PO 3rd Class sports the white cord and whistle of a leading boatswainsmate. His jumper shows one service stripe and ribbons for American Defense and ETO service; he is no doubt a skilled bosun whose lack of a Good Conduct ribbon may account for his low rank. As a deck sailor, he has a right sleeve rating. His flat 'Donald Duck' hat was the normal winter headgear for the enlisted man; sailors preferred the white 'dixie cup', but the pattern illustrated here was a common sight in England, and it was technically the required headgear for liberty. In 1942 sailors also carried gasmasks, as did everyone else in Britain. The bosun's worldly possessions are contained in the white canvas seabag ('dufflebag'), which here has the canvas hammock wrapped around the outside.

G2: Chief Petty Officer, submarines; USA, 1944–45
CPO was the senior enlisted rank a sailor could attain. Rank and service stripes were red except for sailors with over 12 years' of good conduct, who wore gold stripes. CPOs generally wore modified officers' uniforms, though the blue reefer jacket had an eight-button front instead of the officer's six buttons; CPOs wore a white version of this jacket for summer dress occasions. Among this Chief Machinistsmate's ribbons are the Purple Heart, Good Conduct, China Service and the Pacific theater with seven battle stars (one silver and two bronze). This Chief, like all enlisted submariners, wears his cloth qualification badge on his right cuff.

G3: Submarine sleeve badge, enlisted ranks
G4: CPOs' rating badges – Radioman with 12 years' service; Electrician with less than 12 years' service; and Turret Captain, on 'whites'.

H1: Ensign, PT boats; Pacific, 1944
PT boats proved very useful for picket, rescue and inshore gunnery work in the Pacific and Mediterranean, and played an important part in destroying Japanese resupply barges in the South Pacific, which helped starve the enemy's island garrisons. They could also pester and distract major warships with torpedo attacks, although they never sank anything larger than a destroyer. To be skipper of a PT was exciting work, and an ensign or lieutenant (jg) was lucky to receive the responsibility of command. Other commands open to these junior ranks were amphibious craft (LST, LCI or LCM). Due to the inshore nature of the mission this officer wears a web belt with a .45in. pistol (interestingly, tracer ammunition was issued for use like a flare when signalling for rescue in the water).

This ensign's relaxed khaki uniform is typical of most officers in the Pacific. His rank is shown by the gold bar on each side of the shirt collar; non-line officers wore their branch insignia on the left collar. (The USN followed the same sequence of rank symbols as the Army: e.g. lieutenant junior grade and lieutenant wore one and two silver bars, lieutenant-commanders and commanders a gold or silver oakleaf, captains a silver eagle.) Note the 'U.S.N.' stencil on the chest of his olive drab deck jacket. His rather beat-up cap has a slight 'smile' – the line of khaki showing above the black band where the khaki cover is not snugged down properly.

H2: Rear Admiral; Pacific, 1944–45

A much neater set of khakis is worn by this senior officer on combat operations, his rank identified by the two silver stars worn on both shirt collar points; vice admirals wore three and admirals four stars. Admirals were given fairly wide latitude over what they wore on shipboard. They tended to wear the visored cap with 'scrambled eggs' on the visor, though overseas hats and baseball-style caps were also common. A variation peculiar to admirals was the wearing of various issue and civilian leather/canvas belts with their khaki uniform trousers. Admiral Mitscher scandalized the Navy by wearing aviator's brown shoes with his khakis; he also wore miniature pilot's wings on his overseas hat in place of the USN crest. The one-star rank of commodore ('rear admiral lower half') was reinstituted in 1943 for the senior captains commanding certain squadrons and task forces. In December 1944 the five-star rank of Admiral of the Fleet was introduced for Adm. King, and Adm. Nimitz was also promoted to this rank subsequently.

H3: Lieutenant, Admiral's aide; Pacific, 1944–45

This neatly turned-out escort or aide to the admiral wears khakis with the common overseas hat, showing rank on one side and a miniature Navy crest on the other; Navy officers used pin-on rank insignia about half the size of the Army versions. The khaki shirt had no epaullettes and the design of the patch pockets varied. His prominently displayed submarine badge would be retained even if he were no longer serving on a sub. If he were an aviator, he would likewise be wearing brown shoes and the pilot's badge.

I1: Petty Officer 'talker'; Pacific, 1945

This petty officer is serving in the 'talker's' position in a gun crew, relaying spotting and firing instructions between the Fire Control Center and the gun. His oversize helmet is designed to take headphones; his microphone is mounted on a small plate resting on his chest. Besides his dungarees, he wears the bulky standard issue kapok lifevest made in a heavy medium blue-grey cotton – a high visibility red/orange version came into use after the war. During the Okinawa landings AA gun crews stayed at their action stations almost without pause for days at a time, living on coffee and sandwiches as they fought off waves of kamikazes.

I2: Chief Petty Officer, daily working dress, Pacific

In the pre-war Navy, CPOs would have at least 15 years' service, but under wartime conditions a talented man might make chief in three years. Chiefs generally preferred to wear the enlisted dungaree uniform for everyday duty. As they normally wore no rank insignia, the visored cap with their fouled anchor badge was the symbol of their status. The khaki uniform was worn by shipboard chiefs who worked in

the more administrative capacities, and by VJ-Day was gaining more general acceptance from the CPOs. (In today's Navy, khakis are a prerogative of the CPOs and this class of veteran sailors are sometimes referred to by officers as the 'Khaki Mafia'.) On large vessels CPOs slept in separate quarters from the men and had their own mess facilities – which were invariably the best in the ship.

I3: Petty Officer, submarines, 1944

Navy regulations allowed for the wearing of beards and moustaches by enlisted men. Rarely tolerated in the USA, on some submarines and ships they were encouraged, and on subs particularly the practice saved precious fresh water. Facial hair was to be kept trim, and sometimes a man was required to be clean-shaven before he could leave the ship. This sailor wears the dark blue 'dixie cup' sailor hat that was slowly becoming common for fatigue use; these were usually white hats that had been dyed on board ship.

As a sub crew returned from patrol they might display a broom on their mast, signifying that they had fired all their torpedoes and had sunk enemy vessels ('a clean sweep'). This petty officer would be submarine-qualified, with increased pay to acknowledge the hazards inherent in his job. Approximately one in five of the active US submarine sailors were killed in action during World War II; the fate and location of some of the boats lost to enemy action, accident, or the hazards of navigation still remains a mystery.

I4: Seaman, PT boats; Pacific, 1943

This sailor, startled by the sudden appearance of an aircraft above an island anchorage, wears the standard work uniform of the US Navy in its scruffiest form. Sleeves were rolled up or even cut off, and a T-shirt might also be worn. Any deck sailor worth his salt always carried a folding-blade knife, usually hung on his belt by a brass clip. Several

OPPOSITE **August 1943: this 'talker' – cf Plate I1 – is serving on 'the Fighting Lady', the carrier USS *Yorktown* (CV-10), relaying targeting and gunnery data between the Fire Control Center and his AA gun crew. The first *Yorktown* (CV-5) was lost during the battle of Midway in 1942. The new *Yorktown* (CV-10), an Essex Class carrier, survives to this day in Charleston, South Carolina.**

November 1943: a cheerful 40mm AA gun crew aboard the battleship USS *New Mexico* jeering at another crew's claims, led by a CPO wearing his khaki visored cap with blue dungarees – cf Plate I2.

varieties of narrow dungaree belts were used, including civilian leather types. As the uniform was for fatigue it was commonly torn, stained or threadbare; small ship crews (being far from senior supervision) were sometimes noted for their generally grungy appearance, but carrier sailors also had this reputation. PT boat sailors were all volunteers and were cross-trained in several jobs to back each other up in case of casualties among these small crews. In combat, PT crews wore kapock lifevests and steel helmets; fearing that their necks could be snapped by nearby explosions, sailors rarely wore the chinstraps fastened. As in this case, many ships had their OD green helmets painted in Navy deck blue.

Note his 'dogtags'. These semi-oval dull steel disks were to be worn in pairs around the neck at all times as a permanent part of the uniform. Stamped on the disk were the sailor's name, rank and service number; the date of his last tetanus shot, his blood type, and his religion (P, C, H or None). Starting in 1941, the rear of the tag showed the outlines of the sailor's right index fingerprint; this was accomplished by making an ink fingerprint impression and adding chemicals which acid-etched it into the metal. This feature was discontinued in the middle of the war. Officers' tags showed their rank but no service number. Sailors serving in close proximity to the Army sometimes added an oblong Army-style dogtag to their Navy tags.

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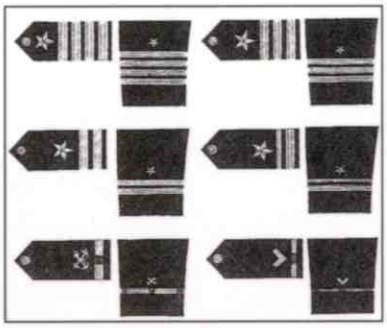
The history of military forces, artefacts, personalities and techniques of warfare.

Full color artwork



Diagrams

Unrivaled detail

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The US Navy in World War II

In 1941 the US Navy had 17 battleships – of which eight would be knocked out on the first day of the war – four aircraft carriers, and about 340,000 men including reservists. Pearl Harbor so weakened it that it was unable to prevent the Japanese capture of the Philippines and a vast sweep of Pacific islands. By 1945 it was the strongest navy the world had ever seen, with nearly 100 carriers, 41,000 aircraft and 3.3 million men; the unrivaled master of air-sea and amphibious operations, it was poised to invade Japan's home islands after reducing her fleet to scrap and her Pacific empire to impotence and starvation. This extraordinary story is illustrated here with dramatic photos, and nine meticulous color plates showing a wide range of USN uniforms.

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