ON COURSE THROUGH HISTORY

THE U.S. NAVY AT 250

EXPANDED EDITION

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INTRODUCTION BY REAR ADMIRAL SAMUEL J. COX, USN (RET.)
DIRECTOR, NAVAL HISTORY AND HERITAGE COMMAND

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INTRODUCTION: "DON'T GIVE UP THE SHIP!"

For 250 years, American sailors have stood watch at sea in the name of freedom. Against pirates, empires, and superpowers, their devotion to duty has never wavered even as their operating environments have expanded to the depths of the ocean and the skies above it. The complexity of modern naval warfare has required the Navy to develop new capabilities and establish countless new specialties since its founding, but the constant element throughout the Navy's history is the ethos of service and the commitment to winning at sea. It is this combination of professionalism, technical expertise, and willingness to sacrifice that has made the U.S. Navy the most powerful naval force in history. Though the initial decades of the Navy's existence were a perpetual struggle against overwhelming odds, the tenacity and resilience that the first American sailors demonstrated still serves as a call to duty for their present-day spiritual descendants.

On 1 June 1813, the frigate USS *Chesapeake* engaged the Royal Navy frigate HMS *Shannon* about 20 miles east of Boston harbor. In the space of 11 minutes, 228 men on both sides were left dead, dying, or wounded in the bloodiest single-ship engagement of the War of 1812. A boarding party led by *Shannon*'s captain, Philip Broke, gained control of *Chesapeake*'s upper deck after brutal close quarters combat that trapped the surviving Americans below. By the end, Broke had suffered a grievous head wound and Captain James Lawrence of *Chesapeake* was shot in the knee and the groin. As the mortally wounded Lawrence was being carried below, he gave a command that would echo in the soul of sailors for centuries: "Don't give up the ship!"

Though the battle between *Chesapeake* and *Shannon* appears at first glance to be a lopsided, albeit costly, British victory, there was actually a very fine line between victory and defeat. The loss of *Chesapeake* came as a great shock to Americans who had cheered six consecutive victories of U.S. Navy ships over Royal Navy vessels in single combat. Nevertheless, Captain Lawrence's "last words" became a rallying cry. His close friend, Master Commandant Oliver Hazard Perry, named his flagship after Lawrence. Perry also emblazoned Lawrence's words onto his battle flag. In the Battle of Lake Erie on 10 September 1813, the three most capable British vessels subjected USS *Lawrence* to almost two hours of long-gun bombardment. With his ship

a shambles and many of his crew killed or wounded, Perry shifted his flag in a small boat to the undamaged USS *Niagara*. Perry then unleashed full broadsides upon the battered enemy at close range to achieve a decisive victory, in which the entire British force surrendered. Perry penned his own immortal declaration to the U.S. Commander in the West, General William Henry Harrison, "We have met the enemy and they are ours."

Perry's battle flag arrived at the U.S. Naval Academy in 1849, where it and Lawrence's words have served as an inspiration to generations of midshipmen whose resolve might be wavering. I know, as I was one of them. Coupled with the adjacent list of all Naval Academy graduates who have been killed in action, the flag is a powerful reminder that, compared with what was expected of them, what has been expected of me was not so great. I was far from alone in this feeling, as the concept has become inculcated throughout the Navy officer corps. Prior to the War of 1812, if a ship was seriously outmatched by an opponent, the gentlemanly thing to do was to strike one's colors to avoid unnecessary bloodshed. After the War of 1812, and increasingly so after the Civil War, the concept of striking colors to a foreign power was anathema to U.S. Navy officers.

There have been numerous examples of U.S. Navy ships choosing to fight to the end even in the face of overwhelming odds. In March 1942, during the opening months of World War II, the heavy cruiser USS *Houston* (CA-30) was exiting the Java Sea when it unexpectedly encountered the main Japanese invasion force bound for Java. Low on fuel and ammunition and with one of three main turrets destroyed from a previous action, the ship's commanding officer, Captain Albert Rooks (USNA '14), nevertheless chose to attack, placing mission above a chance at escape. Only once all of *Houston*'s ammunition was depleted and the ship was sinking, did Rooks order the crew to abandon ship. He was killed immediately thereafter by an enemy shell. Three months later in the Battle of Midway, the submarine USS *Nautilus* (SC-2) under the command of Lieutenant Commander William H. Brockman Jr. (USNA '27) repeatedly surfaced and engaged the Japanese strike force. The persistence of the skipper and the crew while enduring hours of depth charges helped carry the day when a Japanese destroyer detached to sink *Nautilus* inadvertently led a flight of Navy strike planes from USS *Enterprise* (CV-6) to the Japanese carriers.

Although Perry's flag has a close association with the U.S. Naval Academy, the sentiment permeated the entire Navy officer corps as reservists took command of hundreds of newly commissioned vessels in World War II. These included Lieutenant Commander Robert Copeland of the destroyer escort USS *Samuel B. Roberts* (DE-413) at Samar. When a force of four Japanese battleships, six heavy cruisers, two light cruisers, and eleven destroyers surprised the six light escort carriers of Taffy 3 and their escorts, Copeland calmly readied his small ship to attack in company with the three other destroyer escorts and three destroyers of the task unit. He announced to the crew over the ship's loudspeaker that they were entering "a fight against overwhelming odds from which survival could not be expected, during which time we would do what damage we could." The skill and heroism of Lieutenant Commander Copeland and his crew saved all but two of the escort carriers from destruction and repelled the Japanese force. Forty-four years later in

April 1988, the crew of the frigate USS *Samuel B. Roberts* (FFG-58), namesake of the World War II destroyer escort, once more embodied the spirit of Captain James Lawrence when their ship struck a mine in the Persian Gulf. With a 21-foot-hole in the ship's port side, 2,000 tons of water entering the ship, a major fire aboard, and power lost, Commander Paul Rinn refused to consider abandoning ship. The bravery and determination of his crew saved the stricken frigate and the lives of all aboard.

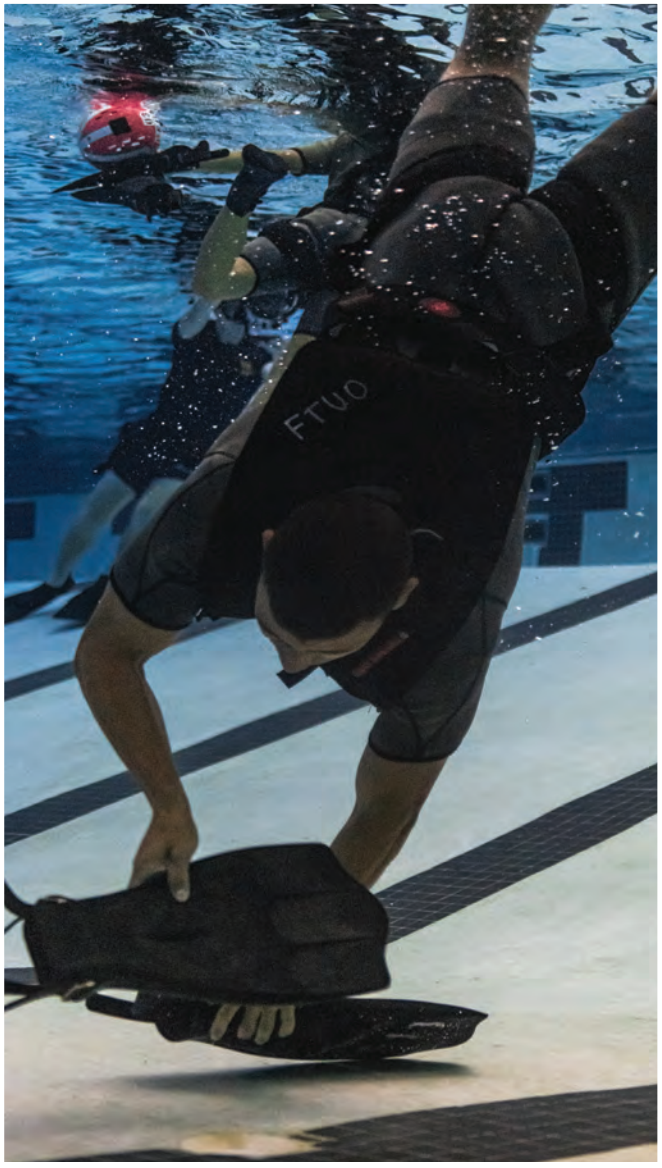
In honor of two and a half centuries of American sea power and the nation's 250th birthday, this volume presents an overview of the Navy's history since its creation. It then offers chapters that explore the people and events that have contributed to the Navy's warfighting readiness at sea, on land, in the air, and deep in the depths of the world's oceans. This expanded edition encompasses the contributions of those in other Navy communities, to include information warfare, logistics, diving and salvage, medicine, and civil engineering.

Alongside the growth of the nation since its independence, the Navy too has expanded and evolved while maintaining its essential place in ensuring national security. Today the Navy's active-duty sailors and reservists stand ready to confront threats anywhere around the globe, providing the nation's leaders with unparalleled capabilities in both peacetime and times of war. This book is intended to showcase just some of their forebears, whose innovation and dedication helped make the Navy into the team of professionals that continues to protect Americans' way of life. Every American sailor is a warfighter, and collectively they can draw upon their service's rich legacy for insight and inspiration as they uphold its honorable tradition of defending the nation.

Rear Admiral Samuel J. Cox, USN (Ret.)
Director, Naval History and Heritage Command

ON COURSE THROUGH HISTORY

IN TRAINING



1 A NAVY OF NECESSITY

TYLER R. BAMFORD

Few Americans today can remember a time when the U.S. Navy was not the most powerful naval fighting force on earth. Since the end of World War II, American sailors have ensured the safe transit of the nation's citizens and goods throughout the global maritime commons and stood the watch, ready to defend the nation against its enemies anywhere in the world. The prosperity and freedom of movement that their service has guaranteed for the United States and its allies was not preordained by geography or fate. Rather, the U.S. Navy and its unprecedented capabilities are the product of the American people's recognition that their security is closely bound to the sea. After two and a half centuries, Americans rely on their Navy more than ever to guard the nation and its interests around the globe.

REVOLUTIONARY BEGINNING

The U.S. Navy traces its origins back to the very debate over whether the 13 colonies should declare independence from Great Britain, the eighteenth century's greatest naval power. After British troops fired on colonial militiamen at Lexington and Concord in April 1775, thousands of colonists besieged British forces in Boston. When Virginian George Washington took command of this force, he acquired several civilian ships and outfitted them as raiders to attack British supply vessels entering Boston Harbor. Some members of the Continental Congress, too, saw the value in attacking vulnerable British shipping. On 13 October 1775, Congress strenuously debated and ultimately voted appropriations for two armed sailing vessels to intercept British merchant ships. The colonial representatives simultaneously established a committee of three men to contract for the purchase of the first ship and prepare cost estimates for the second. This humble beginning marked not only the birth of the Continental Navy, but also of its heir, the United States Navy.

As the fighting escalated and spurred calls for complete independence, many colonists feared breaking with Britain and confronting the full power of its army and fleet. In making the case for independence, Thomas Paine assured his fellow colonists that they could successfully challenge the thinly stretched British Royal Navy, which had global commitments and supply lines that stretched thousands of miles. Paine explained in his February 1776 pamphlet *Common Sense* that when it came to constructing warships, "no country on the globe is so happily

situated, or so internally capable of raising a fleet as America. Tar, timber, iron, and cordage are her natural produce. We need go abroad for nothing."

Though Continental Navy captains Lambert Wickes, John Barry, and, most notably, John Paul Jones, achieved impressive victories in single-ship contests with Royal Navy combatants, the colonies' naval power exerted the greatest influence on the outcome of the war in commerce interdiction. Continental Navy ships, together with thousands of privately outfitted vessels possessing letters of marque issued by the Continental Congress and state governments, preyed on British shipping across the Atlantic from the Caribbean to the coasts of the British Isles themselves. These attacks cost the British no fewer than 600 merchant ships by the war's end.

In the final years of the war, it was a naval victory won by the French navy over a British squadron in the Battle of the Capes that proved decisive. Rear Admiral François J. P. Comte de Grasse's success in preventing the British fleet from resupplying General Charles Cornwallis at Yorktown, Virginia, compelled the latter to surrender to Washington's army on the morning of 19 October 1781. The triumphant American general paid homage to de Grasse's essential victory when he wrote to the admiral nine days after Cornwallis' surrender that, "whatever efforts are made by the land armies, the Navy must have the casting vote in the present contest." The following month, Washington reiterated to Major General Marquis de Lafayette that "no land force can act decisively unless accompanied by a maritime superiority."

Despite the achievements of American sailors in the Revolutionary War and the indispensable contribution of French naval power to victory, the newly independent states were reluctant to appropriate funds to construct a permanent force of warships. In addition to the great cost of frigates and even larger ships of the line, the half dozen frigates that the colonies had succeeded in building and launching during the late war had performed poorly in actions against British warships. Nevertheless, Federalist Alexander Hamilton argued in December 1787 that "if we mean to be a commercial people, or even secure on our Atlantic side, we must endeavor, as soon as possible, to have a navy." Seven years later, a foreign relations crisis in the Mediterranean finally moved Americans to act on Hamilton's appeal.

TOWARD A PERMANENT FORCE

In 1794, President George Washington signed "An Act to Provide a Naval Armament," which authorized the construction of six frigates in response to the seizure of American merchant ships and sailors by the city-state of Algiers. The six frigates that Congress ordered to protect American commerce were intended from their conception to outclass their counterparts in other navies with their greater displacement, sturdier construction, and larger armament. Boasting original designs by Philadelphia Quakers Josiah Fox and Joshua Humphreys, the frigates were rated to carry either 36 or 44 guns each. Before the vessels could be completed, however, the United States ratified a treaty with Algiers in June 1797. Though Congress halted construction of three of the ships to save money, it permitted work on

three others to continue so that the nation would not be wholly unprepared in the event of another crisis.

When French warships and privateers began seizing American ships trading with the British just two years later in 1798, Congress promptly ordered all six of the original frigates to be completed and outfitted. Congress also authorized the purchase of 16 additional sloops and instructed American warships to attack French privateers operating in the Caribbean. Even more importantly, Congress established the Navy Department in a bill passed in April 1798. The following month, President John Adams nominated Benjamin Franklin Stoddert, a prominent merchant, to serve as the first Secretary of the Navy. In the 1799 Act for the Augmentation of the Navy, Congress allotted funding for an additional six ships of the line and six sloops. Though the Quasi-War with France concluded before these ships could be launched, their construction marked a turning point for the U.S. Navy. For the first time, Congress approved the construction of major warships without a defined mission or enemy in mind. This decision altered the Navy's trajectory and permanently fixed its position as an essential element of national security.

Barbary pirates once again attacked American shipping in the Mediterranean in 1801, and President Thomas Jefferson dispatched three frigates and a sloop to maintain a constant presence in the region. Tripolitan gunboats captured the frigate USS *Philadelphia* when it ran aground on 31 October 1803, but Lieutenant Stephen Decatur led a daring raid that succeeded in burning *Philadelphia* on 16 February 1804. A grateful Congress subsequently elevated the 25-year-old Decatur to the rank of captain, and he remains the youngest American to ever attain that rank.

Although Jefferson made extensive use of the Navy's frigates and sloops to guard American commerce abroad, he believed that a large ocean-going naval force was an extravagance and a possible provocation that could lead to war with a European power. Jefferson instead proposed to construct more than 100 gunboats, often mounting just a single gun, to protect American harbors. While inexpensive, these numerous vessels did nothing to deter British and French warships from seizing U.S. shipping as the two European powers repeatedly clashed between 1793 and 1815.

THE WAR OF 1812

In the fight against Napoleonic France after 1800, Great Britain not only confiscated American cargoes, but also removed as many as 6,000 seamen from American merchantmen and warships, whom British naval officers claimed were deserters from Royal Navy ships. A divided Congress declared war on Great Britain on 1 June 1812 and the slogan "Free Trade and Sailors' Rights" became the rallying cry for those who supported the war.

During the first year of the conflict, the nine seaworthy U.S. Navy frigates benefitted from British unpreparedness and scored a number of resounding victories against their smaller enemy counterparts in single-ship combat. These engagements provided a much-needed boost to public morale in the wake of stalemated campaigns against Canada and around the Great Lakes. Captains Isaac Hull, Stephen Decatur, and William

Bainbridge were feted as national heroes while the country paid homage to "the gallantry of our noble Tar's." One Army officer even declared that, "our brilliant naval victories, serve, in some measure, to wipe out the disgrace brought upon the Nation by the conduct of our generals." Simultaneously, American warships and privateers wreaked havoc on British commerce in the western Atlantic, eventually capturing nearly 2,000 British merchant ships. The combatant and shipping losses stunned the British public and led a cabinet official to lament how it "is a cruel mortification to be beat by these second-hand Englishmen upon our own element."

American successes at sea sharply decreased in the second year of the war as the British Admiralty responded to its losses by ordering merchant ships to sail in protected convoys and Royal Navy frigates to avoid single combat with the larger and more heavily armed American frigates. As the British deployed more warships to the western Atlantic, they instituted an effective blockade of major American ports and landed amphibious forces almost at will along the East Coast. On one such foray, British forces burned Washington, DC, and the Washington Navy Yard, one of six navy yards that Stoddert had established in Boston, New York, Philadelphia, Portsmouth, Norfolk, and Washington in 1799.

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USS *Constitution* defeats HMS *Guerriere*, 19 August 1812. Painting by Anton Otto Fischer, c. 1960.

Despite the dominance of the much larger Royal Navy beginning in the second year of the war, the Navy's early victories resulted in unprecedented support for the Navy in Congress following the end of hostilities in 1815. The final years of the war also saw some successes in the Navy's campaign to control the Great Lakes and Lake Champlain. In September 1813, Master Commandant Oliver Hazard Perry decisively defeated the British near Put-in-Bay, Ohio, thus establishing U.S. control of Lake Erie. Two years later, in 1814, Master Commandant Thomas Macdonough's flotilla defeated a British squadron during the Battle of Lake Champlain. This victory compelled the British to abandon plans for an invasion of New York and strengthened the American position in the ongoing Treaty of Ghent negotiations, thereby contributing to the end of the war.

A PROFESSIONAL AND GLOBAL FORCE

Following the end of the War of 1812, the United States enjoyed a long period of sustained growth, most notably from 1820 to 1836, as the population nearly doubled and the economy matured. The construction of roads and canals connected towns and cities and enabled the movement of the nation's agricultur-

al surplus to major ports. Though the country expanded westward, its flourishing trade with Europe was a key contributing factor to its prosperity. The burgeoning American commercial fleet fanned out across the globe, and the nation's leaders championed free trade and neutral rights in the face of European powers' restrictive trading policies.

Many Americans during this period believed their nation was destined to dominate the western hemisphere and embraced an expansionist agenda that resulted in the acquisition of Florida from Spain in 1819 and the annexation of newly independent Texas in 1845, which quickly led to war with Mexico in 1846. Mexico did not possess a naval force capable of challenging the U.S. Navy at sea and instead concentrated on coastal defense. Taking advantage of its control of the sea, the Navy conducted the first large-scale amphibious landing in its history when it put ashore 12,000 U.S. Army soldiers and marines near the city of Vera Cruz, which they captured after a two-week siege in March 1847. On the American West Coast, the Navy's Pacific Squadron claimed Monterey, San Francisco, and San Diego for the United States. When the war ended, the Treaty of Guadalupe Hidalgo ceded more than half a million square miles of territory to the United States, including present-day Arizona, Nevada, New Mexico, and California.

Successive presidential administrations stationed squadrons of warships in the Pacific, West Indies, and the Mediterranean to protect American commerce. In 1819, USS *Cyane* captured nine small American slavers off present-day Sierra Leone. This incident marked the first seizure of slave vessels by a Navy ship following America's withdrawal from the transatlantic slave trade in 1808 and its assurances to Great Britain in 1814 to work to end the trade. Enforcement of the slave trade ban was sporadic until the Navy deployed a permanent African Squadron in 1842.

Unable to communicate with Washington for long periods, Navy captains had to exercise their own judgment and often act in a diplomatic capacity. They frequently negotiated trade treaties and settled disputes with foreign nations in addition to their standard duties protecting U.S. ships against pirates and policing the illegal slave trade. Commodore Matthew C. Perry led the most important commercial mission undertaken by the Navy in the antebellum era when, as the commander of a squadron of two frigates and assorted smaller vessels, he negotiated the first American agreement with Japan in 1854. In the final treaty, leaders of the reclusive island empire agreed to protect shipwrecked mariners, allow foreign ships to take on coal in select ports, and open discussions about establishing trade relations.

The Navy also assisted American merchants by establishing the Depot of Charts and Instruments in 1830 and charging it with employing scientific study to produce charts and navigational guidance. To gather scientific data, the government ordered the Navy to undertake several extended voyages. The most significant of these was Lieutenant Charles Wilkes' four-year-long Great United States Exploring Expedition (1838–42), which confirmed the existence of a seventh continent at the South Pole. Another noteworthy U.S. Navy contribution to navigation was made by Commander Matthew Fontaine Maury. Known as the "Pathfinder of the Sea," Maury compiled and

analyzed information from ship logs to identify prevailing wind patterns and ocean currents. His resulting book, *The Physical Geography of the Sea* (1855), aided ship captains in plotting faster and safer sea transits by harnessing these phenomena.

The great demands and responsibilities placed on naval officers in this period, together with the introduction of new steam-powered warships, prompted the increased professionalization of the officer corps. In October 1845, Secretary of the Navy George Bancroft succeeded in establishing the Naval School at Annapolis, Maryland, following three decades of debate over the merits of formal education for naval officers. Previously, most midshipmen had entered the Navy as teenagers between the ages of 12 and 18 and learned their duties while serving aboard ships before taking an exam to obtain a commission. Schoolmasters had been employed on some larger vessels beginning around 1800, followed by the establishment of navy yard schools at Boston, New York, Philadelphia, and Norfolk by 1822, but these early establishments proved unable to uniformly educate prospective officers to the standards required. The first 50 midshipmen at the Naval School began their course of study in mathematics, navigation, gunnery, steam, chemistry, English, natural philosophy, and French under the tutelage of seven professors. In 1853, the course of study was expanded to last four years, though Congress did not authorize the renamed Naval Academy to begin granting bachelor of science degrees until 1933.

Sailors in the early U.S. Navy braved incredible hardships in the service of their country while generally receiving lower pay than crews of merchant ships. After a sailor aboard *Constitution* nearly drowned, ship's surgeon Amos Evans reflected in his diary how "the tenure of a sailor's existence is certainly more precarious than any other man's, a soldier's not excepted." The Navy primarily recruited sailors from coastal cities and towns, and a high proportion of immigrants and African Americans filled out the ranks. A survey of the crew of one of the Navy's sailing frigates in 1844 revealed that 195 out of 447 crewmen were foreign born, with 23 different nationalities represented. African Americans made up about 10 percent of the Continental Navy during the American Revolution and increased to 16 percent of the naval force during the War of 1812. In 1842, Secretary of the Navy Abel Upshur assured southern Congressmen that no more than one-twentieth (5 percent) of the crew on any naval vessel would be African American. This restriction remained in place until the Civil War, when the percentage of Black sailors once again rose to approximately 16 percent.

A NAVY DIVIDED

On the eve of the Civil War, Congress authorized an impressive expansion of the U.S. Navy that added 24 steam-powered warships to its rolls. Yet, four months after the southern states began seceding over the issue of slavery in December 1860, the Navy possessed just 63 ships in various states of readiness. One week after Confederate soldiers fired the first shots of the war against the U.S. Army garrison in Fort Sumter on 12 April 1861, President Abraham Lincoln announced a blockade of the southern states. The Navy faced a monumental task in executing this order to sever all maritime commerce along the Confederacy's 3,500-mile coastline. An effective and legally binding blockade

required the Navy to place vessels off nearly every port and at the outlet of every navigable waterway.

To institute the blockade, Secretary of the Navy Gideon Welles oversaw a dramatic expansion of the Navy. By the end of the war, the Navy possessed more than 650 ships, many of them converted civilian vessels. For the sailors who manned these ships, blockade duty meant long periods of boredom and maintaining a careful watch in the sweltering summer heat, punctuated by episodes of furious activity as they pursued blockade runners. Large numbers of escaped enslaved individuals materially assisted the Navy in its mission by acting as pilots in southern waters. Robert Smalls, an enslaved man and the pilot of the Confederate transport *Planter*, commandeered the ship with the assistance of other crew members and delivered it, along with a codebook containing Confederate signals and a map of "torpedoes" (mines) that had been laid in Charleston harbor, to U.S. forces. Smalls later served in the U.S. Navy on USS *Keokuk*, and then again on USS *Planter* as a pilot and acting captain. Though not decisive by itself, the U.S. Navy's cordon contributed to materiel shortages, currency inflation, and depressed civilian morale throughout the Confederacy.

At the beginning of the conflict, about half of southern-born naval officers (126 men) resigned to take up arms against the nation they had sworn to defend. They included Franklin Buchanan, the first superintendent of the U.S. Naval Academy and later the Confederate navy's highest-ranking officer, serving as an admiral; Josiah Tattnall III, who commanded CSS *Virginia* during the Battle of Hampton Roads; Raphael Semmes, the commander of CSS *Alabama*; and the oceanographer Matthew Fontain Maury, who developed mine warfare and blockade-running tactics for the Confederacy. Among the many southern-born officers who fought for the Union was future Rear Admiral David G. Farragut, whose West Gulf Blockading Squadron captured New Orleans in April 1862 and emerged victorious in the Battle of Mobile Bay in August 1864.

Despite the devastating loss of navy yards at Pensacola and Gosport (now Norfolk Naval Shipyard), the U.S. Navy possessed a much larger fleet and industrial base than the Confederate navy at the war's onset. To compensate for their weakness, the southern states granted privateers licenses to prey on U.S. merchant ships and constructed a steam-powered ironclad in a bid to break the U.S. Navy's blockade in Hampton Roads. Upon receiving details about the construction of the ironclad CSS *Virginia* (formerly USS *Merrimack*) from African American spy Mary Louvestre, the U.S. Navy responded by contracting Swedish-born inventor John Ericsson to design and build a steel warship in less than four months. Ericsson was an engineering prodigy who had previously designed USS *Princeton*, the first steam-powered screw warship in the world, but his new design for an all-metal vessel that sported a freeboard of just 18 inches and a large rotating turret was an even greater breakthrough in naval construction. The diminutive warship, which Ericsson christened the "Monitor" as it would admonish the rebellious states, arrived in Hampton Roads in the early hours of 9 March 1862 following *Virginia*'s destruction of the wooden sloop USS *Cumberland* and the frigate USS *Congress* the previous day.

In a duel later that same day that portended the future of naval combat, *Monitor* and *Virginia* hammered away at each

other at point-blank range for three hours to little effect. The clash marked the first time that two steam-powered armored warships had engaged in combat and also the first time that a turreted warship had been employed by any navy. An observer noted that *Virginia*'s broadsides had no more effect on *Monitor* "than so many pebblestones thrown by a child." When *Virginia* rammed its smaller opponent, *Monitor*'s Acting Paymaster William Keeler recalled "a moment of terrible suspense, a heavy jar nearly throwing us from our feet—a rapid glance to detect the expected gush of water—she had failed to reach us below the water & we were safe." Neither ship was seriously damaged in the encounter, but *Monitor* succeeded in halting *Virginia*'s rampage and the U.S. Navy's blockade remained in place. In the aftermath of the battle, it was clear to many naval planners that the days of wooden sailing vessels were numbered. By the end of the war, the U.S. Navy had built more than 60 armored monitor-type vessels.

The U.S. Navy's uncontested control of the Confederate coasts gave Lincoln's generals the strategic flexibility and logistical capacity to transport and land whole armies at will. Major General George B. McClellan's 1862 Peninsular Campaign aimed at capturing Richmond was perhaps the clearest demonstration of this capability. Joint Army and Navy operations along the coast successfully captured critical southern ports such as Port Royal, South Carolina, while a Navy riverine force under Farragut's stepbrother, Rear Admiral David Dixon Porter, facilitated the Army's capture of Vicksburg, Mississippi, the Confederacy's last bastion on the Mississippi River, on 4 July 1863.

THE NEW STEEL NAVY

The end of the Civil War prompted a dramatic retrenchment within the U.S. Navy. Five years after General Ulysses S. Grant accepted the Confederate surrender at Appomattox, the Navy counted just 52 ships on active service. For the next two decades, the Navy resumed its prewar role of protecting American commerce and representing U.S. interests abroad. American sailors performed these missions, however, in increasingly obsolete wooden ships. When U.S. Navy Chief Engineer James W. King visited Europe in 1876, he observed that wooden warships had all but vanished from the major European navies and been replaced by armored turretships sporting breech-loading, rifled guns and displacing as much as 11,000 tons. In contrast, the largest U.S. Navy warship in commission was a 4,000-ton wooden sailing vessel with muzzle-loading cannons. Though most of the Navy's wooden ships possessed steam power plants, they rarely used them in an effort to economize on the cost of coal and to avoid dependence on foreign fueling stations. Lacking overseas coaling stations, the Navy had no way of sustaining a force of steam-powered ships abroad without relying on the benevolence of foreign powers.

The postwar drawdown of the U.S. Navy concerned many naval officers and a number of them began taking steps to reform and rebuild the service. In 1873, 15 officers at the Naval Academy founded the United States Naval Institute to foster debate about current naval topics and keep abreast of the latest developments in naval technology. Less than a decade later in March 1882, Secretary of the Navy William H. Hunt created the Office of Naval Intelligence (ONI), the first permanent agency

in U.S. history devoted exclusively to intelligence gathering. The move coincided with a push to modernize the Navy encouraged by President Chester A. Arthur, who declared that "every consideration of national safety, economy and honor imperatively demands a thorough rehabilitation of our navy." Though the newly constituted ONI had just a dozen officers assigned to it, the agency and its first attaché assigned to London, Lieutenant Commander French E. Chadwick, collected a great deal of information on foreign warships.

The Navy drew upon the intelligence that ONI accumulated to construct its first four modern steel warships, three cruisers, and a converted dispatch vessel, which Congress authorized in 1883. When the first of these warships finally joined the fleet in 1885, it marked a massive technological leap forward in U.S. warship design with its watertight compartments and first use of electrical systems to replace lanterns belowdecks. Though an impressive accomplishment, naval technology advanced so rapidly in the last two decades of the nineteenth century that these ships, with their masts and sails for auxiliary propulsion, were generally considered obsolete by the time they entered service. Still, the pace of reform and revitalization within the Navy was intensifying. Commodore Stephen B. Luce established the U.S. Naval War College in Newport, Rhode Island, in 1884 to train mid-level officers and think deeply about naval strategy. Two years later, Congress authorized the first two modern U.S. battleships, USS *Maine* and USS *Texas*. In 1889, despite these positive signs, Secretary of the Navy Benjamin Franklin Tracey still lamented that "at no previous time in the present century has the country been relatively so powerless at sea."

The U.S. Navy had been a defensively oriented force since its founding, but in 1890, a sea change took place beginning with congressional authorization of the 10,000-ton battleships USS *Indiana*, USS *Massachusetts*, and USS *Oregon*. These ships outclassed the 6,300-ton *Maine* and 6,600-ton *Texas*, and they had a far greater range befitting their intended purpose of engaging and destroying opposing battleships. By 1897, these new battleships and three others, all sporting 13-inch rifled guns in rotating turrets fore and aft, joined the fleet. To man its new steel ships, the Navy instituted a formal training program for sailors before they were assigned to a vessel. Prior to 1881, the Navy had assigned sailors directly to warships to learn their duties while underway. A little more than two decades later in 1902, the Navy resolved to establish Naval Training Station Great Lakes on the shores of Lake Michigan, both to provide its personnel with standardized basic training and to recruit more sailors from the nation's heartland instead of its traditional focus on coastal areas.

If the *Indiana*-class battleships heralded the arrival of the U.S. Navy as a global naval power, the intellectual blueprint for this force came from Naval War College professor turned sea-power prophet Captain Alfred Thayer Mahan. In his 1890 book *The Influence of Seapower Upon History, 1660–1783*, Mahan examined the origins of British naval power and distilled his findings into a formula for national greatness that derived from a powerful battle force capable of defeating foreign navies and protecting a nation's seaborne trade. Mahan argued that all sea power was based on "peaceful and extensive commerce" that brought a nation wealth and thereby enabled its government to

build and sustain a powerful navy. It logically followed that the nation that could defeat its opponent's battle fleet and thereby control the flow of goods on the seas would ensure its greatness. As a corollary, Mahan added that "men of the past three centuries have keenly felt the value to the mother-country of colonies as outlets for the home products and as a nursery for commerce and shipping." Naval officers and civilian leaders, most notably future president Theodore Roosevelt, embraced Mahan's thesis and cheered the construction of the United States' new battle fleet. Before the decade was over, Mahan's theories would be put to the test in a new naval war.

THE SPANISH-AMERICAN WAR

On the evening of 15 February 1898, the U.S. Navy battleship *Maine* was anchored in Havana Harbor in the Spanish colony of Cuba when a tremendous internal explosion tore the ship apart and destroyed the forward part of the vessel. Two hundred and sixty of *Maine*'s 351 officers and men were killed as a result of the blast. The next day, Lieutenant George P. Blow wrote to his wife, "I can not write of the horrors now. Each man lived a lifetime of horror in a few seconds and all would like to forget it if possible." In recalling his fight to stay alive that night, he added, "in my struggle in the darkness and water, you and the babies were in my mind, dearest." Although no evidence tied Spain to the tragedy, American public opinion fueled by the press overwhelmingly blamed the Spanish and called for vengeance. Congress responded by declaring war on Spain on 25 April 1898.

In the Pacific, Commodore George Dewey commanded the American Asiatic Squadron based in the British colony of Hong Kong. Upon receiving word that war had been declared, the neutral British authorities promptly ordered Dewey's squadron of four protected cruisers, two gunboats, and a revenue cutter to depart the port within 24 hours. That same day, Dewey received orders from Washington to engage the Spanish fleet in the Philippines. Forewarned by the Navy Department to prepare for hostilities two months earlier, Dewey had purchased two British steamers to carry coal for his squadron, and he now sailed for Luzon. Dewey discovered Spanish Rear Admiral Patricio Montojo y Pasaron's seven unarmored ships at anchor in Manila Bay on 1 May 1898. Addressing Captain Charles V. Gridley on USS *Olympia*'s bridge, Dewey initiated the battle with the famous words, "You may fire when you are ready, Gridley." In the one-sided engagement that followed, Dewey aboard *Olympia* led his squadron in engaging the obsolete Spanish ships, the largest of which was still constructed of wood. The U.S. squadron sailed in an oval pattern in the sweltering tropical heat, raining shells on the Spanish anchorage and receiving only sporadic and inaccurate fire in return. After nearly two hours, Dewey withdrew to take stock of his ammunition and feed his sailors. Dewey's ships then resumed their barrage until the Spanish ships and the nearby garrison at Cavite surrendered shortly after noon. American losses consisted of just nine sailors wounded, while the Spanish lost 371 men. News of the resounding victory made Dewey a national hero and public enthusiasm for the Navy soared.

Meanwhile in the Caribbean, an American battleship squadron under Rear Admiral William T. Sampson trapped the smaller Spanish squadron under Admiral Pascual Cervera y Topete

inside Santiago Harbor. When American ground advances on Cuba forced the Spanish ships to break out of the harbor on 3 July, five of the newest U.S. battleships engaged them in a running fight. In the ensuing action, U.S. naval gunfire decimated the Spanish squadron. Every Spanish ship was either sunk or intentionally beached by its commander after sustaining heavy damage. Spanish losses were 323 men killed, 151 wounded, and 1,720 captured, while just a single American sailor, Chief Yeoman George H. Ellis, was killed. Writing after the conclusion of the battle, Sampson proclaimed, "the fleet under my command offers the nation as a Fourth of July present the destruction of the whole of Cervera's fleet." The dramatic victory ended Spain's attempt to relieve its beleaguered forces in Cuba and forced the nation's leaders to recall their remaining capital ships to defend Spain against a possible American attack.

Spain and the United States signed a treaty to end the war in December 1898 that ceded the Philippines, Puerto Rico, and Guam to the United States. Spain also agreed to grant Cuba its independence, though the United States subsequently exercised considerable influence over the island. In 1903, the U.S. government signed a lease with Cuban authorities that gave the U.S. Navy indefinite control of Guantanamo Bay on the south coast of the island. Independent of the peace settlement, the United States annexed Hawaii as a territory on 7 July 1898. The move was prompted by the immediate wartime need to secure America's strategic and commercial lines of communication by providing a coaling station and naval base in the Central Pacific. In response to Japanese attempts to exert influence in the islands, a Senate Foreign Relations Committee report declared that the question of who would control Hawaii was a matter of whether "America shall have the vantage ground of the control of the naval 'Key of the Pacific,' the commercial 'Crossroads of the Pacific.'" For many American leaders, the primary value of acquiring territories in the Pacific was the access they facilitated to the markets of China. The uncertainty over who would dominate the areas formerly controlled by the declining Qing Dynasty was the critical strategic question in the Pacific for the next half century.

President William McKinley's decision to annex the Philippines as a U.S. colony instantly created a Pacific empire for the United States that required a large naval force for its defense. As naval leaders planned to construct naval bases in the Philippines and even on the China coast, the immediate problem of security in the Philippines required large numbers of small patrol vessels. In response, the Navy commissioned a host of new gunboats and destroyers to police the Philippines. These small vessels gave unprecedented command opportunities to a generation of young officers. Twenty-one-year-old Ensign Chester W. Nimitz, who later rose to prominence as the commander in chief of the U.S. Pacific Fleet in World War II, assumed command of the gunboat USS *Panay* in the Philippines in 1905, less than a year after graduating from the U.S. Naval Academy. Two years later he became the commanding officer of the destroyer USS *Decatur*.

The ascension of committed naval proponent Theodore Roosevelt to the presidency upon the assassination of McKinley in September 1901 initiated a period of rapid expansion for the U.S. Navy. Although the Navy commissioned just one battleship

in 1902 and 1903 respectively, 13 joined the fleet between 1906 and 1908. The construction of this force definitively signaled the emergence of the United States as a global naval power capable of defending the nation and its interests against foreign naval threats. In 1906, Roosevelt became the first sitting president to leave the country when he personally inspected progress on the Panama Canal. When it opened in 1914, the canal greatly accelerated the Navy's ability to transfer ships between the Atlantic and Pacific oceans. After Japan dealt Russia a resounding defeat in the naval Battle of Tsushima in May 1905, the Imperial Japanese Navy emerged as the single largest threat to U.S. interests in the Pacific. This new great power threat prompted Roosevelt to ask Congress to fund the development of a major naval base at Pearl Harbor, Territory of Hawaii, instead of Subic Bay in the Philippines.

THE GREAT WHITE FLEET

Two years later in 1907, amid a war scare between the United States and Japan, President Roosevelt ordered 16 U.S. battleships to undertake a practice cruise from the Atlantic to the Pacific around South America to test the fleet's readiness. After the ships arrived on the West Coast, it was announced that they would return to the Atlantic by crossing the Pacific Ocean and transiting the Suez Canal. The resulting 1907–1909 circumnavigation by the "Great White Fleet," so-called because the ships were painted in a white and buff peacetime scheme, was a resounding diplomatic and operational success.

The spectacle of the fleet's visits to American cities drew huge crowds and fueled interest in the Navy, while foreign port calls generated goodwill, particularly in Japan, Australia, and New Zealand. For the officers and sailors of the battleships, the nearly 45,000-mile cruise improved their ship-handling, watch-standing, and fuel-management skills. Sailors assumed more responsibility for the maintenance of their ships during the extended time away from repair yards, and constant drills at sea dramatically improved the fleet's marksmanship. When the fleet arrived in the Pacific earlier and in better condition than expected, it enabled naval leaders to shorten their projected war plan timelines for a possible conflict with Japan. While in the Mediterranean, elements of the fleet provided assistance to the citizens of Sicily following the 1908 Messina earthquake. This was the Navy's first major foreign disaster relief operation. Finally, the cruise highlighted the Navy's immediate need for more vessels built to transport large quantities of coal, known as colliers, which could resupply Navy ships with fuel at sea. In response, Congress authorized five new colliers in 1909.

Even before the Great White Fleet had departed Norfolk, Virginia, a new global naval arms race had begun with the Royal Navy's launching of HMS *Dreadnought* in 1906. *Dreadnought* boasted 10 12-inch guns in its main battery and only a small secondary battery. This reorientation of armament away from smaller, short-range secondary batteries changed the calculations of the world's navies, and every battleship launched thereafter was classified as either a dreadnought or a pre-dreadnought. For Germany, which sought to challenge British naval supremacy in Europe and acquire its own overseas empire under Kaiser Wilhelm II, the introduction of the dreadnought was an opportunity to potentially match Britain's naval power now

that Britain's large fleet of pre-dreadnoughts was obsolete. The United States launched its first dreadnought, USS *South Carolina* (Battleship No. 26), four years later in 1910. On the eve of World War I, navies around the world also began transitioning to oil-fired boilers in their capital ships. Although the U.S. Navy was slow to adopt the new fuel, the change greatly benefitted the United States, which possessed large natural oil reserves.

WORLD WAR I

The naval arms race between Great Britain and Germany contributed to the tensions caused by Germany's aggressive actions in the Pacific and Atlantic in the years before World War I. Following Dewey's victory at Manila Bay in May 1898, a much more powerful German squadron had appeared in the harbor by the following month, seemingly intent on seizing the Philippines for Germany. Upon the outbreak of World War I on 28 July 1914, President Woodrow Wilson declared that the United States would remain neutral in the conflict. The crisis, however, encouraged Congress to create the Office of the Chief of Naval Operations, which was "charged with the operations of the fleet, and with the preparation and readiness of plans for its use in war." Captain William S. Benson was appointed the first Chief of Naval Operations (CNO) on 11 March 1915 and promoted to the temporary rank of rear admiral. Though the newly created post of CNO was responsible solely for planning and strategy, the establishment of this position helped to monitor the independent planning taking place in each of the autonomous Navy bureaus, which reported directly to the Secretary of the Navy. Prior to the creation of the CNO, the Navy Secretary relied heavily on the General Board, composed of senior officers who acted as informal advisors on ship design and war plans.

Between 1913 and 1921, Wilson's Secretary of the Navy, Josephus Daniels, transformed the lives of sailors by enacting far-reaching personnel changes. Daniels was a reformer who believed that the Navy should educate and uplift sailors, but also attract quality recruits. For much of the Navy's history, sailors had been regarded as belonging to a less desirable class, and they had been forbidden from entering many establishments in coastal cities. Daniels rehabilitated that image. He ended the ability of judges across the country to force defendants to enlist in the Navy rather than go to prison and forbade alcohol on Navy vessels in 1914. Author and 22-year Navy veteran Richard McKenna attested that Daniels "worked powerfully with actions to remove the stigma of personal unworth traditionally attaching to the enlisted naval uniform" and in the decades after his tenure "it was never successfully reattached." Daniels also approved recruiting slogans such as "Every Battleship a School" and "Join the Navy and Learn a Trade," and then honored them by opening trade schools for sailors and enabling sailors to compete through competitive examination for admission to the Naval Academy for the first time. Among Daniels' other lasting reforms, he enhanced the teaching of the humanities at the Naval Academy by hiring gifted civilian instructors and gave enlisted sailors more freedom by allowing them to wear civilian clothes when off duty and live ashore wherever they chose when in port. These changes laid the groundwork for creating the modern professional force of naval officers and sailors who today are universally respected.

During the first two years of World War I, Wilson upheld American neutrality as U.S.-flagged ships carried goods to both the Central Powers—principally Germany and the Austro-Hungarian Empire—and the Allies—namely Great Britain, France, Belgium, and Russia. Wilson asserted the United States' commitment to freedom of the seas and condemned both German submarine attacks on unarmed merchant ships and British seizures of ships bound for German ports. Americans particularly opposed submarine attacks on merchant shipping, which often occurred without warning. When the German submarine *U-20* torpedoed and sank the British passenger liner RMS *Lusitania* on 7 May 1915, killing 1,196 people including 128 U.S. citizens, Americans were outraged. Although the ship had been carrying millions of rounds of ammunition, the United States' protests led Germany to suspend indiscriminate attacks on merchant vessels. The U.S. Navy had commissioned its first internal combustion–powered submarine, USS *Holland* (SS-1), in 1900, but many naval officers had envisioned the slow and limited-range vessel as a predominantly defensive weapon to be used exclusively against enemy warships. When Germany announced the resumption of unrestricted submarine warfare in February 1917 in a bid to force Great Britain to surrender, the United States declared war on Germany nine weeks later.

The British and German battle fleets fought the only major surface engagement of World War I from 31 May to 1 June 1916 at the Battle of Jutland, but the inconclusive engagement prompted Congress to pass the Naval Expansion Act of 1916. The bill authorized the construction of 10 new battleships with 16-inch main batteries, 6 battlecruisers, 10 scout cruisers, 50 destroyers, and 67 submarines. Though an impressive armada on paper, none of the new ships had been completed by the time the United States declared war on Germany on 6 April 1917. With shipping losses to U-boats outpacing Allied ship construction, American shipyards halted construction of the new cruisers and battleships in favor of merchant ships and destroyers to escort them. Nevertheless, the active fleet still managed to grow from 245 ships in December 1916 to 774 ships in November 1918. The construction of auxiliaries and small surface combatants accounted for much of this increase.

Through close coordination with the British Royal Navy, Rear Admiral William S. Sims helped establish a system of convoys that shepherded slow merchant vessels in the dangerous waters off Ireland and England. As U.S. destroyers made their way across the Atlantic to the battle zone, the U.S. Navy also conducted its first wartime underway refueling operations. When the U.S. Navy's Destroyer Division 8 arrived in Queenstown, Ireland, in May 1917, Sims placed it under the direct command of Royal Navy Vice Admiral Sir Lewis Bayly, commander of the British naval force based at Queenstown. Bayly cautioned the division's captains, "When you pass beyond the defenses of the harbor, you face death and live in danger of death until you return behind such defenses. You must presume from the moment you pass out that you are seen by a submarine and that at no time until you return can you be sure that you are not being watched."

American destroyer sailors took a crash course in antisubmarine warfare from British sailors since the U.S. crews had no experience using depth charges before British workmen outfit-

ted their destroyers with the weapons. The Navy's destroyers were joined one month after their arrival by a U.S. Navy destroyer tender, which, as Bayly explained, "came to act as mothership to the U.S. destroyers." Though the destroyer divisions were not fully self-sufficient, the U.S. Navy gained valuable experience from their antisubmarine and minelaying patrols in the Atlantic and North Sea. Despite the deployment of more advanced German submarines, the large number of American destroyers decisively reduced shipping losses to submarine attacks from 696,725 tons in June 1917 to just 302,600 tons in November. Germany's gamble on winning the war by severing Britain's maritime lifeline had failed.

LOC 92510003

A World War I–era Liberty Loan poster showing a U.S. Navy destroyer protecting an Allied merchant ship from a German U-boat.

THE INTERWAR PERIOD

With the end of World War I on 11 November 1918, Congress voted to resume work on the unfinished capital ships of the 1916 naval bill to provide for the defense of American interests. This massive building program threatened to ignite a new naval arms race between the United States and its wartime allies Great Britain and Japan. Following the election of Warren G. Harding, the new president invited the major naval powers to a conference in Washington, DC, to discuss naval armaments. On 12 November 1921, the conference convened with Harding delivering brief opening remarks and then turning the podium over to Secretary of State Charles Evans Hughes. In a short address, Hughes announced to the packed auditorium that the United States was prepared to scrap 15 battleships and cancel nine others under construction. He offered to destroy 30 U.S. capital ships in all, totaling nearly 900,000 tons. Hughes then listed, by name, the 36 capital ships that the United States would ask Great Britain and Japan to scrap in return. The room erupted in cheers, a reflection of the public desire for peace in the aftermath of the bloodshed of the Great War. The British and Japanese delegations were stunned, as were nearly all the officers of the U.S. Navy, who had known nothing of the proposal beforehand.

The final Washington Naval Arms Limitations Treaty of 1922 negotiated at the conference limited British, American, and Japanese capital ship construction to a ratio of 5:5:3 respectively. Even more importantly, additional treaties removed the largest sources of conflict between the three powers by guaranteeing Japanese security in the western Pacific, ensuring each

of the three powers equal access to the markets of China, and replacing the Anglo-Japanese Alliance, which had concerned U.S. leaders. Although the treaties prohibited the United States from constructing new battleships or new fortifications in Guam or the Philippines, they permitted the Navy to convert the hulls of two battlecruisers to aircraft carriers. These ships became the carriers USS *Lexington* (CV-2) and USS *Saratoga* (CV-3), which formed the foundation for an invigorated naval air arm once they were commissioned in 1927.

The Washington Naval Arms Limitation Treaty forced naval planners to creatively use the assets at their disposal and allocate the reduced budgets of the postwar years to the greatest effect. The result was the development of a fleet air arm built around larger offensive-oriented carriers as well as plans for long-distance fleet supply capabilities and mobile repair facilities such as floating dry docks to replace the loss of fortified forward bases in the Pacific. The treaty did have a detrimental effect on the finances of private shipyards that relied on U.S. Navy contracts, but these companies survived the lean years of the 1920s by specializing in various ship types and declining to undercut one another when bidding for scarce contracts. Steep budget cuts also hit the Navy in other ways, including a reduction in the size of the enlisted force and pay cuts for officers.

Despite financial constraints, the Navy conducted large-scale annual exercises called Fleet Problems and developed detailed war plans at the Naval War College. War Plan Orange, the codename for the plan for a war with Japan, dominated the Navy's interwar strategic thinking. Its principal elements assumed a Japanese invasion of the Philippines followed by the American battle fleet sprinting across the Pacific for a climactic showdown with the Japanese fleet in the western Pacific. U.S. Navy Fleet Problems encouraged creative experimentation with aircraft, and several exercises featured surprise aerial raids on the Panama Canal and even Pearl Harbor. U.S. Navy doctrine, however, did not include massed aerial strikes with multiple carriers nor did the U.S. Navy possess aerial torpedoes effective in shallow harbor waters. These factors contributed to preventing planners from anticipating a surprise Japanese raid on a U.S. harbor.

In 1930, Japan, Britain, and the United States signed the London Naval Treaty extending the ratio on battleships agreed to in the Washington Treaty to cruisers. This proved to be the high-water mark of interwar arms limitation agreements. The following year, the Japanese army invaded Manchuria, and the Japanese government announced its intention to withdraw from the London Naval Treaty and the Washington Treaty in 1934. When Franklin D. Roosevelt assumed the presidency in March 1933, Congress had not even appropriated funds for the Navy to build up to its allotted treaty limits in warships. Roosevelt, like his distant cousin Theodore Roosevelt, had read Mahan and was a firm believer in the importance of a strong Navy. He supported the passage of the Vinson-Trammel Act of 1934, which authorized a multi-year building program to bring the Navy up to its authorized treaty strength. The second Vinson-Trammel Act of 1938 then authorized the expansion of the Navy by an additional 20 percent. Roosevelt promoted naval construction both to defend the nation but also as a way to revitalize American industry during the Great Depression, which

resulted in nearly a quarter of Americans being unemployed by 1933. Naval rearmament took on additional urgency after German Führer Adolf Hitler announced the rearmament of Germany in March 1935, and Japan launched a full-scale invasion of China in July 1937.

WORLD WAR II

Germany invaded Poland on 1 September 1939, plunging Europe into a second major war in less than a generation. After France surrendered to Germany on 22 June 1940, Congress passed the Two-Ocean Navy Act, which expanded the Navy by more than 70 percent. The bill provided for 257 warships and 15,000 combat aircraft, though this formidable armada would not begin to join the fleet until late 1942. Although the United States declared its neutrality in the war, Roosevelt openly supported the British by allowing them to purchase arms and materiel, and trading 50 obsolete destroyers to Britain in exchange for leases on naval bases, primarily in the Caribbean. As Britain's strategic situation deteriorated, Congress passed the Lend-Lease Act in March 1941 to supply arms to Britain, China, and the Soviet Union after Germany invaded that country in June. Roosevelt even authorized U.S. warships to escort war convoys as far as Iceland and to assist the Royal Navy in hunting German U-boats. When a U-boat torpedoed the destroyer USS *Kearney* (DD-432) on 17 October 1941, 11 sailors aboard died and 22 more were wounded. Two weeks later, 115 sailors were lost when a U-boat torpedo sank the destroyer USS *Reuben James* (DD-245) off Iceland while it was escorting a convoy.

On 7 December 1941, Japanese carrier planes and miniature submarines attacked the U.S. Pacific Fleet at Pearl Harbor, Territory of Hawaii, bringing the United States officially into World War II. The destroyer USS *Ward* (DD-139) fired the first shot of the Pacific War when it sank one of the Japanese submarines outside the entrance to Pearl Harbor. Japanese carrier pilots achieved complete surprise in the raid, and damaged or destroyed the entire U.S. battleship fleet in Hawaii. Amid the disaster, sailors raced to save their shipmates' lives and defend their ships. African American Mess Attendant Second Class Doris Miller aboard the battleship USS *West Virginia* (BB-48) carried his mortally wounded captain to safety and then manned a machine gun despite having no training on the weapon. When Miller had exhausted all available ammunition, he assisted other sailors in abandoning the ship and was one of the last three sailors off the battleship. The raid killed a total of 2,403 Americans and wounded 1,178 more. It was the largest single loss of life in U.S. Navy history. Though Navy and civilian divers subsequently completed approximately 5,000 dives and 20,000 hours underwater to salvage all but two of the sunken battleships, the U.S. Navy was temporarily stripped of its largest guns.

Immediately following the Japanese raid, the Navy authorized U.S. submarines in the Pacific to conduct unrestricted submarine warfare against Japanese warships and merchant shipping, though this campaign did not impede the string of Japanese victories at Singapore, Guam, and in the Philippines. Once newer submarines and improved torpedoes reached the fleet in 1943, American submariners destroyed more than half

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Admiral Chester W. Nimitz awards the Navy Cross to Mess Attendant Second Class Doris Miller in May 1942 for Miller's heroism on board USS *West Virginia* (BB-48) during the Japanese attack on Pearl Harbor on 7 December 1941.

of all of Japanese merchant shipping sunk during the war and severed Japan's lifeline to its overseas colonies. Upon being named commander in chief of the U.S. Pacific Fleet, Admiral Chester W. Nimitz ordered a series of successful carrier raids on Japanese-held islands in the Gilbert and Marshall Islands in January 1942, using the fleet carriers USS *Yorktown* (CV-5) and USS *Enterprise* (CV-6). At the Battle of the Coral Sea in May, Rear Admiral Frank J. Fletcher's Task Force 17 fought the Japanese to a tactical draw and succeeded in repelling the Japanese invasion force bound for Port Moresby in New Guinea. The battle was the first naval engagement in history in which the opposing fleets did not close within visual range of each other and marked the emergence of aircraft carriers as the primary fleet units.

In a bid to draw out and destroy the remaining U.S. carriers in the Pacific, Japanese Admiral Isoroku Yamamoto planned an invasion of Midway Atoll in June 1942. American cryptographers of Station Hypo in Hawaii under the leadership of Commander Joseph J. Rochefort decrypted intercepted Japanese radio messages indicating a major upcoming operation. Commander Edwin T. Layton, Nimitz's intelligence officer, later credited World War I Navy veteran turned Navy civilian employee Agnes Meyer Driscoll with training many of these analysts. In a spectacular intelligence coup, Layton, Rochefort, and the analysts of Station Hypo instructed U.S. forces on Midway to broadcast a message in plain English that the island's desalinization plant was broken. When Station Hypo subsequently intercepted a Japanese message that the invasion force needed to bring more fresh water because the target island was

low on water, the cryptographers had definitive proof of Japanese intentions to seize Midway. Nimitz placed great trust in the intelligence officers and ordered all three of his available fleet carriers to ambush the Japanese invasion force. This force included *Yorktown*, which had been badly damaged by a bomb hit and near misses at Coral Sea. Civilian shipyard workers in Pearl Harbor made temporary repairs to *Yorktown* in three days, and some of the workmen were still aboard when the carrier sailed to join USS *Hornet* (CV-8) and *Enterprise* northeast of Midway. In the space of just 10 minutes on the morning of 4 June, Navy dive-bomber pilots destroyed three Japanese carriers. Later that day, Navy aviators destroyed the final Japanese fleet carrier at Midway. Though the Japanese Navy remained a formidable force after the Battle of Midway, it had permanently lost the strategic initiative in the Pacific War.

Following the battle, U.S. Navy, Army, and Marine Corps forces began the costly campaign to recapture strategic islands from the Japanese as they leapfrogged toward Japan. This campaign began with the invasion of Guadalcanal on 7 August 1942. For the next six months, American and Japanese forces funneled planes, men, and ships into the battle for the island. With carriers unable to operate at night, cruisers, destroyers, and PT (patrol, torpedo) boats fought a series of close-range night engagements with Japanese surface units that ultimately prevented the Japanese from destroying the island's airfield or from landing enough reinforcements to dislodge the U.S. Marines ashore. Meanwhile, in the skies over Guadalcanal, Navy, Marine, and Army pilots waged a battle of attrition that decimated the ranks of Japan's most experienced pilots. After the Japanese withdrew, the U.S. Navy never again confronted the Japanese fleet during the war from a position of material inferiority.

Conducting a two-ocean war required the Navy to expand to more than four million officers and sailors. In order to make up for a shortage of manpower, the Navy recruited more than 100,000 women as Women Accepted for Voluntary Emergency Service (WAVES) to fill critical roles such as clerks, storekeepers, engineers, parachute riggers, and weather forecasters. The Navy created other new specialized units to meet the demands of a global war as well. Construction battalions, colloquially known as CBs or Seabees, were established to build and repair airfields and naval installations on newly captured territories, while highly trained underwater demolition teams known as "frogmen" cleared obstacles on hostile beaches and conducted reconnaissance on enemy-held islands. The vast distances of the Pacific created new logistical challenges for the Navy, and the fleet established major bases at Kwajalein and Ulithi atolls, where floating dry docks could repair or stabilize battle damage, fleet units could be re-provisioned, and sailors could enjoy recreation ashore. This was particularly important as vessels remained at sea for years without returning to either Hawaii or the United States.

Even as the U.S. Navy grew from an active fleet of 790 ships on 7 December 1941 to 6,768 at war's end, its sailors still faced the constant strain of war at sea. The fatigue of standing watch and the stress of constant alerts wore on the men. Seaman First Class James Fahey aboard the cruiser USS *Montpelier* (CL-57) wrote in his diary in July 1944 that there was no such thing as

a good night's sleep aboard a ship in the battle zone. "Most of our time is spent at battle stations," Fahey explained. "In all the time that I have been out here I only slept below in my bunk a few times, because it is too hot. You sleep on the steel deck with your clothes on and use your shoes for a pillow, and your hat on top of the shoes."

In the spring of 1944, as the Allies prepared to launch the long-awaited invasion of German-occupied Western Europe, the entire operation hinged on the Navy's fleet of landing craft. In May, the Joint Chiefs of Staff, formed in 1942 as an informal body to coordinate war planning and strategy between the services, agreed to postpone Operation Overlord, the invasion of Normandy, France, by one month so that more tank landing ships (LSTs) had time to reach the European Theater of Operations. British Prime Minister Winston Churchill told U.S. Army Chief of Staff General George C. Marshall in April "how it is that the plans of two great empires like Britain and the United States should be so hamstrung and limited by a hundred or two of these particular vessels will never be understood by history." Yet, these ships, which could beach themselves and discharge vehicles and personnel directly onto hostile shores, were indispensable to the success of the operation.

The Allied invasion fleet that sailed for Normandy numbered more than 7,000 warships and landing craft of all sizes. Navy ships cleared German mines across the English Channel as the fleet approached, and then staged a massive bombardment led by 23 cruisers and five battleships, three of them American. On the beaches, Navy combat demolition units cleared enemy obstacles, while U.S. destroyer captains on their own initiative maneuvered their ships to within machine-gun range of German positions on the bluffs overlooking the beaches to provide close-in fire support to soldiers pinned down on Omaha Beach. This support was critical to the success of Overlord due to the strength of German fortifications. By nightfall on D-Day, 6 June, more than 130,000 Allied soldiers had secured a beachhead on French soil.

In the final year of the war, the Navy's sailors in both Europe and the Pacific confronted new threats including Japanese suicide planes called kamikazes, and German remote-controlled glide bombs, one of which sank USS *LST-282* in the invasion of southern France on 15 August 1944. In the campaign to take the island of Okinawa, which began on 1 April 1945, 4,907 sailors were killed and 4,842 were wounded, many of them by kamikazes. American destroyers and destroyer escorts stationed as early-warning radar picket ships suffered severe losses. The destroyer USS *Morrison* (DD-560) was hit by three kamikazes in rapid succession and sank in less than 10 minutes, killing almost half of its crew.

THE COLD WAR

World War II ended on 2 September 1945, when Japanese delegates signed the official surrender documents aboard the battleship USS *Missouri* (BB-63) in Tokyo Bay. At that moment, the U.S. Navy was the most powerful naval force in history and more than double the size of the rest of the world's navies combined. The Navy counted more than 3.4 million personnel in uniform at the war's end. Just as they had after almost all previous wars in the nation's history, the Navy's leaders now set about

the task of demobilizing and economizing. By 1949, the Navy had contracted to 690 active ships and 451,276 sailors.

The service continued to fulfill its traditional role as a mobile rapid response force and instrument of American foreign policy. In a speech to Congress in March 1947, President Harry S. Truman announced a new policy of economic and military assistance to nations threatened by Soviet-backed communist insurrections. The so-called Truman Doctrine marked a major shift in U.S. foreign policy, which historically had avoided making long-term commitments abroad. At the forefront of this effort were U.S. Navy deployments to the Mediterranean to bolster the governments of Italy, Greece, and Turkey. Along with financial assistance, the visits of the battleship *Missouri* and its escorts to Turkey and Greece in April 1946 and the arrival of the carrier USS *Midway* (CV-41) and its task force in Italy in November 1947 sent a powerful message that the United States would not abandon Europe, but would instead help it rebuild and ensure that it remained free. Though the U.S. Sixth Fleet was not formally established until 12 February 1950, U.S. carrier task forces and smaller warships remained a regular fixture in the Mediterranean in response to the outbreak of the Greek civil war and other communist provocations for the remainder of the decade.

THE KOREAN WAR

The Navy's postwar struggle to prove its relevance in the nuclear age was given a major boost when the forces of North Korean leader Kim Il Sung invaded South Korea on 25 June 1950. The United States and its allies dispatched troops to repel the invasion five days later, and the ensuing conflict soon demonstrated the indispensable warfighting and logistical capabilities of the Navy's aircraft carriers, surface warships, and sealift capacity in combatting communist aggression. Having been reduced to just seven carriers as the result of postwar budget cuts, the Navy rushed to transfer carriers from the Atlantic, where they had been supporting American commitments to the newly formed North Atlantic Treaty Organization (NATO), to the Pacific. Navy leaders also reactivated mothballed ships and manned them with reservists, many of whom were veterans of World War II. The carrier USS *Princeton* (CV-37) was reactivated and dispatched to the Far East with a crew of reservists in the record time of just three months. Navy carrier aircraft flew missions to strike North Korean troop concentrations, supply lines, and infrastructure. While U.S. warships supported ground forces in Korea, President Truman simultaneously ordered Navy leaders to maintain a substantial naval presence in the Taiwan Strait to deter China from attacking Taiwan.

One of the Navy's greatest contributions to the war was the successful amphibious landing at the port of Inchon near Seoul on 15 September 1950. Devised by General of the Army Douglas MacArthur, the invasion required the Navy task force to sail up a narrow channel with a 30-foot tide in broad daylight to deposit a force of U.S. Marines directly into an urban area.

Ahead of the invasion, Navy Lieutenant Eugene F. Clark and two South Korean intelligence officers conducted a covert mission to confirm the hydrographic properties of the landing area. Clark's success at determining the tidal schedule was critical to the invasion's success. After the landings, Navy destroyers, cruisers, and battleships continued to provide crucial close fire support for United States and United Nations soldiers on both coasts as they advanced up the Korean peninsula. When Chinese forces entered the conflict, Navy ships evacuated 69,000 soldiers, 1,000 vehicles, and 64,000 refugees out of Inchon and another 105,000 soldiers, 17,500 vehicles, and 91,000 civilians from Hungnam by Christmas 1950. The redeployment of these forces contributed to the stabilization of the front lines in Korea around the 38th parallel, where they remained for the following two years. An armistice ending active hostilities was signed on 27 July 1953. The Korean War reinforced the imperative of maintaining a powerful fleet able to rapidly respond to regional crises around the globe and project power ashore while also protecting the nation's maritime lines of communication. Though the Navy during the Cold War stood ready to deliver decisive strike capabilities in response to regional crises, it never lost sight of its primary mission of deterring and, if necessary, confronting the nation's greatest enemy, the Soviet Union.

THE NUCLEAR NAVY

On 30 September 1954, the U.S. Navy launched the world's first operational nuclear-powered submarine, USS *Nautilus* (SSN-571). Unlike the diesel-powered boats of World War II that could remain submerged for only short periods at low speeds, *Nautilus* was a true submarine, capable of running submerged at greater speeds than any previous submarine and not needing to surface for weeks at a time. On 17 January 1955, *Nautilus* radioed "Underway on Nuclear Power," and ushered in an era of nuclear propulsion in the Navy. The results of the Navy's nuclear submarine program under the direction of Rear Admiral Hyman G. Rickover gave America's "silent service" an incalculable advantage over potential adversaries and rendered all World War II-era antisubmarine tactics obsolete. The full potential of nuclear submarines, however, was not realized until the deployment of the Polaris missile.

The goal of fielding the world's first submarine-launched ballistic missile was a top priority for the Navy during the ten-

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USS *Nautilus* (SSN-571). Painting of the Navy's first nuclear-powered submarine by Albert Murray, c. 1957.

ure of CNO Admiral Arleigh A. Burke from 1955 to 1961. In November 1955, Admiral Burke appointed Rear Admiral William Raborn to lead the Navy's Special Projects Office and the effort to create the Polaris missile. At a time of scarce resources, Burke went so far as to delete a second aircraft carrier from the Navy's shipbuilding plan in 1958 in order to field more missile-capable submarines. He recognized that an accurate missile with a nuclear warhead fired from a submerged submarine would give the United States the potential for a nuclear strike force invulnerable to counter-strikes. Burke's faith was rewarded in 1959 upon the launch of USS *George Washington* (SSBN-598), the first submarine capable of launching a Polaris missile while submerged. This submarine, and the others that soon followed, made the U.S. Navy a key element of the nation's nuclear deterrent strike force and together they initiated a continuous patrol that the submarine force has maintained without pause for more than seven decades.

The most dangerous episode of the Cold War between the United States and the Soviet Union occurred in October 1962, when President John F. Kennedy ordered the Navy to establish a "quarantine" of Cuba in response to the Soviet deployment of intermediate nuclear missiles on the island. The blockade was intended to prevent Soviet weapons from reaching Cuba and compel the Soviet Union to remove those already on the island. The ensuing standoff lasted for 13 days, during which U.S. Navy vessels, including *Nautilus*, patrolled the waters around Cuba and stopped any ships trying to reach the islands. The professionalism of naval officers was critical during the crisis as they executed the President's orders without causing unnecessary provocation to Soviet forces. The confrontation is generally considered the closest that the world has ever come to nuclear war, and the threat of war finally subsided when the United States lifted its naval blockade of Cuba in return for Soviet promises to remove the missiles on the island. Once again, the Navy demonstrated in the crisis the importance of being able to field a continuous naval presence to establish sea control in an area of strategic importance.

THE VIETNAM WAR

When the United States deployed ground combat forces in defense of South Vietnam's government in 1965, the U.S. Navy was again called upon to project power ashore in support of U.S. soldiers and marines. The Navy's primary lines of effort in the eight-year-long conflict consisted of flying bombing missions from aircraft carriers stationed off the coast, interdicting vessels moving communist supplies along the coast of Vietnam, and patrolling the countless small waterways of the Mekong Delta with shallow-draft vessels.

Navy pilots flew from carriers on either Dixie Station off South Vietnam or Yankee Station in the Gulf of Tonkin. From these they bombed targets in heavily defended North Vietnam as well as Communist supply routes running through Laos and Cambodia. Navy aircraft also provided close air support for U.S. ground troops in South Vietnam and patrolled the coast of Vietnam hunting Communist supply vessels.

At sea level, "Swift" boats (PCFs—patrol craft, fast) and larger surface vessels assisted in this coastal interdiction effort, called Operation Market Time. The hastily acquired, unar-

mored Swift boats were armed with three .50-caliber machine guns and an 81-millimeter mortar and proved highly effective in subduing armed North Vietnamese coastal freighters and motorized craft but proved vulnerable to hostile fire in more confined waterways. The commander of Naval Forces Vietnam, Rear Admiral Norvell G. Ward, stood up a riverine task force in late 1966 to extend this interdiction effort into the rivers and inland waterways of the Mekong Delta called Operation Game Warden. It employed smaller, highly maneuverable PBRs (patrol boat, river) to search enemy sampans in the Mekong Delta and Rung Sat Special Zone. However, with only 70 PBRs to patrol more than 24,000 square miles of waterways, the force never achieved full control of the area. Yet, it did occasionally score successes as was the case when a PBR section led by Boatswain's Mate First Class James Elliot Williams interdicted a major Viet Cong river crossing in late 1966, sinking numerous watercraft and killing large numbers of enemy troops.

The last major inland task force established during the war was the Mobile Riverine Force—a collection of armed landing craft. Working with the Army's 9th Infantry Division, this unit "saved the Delta" in the words of General William Westmoreland, the overall U.S. commander in Vietnam, by countering Viet Cong attacks in major Mekong Delta towns during the 1968 Tet Offensive.

Other Navy contributions during the war included the logistics services provided by Navy supply ships of the Military Sea Transportation Service (renamed Military Sealift Command in 1970), naval support activities located in Saigon and Da Nang, and the Seabees' construction of roads, bridges, and other infrastructure throughout South Vietnam. Navy medical personnel supported the war on land at military hospitals and from the sea in hospital ships. Navy surveillance aircraft gathered valuable intelligence in support of the air war, and Navy attack and electronic warfare aircraft helped suppress enemy air defenses during the Christmas bombing campaign in 1972 (Operation Linebacker II), which helped persuade Hanoi to sign the Paris Peace Accords in 1973.

While fighting a protracted and increasingly unpopular war in Vietnam, the U.S. Navy simultaneously grappled with many of the same social changes taking place in the United States. During Admiral Elmo R. Zumwalt Jr.'s tenure as CNO from 1970 to 1974, he issued more than 100 "Z-grams" that addressed everything from discrimination within the ranks to facial hair and the relaxation of liberty policies. Though many long-serving naval personnel disagreed with the reforms, Zumwalt believed they were necessary to stabilize personnel retention and make the service more appealing to a new generation. These efforts were particularly important in helping persuade qualified individuals to join the Navy after the Vietnam War ended and the United States abolished the draft in 1973.

POST–COLD WAR

Following the end of the Vietnam War, the U.S. Navy was able to devote more resources to countering the Soviet Union. The doubling in size of the Soviet Navy's major surface warship force between 1964 and 1980 was a cause of serious concern among U.S. naval planners since it coincided with the decommissioning of hundreds of World War II–era U.S. Navy ships.

Though the U.S. Navy added 118 major combatant warships during that 16-year period, it decommissioned more than 235 ships. As the Navy worked to reverse this trend and revitalize the fleet in the two decades following the end of the Vietnam War, it introduced new classes of highly capable vessels including *Nimitz*-class nuclear aircraft carriers, *Oliver Hazard Perry*–class guided-missile frigates, and *Ohio*-class ballistic missile submarines. These vessels formed the nucleus of the fleet well into the new millennium.

U.S. sailors once more went into harm's way to uphold the nation's commitment to freedom of the seas during the Iran-Iraq War. As part of Operation Earnest Will, U.S. warships escorted neutral tankers through the war zone in the Persian Gulf. After the guided-missile frigate USS *Samuel B. Roberts* (FFG-58) struck an Iranian mine on 14 April 1988, the crew heroically saved the stricken ship without the loss of a single sailor. In response, President Ronald Reagan ordered the Navy to destroy three Iranian gas and oil separation platforms in the gulf. This strike initiated the largest surface engagement since World War II when the Iranian Navy sortied to retaliate against U.S. vessels. Using surface-to-surface missiles, U.S. Navy ships and aircraft sank two Iranian vessels and damaged a third. The clash foretold what the future of naval warfare between missile-armed combatants might look like and resoundingly demonstrated the superiority of American combat capabilities.

The U.S. Navy deployed in force to the Persian Gulf again in 1991 in support of Desert Shield/Desert Storm, the American-led force build-up and campaign to oust Iraqi forces from the small country of Kuwait. The Navy called more than 21,000 reservists to active duty in response to the crisis and orchestrated a strategic sealift that delivered more than 18.3 billion pounds of equipment and supplies in 240 ships to sustain the Allied forces assembled in the region. Prior to the lightning ground offensive that destroyed the Iraqi army in Kuwait and southern Iraq in just 100 hours, the Navy's amphibious forces on station in the Arabian Gulf provided a strategic threat that tied down tens of thousands of Iraqi soldiers along the coast of Kuwait and prevented them from opposing the ground offensive at the critical point.

THE GLOBAL WAR ON TERRORISM

The collapse of the Soviet Union that same year complicated the threat environment and forced the Navy to reevaluate many of its strategic assumptions. Without an immediate potential peer adversary, the service devoted more attention to combatting pirates and smugglers and facilitating humanitarian missions and disaster relief. Even when carrying out peaceful missions, however, sailors were constantly at risk of attack from the nation's enemies. On 23 October 1983, two truck bombs driven by terrorists affiliated with Hezbollah killed 220 marines, 18 sailors, and 3 U.S. soldiers in the Marine Barracks in Beirut, Lebanon. Seventeen years later, terrorists affiliated with al-Qaeda detonated a suicide boat beside the guided-missile destroyer USS *Cole* (DDG-67) in Aden, Yemen, on 12 October 2000, killing 17 sailors and wounding 37 others. The attacks highlighted the dangers to American sailors even when they served in times of ostensible peace. President George W. Bush formally announced a global war on terrorism in the wake of the al-

Qaeda–organized suicide attacks on 11 September 2001. These attacks, the deadliest on U.S. soil since Pearl Harbor, left 2,977 Americans dead when hijacked airliners crashed into the World Trade Center in New York City, the Pentagon in Arlington, Virginia, and an open field in Shanksville, Pennsylvania. No less than 39 active duty and retired U.S. Navy personnel lost their lives in the attack on the Pentagon.

When the United States invaded Afghanistan and Iraq in response to the 11 September terrorist attacks, the U.S. Navy's sailors took part in almost every aspect of the operations from providing sealift capabilities and long-range fire support to participating in ground combat. More than 15,000 Navy personnel served aboard ships in the region during the initial campaign to depose Iraqi dictator Saddam Hussein, which began on 20 March 2003. U.S. Navy special warfare SEAL (Sea, Air, Land) teams conducted the largest deployment in their history in support of Operation Iraqi Freedom, and SEALs successfully targeted the mastermind of the 11 September terrorist attacks, Osama bin Laden, on 2 May 2011. Smaller groups of sailors or individuals attached to U.S. Marine Corps units also made substantial contributions, notably in the disposal of dangerous ordnance. One hundred and forty-nine sailors were killed in action and more than 1,100 were wounded in Operation Iraqi Freedom and Operation Enduring Freedom.

U.S. Navy 191012-N-LZ409-0083

Sailors assigned to the *Arleigh Burke*–class guided-missile destroyer USS *Cole* (DDG-67) render honors at the USS *Cole* Memorial at Naval Station Norfolk during the commemoration of the 12 October 2000 terrorist attack in Yemen that killed 17 sailors, 12 October 2019.

GREAT POWER COMPETITION

The need for a powerful and effective U.S. Navy has never been greater. At any given time, nearly 100 U.S. Navy vessels are underway around the world, crewed by highly skilled personnel and armed with the world's most sophisticated weapons systems. Confronted by near-peer competitors that intend to challenge the rights of Americans at sea, today's sailors are prepared and committed to protecting the hard-won prosperity and security that is their inheritance from the sailors who went before them. For more than 250 years, the U.S. Navy has defended American interests around the globe and served as the nation's first line of defense. With the enduring support of the American people, America's sailors will continue to keep the watch and respond to any threat because the United States has always been a maritime nation—and Americans' way of life depends on freedom of the seas.

2 THE SURFACE NAVY

GUY J. NASUTI

In his 2022 Navigation Plan, Admiral Michael M. Gilday, the 32nd Chief of Naval Operations, wrote: "History shows that the navy which adapts, learns, and improves the fastest gains an enduring warfighting advantage." The United States Navy often looks to its own past for inspiration, whether acknowledging victories in past battles, learning from occasional setbacks, or recognizing the accomplishments of a particular sailor or leader from a bygone era. With a long, storied maritime tradition built upon the blood, sweat, and sacrifice of its sailors, the surface Navy, in particular, has much to be proud of, but it also demonstrates the sometimes halting nature of progress in response to technological change and new strategic challenges. Even so, through all the well-known victories and saddening mishaps, the resolve, courage, and steadfastness of sailors shines through, directing and shaping the surface force's current readiness.

BIRTH OF THE SURFACE FORCE

For the first 125 years of its existence, the history of the surface Navy and that of the Navy as a whole were largely one and the same. From wooden frigates to steel battleships, the early surface force performed many of the same missions it does today: defending U.S. shores, protecting maritime commerce, and maintaining a forward presence around the globe. Although technological change increasingly instilled in the Navy's personnel a greater engineering and technical mindset, the image of gentlemanly officers and hardy jack tars engaged in close combat with enemy warships is one that continues to loom large in the imaginations of sailors and the American public to this very day.

The history of the Navy's surface force began slowly amid the creation of the United States of America. During the American Revolution, the colonists created several concurrent (and often competing) naval forces to engage the British. After its official founding on 13 October 1775, the Continental Navy—along with Congress-authorized privateers—took on the roles of the states' navies. America's first truly organized naval force, commanded by Commodore Esek Hopkins, was formed specifically to challenge Great Britain's Royal Navy, considered at that time to be the greatest naval force in the world. Although it was far too small to engage in large-scale operations against the Royal Navy, the Continental Navy proved effective at commerce raiding both in American waters and overseas, disrupting supply

lines and diverting resources, and one of its most important tasks—opening lines of communication and transporting American ministers and correspondence to and from France. The daring attacks made by officers such as John Paul Jones and Gustavus Conyngham in and around British home waters, in particular, did much to bolster American morale while simultaneously undermining popular support for war effort in Britain itself.

When the war ended with the signing of the Treaty of Paris on 3 September 1783, the Continental Navy was disestablished due to the new government's lack of funds and support. However, the newly formed United States would again soon find itself in need of a navy. In response to attacks on American merchantmen and ships by the Barbary pirates in the Mediterranean, President George Washington signed the Naval Act of 1794, which marked the reconstitution of the naval service on 27 March 1794. With a naval tradition already established by the Continental Navy's actions, the U.S. Navy began to emerge from the Royal Navy's long shadow, even as it continued to pattern its traditions, tactics, and strategies after those of its primary adversary. Determined to make the most of emerging technology of the age and its creation of this new Navy, Secretary of War Henry Knox set a high standard for the first frigates. Designed by Joshua Humphreys, the first frigates were both unique and innovative. USS *Constitution*, the oldest commissioned warship afloat, was one of the first six frigates authorized—an enduring touchstone of American naval heritage.

Although the surface force of the Navy of this earlier age was considerably smaller and of more limited capabilities than

NHHC 2003-088-01

Captain John Paul Jones. Period plaster cast of marble bust by Jean-Antoine Houdon, 1780. The marble sculpture is on display in the U.S. Naval Academy's Chapel Crypt, where Jones' body was interred in 1913.

the Fleet of today, it nonetheless undertook many of the same missions and bequeathed a rich legacy to today's sailors. From 1798 to 1801, the U.S. Navy achieved its first naval victory as a republic in the "Quasi-War" with France over the issue of freedom of commerce at sea. France targeted neutral U.S. shipping in response to the 1794 Jay Treaty between the United States and Great Britain. Although war was never formally declared by either side, France opened hostilities when a French privateer entered Charleston Harbor, South Carolina, and seized an American merchant ship in 1798. That same year, despite American commanders receiving orders not to take offensive actions against French ships, U.S. Navy Lieutenant Stephen Decatur Jr., in the 20-gun ship *Delaware*, defeated the French privateer *La Croyable*. On 9 February 1799, Captain Thomas Truxtun, commanding the frigate *Constellation*, defeated the French frigate *L'Insurgente* off the island of Nevis.

NHHC KN-2882

This painting by Rear Admiral John W. Schmidt, USN (Ret.), depicts the U.S. frigate *Constellation* (*left*) taking position ahead of the French frigate *Insurgente*, 9 February 1799. After a 75-minute-long engagement, the badly outmaneuvered and damaged French ship surrendered.

The Quasi-War against France continued until the recently crowned Emperor Napoleon Bonaparte ordered Charles Maurice de Talleyrand-Périgord, his foreign minister, to bring hostilities to an end. The Treaty of Mortefontaine, signed on 30 September 1800, officially concluded the conflict and acknowledged American rights to freedom of the seas while allowing the United States Navy to actively protect those freedoms, a mission that continues to this day.

Shortly after the end of the Quasi-War, the United States returned its focus to the Barbary pirates, who continued to harass American merchantmen in the Mediterranean. From 1801 to 1805, the United States engaged in hostilities with Tripoli, and President Thomas Jefferson ordered the Navy to protect American commerce and blockade the North African coast. The Navy suffered an initial setback when the frigate *Philadelphia* and its crew were captured in October 1803, but Lieutenant Stephen Decatur restored the service's honor by leading a small raiding party to burn the ship in February 1804. This daring raid not only made Decatur a national hero once word of his feat reached the United States, but it also inspired generations of surface warfare officers. Both the Quasi-War and the Barbary War had a major impact on the fledgling American Navy as it

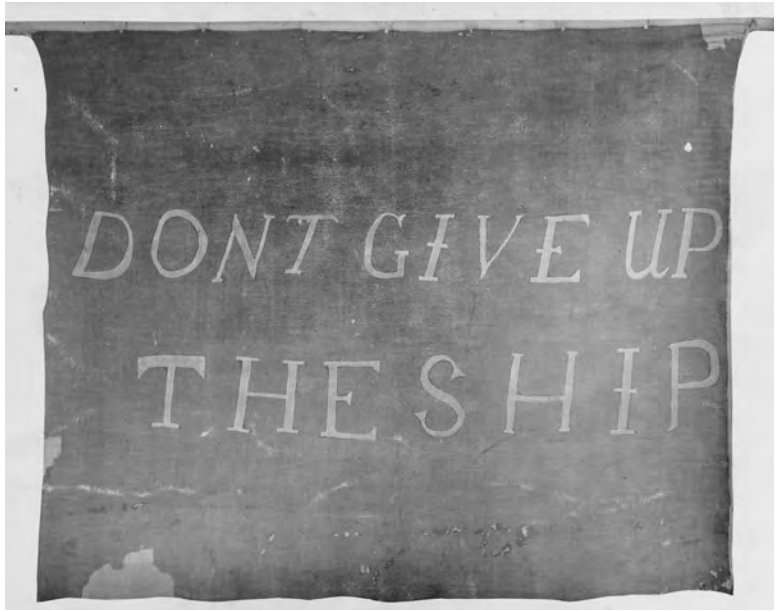
NHHC KN-10849

Burning of the Frigate Philadelphia *in the Harbor of Tripoli, February 16, 1804.* The 1897 oil painting by Edward Moran depicts USS *Philadelphia*, previously captured by the Tripolitans, ablaze after it was boarded and set afire by a party from the ketch *Intrepid* led by Lieutenant Stephen Decatur Jr.

provided the combat seasoning to a generation of young naval officers whose skills were soon pitted against a mightier foe.

The Navy faced its most severe test during the War of 1812 with Great Britain. Although the Royal Navy remained the world's dominant naval force, the U.S. Navy was both larger and better equipped than the Continental Navy had been. Even as the United States experienced setbacks in its land campaigns, the Navy and its sailors won major victories that captured the nation's imagination and demonstrated that the service had finally emerged from the Royal Navy's long shadow. In August 1812, for example, the legend of "Old Ironsides" was born when *Constitution* defeated HMS *Guerriere*, with one sailor allegedly exclaiming during the battle that *Constitution's* "sides were made of iron," when he observed *Guerriere*'s cannonballs bouncing off the side of the ship.

Even in defeat, the Navy and its sailors sometimes found inspiration. In 1813, HMS *Shannon* captured USS *Chesapeake*, one of the Navy's original six frigates. As he lay dying, *Chesapeake's* captain, James Lawrence, issued a final command, "Don't give up the ship!" Although *Chesapeake* was captured shortly thereafter, Lawrence's friend Oliver Hazard Perry was inspired to have a banner emblazoned with Lawrence's dying words, which he had hoisted aloft on his flagship USS *Niagara* at the Battle of Lake Erie as a symbol of defiance and resilience for the sailors and soldiers under his command. The victory Perry won was not only of considerable strategic importance, but etched Lawrence's *cri de coeur* into the hearts and minds of generations of sailors to this day.



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Commodore Oliver Hazard Perry's flag, emblazoned with Captain James Lawrence's dying words. Flown by Perry at the Battle of Lake Erie on 10 September 1813, it is now on display in the U.S. Naval Academy Museum.

For the surface Navy of today, the legacy of these early decades retains enduring importance. Although the days of wooden frigates and fighting in close combat are long over, the mission to protect U.S. shores, U.S. maritime commerce, and freedom of the seas remains vital to national interests. Likewise, the boldness, resourcefulness, and resiliency of early figures such as Jones, Decatur, Perry, and the crews who fought under their command continue to serve as models for the sailors of today's surface Navy. Perry's flag from Lake Erie stands proudly on display in the Naval Academy's own museum, while Jones' remains were eventually repatriated from France and laid to rest in the academy's chapel. On the occasion of Jones' reinternment in 1906, President Theodore Roosevelt cited the example set by Jones and other captains of earlier eras as one to be followed, remarking "no courage can atone for the lack of that efficiency which comes only through careful preparation in advance, through careful training of the men, and careful fitting out of the engines of war, yet that none of these things can avail unless in the moment of crisis the heart rises level with the crisis."

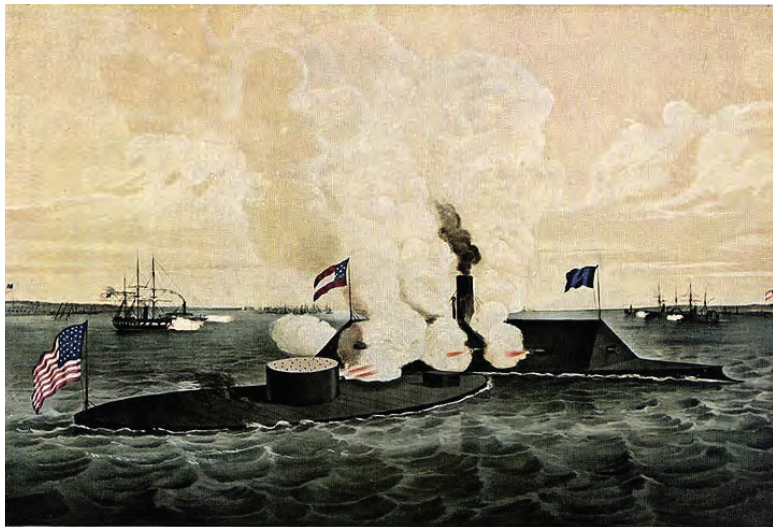
STEAM AND THE CIVIL WAR NAVY

In the mid-nineteenth century, the U.S. Navy cautiously experimented with the development of steam-powered warships. As this technology improved, the sailors of the surface Navy evolved into a more professionalized and more specialized group capable of operating new types of ships as part of a multi-domain force. Though antebellum sailors would not have recognized the surface Navy's large fleet of ironclads commissioned during the U.S. Civil War, their crews' heroism and devotion to duty in the maelstrom of a new form of naval warfare perpetuated the Navy's most honorable traditions.

Although the first steam-powered vessel, Robert Fulton's *Demologos* (later renamed *Fulton*) was delivered to the Navy in 1816, steam propulsion did not become widely used until the 1840s. Some traditionalist officers balked at the introduction of steam-propelled vessels, believing that it would invariably diminish officers' navigation skills and general seamanship, but as the technology matured and became more widespread, it actually required an even greater level of specialization and professional training among officers and enlisted person-

nel alike. In 1842, for example, a separate corps of engineers was established. Initially distinct from the line community, its members increasingly became more integral to surface warfare to the point that a separate specialization track was introduced at the Naval Academy, formally located ashore in Annapolis, Maryland, in 1845, and new enlisted ratings were introduced. Despite ongoing opposition from many line officers, the engineering corps was eventually amalgamated into the line by the end of the nineteenth century. Engineering expertise was later to become a key requirement for the surface warfare qualification insignia.

Beyond its professional impacts, steam propulsion significantly transformed naval operations during this era. Although sailing ships still operated, including participation in the blockade of the Confederate ports during the Civil War, steam-powered vessels, including the newly introduced ironclads, had the largest impact. The 9 March 1862 Battle of Hampton Roads between USS *Monitor* and CSS *Virginia* (ex–USS *Merrimack*) dramatically epitomized this "sea-change" in naval technology from sail and wooden warships to steel and steam. Navy vessels not only operated off the coasts, but also on the Mississippi River and its tributaries, operating jointly with the Army to seize multiple Confederate strongholds, including the strategic Mississippi city of Vicksburg in 1863. For the Navy officers involved in these operations, most notably Andrew Hull Foote and David Dixon Porter, the ability to cooperate and coordinate jointly with their Army counterparts was as critical as their ability to command their own forces.



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This Currier & Ives lithograph depicts the 9 March 1862 engagement between USS *Monitor* and CSS *Virginia*, "the first fight between iron ships of war," at the Battle of Hampton Roads.

There was, of course, still room for individual moments of glory. At the Battle of Mobile Bay in August 1864, Rear Admiral David Farragut added to the Navy's lore by famously ordering his fleet through a minefield, allegedly uttering the immortal phrase, "Damn the torpedoes!" Despite becoming the Navy's first admiral, Farragut was, in many ways, a throwback to an earlier era rather than representative of officers to come. He had entered the Navy as a midshipman at the age of nine and commanded his first ship—a prize captured during the War of 1812—at twelve. Farragut and his contemporaries received a tremendous amount of on-the-job training and skills that set them apart from most sailors of the twentieth century. As naval

ships became more technologically complex and more differentiated from civilian vessels, sailors such as Farragut, who had learned by doing, became rarer as the force became more professionalized. Increasingly, the Navy focused on structured enlistments and training pipelines. Although sailors could not follow Farragut's career path, they could look to his famous defiance at Mobile Bay as an exemplar of the Navy's spirit of courage and adaptability.

THE NEW STEEL NAVY

Following the end of the Civil War, the Navy shrank dramatically and the pace of technological advancement slowed. Historian George W. Baer notes that it was not until the final two decades of the nineteenth century that the "modern" Navy was "formed and reformed in the interaction of purpose, experience, and doctrine." It gained a legitimization as an offensive battle fleet through Captain Alfred Thayer Mahan's 1890 book *The Influence of Sea Power upon History, 1660–1783*. Mahan believed in offensive sea control, with warships fighting it out in traditional naval engagements to determine the victor, the ruler of the seas, and protector of the economic lifelines of modern industrialized nations. Mahan's theories appeared to provide a blueprint for the Navy's future. Moreover, public support for the service swelled around the turn of the century. The naval victories at Santiago de Cuba and Manila Bay during the Spanish-American War in 1898 seemingly vindicated Mahan and heralded a new era of naval warfare, one driven by increasingly large guns and even larger vessels.

NHHC KN-619

The Battle of Manila Bay, Sunday, May 1, 1898, painted by Spanish naval surgeon Alfonzo Saenz in 1899.

The introduction of both naval aviation and submarines challenged these assumptions. Although it would take time for these communities to develop and mature, they forced surface warfare to adapt to the new threats. With German submarines posing a major threat during World War I, the U.S. Navy's focus was predominantly on transporting troops overseas, supporting convoy operations, conducting anti-submarine patrols, and sowing sea-denial minefields. Due to their speed and versatility, destroyers played a significant role in these operations, foreshadowing a future in which surface warfare was not defined solely by capital vessels such as battleships.

The horrific human toll of World War I and the threat of a renewed naval arms race among the former allies caused the leading naval powers of the day to sign the Washington Naval Treaty in 1922. The treaty set limits on tonnage and the number of battleships, cruisers, and aircraft carriers that a fleet could

possess. The treaty's naval force ratios, though adjusted in subsequent conferences in London in 1930 and 1936, were shaken by Japan's decision in 1931 to launch an expansionist war in China. In 1934, Japan gave notice that it would terminate the treaty and later denounced the modified terms adopted at the 1936 London conference. The interwar U.S. Navy was noted for innovation in training and testing. It conducted annual 'Fleet Problems" in which the tactics and techniques of large fleet operations, amphibious warfare, the integration of aircraft carriers, lighter-than-air (LTA) airships, and other missions emerging from the nation's war plans were put into practice. Decades later, in a 1960 speech to the Naval War College noting the impact of these exercises and war games carried out at the college, Fleet Admiral Chester W. Nimitz remarked that "nothing that happened during the war [World War II] was a surprise . . . except the kamikaze tactics."

NHHC 2004-110-01

Artist James Dougherty captured the challenges of Atlantic convoy duty during World War I in his dramatic painting *Outward Bound for Freedom*, 1918.

WORLD WAR II

Following the outbreak of World War II in Europe in September 1939 and Japan's alliance with Germany and Italy a year later, escalating tensions with the United States over Japan's expansionist aggression in East Asia neared a breaking point. On 7 December 1941, the Imperial Japanese Navy attempted to strike a knockout blow to the U.S. Pacific Fleet in a surprise attack on the base at Pearl Harbor, Territory of Hawaii. Although employing the might of Japan's carrier arm to carry out the strike, Japanese naval leaders still believed (as did many American naval officers) that only a Mahanian-type decisive victory, with battleships playing the major role, would determine the war's victor. Consequently they hoped to destroy the U.S. Navy's battle force and force the United States to sue for peace. U.S. losses at Pearl Harbor were severe, but the Pacific Fleet's carriers were not caught in port by the attack and were to serve as a significant component of the full spectrum of American naval forces—surface, aviation, and submarines—which ultimately doomed Japan's efforts in the Pacific.

NHHC 80-G-32691

Pearl Harbor, Territory of Hawaii, 7 December 1941: A view of Battleship Row from the head of 1010 dock, during or immediately after the Japanese raid. USS *Arizona* (BB-39) is sunk and burning at right. USS *West Virginia* (BB-48) is in the right center, sunk alongside USS *Tennessee* (BB-43), with oil fires shrouding them both. The capsized USS *Oklahoma* (BB-37) is in the left center, alongside USS *Maryland* (BB-46).

In the meantime, the Japanese wave of conquests continued into 1942. The U.S. Navy endured reverses in the Philippines and in the Battles of Java Sea and Sunda Strait in the defense of the Malay Barrier. U.S. Asiatic Fleet sailors, their vessels sunk, found themselves defending the Corregidor coastal fortifications in the Philippines before being subsumed into the surrender of U.S. forces in the archipelago. USS *Houston* (CA-30) went down in the Sunda Strait with its flag flying and few remaining guns firing. Its commanding officer, Captain Albert H. Rooks, was posthumously awarded the Medal of Honor for his gallant leadership against overwhelming enemy forces. The battle-damaged destroyer USS *Edsall* (DD-219), among the remnants of the Asiatic Fleet withdrawing to Australia, encountered a Japanese force that included four carriers, two battleships, one light and two heavy cruisers, and six destroyers in the Indian Ocean. With no possibility of outrunning the enemy, *Edsall*'s commanding officer, Lieutenant Joshua J. Nix, decided to fight his ship. Skillfully handling the destroyer for nearly two hours, Nix managed to avoid salvos of 14- and 18-inch shells from the Japanese capital ships before *Edsall* finally succumbed to Japanese air attacks. Initially listed as missing in action, Nix likely went down with his ship.

The Japanese air attacks on *Edsall* and other U.S. and Allied surface vessels were, to some extent, harbingers of things to come. In the Central Pacific, the surface fleet learned to operate as independent task forces during the carrier raids on the Japanese-held Gilbert and Marshall Islands as well as during the carrier-launched Doolittle Raid that April. In early May 1942, the U.S. Navy's carrier force won the Battle of the Coral Sea, the first significant U.S. victory against the Imperial Japanese Navy. The Battle of Midway, on 4–6 June, was also primarily fought by naval aviation assets. The U.S. victory at Midway permanently shifted the initiative in the Pacific War to the Allies. However, "traditional" surface actions did not disappear. Of particular note were the numerous hard-fought engagements in the Solomon Islands in late 1942. Despite some setbacks and numerous losses, these clashes honed the tactical proficiency of U.S. surface force commanders, and ship-handling and gunnery skills of

combatant crews. Moreover, newer technology, such as various radar applications, was successfully integrated into warfighting. Two clashes that illustrated the continued importance of the surface force were the "charge of the Irish destroyers" during the—exclusively surface—Battle of the Komandorski Islands west of the Aleutians in March 1943 and the actions of future CNO Arleigh A. Burke's Destroyer Squadron 23 at the Battle of Cape St. George in the northern Solomons that November.

Nevertheless, as carrier operations and submarine warfare became staples of victory in the Pacific Theater, many believed the era of ship-to-ship combat had ended. The aviation and the submarine communities vied for the attention of naval planners, inevitably becoming intertwined with, and at times eclipsing, the role of the surface force. However, surface warfare still had an important part to play.

In the Atlantic and Mediterranean theaters, convoy and antisubmarine operations contributed greatly to Allied victory over Nazi Germany. The tactical and technological skill set that defeated the U-boat menace in the Battle of the Atlantic formed a solid basis for the further development of antisubmarine warfare (ASW) applications during the Cold War era. Additionally, without U.S. Navy surface forces, amphibious landings in North Africa, Italy, and France would likely not have been possible at the time they were undertaken. As in the Pacific, U.S. battleships, cruisers, and destroyers provided critical air defense, shore bombardment, and fire-support capabilities to ground forces before, during, and after amphibious landings. Specially developed amphibious ships and landing craft carried out the beach assaults.

Even in 1944, surface actions were fought that rivalled those of earlier eras. At the Battle of Leyte Gulf that October, for example, the Navy's battleships, some of which had been raised from the mud of Pearl Harbor, finally had the opportunity to exact retribution when an incoming column of Japanese capital ships encountered the U.S. battle line at Surigao Strait. The resulting action was among the most lopsided of the war, with U.S. battleships annihilating the Japanese force in a classic maneuver known as "crossing the T."

NHHC NH 59854

Captain (and future CNO) Arleigh A. Burke, commander of Destroyer Squadron 23, reads on the starboard bridge wing of his flagship, USS *Charles Ausburne* (DD-570), during operations in the Solomon Islands, 1943.

To the north of this action, the sailors of Task Unit 77.4.3 (radio call sign "Taffy 3") engaged in a different sort of struggle. Comprised of destroyers, destroyer escorts, and escort carriers, and formed for the purpose of protecting the Army's landings at Leyte, Taffy 3 was the first to encounter a hitherto undetected Japanese force entering Leyte Gulf. Outgunned and outnumbered, the sailors of Taffy 3 knew very well that they were in for, in the words of Lieutenant Commander Robert W. Copeland, USNR, commanding officer of the destroyer escort USS *Samuel B. Roberts* (DE-413), "a fight against overwhelming odds from which survival could not be expected." Nonetheless, they took the fight directly to the battleships and cruisers of the Japanese surface force, charging them at flank speed and firing everything they had in a bid to protect the escort carriers under their charge. Commander Ernest Evans of the destroyer USS *Johnston* (DD-557) did not even wait for orders to engage the enemy before attacking. Even after *Johnston* was severely damaged, he ordered his ship back into the fray, interposing it between the Japanese force and the fleeing escort carriers. *Johnston* and several of its consorts were sunk in this action (known today as the Battle off Samar), but the ferocity with which they fought prompted the Japanese to turn back rather than risk further engagement. In his after-action report, Lieutenant Commander Copeland, who received the Navy Cross notwithstanding the loss of his own ship, observed that despite facing certain death, "Men zealously manned their stations wherever they might be, and fought and worked with such calmness, courage and efficiency that no higher honor could be conceived than to command such a group of men."

Although the Battle of Leyte Gulf remains the Navy's last major traditional surface action with a peer adversary, it nonetheless was illustrative of how, even in this new era of multi-domain operations, split-second decision-making, resiliency under even the most harrowing of circumstances, and defiance in the face of the enemy remained just as central to the surface warfare community's collective identity as they were when Farragut entered Mobile Bay. Even so, the community had evolved significantly, incorporating greater engineering expertise, more structured training and roles, and greater emphasis on cooperation,

NHHC 80-G-288885

USS *Heermann* (DD-532) and a destroyer escort lay a smoke screen to cover "Taffy 3" escort carriers during the initial phase of the Battle off Samar, 25 October 1944.

both with other elements within the Navy and jointly with other services. During the immediate postwar period, these circumstances prompted the Navy to reevaluate the surface force's role.

NO MORE NAVIES TO FIGHT

Necessity is often the key for providing the surface Navy with the tools needed to conduct its many missions. Traditional roles such as gunfire support, escort duties, and support of amphibious operations were revisited during the Korean War. The 15 September 1950 landings at Inchon would not have been possible without the support of the experienced naval officers and sailors of Rear Admiral James H. Doyle's Task Force 90, mainly in overcoming challenging hydrography and a tidal range that posed great risk to the fleet.

With the challenges of the Cold War, the surface force shifted its focus, and placed a greater emphasis on antisubmarine operations and screening aircraft carriers. Throughout this period, the surface community carried on its tradition of adaptability in meeting new challenges, but it was some time before the Navy made a concerted effort to define more clearly the community's mission and standards.

During the Vietnam War, the U.S. Navy's surface force played a significant role in several operations at sea. Riverine operations also became a critical extension of sea power, with the so-called "brown water" Navy disrupting enemy communications, interdicting supplies, and depriving the enemy of sanctuary in the canals, rice paddies, and dense foliage of the Mekong Delta. Although guerilla tactics of the Viet Cong created considerable and novel challenges, in some respects, this type of combat harkened back to earlier eras such as operations along the Mississippi River during the Civil War. Captain Wade C. Wells, the first commanding officer of River Assault Flotilla 1, described American sailors as participating in the "age-old Navy tradition of close combat."

As historian Malcolm Muir Jr. notes, lacking a conventional enemy fleet to fight, the U.S. surface force off the coast of Vietnam "found that much of their work lay in backing up the avia-

NHHC 80-G-668791

Inherent professionalism: Flag conference on board USS *Rochester* (CA-124), flagship of Joint Task Force 7, during the Inchon amphibious operation, 15 September 1950. Those present are (*left to right*) Rear Admiral James H. Doyle, commander of Task Force 90; Vice Admiral Arthur D. Struble, commander of Joint Task Force 7; and Rear Admiral John M. Higgins, commander of Task Group 90.6.

tors with their strike mission. Tasks included plane guard and general escort duties—and much steaming." These primarily took place in the multi-carrier operating area off North Vietnam designated Yankee Station and in the single-carrier operating area off South Vietnam known as Dixie Station. The smaller frigates and destroyers spent a great amount of time at sea and also provided gunfire support to ground units ashore. By the end of 1965, 72 ships had fired nearly 90,000 rounds at Viet Cong targets within range of the 850-mile Vietnamese coastline. By June 1968, U.S. surface warships had fired more than one million rounds of ammunition, with one destroyer firing 48 tons of ordnance in a 26-hour mission.

NHHC 88-162-EF

Gerald Merfeld, *PBR in the Delta*, oil on canvas, 1969. The PBR—patrol boat, river—was one of the U.S. Navy's mainstays in its "brown water" operations in Vietnam.

An interesting footnote to the Navy's involvement during the war was the recommissioning of the *Iowa*-class battleship USS *New Jersey* (BB-62). Of vast importance to the conflict raging in Vietnam, *New Jersey* provided a platform for much-needed larger-caliber naval gunfire. Due to the lack of a battleship in the active fleet for a decade at that point, the Navy was forced to contact retired sailors and conduct archival research for information on how *Iowa*-class systems operated. *New Jersey* had already had a long and distinguished career, being active during World War II, decommissioned, and then reactivated for the Korean War. Its third career began on 6 April 1968, when it was recommissioned at the Philadelphia Naval Shipyard. Fitted with improved electronics and a helicopter landing pad after the 40-millimeter batteries were removed, the battlewagon was slightly redesigned for use as a heavy bombardment ship. With enormous 16-inch guns packing a powerful punch, it was expected that the only active battleship in the world at that time would reach targets in Vietnam inaccessible to smaller naval guns. Despite success on the gun line, the expense of manning and maintaining the large ship outweighed the benefits of its heavy artillery to support ground forces. Consequently, *New Jersey* was again decommissioned in 1969. Although this would not be the final time that it would be in commission (*New Jersey* and other *Iowa*-class battleships were activated yet again in the 1980s and refitted to carry Tomahawk land attack missiles), its

abbreviated third career was emblematic of the transition the surface Navy was undergoing. No longer apex predators with the role of confronting similar adversary capital ships, vessels such as *New Jersey* were now increasingly oriented toward strike missions and serving as platforms for increasingly sophisticated weapon systems.

Toward the end of U.S. involvement in Vietnam, the Navy began to suffer severe budgetary restrictions among all of its warfighting communities. The surface force continued high-tempo operations with greatly aged equipment and ships, many having been in service since World War II. Admiral Elmo R. Zumwalt Jr., who had once commanded a destroyer and a frigate, was sworn in as CNO on 1 July 1970, becoming the first surface line officer to serve as CNO in nine years. Early on in his tenure as CNO, Zumwalt helped return the Navy's focus to confronting the Soviet Union, just as it had been in the early years of the Cold War. Although the USSR outspent the United States by 50 percent in naval missiles throughout the 1960s, many U.S. Navy admirals viewed the Soviet Navy as more for show than actual warfighting, holding the belief that American advantages in the quality of personnel and training would offset the disparity in Soviet numbers and weaponry. Captain (later Rear Admiral) Stansfield Turner recalled that it seemed the Soviets "sat at anchor all the time." Admiral Zumwalt, by contrast, continued to fear Russian shipboard missiles and being outnumbered in ships.

The American withdrawal from Vietnam engendered much pessimism in the service and there remained unanswered questions within the surface community about the best course of action moving forward. Concerned about Soviet submarines conducting operations closer to United States territory, some argued that the surface Navy should return to a concentration on antisubmarine warfare rather than emphasize fighting other surface combatants—as had been the focus during the first half of the twentieth century. Despite fears of what Soviet missiles could do to surface vessels, Rear Admiral Turner was among several career naval officers who believed that carrier aviation should focus exclusively on surface threats, while destroyers and

NHHC L38-99.05.02

CNO Admiral Elmo R. Zumwalt Jr. talks with a group of sailors on the mess deck of USS *Puget Sound* (AD-38) in Newport, Rhode Island, 1970.

frigates reverted back to the role of protecting surface vessels from submarines. This became a prevailing view that informed surface operations through the last quarter of the century. For the next several decades, the surface Navy continued to train and also conducted a plethora of humanitarian missions, drug interdictions, and amphibious and onshore fire missions in smaller and less sustained areas of operations, all while retaining its primary function of ASW.

Beyond grappling with the question of what surface warfare's mission would be, Admiral Zumwalt also focused on several key problems within the surface community immediately upon assuming the role of CNO. These included the grievances of junior surface warfare officers (SWOs) and the 14 percent retention rate of these officers in 1970. During this period, an increasing number of officers chose to join the seemingly more glamourous aviation or submarine communities, resulting in lower numbers of surface warfare officers. With the SWO specialty lacking an identifiable image, Zumwalt pushed for more rigorous standards, schooling, and a surface warfare qualification pin to rank with the wings worn by aviators or the "dolphins" of submariners. The new insignia, designed by Vice Admiral Robert E. Adamson Jr. and instituted in 1975, promoted learning all one could about commanding a ship at sea and helped to instill a sense of professional pride and *esprit de corps* in junior officer ranks. An enlisted surface warfare qualification insignia was subsequently introduced in 1978.

The introduction of the surface warfare insignia was a symbolic turning point for the community. Since the end of World War II, the community had increasingly struggled to define itself in an era in which surface warfare was no longer the Navy's sole or, depending on circumstances, even primary mode of warfare. Now, the surface community had come to embrace a more specialized role and sought to establish its own distinct identity. Although its long history and hallowed traditions continue to play a large role in shaping the community's identity, surface warfare is equally defined by its ability to adapt to the demanding requirements of the high-tech, high-tempo operations of an, all too often, unpredictable modern era.

During the "Tanker War," which took place against the backdrop of the larger Iran-Iraq War, two Iraqi Exocet missiles struck the guided-missile frigate USS *Stark* (FFG-31) on 17 May 1987, while the ship was steaming in the Persian Gulf to protect Kuwaiti oil tankers vulnerable to both Iraqi and Iranian attacks. This incident killed 37 sailors and wounded another 21. Less than one year later, on 14 April 1988, a second guided-missile frigate, USS *Samuel B. Roberts* (FFG-58), struck an Iranian moored contact mine while also providing protection to oil tankers in the Persian Gulf. The explosion broke the ship's keel, opened a 22-foot hole in the port side, ignited a major fire aboard, and flooded two main spaces with 2,000 tons of water. Ten sailors suffered critical injuries and had to be evacuated while dozens more sustained non-life-threatening injuries. In both cases, U.S. Navy sailors demonstrated tremendous firefighting and damage-control capabilities, saving their ships and aiding badly injured shipmates.

COALITION WARFARE IN A NEW AGE

The end of the Cold War ushered in a new era no longer dominated by the tensions of what had largely been a bipolar world. Instead, the attention of U.S. policymakers increasingly turned toward the ramifications of regional unrest and conflicts. Following Iraq's invasion of Kuwait in August 1990, forward-deployed U.S. naval forces provided protection for early introduction of land-based ground and air assets as part of Operation Desert Shield/Desert Storm and may well have deterred further aggression by Iraq. Maritime superiority and unchallenged control of the sea enabled the safe and timely delivery of equipment, supplies, and spare parts necessary to support the allied campaign against Iraq. Interdiction of Iraqi seaborne trade, an ongoing operation, cut enemy resupply, dampened their will to fight, and significantly impacted Iraq's economic health. The presence of Joint Task Force Middle East ships deterred Iraqi mine laying in the southern Arabian Gulf. Some of the first shots fired were from Navy ships in the Arabian Gulf and Red Sea, as they launched salvos of Tomahawk cruise missiles against pre-programmed targets in Iraq. Before the end of the conflict in March 1991, 80 naval fire-support missions by the Navy's recommissioned battleships and 288 cruise missile strikes were carried out.

The post–Cold War era's next major crisis was the 1991 dissolution of Yugoslavia into warring ethnic factions. The brutality of the resulting civil war and the ensuing refugee crisis and growing threat to regional stability prompted the dispatch of humanitarian aid, a limited air campaign against Serbian-backed factions, and a peacekeeping force, first under the auspices of the

NHHC DN-SN-91-09313

A BGM-109 Tomahawk land attack missile (TLAM) is fired toward an Iraqi target from the battleship USS *Missouri* (BB-63) at the start of Operation Desert Storm.

United Nations and, as of 1996, in a series of NATO-led stabilization operations. The U.S. Navy's surface force contributed to NATO's Operation Sharp Guard, which encompassed embargo enforcement and maritime surveillance functions in the Adriatic. Amphibious ready groups embarked ready-reaction Marine Corps units key in such events as the rescue of downed U.S. Air Force Captain Scott O'Grady in June 1995.

The crisis situation in the Balkans was to continue to the threshold of the new century. Serbia, one of the former Yugoslav republics and now a sovereign state, exercised increased repression of its independence-minded ethnic Albanian minority in the province of Kosovo, where this ethnic group was primarily resident. By mid-1997, a full-blown Serbian counterinsurgency

operation was underway against dissident Kosovar Albanian groups. The growing violence led to a major humanitarian crisis and also encompassed aspects of ethnic cleansing previously experienced in the Yugoslav civil war. Serbia rebuffed or delayed U.S. and European offers of peaceful arbitration and calls for settlement until, in February 1999, the NATO-led Operation Allied Force began air and missile strikes against Serbian command-and-control nodes. The destroyer USS *Gonzales* (DDG-66) and guided-missile cruiser USS *Philippine Sea* (CG-58) were among the U.S. and British surface ships and submarines that fired the initial 55 cruise missiles against Serbian targets. Allied Force went through three phases of strikes before Serbia agreed to negotiate an end to the conflict and withdraw from Kosovo. Aside from the Navy's carrier battle group, amphibious ready group, and submarines, eight guided-missile destroyers and cruisers also took part in the operation.

U.S. Navy 201009-N-N0701-0070

A U.S. Navy and Marine Corps security patrol passes the damaged U.S. Navy destroyer USS *Cole* (DDG-67) following the 12 October 2000 terrorist bombing attack on the ship in Aden, Yemen. Security personnel established checkpoints and searched incoming vehicles for contraband and explosives while the ship was prepared for its journey back to the United States.

THE GLOBAL WAR ON TERRORISM

Arguably, the bombing of the guided-missile destroyer USS *Cole* (DDG-67) on 12 October 2000 in the port of Aden, Yemen, ushered in the Global War on Terrorism (GWOT) against Osama bin Laden and his terrorist group, al-Qaeda, just 11 months before the horrific 9/11 attacks. *Cole* had steamed into the U.S. Fifth Fleet area of operations at high speed, necessitating a refueling stop. Entering Aden, the destroyer had been moored when a boat carrying two men pulled alongside. After gesturing to and saluting *Cole* sailors, the terrorists detonated a bomb that tore a 40-foot-wide hole amidships and killed 17 Americans while wounding another 40.

The ferocity of the attack against *Cole* shocked the American public despite an earlier failed attempt in January 2000 by al-Qaeda members to strike the guided-missile destroyer USS *The Sullivans* (DDG-68) off Aden. That mission failed when the explosives-laden boat ran aground and had to be recovered by a crane. The terrorists did not consider the plan foiled, however, and bided their time before launching the *Cole* attack nine months later. U.S. Navy forces had been operating in the area for well over a decade at that point, especially during the high-intensity Operation Desert Storm. Lower-intensity incidents throughout the rest of the 1990s and into the early 2000s

had kept the Navy in a forward-presence posture in the Persian Gulf. The successful recovery of *Cole,* like that of the crippled *Stark* and *Samuel B. Roberts* in the region some 20 years before, was characteristic of the tenacity of a new generation of American sailors—they continued to live up to Lawrence's immortal words.

On 11 September 2001, al-Qaeda carried out the most devastating attacks on U.S. territory since the Japanese strike on Pearl Harbor. The attacks catapulted U.S. armed forces into a protracted, multi-faceted conflict in Afghanistan and Iraq. The U.S. Navy played a critical role in the immediate military response to the 9/11 attacks, code-named Operation Enduring Freedom (OEF), which formally began on 7 October 2001 and unfolded primarily in the Central Command (CENTCOM) theater of operations. The initial phases of OEF necessitated an enormous commitment in terms of total naval forces in theater. During the operation's first six months, the Navy committed to the U.S. Naval Forces Central Command and Fifth Fleet's area of responsibility a total of six carrier battle groups, four amphibious ready groups, extensive additional support ships, and around 60,000 active-duty sailors and marines, as well as some 13,000 reservists. In terms of ships alone, this constituted a surge of more than three times the number of naval vessels typically assigned to Fifth Fleet. Coalition navies—the United Kingdom, Canada, France, Germany, and Italy in particular—also participated extensively in OEF, providing further warfighting capabilities and support functions.

Due to concerns about possible Iraqi weapons-of-mass-destruction development and collusion with al-Qaeda, the United States expanded GWOT combat operations to Iraq on 20 March 2003 as Operation Iraqi Freedom (OIF). In both OEF and OIF, naval strike warfare was a key component of the CENTCOM-directed joint air campaigns, as carrier-based strike fighters and ship-launched cruise missiles pummeled airfields, air defense positions, command and control nodes, and—in Afghanistan—al-Qaeda training camps. Owing to its absolute control of the sea during OEF and OIF, the Navy demonstrated its agility and adaptability as a vital instrument of U.S. foreign policy.

LOW-INTENSITY CONFLICT

Maintaining forward naval presence in today's asymmetrical threat environment underscores the need for the surface force to remain vigilant against all threats. The continued presence of naval vessels to protect American interests abroad and execute national policy harkens back to the reestablishment of the Navy and its early operations against France, the Barbary States, and Britain. Although the Navy's history in the twentieth century was punctuated by large wars, day-to-day operations in the new millennium have often focused on the defense of regional partners, deterrence of adversaries, and protection of trade. The Persian Gulf region remains an area of unpredictability and danger.

With the ouster of President Abi Abdullah Saleh in 2014 by rebel Houthi groups, a full-scale civil war convulsed Yemen. Saudi Arabia intervened a year later, prompting the Iranian-backed Houthis to attack targets belonging to powers friendly to the Saudis on land and at sea, including U.S. warships in the Red Sea. In 2016, the guided-missile destroyer USS *Mason*

(DDG-87) destroyed two Houthi missiles fired from Yemen with surface-to-air missiles. This attack was largely considered the opening shot of the conflict between the Houthis and the United States.

On 19 October 2023, less than two weeks after the terrorist group Hamas's brutal surprise attack on Israel, the guided-missile destroyer USS *Carney* (DDG-64) fired SM-2 missiles to destroy three possible Iranian-made Quds-2 land-attack cruise missiles launched from Yemen against Israel. Several drones were launched in the attack as well, and the U.S. Navy committed itself to the defense of Israel against such strikes. The Houthis also conducted sustained attacks against international shipping within the Red Sea. *Mason* proceeded to assist Israeli tanker MV *Central Park* in the Gulf of Aden when the alert crew detected two anti-ship missiles (ASBM) launched from Yemen's coast. After this first use of ASBMs in naval combat, *Carney* shot down three drones during an ASBM attack on a commercial ship on 3 December. Three days later, *Mason* shot down another drone. By 10 December, *Carney* had intercepted and destroyed a mix of 22 Houthi cruise missiles and drones. These onslaughts, visited upon commercial vessels transiting the Red Sea, began the first in a series of "drone swarm" attacks, reminiscent of the *kikusui* missions conducted by the Japanese Special Attack Corps kamikazes against U.S. Navy vessels in World War II.

Carney underwent a second intense drone swarm attack on 16 December 2023, successfully shooting down 14 drones in one day after Houthi militants launched a series of drone and missile attacks against several commercial ships. The conflict against the Iran-backed Houthi regime was dubbed Operation Prosperity Guardian, suggesting a long-term commitment to the area with the objective of keeping the Bad el-Mandeb Strait open to commercial traffic. The tense situation in that region continues to evolve and the U.S. Navy remains prepared to respond against renewed threats.

LEARNING FROM HISTORY

The continual forward presence of the Navy means that operational tempo—and risk—remains high, even when vessels are not engaged in combat operations. Toward the end of the Navy's long involvement in OIF and OEF, however, the sea service began to suffer a series of incidents that reflected poorly

U.S. Navy 200714-N-LQ653-1408

An MH-60S Seahawk helicopter uses a Bambi bucket to provide aerial firefighting support to fight the fire aboard amphibious assault ship USS *Bonhomme Richard* (LHD-6), San Diego, 14 July 2020. Two days earlier, a fire had been called away aboard the ship while it was moored pier side at Naval Base San Diego. Base and shipboard firefighters responded to the fire.

on the readiness of the surface fleet and its leaders. In 2021, the U.S. Naval Institute (USNI) reported on a study titled "A Report on the Fighting Culture of the United States Navy Surface Fleet." The study, commissioned by four members of Congress, asked 77 active duty and recently retired surface sailors for their insights into the culture of the naval service. When queried if incidents such as the 2016 surrender of two Navy patrol boats to Iranian forces, the 2017 fatal collisions in the Western Pacific that killed 17 sailors, and the total loss to fire of the amphibious assault ship USS *Bonhomme Richard* (LHD-6) in 2020 were part of a larger cultural and leadership problem in the Navy, 94 percent of interviewees responded "yes." Fifty-five percent noted a direct connection between leadership culture and the major incidents. The report sought to discover whether these episodes were "isolated, unit-level breakdowns" or indicated "larger institutional issues that degraded the performance and reputation of the entire naval surface force." Several of the interviewees noted a lack of focus on warfighting, a culture of micromanagement, and a lack of resources and consistency in surface warfare training programs, along with the "Navy's underwhelming commitment to surface ship maintenance—a problem that spans decades."

Although the Navy did not participate officially in the study, there were additional reports, including one on surface warfare retention by the Government Accountability Office, which provided insight into some of the Navy's recent string of woes. These reports found ship commanders handcuffed by too many administrative tasks that did not allow them time to train their crews to fight. Others cited the Navy's so-called zero defect mentality, responsible for creating a careerist environment that often leads to risk aversion and the fear of ruined careers. Many historically minded sailors would be among the first to point out that officers making mistakes had often been given second

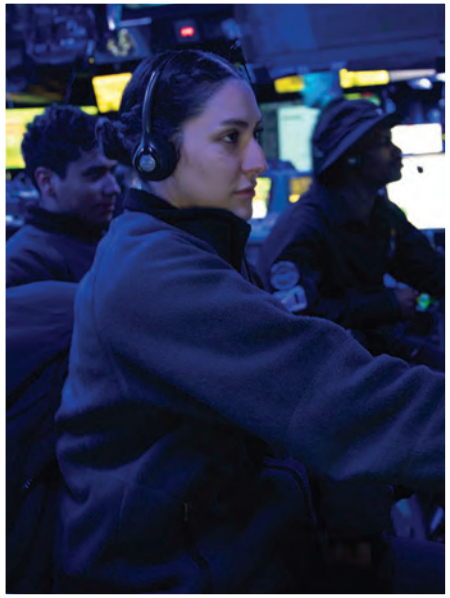
NHHC NH 46740

Ensign Chester W. Nimitz, USN, 1907.

chances, and in many cases rightfully so. The best example of this was when a young ensign by the name of Chester Nimitz ran the destroyer USS *Decatur* (Destroyer No. 5) aground off the Philippines in 1908. Although court-martialed and issued a letter of reprimand, Nimitz learned from his mistake, continued his advancement in the Navy, led allied forces in the Pacific to victory over the Japanese in World War II, and concluded his career as fleet admiral and CNO.

Both glorious and inglorious moments of Navy history are teachable. History continually invites new insights and interpretations that provide examples to the surface force of leadership, integrity, and daring, both in peace and war. Instilled with the Navy's core values of honor, courage, and commitment, the surface Navy community must continue to train and prepare for eventual combat with peer or near-peer adversaries, no matter who they may be. Its innate qualities will stand the Navy in good stead as it pivots to confront new challenges. Aside from the continued rise of China and the People's Liberation Army Navy (PLAN) in just the past decade, any threat from a foreign power pushing deeper into the Pacific will force the U.S. Navy to continue to adapt and evolve, integrating new ships, weapons, and training. The Navy will carry on projecting a forward presence and maintaining power at sea in order to keep up with ever-changing technologies and advancements in all of the familiar and newest dimensions of warfighting. Surface warfare officers', chief petty officers', and enlisted sailors' service in forward-deployed areas around the world will carry on conducting maritime operations in line with the U.S. Navy's mission of preserving and upholding freedom of the seas. Although the surface community will undoubtedly continue to move forward and adapt to an ever-changing technological environment, it will also continue to be guided by the values and traditions that have evolved over its proud 250-year heritage.

UNDERWAY




STOP

3 NAVAL AVIATION

CAROLINE E. TAPP

On 13 March 1913, Captain Washington Irving Chambers received the medal of the Aeronautical Society for his "unusual achievements in being the first to demonstrate the usefulness of the aeroplane in navies." Within one month, Captain Chambers noted that the performance standards for Navy air pilots were different from "land pilots," even differentiating them from the standards of the *Federation Aeronautique Internationale*, which set guidelines for international pilot accreditation. Since the earliest days of naval aviation, the standards for pilots operating on and around naval vessels have been, and remain, quite high.

NHHC UA 450.07

Eugene Ely's plane taking off from USS *Pennsylvania* (Armored Cruiser No. 4) in 1911.

While the maturation of unmanned aerial vehicles (UAVs) continues to dominate concerns regarding naval aviation's future, one factor that continues to influence naval aviation is its people. Echoing Admiral Ernest J. King's "War Instructions" from 1944, the "human element" of naval warfare remains "the very foundation of naval efficiency." A look back at the people who have formed the naval aviation community and its continued development reminds us why, even in a period in which technological advancement dominates capabilities, 33rd Chief of Naval Operations Admiral Lisa M. Franchetti noted that "the cornerstone of our naval power is our people."

EARLY FLIGHT AND BIRTH OF NAVAL AVIATION

While the earliest iterations of humans and flight date to Greek mythology, balloons, and even Leonardo Da Vinci's "flying machines," the Wright Brothers' famous flight on 17 December 1903 holds a prominent position on the timeline of aviation history and in public memory. As the first powered takeoff and landing under the control of a pilot, this milestone set the stage

for military integration of heavier-than-air aircraft. Five years later, in 1908, the Navy detailed Lieutenant George C. Sweet and Assistant Naval Constructor William McEntee to Fort Myer, Virginia, to serve as observers at the test flight of the Wright plane. In Lieutenant Sweet's report to the Navy Department, he recommended pontoons as a possible addition to the use of airplanes. Although Navy leaders were not originally keen on the idea or viability of integrating aircraft into a sea mission, Captain Chambers saw a future for aviation within the Navy. Chambers, who at the time was assistant chief of the Bureau of Ordnance, attended the aviation meets at Belmont Park in New York as an observer and became a staunch advocate for the potential value of the airplane to the fleet. Although he originally pitched the Wright brothers with the idea of launching an airplane from the deck of a naval vessel, Wilbur Wright declined. Undeterred, Chambers solicited the help of the Curtiss Aeroplane and Motor Company, which agreed to assist in Chambers' efforts to demonstrate the airplane's value to the Navy. Curtiss provided their representative pilot and member of their exhibition team, Eugene B. Ely, to complete the flights. Although Chambers made it clear that he had no money to cover the costs of the aviator or airplane, he agreed to provide a ship if Ely would be willing to attempt the historic flight.

After the hasty construction of a platform on the bow of USS *Birmingham* (Scout Cruiser No. 2), on the foggy day of 14 November 1910, Ely successfully flew a 50-horsepower Curtiss Model D biplane from the scout cruiser while it was anchored in Hampton Roads, Virginia, and landed on a nearby beach less than three miles away. Just two months later, on 18 January 1911, Ely travelled to the West Coast where he landed the same airplane on a platform constructed on the stern of USS *Pennsylvania* (Armored Cruiser No. 4), anchored in San Francisco Bay. Within the span of a few months, Ely had proven it was possible to take off and land on a U.S. Navy ship. Sandbags and 22 lengths of manila rope lined the platform, serving as the original arresting gear used on *Pennsylvania*.

NHHC 80-G-424786

Captain Washington Irving Chambers, USN.

Less than four months after Ely's successful landing on *Pennsylvania*, Captain Chambers filled out a purchase request for two aircraft on 8 May 1911. The Navy recognizes this date as the official birthday of naval aviation. By 13 May, Chambers had received orders assigning him to the Bureau of Navigation, where he was to put full effort into developing naval aviation. Unfortunately, Ely did not get to see the legacy of his first flights. On 19 October 1911, he died after attempting a dip at an air show in Macon, Georgia. Although Chambers had successfully overcome the first major hurdles in proving the viability of airplanes in a seafaring service and securing appropriations, he also labored against many doubters of the nascent technology (albeit with the support of technical innovator Captain Bradley Fiske and Admiral of the Navy George Dewey). The bravery of early pilots like Ely, together with Chambers' persistence, would serve as the stepping stones to making naval aviation a valuable asset for the U.S. military.

NHHC UA 41.0.08

Glenn Curtiss being hoisted aboard his hydroplane on board *Pennsylvania* at San Diego, California, in 1911.

WORLD WAR I

Within three years of Ely's initial flights, on 10 January 1914, Secretary of the Navy Josephus Daniels announced, "the science of aerial navigation has reached that point where aircraft must form a large part of our naval force for offensive and defensive operations." This remark came on the heels of a major funding request for $1,297,700 to integrate aviation within the fleet. The newly created Board of Aeronautics established the first naval aviation station in Pensacola, Florida, at the site of the abandoned navy yard. With just seven aircraft, and portable hangars and gear from the aviation unit at Annapolis, nine officers and 23 enlisted men set up a flying school under the command of Lieutenant Commander Henry C. Mustin.

In the lead-up to World War I, development of naval aviation included a focus on aircraft that operated from the water, as well as centralizing and developing training and flight procedures. Designed by Assistant Naval Constructor Holden C. Richardson, personnel built the first Navy-designed seaplane at the Washington Navy Yard in 1915. With integration into the fleet, "it was necessary for [naval aviators] to develop some type of catapult that launch[ed] planes from the decks of ships." Following successful testing, the early gunpowder catapult became a common feature on board large warships. This created

separate requirements for naval aviators: the ability to take off via catapult and land in the water nearby for recovery. With 11 classifications for personnel assigned to aeronautic duty, naval aviation was coming into its own, but was in no shape to fight a war.

By 6 April 1917, when the United States declared war on Germany, the numbers of those in the naval aviation community remained small. According to personnel records, the Navy had less than 30 men to serve as naval aviators at the outbreak of war and only a total of 201 personnel were associated with naval aviation. For the first five months of the U.S. involvement, the Navy was unsure to what extent airplanes would be used during the war effort or if any would be sent abroad. A board of officers went to England, France, and Italy to determine if the Navy should manufacture any specific types of aircraft in the summer of 1917. As recounted by naval historian Dudley W. Knox, they reported upon their return that "there was no wholly satisfactory foreign seaplane suitable for coastal patrol; and that American types equipped with the new Liberty engine would be superior to any abroad." In September 1917, naval leaders determined they would operate 15 seaplane stations on the coasts of France and Ireland. According to historian R. D. Layman, "Aviation's principal functions on land during the Great War can be described under four headings: aerial combat, tactical offence, strategic offence, and reconnaissance." With U-boats posing the greatest threat to Allied efforts transporting troops, aerial reconnaissance both from land and seaplane bases became a crucial need in antisubmarine warfare and for the safe passage of convoys traversing the Atlantic toward Europe.

By the end of the war, naval aviation had expanded from one station at Pensacola to dozens in the United States, as well as a like number of stations overseas in France, England, Ireland, and Italy. Naval aviation as a force grew significantly, totaling 2,000 airplanes and 37,000 officers and sailors. The Navy conducted 5,691 bombing sorties against targets in Europe, and 22,000 flights supporting antisubmarine operations. The story of aviation in World War I was often one of rapid growth, and the brave personnel who operated, trained, and experimented with the developing technology showed the value of aviation assets in war, setting the Navy's aviation program up for success in the 1920s and 1930s.

NHHC NH 50867

Rear Admiral William A. Moffett, USN, while chief of the Bureau of Aeronautics in 1928. Note the two-starred flag on the Douglas DT-2.

INTERWAR ERA

As the "golden age of flight" captured the imagination of the American public, several notable figures worked to expand the Navy's aviation community. Rear Admiral William A. Moffett was a general line (surface) officer who had been awarded the Medal of Honor for his actions in Vera Cruz, Mexico, in 1914 while commanding USS *Chester* (Cruiser No. 1). After World War I, Moffett became a staunch advocate of aviation and its incorporation within the fleet. On 25 July 1921, President Warren G. Harding appointed Moffett as first chief of the Bureau of Aeronautics (BuAer), coincidentally only a few days after Army Brigadier General William "Billy" Mitchell's presentation to Congress on the further incorporation of aircraft into military strategy and tactics. Although widely regarded as the father of the U.S. Air Force, Mitchell played a role in proving the viability of airplanes for all military uses. He also controversially claimed that the recent sinking of the captured German battleship *Ostfriesland* on 21 July proved that heavy warships were obsolete and that air power was the future of war. Although this pronouncement was little more than sensationalism (as *Ostfriesland*'s position was known and it was stationary, undefended, and its watertight doors remained open), Mitchell's antics captured the popular imagination and helped pave the way for Moffett's work.

One of the largest undertakings during Moffett's leadership of BuAer was the development of the Navy's first aircraft carriers. Congress authorized funds for the conversion of the *Proteus*-class collier *Jupiter* into USS *Langley* (CV-1), which was recommissioned on 20 May 1922. Although *Langley* primarily served as a test ship for flight operations, its success soon led to the conversion of the Navy's first large aircraft carriers from two cancelled battlecruisers, USS *Lexington* (CV-2) and USS *Saratoga* (CV-3), in the late 1920s, as well as the construction of USS *Ranger* (CV-4) beginning in 1931. *Ranger* was the first Navy warship built from the keel-up to be a carrier. Before these ships were built, Captain Joseph Mason "Bull" Reeves, an 1894 graduate of the Naval Academy, utilized war gaming and studies at the War College from 1923 to 1925 to concentrate on the aircraft carrier, aviation theory, and tactics, and put his ideas into practice during his subsequent role as Commander Aircraft Squadrons, Battle Fleet. Historian Douglas Smith notes that Reeves, known as the "father of carrier aviation," "left his mark indelibly on the mating of the aircraft carrier and its embarked aircraft as the centerpiece of American seaborne offensive lethality." Although Admiral Reeves retired in 1936 after serving as commander in chief, U.S. Fleet, he was recalled to active duty in 1940 and ultimately received the Distinguished Service Medal.

NHHC NH 71033

USS *Langley* (CV-1) with the Battle Fleet during the 1920s.

The 1920s and 1930s also saw the development of the Navy's first rigid airships. Use of lighter-than-air (LTA) aircraft for U.S. military operations dates to the Civil War, when hydrogen-filled balloons lifted observers in attached baskets for reconnaissance. The Navy contracted its first airship in June 1915, and that same year, the Navy offered Goodyear a contract to manufacture a free balloon and train two officers at the plant in Akron, Ohio, to operate it. In the aftermath of World War I, the Navy made the switch to helium in LTA operations and established a center for LTA operations at Naval Air Station (NAS) Lakehurst, New Jersey, in August 1921.

NHHC NH 44099

USS *Akron* (ZRS-4) over Arlington, Virginia, c. 1931–32.

Despite the loss of the Navy's first rigid airship, USS *Shenandoah* (ZR-1), Rear Admiral Moffett continued to advocate for advancements and replacements in Navy LTA. The Goodyear-Zeppelin Corporation designed two rigid airships beginning in 1929, when Moffett drove the golden rivet into the main ring of USS *Akron* (ZRS-4) on 7 November. Carrying trapeze systems and an internal hanger space to house F9C Sparrowhawks, the *Akron* and its sister ship, USS *Macon* (ZRS-5), were the last of the massive rigid airships constructed for the Navy. On the evening of 3 April 1933, *Akron* took off from NAS Lakehurst with Rear Admiral Moffett on board, along with his aide and the commanding officer of the air station. Just after midnight, due to a suspected downdraft in poor weather, the *Akron* made a violent descent into the Atlantic Ocean. The crash claimed the lives of 73 out of the 76 souls on board, including Moffett. The Navy continued with the development of airships and utilized them in upcoming conflicts, although LTA saw a reduction of the force by the 1950s. Moffett's support and belief in LTA and the use of aircraft in naval operations led to technological improvements and a greater understanding of how aviation could be used as part of the larger fleet. Such foresight prepared the Navy for aviation's critical role in World War II.

WORLD WAR II

With *Langley* removed from the carrier force in 1936, the United States had seven aircraft carriers in its fleet when the Japanese struck Pearl Harbor on 7 December 1941.When the war broke out, Lieutenant David McCampbell was serving as landing signal officer aboard the carrier USS *Wasp* (CV-7). After surviving

the ship's sinking by a Japanese submarine during the Guadalcanal campaign in September 1942, McCampbell was promoted to lieutenant commander and returned to the United States. He next commanded Fighting Squadron 15 attached to USS *Essex* (CV-9) and was promoted to commander in January 1944. In commanding *Essex*'s Air Group 15, he personally downed 34 Japanese aircraft, with the air group as a whole credited with "315 planes shot down in aerial combat, 348 destroyed on the ground, nearly 300,000 tons of enemy shipping sunk and an even greater tonnage damaged." McCampbell received the Medal of Honor from President Franklin D. Roosevelt in January 1945 for leading his aviators against Japanese forces during the Battle of the Philippine Sea and Battle of Leyte Gulf. As the top naval ace of World War II, McCampbell represents the impact of not only skill, but also leadership. The heroes of World War II are numerous, including the brave pilots and aircrew of USS *Enterprise* (CV-6), USS *Hornet* (CV-8), and USS *Yorktown* (CV-5) at the Battle of Midway in June 1942. The necessity of air superiority during the war proved the value of carrier task force operations and the importance of airplanes to navies. Such factors contributed to the continued growth and development of naval aviation, while also reminding leaders in the aviation community that people were their most important asset.

During the war, people were such a vital resource that the military could no longer afford to exclude half of the U.S. population. Public Law 689, signed by President Roosevelt on 30 July 1942, established the Women Accepted for Volunteer Emergency Service (WAVES) as a women's branch of the Naval Reserve. Twenty-three thousand women served in the naval aviation field as WAVES during World War II, in large part due to the efforts of Lieutenant Joy Bright Hancock. Hancock had served as a yeoman (F) during World War I and, prior to World War II, had worked as a civilian at BuAer. As one of only two WAVES entitled to wear the World War I Victory Medal, Lieutenant Hancock served as the civilian head of the Editorial and Research Section of BuAer, special assistant to the chief of BuAer, Women's Reserve representative for BuAer, and special assistant for the Women's Reserve to the Deputy CNO (Air).

NHHC 80-G-K-2179

Commander David McCampbell poses in the cockpit of his F6F Hellcat on board USS *Essex* (CV-9), early October 1944.

She advanced to captain by 26 July 1946. During her time with the bureau, WAVES worked in a variety of positions within the aviation field, ranging from control tower operators, aircraft inspectors, and meteorologists, to working in aircraft navigation and air traffic control. These support functions were essential to sustaining the war effort and enabling the successful carrier operations that came to define naval aviation's role during World War II.

Lesser known, but still critically important, was the role of land- or sea-based patrol and reconnaissance aircraft, whose mission only became more important after 1945. Following World War II, the Navy established a secret national reconnaissance program specifically intended to keep tabs on Soviet military and naval development. This involved long-range coastal patrols and overflights by land-based Navy patrol aircraft like the PB4Y Privateer. These missions were not always particularly subtle, and were frequently contested by Soviet fighters, as in the case of the PB4Y-2 dubbed "Turbulent Turtle," which was shot down by four La-11 fighters off the Latvian coast in April 1950. Within a decade, the missions had led to the loss of six airframes and 46 lives, but these sacrifices resulted in crucial intelligence regarding the nascent Communist bloc.

NHHC NH 62593

A formation of U.S. Navy carrier aircraft fly over part of U.S. Third Fleet at the end of World War II.

POSTWAR, KOREA, AND THE EARLY COLD WAR

Having proven the indispensability of naval aviation in securing naval superiority, the Navy still faced challenges amid rapid demobilization, brewing tensions between the United States and Soviet Union, and impending organizational changes within the U.S. military. Historian Peter C. Luebke noted that with President Harry S. Truman supporting defense unification efforts, "the Navy feared that unification would undermine its independence and result in the lion's share of postwar funding going to the Army or the Army Air Force (AAF). The Marine Corps also feared for its existence under a unified structure, in which the Army might make it redundant." Although unification did occur under the Office of the Secretary of Defense, the Navy retained its own aviation. Around the same time, CNO Fleet Admiral Chester W. Nimitz ordered the establishment of the Navy's official flight demonstration team, the Blue Angels, on 24 April 1946. During a period in which the Navy struggled to define naval aviation amid budget cuts and the threat

of reorganization, the Blue Angels provided a positive public representation of navy fliers that began with their first show at Craig Field in Jacksonville, Florida, in June 1946.

Another major milestone during this period included the integration of the first African American naval aviator, Jesse Leroy Brown. After officially joining the Navy in July 1947, Brown reported to basic flight training at NAS Pensacola and earned his wings of gold on 21 October 1948. Upon logging a range of flight hours, Midshipman Brown received an appointment to the rank of ensign effective 3 June 1949. At the outbreak of the Korean War in June 1950, Brown served as squadron duty officer of VF-32 aboard USS *Leyte* (CV-32). Due to the short range of land-based tactical air assets of the time, U.S. air power in Japan had difficulty supporting allied forces in Korea. Historian Gary Ohls observed that as a result, "carrier-based naval air power along with land- and carrier-based Marine Corps close air support would prove crucial in the hard fighting American forces faced during the three years of the Korean War." *Leyte* joined the U.S. Seventh Fleet off Korea in October 1950, and Brown's squadron began supplying close air support for the 1st Marine Division. On 4 December 1950, Brown took off in his F4U Corsair from *Leyte* on a mission to support Marine units near the Chosin Reservoir. After being hit by ground fire, Brown reported a loss of oil pressure and landed his aircraft in enemy territory. With the harsh terrain and rough landing, the fuselage bent so that it trapped Brown. Ultimately, Brown's wingman, Lieutenant (j.g.) Thomas Hudner Jr., crash-landed his own aircraft and attempted to free Brown from the wreckage of his Corsair. Several attempts by Hudner and Marine First Lieutenant Charles Ward of Marine Observation Squadron 6 to free Brown were unsuccessful, and they reluctantly left the crash site for fear of enemy capture. Ensign Jesse L. Brown posthumously received the Air Medal, Purple Heart, and Distinguished Flying Cross. His life and career represent the difficult realities that naval aviators faced during the Korean War, as well as the racial integration of naval aviation and the military at large during the postwar period. By the end of the Korean War, Navy and Marine Corps pilots had flown approximately 41 percent of the total U.S. sorties undertaken, underscoring the importance of carrier-based aircraft providing close-air support for ground and amphibious forces.

NHHC 80-G-K-13678

The Blue Angels flying F9F Panthers, 8 December 1952.

NHHC 80-G-707201

Ensign Jesse L. Brown takes the oath of office on board USS *Leyte* (CV-32), 26 April 1949. Administering the oath is the ship's commanding officer, Captain William L. Erdmann. Lieutenant Commander E. D. Williams (*center*) is witnessing the ceremony.

NHHC 80-G-689304

An FJ-4 Fury during carrier qualification trials. The Fury was a navalized version of the famous Air Force F-86 Sabre, adopted during a search for a viable high-performance, carrier-based fighter.

Simultaneously with the Korean War, the Navy was working on transitioning from propeller- to jet-driven aircraft. Beginning with the 1946 development of the McDonnell FH-1 Phantom, the Navy's transition to jets came with increased costs and challenges including "technical problems [such] as engine reliability and response times, swept-wing flight characteristics, and man/machine interface issues." The transition not only required radical new design practices and training, but also a transformation of the aircraft carrier. Jets quickly became far heavier than their predecessors and required significantly longer takeoff runs, eventually leading to a reliance on steam-powered catapults for launching aircraft and angled flight decks for simultaneous launch and recovery operations.

But even as naval aviation's complexion radically changed in these areas, many of the missions remained the same—a fact made starkly clear by the 1962 Cuban Missile Crisis. The detection of Soviet medium- and long-range ballistic missile sites by high-altitude U-2 reconnaissance overflights led President John F. Kennedy to order a naval "quarantine" (blockade) to prevent the installation of additional weapons. In the ensuing 13 days of the crisis, Navy F8U-1P Crusaders of Light Photographic Squadron 62, a specially trained, low-altitude reconnaissance squadron, provided critical intelligence to Kennedy and his advisors on the progress of Soviet military activity in Cuba, all while being repeatedly fired upon. Simultaneously, the blockade of Cuba was enforced by a combination of Navy ships and aircraft. Particularly critical to these efforts were the service's

land-based patrol squadrons and carrier-based antisubmarine aircraft. Long-range patrol aircraft based out of Bermuda and Jacksonville such as the P2V Neptune, P3V Orion, and P5M Marlin, identified, photographed, and tracked Eastern Bloc ships as they approached Cuba, providing timely information to determine if American surface forces needed to intercept and board each ship. Antisubmarine aircraft such as the S2F Tracker (off of dedicated antisubmarine warfare carriers such as USS *Essex*, now CVS-9) effectively carried out the same duty against underwater contacts attempting to run the blockade, notably forcing the Soviet submarine F-945 to the surface. Although these efforts were carried out in the spotlight and were critical to the peaceful conclusion of the Cuban Missile Crisis, they were an extension of lesser-known, continuous (and exhausting) patrol operations maintained throughout the first 15 years of the Cold War to guard the United States from surprise attacks. They continued, largely uncelebrated, until the collapse of the Soviet Union in 1991.

NHHC USN 1102786-C

Commander Jerry Pully with Commander W. B. Ecker, Commander Robert A. Koch, Ensign Homer Ogles, and Lieutenant Commander B. J. Larkind as they discuss the flight of Ecker, commanding officer of Light Photographic Squadron 62, over Cuba on 5 June 1963.

VIETNAM AND THE LATER COLD WAR

With tensions rising between the democratic west and communist countries since the end of World War II, the United States found itself involved in conflicts that would test the strength of naval air power. Although a communist invasion of South Korea prompted the start of the Korean War, the lead-in to the Vietnam War was not as clear-cut. Tensions escalated in August 1964 when three North Vietnamese patrol boats attacked the American destroyer USS *Maddox* (DD-731) in international waters. In response, President Johnson launched Operation Pierce Arrow, set to be a retaliatory air raid on North Vietnamese patrol boats and the fuel installation at Vinh. USS *Ticonderoga* (CVA-14) and USS *Constellation* (CVA-62) launched aircraft for attack on 5 August. Although the sorties were successful, the North Vietnamese put up heavy automatic weapons fire over the designated targets. Flying off *Constellation*, Lieutenant (j.g.) Everett Alvarez Jr. became the first American naval aviator taken captive as a prisoner of war (POW) in the Vietnam conflict after he ejected from his A-4C Skyhawk over Hon

Gai. Alvarez became the second-longest-held POW in U.S. history, as his imprisonment in Hỏa Lò Prison lasted from 5 August 1964 until 12 February 1973. Alvarez later received the Distinguished Flying Cross for his actions, as well as the Silver Star for not breaking under torture, and continues to serve as a reminder of the heroism exhibited by many U.S. service members throughout the Vietnam War. In particular, naval aviators played crucial roles in the air war over Vietnam, as carrier-based airpower was key to conducting bombing missions against North Vietnamese infrastructure and supply lines in operations such as Rolling Thunder (March 1965–November 1968). During the fall of Saigon in 1975, naval aviation personnel also participated in the evacuation of thousands of South Vietnamese refugees as part of Operation Frequent Wind. Knowing the people behind the aircraft, and the people they helped save, reminds us of the human element in factoring the cost of war.

NHHC L38-01.06.01

Everett Alvarez Jr., pictured here as a commander, c. 1980.

During this same period, naval aviators were instrumental in the growing space program. Beginning in October 1958, "approximately half of NASA astronauts, including the first American in space and the first to orbit earth, were naval aviators. Of the 12 men who walked on the moon, seven were naval aviators, including the first and the last." Serving as a naval aviator from 1949 to 1952, Neil Armstrong flew 78 combat missions over Korea before joining the Naval Reserve and then resigning his commission in October 1960. On 20 July 1969, Armstrong ensured that a naval aviator became the first person to walk on the moon. Although events surrounding the so-called space race were highly publicized, the stories of those such as Everett Alvarez sometimes get lost in the larger narrative of the Cold War. Be it Korea, the space race, Vietnam, or confrontation with the Soviet Union, naval aviation remained a crucial component of national security and technological expansion during the second half of the twentieth century.

THE 1990S AND GULF WAR

While the Cold War wound down with the final, rapid dissolution of the Warsaw Pact from 1990 to 1991, another conflict erupted in the Middle East. On 2 August 1990, Iraq invaded Kuwait, fueled by Iraqi leader Saddam Hussein's historical claim to territory, large debts owed to Kuwait from the Iran-Iraq War, and a desire to control Kuwait's oil reserves. What followed was a massive effort known as Operation Desert Shield, led by the

NHHC L38-02.07.013

Neil Armstrong, pictured here as an ensign, while serving as an F9F pilot in 1951.

United States to build up U.S. and coalition forces in defense of Saudi Arabia and to liberate Kuwait. The Navy spent August 1990 through mid-January 1991 preparing targets and providing logistical supply for food, supplies, ammunition, equipment, and fuel (fondly referred to as "bullets, bandages, and beans"). Meanwhile, carrier-based aircraft deterred and monitored Iraqi forces. On 16 January 1991, President George H. W. Bush announced the second phase of operations, known as Desert Storm, which marked the official beginning of the liberation of Kuwait. By 27 February, the allies had liberated Kuwait, marking the end of the Persian Gulf War.

As commanding officer of Tactical Electronic Warfare Squadron 34 at the beginning of the 1990s during Operation Desert Storm, then-Commander Rosemary Mariner was the first woman to lead an aviation squadron. Mariner had been selected as one of the first eight women to complete flight training beginning in 1973. She earned her wings of gold as one of the "First Six," and went on to advocate for breaking barriers for women in aviation. In 1992, she worked with members of Congress and a Department of Defense advisory board, leading to the announcement by Secretary of Defense Les Aspin of the repeal of the Combat Exclusion Policy in April 1993. Although women were legally permitted to serve in most aviation capacities, cultural barriers remained, as evidenced by the misconduct and assault that occurred at the 1991 Tailhook Symposium. The growth of fighter pilot culture within public imagination only added to misconceptions regarding women as naval aviators. As the National Academy of Sciences' Committee on Education and Training for Civilian Aviation Careers noted, "those unfamiliar with the modern airplane or steeped in the movie imagery of the *Top Gun* military fighter pilot may harbor outdated perceptions of the pilot's job and accompanying beliefs that women in particular are less suited to performing it." As it had with male aviators, integration of racially diverse female aviators lagged behind as well, with Lieutenant Commander Brenda E. Robinson becoming the first Black female naval aviator in 1980 and Lieutenant Matice Wright-Springer qualifying as the first Black woman naval flight officer in 1993.

Despite the challenges naval aviation faced culturally, the 1990s showed how a diverse, prepared force led to successful operations. In the summary report on the United States Navy in Operations Desert Shield and Desert Storm, the Chief of Naval Operations declared that "the most significant contributor to our decisive victory was our motivated, dedicated, well-trained volunteers." Naval aviation assisted in paving a clear way for victory, and both men and women continued to fight for an institutional culture that would benefit all naval aviation personnel, who in turn reflected the full population of the United States.

TWENTY-FIRST CENTURY AND GLOBAL WAR ON TERRORISM

At the turn of the millennium, terrorists from al-Qaeda attacked targets in the United States on 11 September 2001. In swift response, President George W. Bush declared a national emergency on 14 September and Secretary of Defense Donald Rumsfeld announced on 25 September that Operation Enduring Freedom (OEF) would initiate America's Global War on Terrorism by 7 October 2001. United States naval aviation provided critical assets in operations over Afghanistan. With a need for deep-strike capability, the Navy dispatched carriers to the region with carrier air wings consisting of rotary- and fixed-wing aircraft. In a hearing before the Senate Armed Services Committee on 7 February 2002, Chairman Carl Levin (D-MI) noted the level of cooperation among the services was paramount to success in OEF (including the use of Navy assets to transport Army special forces to Afghanistan), although the excellence of the forces was due, in part to "the versatility of our brave men and women in uniform."

In March 2003, the coalition to remove Saddam Hussein from power, led by the United States, launched Operation Iraqi Freedom (OIF). For close air support and force interdiction, the Navy primarily relied on carrier-based fighter jets including F/A-18 Hornets and Super Hornets, and F-14 Tomcats. As the "largest deployment of combatant naval aviation forces since Operations Desert Shield and Desert Storm," OIF included the deployment of five carrier battle groups, three amphibious ready groups, and two amphibious task forces with 780 Navy and Marine Corps aircraft flying 13,893 sorties. In the midst of warfighting, the U.S. Navy also continued to develop UAVs, carried on with the search for the next-generation multipurpose fighter, and assisted in massive humanitarian relief efforts.

NHHC NH 107666-KN

USS *Iwo Jima* (LHD-7)—shown here off Pensacola, Florida—and its aviation assets were critical components of the Navy's relief efforts following hurricane Katrina, August 2005.

One of these efforts came after Hurricane Katrina struck the Gulf Coast of the United States in August 2005. The Navy provided immense support to disaster relief, including search-and-rescue and fly-away medical teams. As commanding officer of USS *Iwo Jima* (LHD-7) when Katrina made landfall in Louisiana, Captain Richard Callas wrote home to his wife regarding his observations. Describing the morning of 5 September 2005, Captain Callas wrote, "Since 0500 this morning, we have been launching and recovering aircraft, even during the transit up the [Mississippi] river. I finally had to stop flight operations as we approached the pier so I could concentrate on mooring the ship." Oftentimes only considered in wartime, such rapid flight operations were paramount to the Navy's and Marine Corps' quick response to natural disasters. Rear Admiral Sinclair M. Harris served as commander of Amphibious Squadron 4 and reported how proud he was with the Navy's and Marine Corps' response. He noted, "Our service men and women were selfless and caring to all. And, we showed our citizens the compassionate side of human nature throughout the region. Many commented to me that now that they saw us, they knew America actually cared. I expected my Sailors and Marines to find the good and do it." As command-and-control center for all Department of Defense operations in Louisiana, *Iwo Jima* represented just one of the 21 supporting ships the U.S. Navy sent to assist within days of the hurricane. Overall, the Navy's response reflects the readiness of naval aviation and its people to support missions during both wartime and in humanitarian crises.

THE FUTURE OF NAVAL AVIATION

While technological advancement is a vital component of naval aviation, history shows that the people who make up the naval aviation community are the key asset to the continued development of aviation within the fleet. The human element undergirding naval aviation is vital to its continued success. Without voices in leadership and a personnel pipeline to match the pace of a changing world, the naval aviation community would be beholden to an enterprise architecture that prizes development of technology over warfighters. Simply put, people remain the greatest asset to the Navy and to naval aviation.

4 UNDERSEA WARFARE

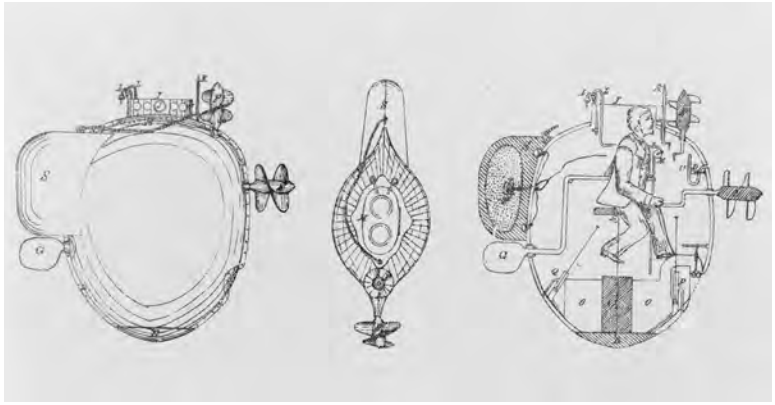
CHRISTOPHER J. MARTIN

American interest in, and acknowledgement of, the value of undersea warfare dates to the very founding of the republic. For 250 years, the American submarine force has undertaken a multitude of roles in defense of the United States. Currently, as the most survivable element of the U.S. nuclear triad, the submarine force protects the country through strategic deterrence and, if necessary, "taking the fight to the enemy and denying them the ability to operate at sea." This chapter will discuss the origins of undersea warfare, the various roles undertaken by American submarines, and the community that has supported and operated them in defense of the nation's interests for two and a half centuries.

DAVID BUSHNELL AND HIS "SUB-MARINE VESSEL" *TURTLE*

In 1771, Yale student David Bushnell demonstrated that gunpowder could be successfully detonated underwater. During the spring of 1775, Bushnell became convinced that his discovery could help break the British Royal Navy's blockade of American ports, and the most effective way of detonating gunpowder under an enemy ship was by means of a submarine. Minimally supported with a £60 stipend from the Connecticut Council of Safety and encouraged by General George Washington, Bushnell likely completed his "sub-marine vessel" in the late summer or early fall of 1775 and christened it "Turtle."

Bushnell intended to transport the nearly two-ton craft from Saybrook, Connecticut, overland to Boston, where it would be used to attack the Royal Navy fleet blockading the harbor. The British, however, found their position in the city untenable and withdrew to Halifax, Nova Scotia, on 17 March



LOC LC-USZ-110384

Bushnell's "American Turtle."

1776. Reinforced with fresh troops, the British returned to the East Coast on 5 July, disembarking an army at Staten Island, New York. A Royal Navy squadron, led by Admiral Lord Richard Howe on board the 64-gun third-rate ship of the line HMS *Eagle,* lay at anchor to the north of Staten Island.

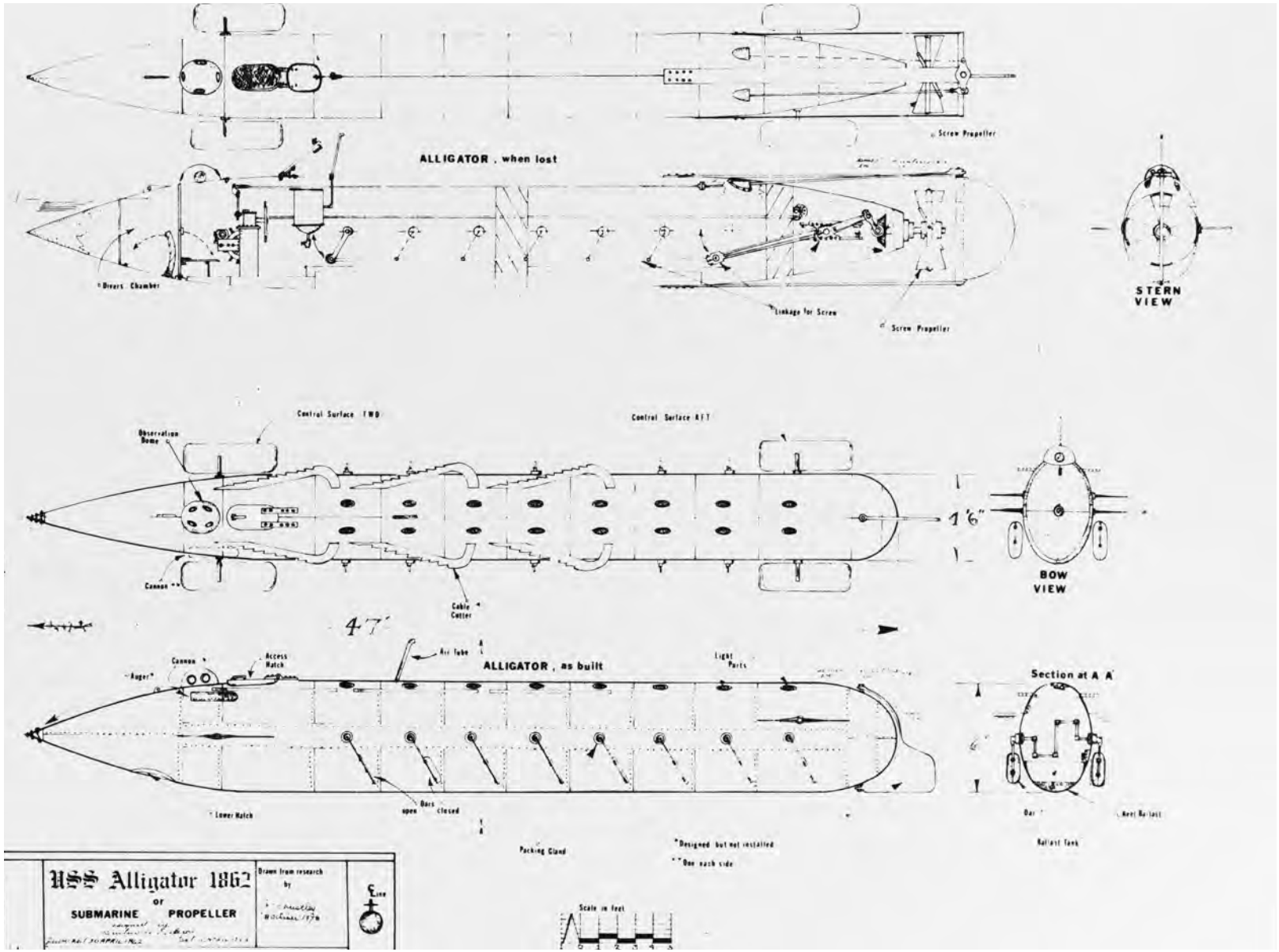
At approximately 2300 on 6 September 1776, *Turtle*, piloted by Sergeant Ezra Lee of the 10th Continental Regiment, slipped into the waters off Whitehall, New York. Whaleboats towed the submarine before casting it off. Unfortunately, Lee quickly found that the tide would carry him past his target, through the narrows, and into the open ocean. He came about and through furious paddling brought *Turtle* near Bedlow's Island. Likely quite exhausted, he remained there for several hours waiting for the current to diminish. Shortly after 0400 on 7 September, Lee began his attack on *Eagle*. As *Turtle* crept closer to the stern of its prey, Lee saw and heard British sailors on deck. At approximately 0430, he closed the hatches on his submarine and pressed the foot-operated valve that allowed water to fill the bilge, sinking *Turtle* deeper into the ocean. Engaging the submarine's vertical propeller, Lee maneuvered under the enemy ship. Once in position he was unable to drill into its hull in order to position his powder charge. With only half an hour of air remaining, Lee attempted to maneuver into a better position for a second attack. As he did so, the submarine briefly popped two or three feet out of the water alongside his target. With early morning twilight approaching and his air supply depleted, Lee chose to break off the attack and retreat to Whitehall.

Following the American evacuation of New York City, Bushnell, Lee, and *Turtle* retreated up the Hudson River to Fort Lee. According to Bushnell, *Turtle* made a second attack against an unknown enemy ship in late September and an abortive attack against a British frigate on 5 October. On 9 October, possibly prompted by *Turtle*'s third failed attack, the frigates HMS *Phoenix*, HMS *Roebuck,* and HMS *Tartar* proceeded up the Hudson and sank the submarine and its tender off Fort Washington.

After the loss of his submarine, David Bushnell turned his focus to more conventional military engineering pursuits as the first commander of a new military unit, the Corps of Sappers and Miners, and later as a captain in the Continental Army from 1781 to 1783. Bushnell's shift in focus aligned with the Navy's position on undersea warfare, which was made clear during the War of 1812, when the service formally declared its opposition to fighting in this dimension, preferring "the more chivalrous method of mowing down crews with grape and canister."

SUBMARINE WARFARE DURING THE U.S. CIVIL WAR

Over time, the Navy's opposition to undersea warfare seemed to soften for many reasons, including an incident that occurred on 16 May 1861, in which Philadelphians were astonished to see an iron submarine proceeding down the Delaware River toward the Navy Yard. As the harbor police closed on the strange vessel, it grounded on the lower end of Smith's Island. The four-man crew, as well as Brutus de Villeroi, the submarine's inventor, were quickly arrested and their submarine towed to the Noble Street wharf. In an interview with the Philadelphia *Evening*



NHHC NH 91997

The reconstructed plan of *Alligator*, a hand-powered submarine, was designed by Brutus de Villeroi.

Bulletin, the submariners denied any disloyal intent, claiming they intended to present their vessel to the Navy for testing. On 30 May, suitably intrigued, Captain Samuel F. Du Pont, the commandant of the Philadelphia Navy Yard, ordered three of his officers to examine the boat. Their 7 July report described it as "an iron cylinder, about 33 feet in length, 4 feet at its greatest diameter…propelled by means of a screw in the stern." Their examination also revealed that the submarine generated "an artificial atmosphere perfectly respirable [sic] by the men generated…by a chemical process." Even more astonishingly, they found that the ship possessed a "man hole" allowing its crew to exit and re-enter the submarine without surfacing, and that tubes attached to its hull could allow a sailor to "live for an appreciable time" underwater.

The report determined that with such a submarine, a diver could "attach some 'engine of destruction' to the hull of a hostile vessel" and recommended that the Navy acquire it and contract the services of its inventor. On 1 November, the federal government signed a $14,000 contract with Martin Thomas for a slightly larger submarine to be constructed within 40 days. Thomas subsequently sublet the project to the Neafie & Leavy shipyard in Philadelphia, with Brutus de Villeroi employed as the superintendent of construction. Secretary of the Navy Gideon Welles hoped the submarine would be completed in time to defeat the newly constructed Confederate ironclad CSS *Virginia*. Unfortunately for Welles and the Navy, a myriad of construction delays plagued the project, most notably Thomas' initial refusal to purchase chemicals necessary for the submarine's unique air purification system. The boat was finally launched with much public fanfare on 30 April 1862. Unlike de Villeroi's vessel from the previous spring, the "Iron Submarine Propeller" was more than 40 feet in length, with eight hand-operated oar-like paddles protruding from both sides of the hull.

On 19 June, Welles ordered the submarine, now armed with two mines, to report for duty off Hampton Roads, Virginia. The secretary recommended that Rear Admiral Louis M. Goldsborough utilize it "for clearing obstructions in the James River or any other submarine work you think proper." The submarine arrived off Fortress Monroe four days later. The following day, the submarine was taken in tow by the steam tug *Fred Kopp*, which proceeded up the James River to rendezvous with the ironclad steamer *Galena*. Goldsborough ordered Captain John Rodgers, *Galena*'s commanding officer, to deploy the submarine up the Appomattox River and determine if the boat could be useful in the destruction of the railroad bridge at Petersburg and the removal of obstructions off Fort Darling. U.S. Army General George B. McClellan's tactical defeat in the Battle of Gaines' Mill on 27 June 1862 forced Rodgers to order the submarine back to Hampton Roads, concluding that the boat would not contribute to the war effort. On 4 July, Goldsborough ordered it to return to the Washington Navy Yard for additional testing. Despite the intervention of Assistant Secretary of the Navy Gustavus Fox, who devised a plan that would have sent the submarine, now known as *Alligator*, back up the James River with orders to destroy the ironclad ram CSS *Virginia II* under construction in Richmond, the submarine returned to the Washington Navy Yard and put into dry dock. With

repairs and improvements complete, *Alligator*, its screw propeller now replaced with oars, rejoined the fleet off Hampton Roads in late March 1863. Ordered to report to Rear Admiral Du Pont, who commanded the South Atlantic Blockading Squadron off Port Royal, South Carolina, *Sumpter*, with *Alligator* in tow, slowly proceeded southward on 1 April. A major storm battered the two vessels as they neared Cape Hatteras, North Carolina, the following day. Fearing for his ship, Acting Master John F. Winchester, ordered the towline cut. *Alligator* sank shortly thereafter.

Undaunted, the U.S. Navy constructed a second submarine, *Intelligent Whale*, launched in April 1866. Contemporary reporting claimed that as many as 30 sailors perished during its multiple trials, putting an end to the American undersea warfare effort for more than 20 years.

HOLLAND AND THE ESTABLISHMENT OF THE SUBMARINE FORCE

Prompted by news that the French had begun testing submarines and of industrialist Thorsten Nordenfelt's construction of *Abdül Hamid* and *Abdül Mecid* for the Ottoman Navy, President Grover Cleveland's Secretary of the Navy, William C. Whitney, was determined to resume the Navy's undersea warfare effort. At the urging of the head of the Bureau of Ordnance, Commander Montgomery Sicard, the Navy solicited bids from private industry for a "Steel Submarine Torpedo Boat" able to cruise at 15 knots while surfaced and 8 knots submerged, retain positive buoyancy, dive to 150 feet and remain submerged for two hours, and fire a torpedo with a 100-pound charge. The winning proposal would receive a $2 million contract. Cramp & Sons Shipbuilding of Philadelphia submitted two bids, including one led by engineer John P. Holland. Faced with a choice among Nordenfelt's proposal based on the design of a submarine that had sunk off the coast of Jutland on 18 September 1888, the inventor George Baker who had not ever constructed a submarine, and Josiah Tuck's boat that was unable to retain its depth or longitudinal stability, the Navy quickly awarded the contract to Holland. However, he would not receive any government financial support for several years.

On 3 March 1893, Congress appropriated $200,000 for the construction of a submarine, with John Holland once again winning the contract. Yet, Secretary of the Navy Hilary A. Herbert refused to release the funds for another two years. Launched on 7 August 1897, the steam-powered *Plunger* featured three screws, a retractable smokestack and vertical thrusters. Frustrated by dictates from the Navy with which he disagreed, however, Holland largely abandoned the project in mid-1896 in favor of a new privately financed submarine, *Holland VI*.

Constructed at the Crescent Shipyard in Elizabethtown, New Jersey, the new submarine incorporated several lessons learned during the construction of *Plunger*. *Holland VI* featured a single screw powered by a four-stroke Otto gasoline engine that could propel the submarine up to six knots while surfaced, and an Electro Dynamic motor capable of making more than five knots submerged.

On 17 March 1898, as the nation was preparing for war with Spain, *Holland VI* successfully completed its first extensive sea trial in Long Island Sound. The press hailed the new weap-

on, and interestingly, multiple articles declared it capable of several missions for which the U.S. Navy would ultimately use submarines. The headline of a syndicated feature article blared, "FIFTY HOLLAND SUBMARINE TORPEDO-BOATS MAY GUARD OUR COAST." The accompanying article claimed, "It has been demonstrated that one of these boats could easily take care of three battleships of the *Vizcaya* style." Furthermore, submarines stationed at multiple naval bases along the coastline "would be sent out and could annihilate the enemy before any damage could be done or a landing secured." Another article purported to describe how *Holland VI* could sink an enemy ship with either a torpedo or a pneumatic gun.

Despite additional successful sea trials, and Holland's offer to enter the harbor off Santiago, Cuba, and sink the Spanish fleet, the Navy declined to purchase the submarine. Despite this momentary setback, Holland refused to give up, and he regularly conducted public tests that drew a variety of journalists and military officers. Finally, the Navy agreed to an official inspection and trial to be conducted on 6 November 1899 in Little Peconic Bay, Long Island, New York. The boat successfully dove to nine feet, ran submerged for one mile, surfaced, fired a torpedo, dove, and returned to its starting point. The Naval Board of Inspection declared in its report, "*Holland* [*VI*] is a successful and veritable submarine torpedo boat capable of making an attack upon an enemy unseen and undetectable and that therefore she is an engine of warfare of terrible potency which the government must necessarily adopt into its service." Writing for the board, Captain John Lowe further advised, "a submarine service should at once be organized as a matter of necessity and security. The government should at once purchase the *Holland* [*VI*] and not let the secret of the invention get out of the United States." In a House Committee on Naval Affairs meeting held the following month, Admiral George Dewey famously declared, "If they had had two of those things in Manila, I never could have held it with the squadron I had." Perhaps more importantly, Dewey testified to the submarine's deterrent effect: "I think it would tend to keep peace. That is what we want a navy for. We want peace." Because of such praise, any remaining opposition crumbled. The Navy purchased *Holland VI* on 11 April 1900.

NHHC NH 59

Holland (Submarine Torpedo Boat No. 1) in dry dock, c. 1900, probably soon after it entered Navy service.

Several months later, for the first time in U.S. naval history, a submarine took part in a war game in the waters off Newport, Rhode Island, and performed superbly. According to the submarine's commander, Lieutenant Harry H. Caldwell, *Holland VI* (Submarine No. 1) sighted and fired on *Kearsarge* (Battleship No. 5). Unseen, *Holland* surfaced approximately 100 yards from the "enemy" ship and Lieutenant Caldwell yelled to the battleship's watch, "Hello, *Kearsarge*! You're blown to atoms! This is the submarine boat the *Holland*!" The submarine's crew executed their mission so skillfully that its commanding officer believed he could have torpedoed all three vessels of the opposing force without being discovered. *Holland VI* had successfully demonstrated an ability that would terrify opposing sailors and help turn the tide of wars yet to come.

NHHC NH 53454

Holland officers and crew in June 1901. Those present are (*left to right, in front*) W. Reader, A. Gunther, commanding officer Lieutenant Harry H. Caldwell, A. Callahan, and B. Bowie. In the rear are (*left to right*) H. Wahab, O. Swanson, Gunner Owen Hill, and W. Hall.

THE SUBMARINE FORCE IN WORLD WAR I

When the United States joined World War I in April 1917, Germany had gambled that its submarine campaign would knock the United Kingdom out of the war before the industrial might of the United States could be brought to bear in the land conflict raging across Europe. The United States immediately deployed a flotilla of destroyers to the war zone, followed by a squadron of armed yachts. As the press had envisioned in 1898, the U.S. Navy quickly deployed its submarines to protect the free flow of commercial and military traffic near Boston, New York, Philadelphia, through the Panama Canal, and in the war zone around the British Isles.

The seven *L*-class submarines that comprised Submarine Division 5 were assigned to the waters off the British Isles, where German submarines regularly hunted. In less than a year, the division made contact with 21 enemy submarines.

One of the most significant contacts occurred on the evening of 10 July 1918. At 1825, a watch stander on board USS *AL-2* (Submarine No. 41) sighted an unknown object off the starboard bow, approximately three miles distant. Despite being unable to see the object himself, the officer of the deck, Lieutenant Philip Ransom, ordered the submarine to change course to the northwest to investigate. A few minutes later, a German

torpedo exploded approximately 200 feet off its engine room, followed by the sighting of a German U-boat periscope off *AL-2*'s starboard quarter. The submarine dove, intending to swiftly come about and ram the enemy submarine. Unfortunately, *AL-2* dove so quickly that it surpassed its intended depth of 60 feet and listened as the U-boat passed by so closely that the crew distinctly heard the enemy's propellers through their own hull. Determined to fight, *AL-2* immediately gave chase, intending to trail the enemy submarine until it surfaced. A few minutes later, the American boat identified a second German U-boat patrolling off its stern, which commanding officer Lieutenant Paul F. Foster chose to chase. After eventually losing contact with that U-boat, the U.S. submarine reversed course and unsuccessfully attempted to re-establish contact with the enemy vessel that had fired upon it.

NHHC NH 51121

USS *AL-2* (Submarine No. 41) in Bantry Bay, Ireland, in 1918.

In *AL-2*'s patrol report, Foster claimed his crew heard an explosion, and thought they had destroyed the U-boat, believed to be *UB-65*. Trusting that his submarine had destroyed the enemy submarine, the Navy awarded Foster the Distinguished Service Medal. Furthermore, according to Vice Admiral William S. Sims' postwar report, only depth charges and mines were more effective than Allied submarines at combating the German U-boat menace. Per Sims, "The serious hampering of the enemy in his work is the important item in the results by Division Five in its operations."

THE INTERWAR PERIOD

With the experience of World War I illustrating the utility of submarines, the Navy continued to train and develop the force throughout the interwar period. One of these training evolutions highlighted the dangers of undersea warfare, and the commitment of submariners. At approximately 0630 on 28 October 1923, *O-5* (SS-66), under the command of Lieutenant Harrison Avery, got underway at the head of a column of boats including *O-3* (SS-64), *O-6* (SS-67), and *O-8* (SS-69) across Limon Bay, toward Gatun Lake in the Panama Canal. "Through a series of maneuvering errors and miscommunication," the steamship SS *Abangarez* collided with *O-5*, ripping a 10-foot hole in the starboard side control room and penetrating the boat's No. 1 main ballast tank. In less than a minute, the submarine rolled sharply to port, and then back to starboard, before sinking bow first in 42 feet of water. On duty in the torpedo room when his boat began to sink, Torpedoman Second Class Henry Breault quickly headed up a ladder topside. As Breault did so, however,

LOC LC-DIG-npcc-10707

Torpedoman Second Class Henry Breault after receiving the Medal of Honor from President Calvin Coolidge, 8 March 1924.

he remembered that Chief Electrician's Mate Lawrence T. Brown was asleep below. Unwilling to abandon a shipmate, Breault shut the deck hatch and went below, just as the submarine slipped beneath the waves. Breault found Brown awake but unaware of *O-5*'s condition and of Lieutenant Avery's order to abandon ship. The two submariners subsequently headed aft, intending to exit the stricken boat through the control room. Unfortunately, rising water made that plan impossible. They were, however, able to get to the torpedo room and shut and dog the hatch before the boat's battery exploded. Fortunately, salvage efforts began quickly, with divers examining the wreck by 1000, and the crane barge USS *Ajax* (AR-6), one of the largest in the world, en route by 1400. Just after midnight the following day, *O-5*'s bow broke the surface, allowing Breault and Brown to escape through the torpedo room hatch. For his heroism, President Calvin Coolidge awarded Breault the Medal of Honor on 4 April 1924. He remains the only enlisted submariner to earn that award.

THE SUBMARINE FORCE IN WORLD WAR II

The fateful day of 7 December 1941, and what followed cemented the value of undersea warfare in the U.S. Navy. On that day, the Empire of Japan successfully attacked the U.S. Pacific Fleet at Pearl Harbor, Territory of Hawaii. Twenty-nine of the 40 Japanese torpedo bombers attacked the American strategic center of gravity, the seven battleships moored alongside Ford Island, and sank five, including USS *Arizona* (BB-39) and USS *Oklahoma* (BB-37).

As a small maritime nation, Japan was extremely dependent upon imports to sustain its war effort. At 1752 Eastern Standard Time on 7 December, Chief of Naval Operations Admiral Harold R. Stark ordered the Navy to execute unrestricted submarine warfare against Japan. Unfortunately, most of the early attacks by U.S. submarines based in the Philippines or deployed from Pearl Harbor were ineffective due to a combination of less-than-aggressive leadership, faulty torpedoes, and aging submarines incapable of the task required of them.

NHHC NH 79762

USS *Drum* (SS-228) on 4 June 1943, three days before departing on its sixth war patrol.

Fortunately for the Allied war effort, on 6 March 1942 the first *Gato*-class submarine, USS *Drum* (SS-228), arrived in Pearl Harbor from Portsmouth, New Hampshire. Over the next three years, American industry produced 71 more *Gato*-class submarines, along with 100 *Balao*-class, and 11 *Tench*-class boats. However, faulty torpedoes remained a significant challenge for the submarine force.

At the beginning of the war, the Mark XIV (Mk. 14) torpedo and its top-secret Mark VI (Mk. 6) magnetic exploder represented the most state-of-the-art U.S. torpedo technology. Interwar testing using surface vessels led both officers and enlisted sailors to conclude that the Mk. 14 was "at least the equal of any other nation's [torpedo]." Yet submariners quickly discovered problems with their new weapon. On 14 December 1941, USS *Sargo* (SS-188) sighted a freighter in the vicinity of Cam Ranh Bay, Indochina. Commanding officer Lieutenant Commander Tyrell Dwight Jacobs moved his boat into an advantageous position and fired a single Mk. 14 torpedo at the Japanese merchant vessel. Less than 20 seconds later, a violent explosion shook the boat, indicating that the torpedo had detonated prematurely. Jacobs concluded that either "there was something drastically wrong" with the Mk. 6 magnetic exploder or the Japanese had devised a method of detonating the torpedo before it reached its target. After consulting with his executive and torpedo officers, Jacobs decided to inactivate the Mk. 6 magnetic exploder and rely on contact detonations to destroy enemy shipping. Future events revealed that the exploder was not the only problem with American torpedoes.

Over the course of three days in late December, *Sargo* fired 12 torpedoes at eight enemy targets without a hit. A "baffled-and technically curious" Jacobs and torpedo officer Lieutenant (j.g.) Cassius D. Rhymes Jr., conducted an in-depth analysis of their attacks, and concluded that the Mk. 14 torpedo was running deeper than expected. Accordingly, Jacobs ordered Rhymes to adjust *Sargo*'s torpedoes to run at a shallower depth. On 4 January, *Sargo* sighted a Japanese tanker at 1808. During *Sargo*'s careful 35-minute approach, Jacobs took 17 periscope observations, which were double-checked by a second officer. Furthermore, *Sargo* obtained a constant bearing on its target 10 minutes prior to firing a single torpedo at 1637, which missed. Jacobs asserted in his patrol report, "No reason can be offered for this miss, since at the time it seemed the torpedo could not

miss." Furthermore, Jacobs determined this to be such a serious issue that he broke radio silence and sent Captain John E. Wilkes, Commander, Submarines, Asiatic Fleet, a message "raising serious questions about the reliability of the Mark XIV torpedo." In his patrol report, *Sargo*'s commanding officer wrote, "A change of rudder throws to give more up rudder should be given careful consideration and that test firings, with a tube depth of at least forty-five feet, be conducted to determine the depth performance of these torpedoes." Wilkes conceded that the torpedoes could be running deep and ordered his boats to use shallower settings except against capital ships, but criticized Jacobs for deactivating the Mk.6 magnetic exploder. Most crucially, Wilkes denied *Sargo*'s request to test fire a torpedo into a fishnet. Instead, the Bureau of Ordnance (BuOrd) dispatched a torpedo expert to investigate the problem. Despite not finding fault with any of *Sargo*'s preparations or maintenance procedures, the BuOrd report "placed all the blame for *Sargo* torpedo problems on *Sargo* personnel." Furthermore, Jacobs's boat was far from the only submarine to report problems with their torpedoes. By spring 1942, "almost every Pearl Harbor submariner who had fired a torpedo in anger believed that the Mark XIV torpedo or the Mark VI exploder—or both—was defective."

On 22 May 1942, Rear Admiral Charles A. Lockwood relieved Wilkes as Commander, Submarines, Southwest Pacific. Less than a month later, Lockwood wrote Vice Admiral Herbert F. Leary, Commander, Allied Naval Forces, Southwest Pacific Area, "[w]e are convinced…that they [Mk. 14 torpedoes] run much deeper than the set depth even though [BuOrd] assures us this difference is only four feet." Furthermore, BuOrd once again asserted the submarine force's problems "lay not with the Mk. 14 torpedo and its Mk. 6 exploder, but instead stemmed from deficiencies in aptitude of the captains and their crews." Undeterred, at the suggestion of Captain James Fife, on 20 June 1942, USS *Skipjack* (SS-184) fired a Mk. 14 torpedo at a net strung outside the harbor in King George Sound, Albany, Australia. The torpedo cut through the net at a shocking 15 feet lower than expected. The following day, the submarine conducted two more test firings. The first torpedo, set at 10 feet cut the net eight feet lower than expected. The second, set at zero feet, also cut the net at 18 feet. Based on these tests, and accounting for various other factors, Lockwood concluded that the Mk. 14 ran 11 feet below its set depth. A second test conducted on 18 July confirmed Lockwood's conclusion.

Upon receipt of this data, Chief of Naval Operations Admiral Ernest J. King ordered additional testing. Finally, on 1 August, engineers at Newport Torpedo Station, Newport, Rhode Island, conceded that the Mk. 14 ran 10 feet lower than set. A little over three weeks later, U.S. boats were ordered to adjust the depth settings on their torpedoes while engineers worked on a more permanent solution. Submarine commanders like Jacobs who risked their careers by criticizing the Mk. 14 torpedo were ultimately vindicated, but the price paid in American and Allied blood "far exceeded any satisfaction derived as a result." From 8 December 1941 to 6 May 1942, the 28 Asiatic Fleet submarines only sank seven Japanese vessels in the waters off the Philippine Islands, and only one out of the 80 ships in the Lingayen Gulf invasion fleet.

NHHC 80-G-325532

The commander of Submarine Force, Pacific Fleet, Vice Admiral Charles A. Lockwood, congratulating USS *Balao* (SS-285) upon its return to Naval Operating Base Guam from a successful patrol in early 1945. The submarine's commanding officer, Lieutenant Commander Robert K. R. Worthington, is to the right of Lockwood. Note the 4-inch/50-caliber deck gun with a Japanese flag and six hash marks painted on its barrel.

The new technology provided by American industry would have been worthless without the courage and commitment of officers like Commander Howard W. Gilmore of USS *Growler* (SS-215), as well as enlisted submariners like Steward Third Class Joseph Cross and Cook First Class George W. Lytle.

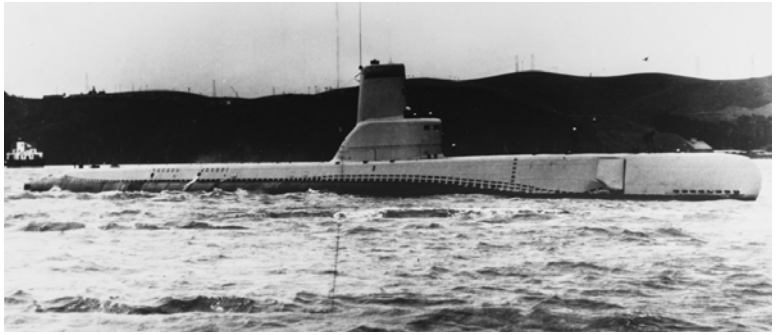
On 7 February 1943, *Growler* sighted an unidentified "small enemy ship" off its starboard bow. As it made its torpedo tubes ready for a surface attack, the submarine was detected by the 900-ton stores ship *Hayasaki*. Realizing that the large enemy vessel had reversed course, Gilmore ordered left full rudder, sounded the collision alarm, and rammed *Hayasaki* at a speed of 17 knots. The enemy vessel immediately opened fire with machine guns, severely wounding Gilmore and killing Ensign William W. Williams and Fireman Third Class Wilbert F. Kelley. After ordering the remainder of his bridge watch, including executive officer Lieutenant Commander Arnold F. Schade, to clear the bridge, Gilmore realized his wounds and inability to speedily get below endangered his crew, and ordered Schade to "Take her down!" For his heroism, Gilmore was posthumously awarded the Medal of Honor, the first of seven submarine commanders to receive the award during World War II.

With a limited number of personnel on board each boat, every single sailor was important, including the cooks, mess attendants, and stewards, many of whom were at least partially qualified in submarines. Moreover, many were assigned additional duties when their boat went to battle stations. In 1943, the Navy awarded Cross and Lytle the Navy and Marines Corps Medal for their service aboard USS *Halibut* (SS-232) and USS *Drum* (SS-228), respectively. Both awards were subsequently upgraded to the Bronze Star with Combat "V" in 1945. Lytle's medal citation notes his "outstanding performance [as] petty officer in charge of the forward battery compartment and as first loader of the deck gun," while Cross was cited for "skillfully [performing] his duties as lookout of a U.S. submarine" during *Halibut*'s fourth war patrol from 8 February to 30 March 1943. In September 1947, the Navy further awarded Cross a Letter of Commendation for "Meritorious conduct in the performance of his duties while serving as…lookout of the USS *Halibut* during the Third War Patrol of that vessel" from 22 November 1942 to 15 January 1943.

THE COLD WAR

After the conclusion of World War II, "conventional wisdom held that the only thing submarines did well was interdict commerce deep in an enemy's home waters." Therefore, because the Soviet Union had extensive interior lines of communication and very little reliance on maritime trade, submarines appeared unnecessary. However, international events quickly showed these criticisms to be shortsighted. After the end of the war, Soviet forces occupied multiple countries in Eastern Europe that had been liberated by the Red Army, creating what former British Prime Minister Winston Churchill described as an "iron curtain…across the continent." Particularly concerning to Navy leadership were projections that the Soviets planned to construct more than 300 submarines based on the German Type XXI U-boat, a submarine much more advanced than the U.S. Navy's World War II fleet submarines. Such a force would allow the Soviets to cut the lines of communication between the United States and Western Europe.

Planners realized that the submarine force's new mission would be "to seek out the hidden Soviet submarine fleet." The Navy needed submarines capable of antisubmarine warfare. With postwar budgets not able to immediately provide the Navy with the funding for large numbers of new submarines, this threat could only be met through innovation. Navy leadership's first efforts resulted in the Greater Underwater Propulsion Power (GUPPY) modifications to 50 fleet submarines. To streamline them for subsurface operations, deck guns were removed, conning towers enclosed, and a "snorkel" was added to allow each submarine to recharge its four new, higher-capacity, lightweight batteries while remaining submerged. The 50 submarines modified during the GUPPY program served as the core of the subsurface fleet until surpassed by nuclear-powered boats in the 1960s.



NHHC NH 90892

USS *Remora* (SS-487) off Mare Island Naval Shipyard, California, on 20 October 1947, after the submarine's GUPPY II modernization.

At the same time, the Navy began research into nuclear propulsion to counter the Soviet threat. A 19 November 1945 Navy Department report listed 12 advantages of nuclear-powered submarines. The two most "outstanding characteristics" of such a boat would be its unlimited range and ability to operate submerged "for weeks," while still providing the crew with "good living conditions."

During the Operation Crossroads nuclear tests at Bikini Atoll in July 1946, Lieutenant Commander Richard B. Lanning queried nuclear scientist Dr. George Gamow on the feasibility of a nuclear-powered submarine. Gamow replied that the Navy could develop one "in ten years if we really put our heart into it." Lanning subsequently sent a letter to Navy leadership recommending such a program, and volunteering to serve in it.

Although Lanning did not receive a reply to his letter, it is clear that the idea of a nuclear submarine force had also occurred to senior officers in the service. During the fall of 1946, Chief of Naval Operations Fleet Admiral Chester W. Nimitz asked the Submarine Officer's Conference to study nuclear propulsion.

Their report, issued on 9 January 1947, bleakly stated that "present anti-submarine technologies and new developments in submarine design have rendered our present fleet submarines more obsolete, offensively and defensively, than any other type [of vessel]." Nimitz immediately accepted the report and approved a nuclear submarine development program. Later that summer, the chief of the Bureau of Ships, Vice Admiral Earle W. Mills, appointed Captain Hyman G. Rickover as the first head of the Nuclear Power Branch. Appointed to the Division of Reactor Development in the Atomic Energy Commission in early 1949, Rickover quickly began designing a prototype nuclear reactor. The Submarine Thermal Reactor (STR) Mark I, assembled in the desert near Arco, Idaho, reached criticality on 30 March 1953. Simultaneously, Rickover also negotiated for the construction of a nuclear-powered submarine, with the Navy ultimately awarding the contract to Electric Boat on 20 August 1951.

NHHC NH 99117

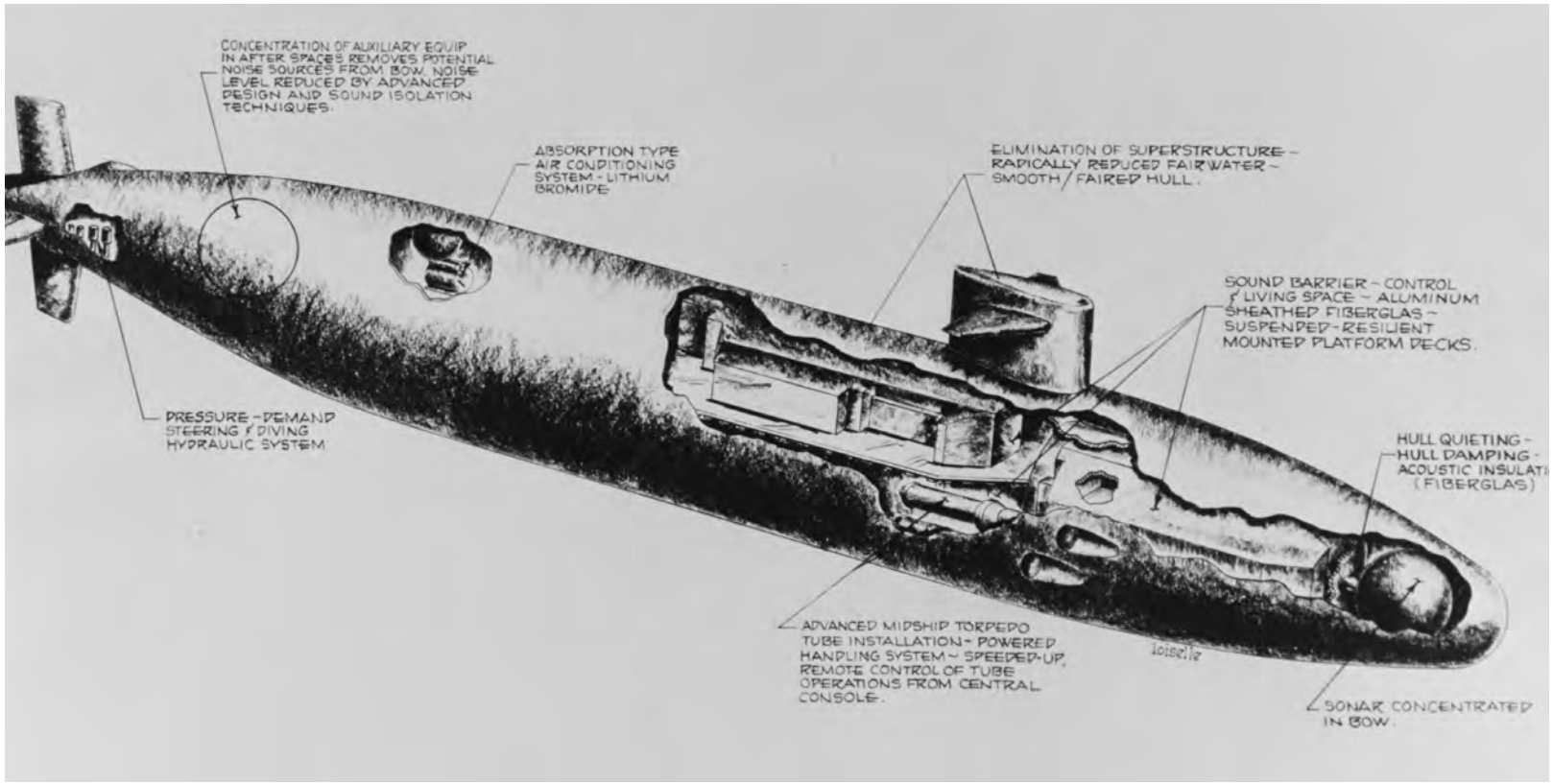
Rear Admiral Hyman G. Rickover, mid-1955.

NHHC NH 82358

USS *Nautilus* (SSN-571) commissioning ceremony in Groton, Connecticut, on 30 September 1954.

On 30 September 1954, the world's first nuclear-powered submarine, USS *Nautilus* (SSN-571), was commissioned, with Commander Eugene P. Wilkinson in command. *Nautilus* and subsequent nuclear-powered submarines, "virtually wiped out contemporary ASW techniques, as aircraft and surface radar... proved ineffective against a submarine which did not need to surface, could dive deeper and could clear a search area in record time." Those capabilities also gave them the ability to covertly trail both Soviet attack (SSN) and ballistic missile (SSBN) submarines.

Less than a decade after *Nautilus* got "underway on nuclear power" on 17 January 1955, the U.S. submarine force suffered its first loss of a nuclear boat and its crew. On 10 April 1963, USS *Thresher* (SSN-593) was lost with all hands while performing a test dive approximately 200 nautical miles east of Cape Cod.



NHHC NH 82318

Cut-away sketch of USS *Thresher* (SSN-593) detailing some of the submarine's unique features.

In the aftermath of the loss, Rickover gathered his staff and tasked them with designing a program that would ensure such a tragedy would be prevented in the future. Their recommendations became the basis of the SUBSAFE program, established on 3 June 1963. Unfortunately, USS *Scorpion* (SSN-589), lost on 27 May 1968 southwest of the Azores, five years after the program was initiated, was not fully SUBSAFE-qualified.

As the Navy's "silent service," many of the missions undertaken by submariners and their boats to protect the United States during the Cold War remain classified. Fortunately, the following declassified patrol reports serve to illustrate the force's accomplishments.

In an effort to force the North Vietnamese to return to the Paris peace talks, the U.S. Navy began mining Haiphong and other major North Vietnamese harbors in early May 1972. On 9 May, USS *Guardfish* (SSN-612) received a message warning it of a potential response by the Soviet navy. Stationed off the Soviet naval base at Vladivostok the following evening, the U.S. submarine detected the *Echo II*–class guided-missile submarine *K-184* proceeding out to sea at high speed. As *Guardfish* gave chase, *K-184* turned toward the southeast. *K-184* proceeded through the Sea of Japan two days later, where it was joined by at least three, possibly four, additional submarines. This extremely unusual deployment prompted *Guardfish* commanding officer Captain David C. Minton III to break radio silence and issue the first early warning, or "critic," report in submarine force history. Following this report, Commander, Pacific Fleet, ordered every available U.S. submarine to sea to provide protection for the aircraft carriers operating off Vietnam, as well as to

NHHC NH 70304

USS *Scorpion* (SSN-589) comes alongside *Tallahatchie County* (AVB-2) outside Claywell Harbor, Naples, Italy, 10 April 1968. The submarine's commanding officer, Commander Francis A. Slattery, is atop its sail, holding a megaphone. *Scorpion* was lost with all hands in May 1968 while en route to the United States from this Mediterranean deployment.

locate the other Soviet submarines identified by *Guardfish*. Judging that naval authorities needed to know *K-184*'s destination, Minton abandoned his original mission in the Sea of Japan, and continued to trail *K-184* as it proceeded west toward the Bashi Channel, the northern entrance of the South China Sea. On 18 May, *K-184* entered the South China Sea and transited to a position approximately 300 miles off Luzon. A few days later, *Guardfish* endured many tense moments as it lost contact with the Soviet submarine for nearly four hours. Sonarman First Class Harold K. Wilson's ability to regain contact was so significant that Captain Minton decided it merited an award. Recalling that his wife had purchased a bag of colored "smiley face" pins prior to the boat's departure, Minton called Wilson to the control room, announced the award over the boats internal communication system, and pinned a smiley button on the clearly very pleased submariner's chest. Throughout the remainder of the patrol, Minton used the smiley face pins as a tangible award for accomplishments "above and beyond the call of duty." Recognizing how important good food was to his and his crew's morale, Minton even awarded a smiley face pin to Commissaryman Second Class Robert Hicks for baking "the best damn sticky buns [the] skipper had ever eaten."

For the next eight days, *Guardfish* continued trailing *K-184* as it patrolled a rectangular area approximately 700 miles from the U.S. carriers off Vietnam, well beyond the range of its eight Shaddock surface-to-surface missiles. During summit talks between Soviet General Secretary Leonid Brezhnev and President Richard M. Nixon, National Security Advisor Henry Kissinger informed Brezhnev that the U.S. Navy had detected the deployment of Soviet submarines and "their presence so close to the Vietnamese War Zone was provocative and extremely dangerous." Approximately two days later, *K-184* proceeded northward and established a patrol area south of Okinawa. During this patrol, *Guardfish* surfaced to receive an urgent message detailing the transfer of the tail to another U.S. submarine. Unexpectedly, *K-184* rose to periscope depth and sighted its pursuer. During *K-184*'s subsequent violent, high-speed maneuvers, *Guardfish* lost contact. With the mission concluded, *Guardfish* returned to Guam on 10 June. During its deployment, the submarine had operated submerged for 123 days and trailed the Soviet submarine for more than 20 days.

Six years later, another U.S. submarine, USS *Batfish* (SSN-681), trailed a Soviet ballistic missile submarine for more than two months. On 2 March 1978, *Batfish* departed Charleston, South Carolina, with orders to "locate, follow, and track the next Soviet nuclear-powered submarine to exit Russian home waters" and "gather detailed intelligence on the Soviet crew's tactics, methods of operation and patrol areas." As predicted by American intelligence, on 17 March, a Soviet nuclear-powered SSBN proceeded from the Barents Sea into the Atlantic Ocean. That afternoon, *Batfish* detected a *Yankee*-class submarine and established a trailing position. It successfully trailed the Soviet submarine through the busy commercial shipping corridor along the underwater shelf 100 miles west of Iceland on 25 March. When the Soviet submarine changed course to the southwest three days later, *Batfish* realized its patrol area was likely located several hundred miles due east of Washington, DC. On 2 April, with the Americans still in pursuit, the

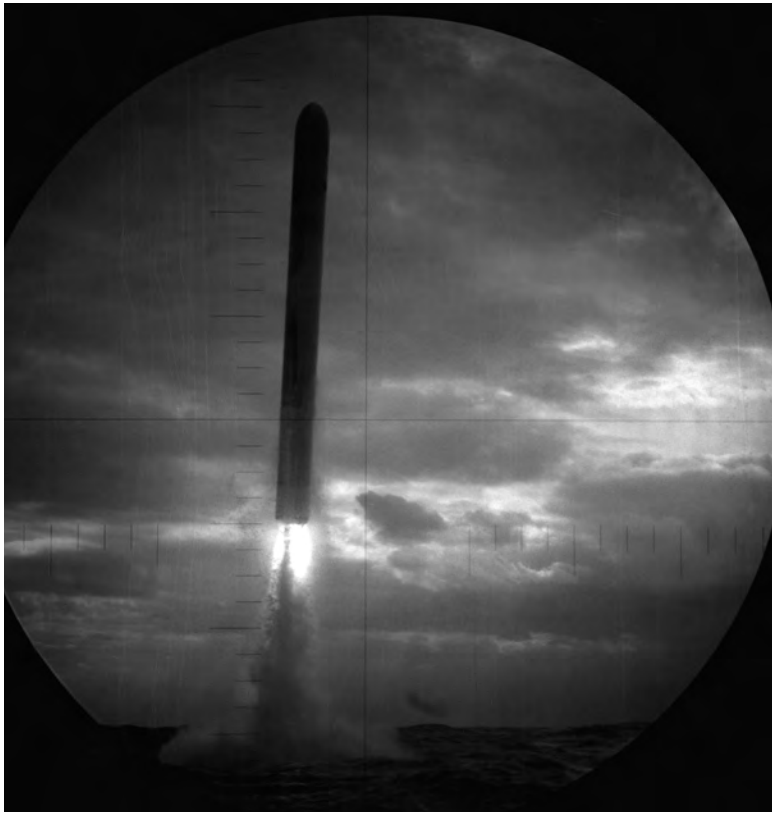
Yankee reached a position off the United States located within the 1,600-mile range of its ballistic missiles. It remained within striking distance for nearly three weeks.

On 21 April, the Soviet submarine proceeded toward the northeast, its speed making it clear to *Batfish*'s crew that it was headed home. With American officials extremely interested in the tactics and return routes employed by the Soviet fleet, *Batfish* continued following the *Yankee* into the Faeroe-Shetland gap. Despite the presence of multiple survey ships using explosive charges to probe for petroleum reserves, *Batfish* continued to trail the Soviet submarine until ordered to break off contact on 5 May.

Surveillance was a critical strategy in countering the Soviets at sea and these two examples highlight the essential role that the U.S. submarine force played in neutralizing the powerful undersea threat of the Soviet navy.

With the thawing of the Cold War in the late 1980s and ultimate dissolution of the Soviet Union in 1991, the submarine force wasted no time in once again proving its utility to U.S. policy makers. Beginning with Operation Desert Shield/Storm in 1990–91, the force shifted from blue water operations to a role in which it continues to serve today: land strike operations. On 20 January 1991, the submarines USS *Louisville* (SSN-724) and USS *Pittsburgh* (SSN-720) fired the first BGM-109 Tomahawk land attack missiles (TLAM) used in combat.

The Navy utilized the submarine's land attack capability to strike Iraq again in 1996 and to destroy the al-Qaeda Zhawar Kili al-Badr terrorist training camp in Afghanistan in 1998.



NARA 6466105

As seen through the periscope of USS *Pittsburgh* (SSN-720), a BGM-109 Tomahawk land attack missile targeted on an Iraqi position clears the surface of the water after being fired from a vertical launch tube aboard the submarine, 19 January 1991.

On 19 March 2011, USS *Providence* (SSN-719), USS *Scranton* (SSN-756), and the guided-missile boat USS *Florida* (SSGN-728) struck targets in Libya as part of Operation Odyssey Dawn. The increased roles of submarines since the end of the

Cold War have necessitated the enlargement of the force since 2010. Two of the female sailors who subsequently qualified in submarines have gone on to become senior leaders: Lieutenant Commander Amber Cowan as executive officer of USS *Kentucky* (SSBN-737) and Master Chief Information Systems Technician (Submarine) Angela Koogler as chief of the boat aboard USS *Louisiana* (SSBN-743).

With the return to great power competition, the Navy's 53 fast attack, 14 ballistic missile, and four guided-missile submarines are charged with fulfilling more missions, including strategic deterrence and antisubmarine warfare in the High North, to land-attack missions in the littorals, than ever before.


POLICE STATION

5 NAVAL SPECIAL WARFARE AND EXPLOSIVE ORDNANCE DISPOSAL

CHRISTOPHER B. HAVERN SR.

Most people think of the United States Navy simply in terms of ships, submarines, and aircraft. The service, however, has developed a full spectrum of capabilities to contend with operational challenges not just on the seas but in the air and on land. Two of the most prominent of these are the naval special warfare (NSW) and explosive ordnance disposal (EOD) communities and their constituent sailors. Doctrinally speaking, naval special warfare employs specially trained operators for missions that conventional naval forces cannot accomplish. Meanwhile, naval explosive ordnance disposal technicians "eliminate explosive threats so the fleet can fight and win — whenever, wherever, and however it chooses." While each is distinct, these communities cooperate to enable power projection from the maritime domain in the manner of their choosing in order to achieve national objectives. They are related not only in function, but also in origin. This chapter will explore, in brief, the development of the naval special warfare and explosive ordnance disposal communities and the employment of their respective capabilities throughout the United States Navy's 250-year emergence as the world's preeminent sea power.

FROM JOINT BEGINNINGS

Although World War II was the primary catalyst for the creation of U.S. naval special warfare and EOD capabilities, there are antecedents to these communities that date to the Navy's beginnings and its two wars against the British. Lacking the capacity to confront the Royal Navy directly in both the American War of Independence and the War of 1812, the nascent American naval forces conducted a *guerre de razzia*—a "war of raiding." This consisted of asymmetric, unconventional small-boat operations and lightning strikes against vulnerable targets that presaged the tactics of their naval special warfare descendants, for whom such operations serve as a core capability. Later, even as the Navy grew in size and conducted more conventional naval operations, there were still instances where smaller specialized naval forces were employed. Two of the more noteworthy examples of these operations include the Navy's joint littoral operations with the Army, Marine Corps, and Revenue Cutter Service to combat the Seminole Tribe in Florida (1830s to the 1850s) and Lieutenant William B. Cushing's daring mission that sank the Confederate ironclad ram CSS *Albemarle* on North Carolina's Roanoke River in October 1864.

National Museum of the Marine Corps

John Paul Jones leads marines and sailors in the raid on the British city of Whitehaven in this painting by Colonel Charles H. Waterhouse, USMCR.

In the years between the American Civil War and the outbreak of World War II, naval warfare underwent considerable change. Steam propulsion, steel construction, and breech-loading ordnance fundamentally altered the nature and conduct of naval warfare. These technological changes also coincided with an evolving navalism world-wide. In the United States, the Navy founded the Naval War College at Newport, Rhode Island, in 1884. Under the guidance of Rear Admiral Stephen B. Luce, the college became the Navy's intellectual center, producing officers like Captain Alfred Thayer Mahan, whose notions of sea power and how to exercise it shaped the Navy's strategic, operational, and tactical development into the twentieth century. Yet, even in this new age, the Navy still needed the unconventional and irregular capabilities of the emergent naval special warfare and explosive ordnance disposal forces to support the battle fleets, submarines, and aircraft of the modern era.

WORLD WAR II

Interestingly, the central figure in the formation of both the naval special warfare and explosive ordnance disposal communities was a single individual, Rear Admiral Draper L. Kauffman. The son of a naval officer, Kauffman graduated from the U.S. Naval Academy in 1933, but poor eyesight denied him a commission. Long concerned about the rise of Adolf Hitler's Germany, he joined the French army's American Field Service's volunteer ambulance corps upon the outbreak of World War II in Europe in 1939. Subsequently captured by the Germans in 1940, he was released with a proviso that prohibited him from traveling to Great Britain. Violating these terms, he joined the Royal Navy Volunteer Reserve (RNVR) and was commissioned a sub-lieutenant in that service's Special Branch. He volunteered for duty with the Unexploded Bomb (UXB) Department and completed training. The intense German bombing campaign against Britain and the resulting large amount of unexploded bombs quickly gave Kauffman a great deal of experience and skill at disarming live ordnance.

While on leave in the United States in September 1941, he met with Rear Admiral William H. P. Blandy, chief of the Bureau of Ordnance. Shortly thereafter, Kauffman transferred to the U.S. Naval Reserve with orders to establish the U.S. Navy Bomb Disposal School. The first course began on 14 January 1942 at

the Washington Navy Yard. The faculty consisted of Navy Civil Engineering Corps and British explosives experts, and new classes began every two weeks. The first class graduated 19 Navy and four Army officers in the summer of 1942.

As the ordnance disposal community began to emerge, so too did today's naval special warfare community. On 15 August 1942, select Navy and Army personnel began joint training at Amphibious Training Base Little Creek, Virginia. These "scouts/raiders" were to "identify and reconnoiter the objective beach, maintain a position on a designated beach prior to a landing, and guide the assault to the landing beach." The first operators deployed for the invasion of North Africa and subsequent operations in the Mediterranean. A second joint force, Special Service Unit No. 1, deployed with the Seventh Fleet in the Southwest Pacific. A third group, the Sino-American Cooperative Organization (SACO), operated against the Japanese in China. To serve as reinforcements, Admiral Ernest J. King, Chief of Naval Operations and Commander-in-Chief, U.S. Fleet, "ordered 120 officers and 900 enlisted" to be trained for "Amphibious Roger" at Fort Pierce, Florida.

Meanwhile, Kauffman continued heading bomb disposal training into 1943. During this time, his staff also began designing detonating fuses for naval ordnance. This expanded the ordnance technicians' skill sets and expertise. Having established its school for ordnance disposal, the Navy now ordered Kauffman to organize a school for naval combat demolition. He chose to co-locate his school with the scouts/raiders at Fort Pierce, establishing it on 6 June 1943. A year later, on the beaches of Normandy, the school's graduates proved to be invaluable.

NHHC NH 95549

Draper L. Kauffman as a lieutenant, RNVR (September 1940–November 1941).

NHHC 88-193-HQ

Mitchell Jamieson, *Placing a Charge on a "Belgian Gate*," 1944, ink-and-wash drawing. NCDU men prepare a charge to blow up this obstacle, a framework of steel mounted on rollers, with the flat side facing seaward, about ten feet high and eight feet wide.

The Bureau of Ordnance provided Kauffman top priority for selecting trainees. He chose 19 of the bomb disposal school's best officers along with officer and enlisted volunteers from the naval construction battalions ("Seabees"). After consulting the scouts/raiders instructors, he decided to condense their eight-week training course into a single week, which later became known as "Hell Week." Kauffman wanted to prepare his trainees for the rigors of combat while identifying those that might not be able to meet its demands. This is his legacy for succeeding generations of candidates who have endured Basic Underwater Demolition/SEAL [BUD/S] training. Although the class suffered a 40 percent dropout/sickbay rate, Kauffman successfully completed the course alongside his trainees.

By May 1944, 32 naval combat demolition unit (NCDU) teams, each consisting of one officer and five enlisted personnel, had deployed to Great Britain to train with their U.S. Army combat engineer counterparts for the cross-Channel invasion of German-held France. The NCDUs, paired with 27 Army combat engineers and three additional sailors, formed gap assault teams (GATs) intended to pierce the enemy's "Atlantic Wall" and precipitate the defeat of Hitler's Germany. Given the necessity of having landing forces penetrate the German beach defenses on the Normandy coast and push inland, these teams were to clear waterline and beach obstacles to facilitate the assault elements' passage. The GAT assaults began at 0633 on 6 June. Despite horrific losses, the NCDUs enabled the follow-on forces to gain an initial foothold for the beachhead that expanded into occupied France in succeeding weeks and ultimately led to the Allied victory in Europe.

Meanwhile, in the Pacific Theater, Rear Admiral Richmond K. Turner, task force commander for the November 1943 invasions of Tarawa and Makin in the Gilberts, pushed to develop underwater demolition teams (UDTs), also known as "frogmen." He recommended to Admiral King that permanent UDTs be formed—six for the Central Pacific and three for the South Pacific, along with an "Experimental and Tactical Underwater Demolition Station" in the Hawaiian Islands. Admiral King approved both. In just six weeks, UDTs "were born and came of age." Trained to operate at night, they were first employed for the Marshall Islands landings (January – February 1944). Although not all of the UDTs accomplished their missions, there were enough successes to demonstrate the units' viability

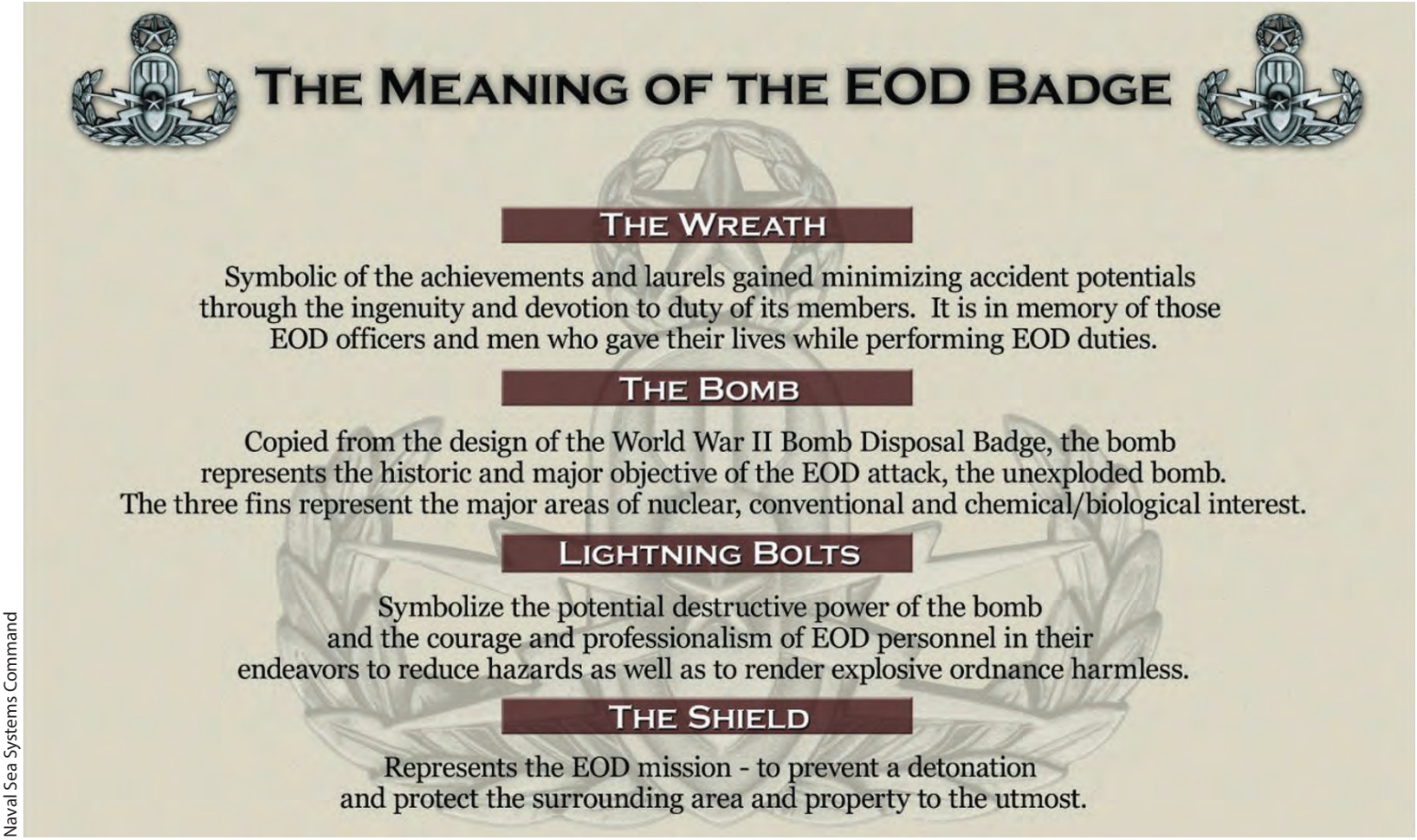
for future amphibious operations. This prompted further development of techniques and tactics that produced more successful employment in subsequent landings.

Transferred to the Pacific in May 1944, Kauffman commanded three UDTs for the Saipan assault in June 1944. Each UDT was assigned a high-speed transport as an afloat base. The teams' mission was to carry out a reconnaissance of beach landing areas at first light and then to deploy frogmen to destroy landing obstacles by demolition under the cover of fire-support ships. The missions were organized into two phases: phase I was the reconnaissance of the approaches and the removal of obstacles; phase II was the post-assault blasting of channels and construction of ramps to facilitate landings. Later, at Iwo Jima in February 1945, the UDTs again deployed with gunfire support. When they came under Japanese fire, the battleship USS *Nevada* (BB-36) directly supported their reconnaissance. The UDTs also participated in the war's last large-scale landings at Okinawa. Overall, the employment of the UDTs was a significant development in the conduct of amphibious warfare. Their reconnaissance of landing beaches and demolition of obstacles contributed to speedier, more effective landings of assault troops and their support elements as they drove inland from the beachheads.

Although the Navy had established its Bomb Disposal School just after the U.S. entry into World War II, the service did not stand up designated "explosive ordnance disposal" units. Instead, the graduates of the 19 classes between June 1942 and October 1945 were classified as mine-recovery personnel and assigned to mobile explosive investigative units.

NHHC 80-G-274693

A UDT swimmer checks his swim fins and face mask during operations at Balikpapan, Borneo, 3 July 1945.



Naval Sea Systems Command

The symbolism of the explosive ordnance disposal badge.

In all, about 20 trained bomb and mine-disposal technicians were killed during the war. In 1946, the year after the war's end, the mine and bomb disposal schools combined at the Bellevue Annex at the Naval Gun Factory, Washington Navy Yard, in advance of relocating to the Naval Powder Factory at Indian Head, Maryland. The training curriculum was subsequently designated "explosive ordnance disposal," giving birth to the acronym "EOD."

THE POSTWAR PERIOD

With victory over the Axis and the temporary U.S. monopoly on atomic weapons, the U.S. military began a massive drawdown. The Navy downsized the UDTs, reducing the total number of teams. Diving apparatus had not been extensively used by the UDTs during the war as no suitable equipment was readily available. UDTs experimented with a modified "Momsen lung" (the underwater rebreather issued to submariners) and other types of breathing apparatus, but not until 1947 did the Navy's acquisition of Aqua-Lung equipment enable diving to become a part of UDT operations. A special SCUBA (self-contained underwater breathing apparatus) platoon of UDT members was formed to test the Aqua-Lung equipment and determine its appropriate uses. With this new equipment, those personnel retained in the UDTs experimented with submarine launch and frigid water operations. At the time of the surprise North Korean invasion of Syngman Rhee's South Korea on 25 June 1950, there were just four 50-man UDTs, UDT-1 and UDT-3 at Naval Amphibious Base (NAB) Coronado, California, supporting the Pacific Fleet, and UDT-2 and UDT-4 at NAB Little Creek, Virginia, supporting the Atlantic Fleet.

The invasion of South Korea generated an ad hoc response by the Navy that altered the UDTs' employment. Seeking to disrupt the rapid North Korean advances, Vice Admiral Charles Turner Joy, Commander Naval Forces Far East, called for "special raiding forces." This prompted the standup of the Special Operations Group on 6 August 1950 to sever Communist coastal logistics lines. It also marked the beginning of the purposeful projection of naval special warfare assets onto land as amphibious raiders. Supporting the Inchon landings on 15 September 1950, UDTs guided landing craft onto the beach. They likewise supported the follow-on landings at Wonsan on 20 October 1950. By 1951, the war had settled into a stasis along the 38th Parallel. The absence of movement, however, did not mean that naval special warfare assets were inactive. The UDTs continued to conduct sea-launched raids and demolition missions to disrupt enemy logistics and gather intelligence in North Korea until the armistice in 1953.

NHHC 80-G-K-14204

UDT frogmen working on the Korean coast during Operation Fishnet, September 1952. Their mission was the destruction of North Korean fishing nets in an effort to reduce Communist forces' food supplies. Note green swim fins and diving masks.

NHHC USN 1105263

South Vietnamese navy personnel in mass calisthenics as part of UDT training conducted by U.S. Navy advisors.

As the Korean War wound down, the Navy took steps to organize two major operational EOD units. EOD Unit 1 was established at Pearl Harbor to support Pacific operations, while EOD Unit 2 was initially stood up and stationed at Charleston Naval Base, South Carolina, to support the Atlantic Fleet. Both units eventually relocated. EOD Unit 1 now operates from NAB Coronado, while Unit 2 calls NAB Little Creek home.

Through the 1950s, the UDTs continued developing new underwater delivery, reconnaissance, and demolition techniques. They also evaluated new equipment, to include diving gear and small arms. In May 1961, amid Soviet and Communist Chinese support for "wars of national liberation," CNO Admiral Arleigh A. Burke directed the identification of Navy personnel familiar with guerrilla warfare, psychological operations, and underwater demolition. Rear Admiral William E. Gentner Jr., Burke's director of strategic plans, issued a memorandum calling for a unit to conduct "naval guerrilla/counterguerrilla operations." He further suggested that "an appropriate name for such units could be 'SEAL' units, SEAL being a contraction of SEA, AIR, LAND, and thereby, indicating an all-around, universal capability." Burke ordered two SEAL teams established. Constituted by UDT members, SEAL Team 1 at NAB Coronado and SEAL Team 2 at NAB Little Creek stood up on 1 and 6 January 1962, respectively.

VIETNAM

Less than three months after their unit's formation, SEAL Team 1 members deployed to train *Biet Hai* ("Sea Commandos") in South Vietnam. Given the UDTs' experience in Korea, plan-

ners expected to turn Vietnamese divers into coastal raiders. In 1963, a 12-man SEAL detachment conducted courses on small boat operations, sabotage, landing techniques, and other related skills. During the next few years, SEAL-trained South Vietnamese frogmen conducted maritime raids and sabotage against North Vietnam. UDTs would also be deployed to Vietnam. Although still distinct from the emerging SEALs, their collective advisory efforts often intersected and overlapped. In keeping with the actions of its World War II forebears, UDT-12 scouted the beaches in advance of III Marine Amphibious Force's landing at Da Nang on 8 March 1965.

President Lyndon B. Johnson's commitment of combat troops led to direct action against Communist forces in South Vietnam. This generated a similar change in mission for the SEALs "in country." In subsequent years, they were based ashore and their primary *modus operandi* focused on direct-action missions (prisoner snatches, ambushes, raids, reconnaissance, etc.) against land-based targets. With "Vietnamization," the last SEAL platoon departed South Vietnam on 7 December 1971, and with the signing of the Paris Peace Accords on 27 January 1973, the last advisors left in March 1973. Between 1965 and 1972, 46 SEALs died in Vietnam and three team members received the Medal of Honor.

Like the SEALs, explosive ordnance disposal units emerged in the Vietnam conflict as an increasingly vital element in combat operations. Beginning in 1964, the Navy mobilized three- and four-man EOD teams to support major units and facilities in Vietnam. During 1966–67, the Navy committed to

NHHC K-84315

A Navy SEAL moves through deep mud as he makes his way ashore from a river craft during a combat operation in South Vietnam, May 1970. He is carrying a MK23 5.56mm (Stoner 63) machine gun.

NHHC K-31466

Mineman Second Class Franklin Marshall, a Navy EOD team member, conducts a search for mines, especially those attached to ships' hulls, Vietnam, April 1966. Marshall's EOD team was responsible for harbor security.

U.S. Navy

Naval Special Warfare Development Group (DEVGRU) insignia.

protecting U.S. naval and maritime logistics, as well as the merchant shipping in South Vietnam's major ports. Five inshore undersea warfare units (IUWU) were based throughout the country. Emphasizing sea and riverine mine clearance, they worked to safeguard shipping and maritime operations. The Viet Cong's mining, sapper-swimmer attacks, and the development of improvised explosive devices (IEDs) particularly challenged these units. EOD divers removed countless munitions from ship bottoms and waterways in Vietnam. Although the enemy sank or damaged ships, they "never appreciably slowed the delivery of troops, ammunition, fuel, and other supplies." The EOD units also proved invaluable in clearing mines from North Vietnam's harbors after the 1973 peace accords.

A NEW ERA

The unsuccessful end of the U.S. commitment to South Vietnam caused considerable turmoil in the military and generated organizational changes in the naval special warfare and EOD communities. The SEALs and UDTs subsequently downsized, with team members reassigned to other units. These included members of special boat units and the UDT-13 members who, in 1974, constituted the newly established Under Water Construction Teams 1 and 2. After the failed Iranian hostage rescue mission, Operation Eagle Claw, in April 1980, Navy planners reorganized and "solidified the Navy's future commitment to land-focused capture/kill commandos." The first action was the constitution of the Naval Special Warfare Development Group (DEVGRU), commonly known as "SEAL Team 6," in Novem-

ber 1980. "Ostensibly a maritime-focused version of the Army's Delta Force," the unit's commitment to counterterrorism soon superseded its original maritime locus. The second action converted UDTs into SEAL teams and SEAL delivery vehicle teams (SDVs). The first deployment of SEAL Team 6 following its formation was during the 1983 Grenada invasion. The operation had mixed results. Although the SEALs' reconnaissance for the Marine Corps' landing at Pearls Airport succeeded, shortcomings in communications and leadership hindered the completion of other missions.

In light of the inadequacies identified in Iran and Grenada, President Ronald Reagan signed the Department of Defense (DOD) Reorganization Act in 1986. This act revised the National Security Act of 1947 to clarify chains of command and enhance military operations. The Special Operations Command, created on 16 April 1987, exercised unified command and control of all DOD special operations components. Its subordinate naval component, the Naval Special Warfare Command (NSWC), stood up that same day at NAB Coronado.

U.S. Navy

U.S. Naval Special Warfare Command insignia.

The Navy organized the NSWC to man, train, and equip naval special operations forces including SEAL teams, a SEAL delivery vehicle (SDV) team, special boat teams, and integrated support elements. Boasting organic intelligence, reconnaissance, logistics, and mobility assets, NSWC can deploy customized force packages with the capabilities necessary to accomplish a wide variety of missions. The advantages of this flexible force structure were evident in subsequent SEAL team deployments.

Following these reorganizations, the SEALs were soon conducting combat and anti-terrorism missions. Having learned from their Grenada missteps, the SEALs deployed to the Arabian Gulf in 1987 to support Operation Earnest Will, the U.S. re-flagging of Kuwaiti tankers during the Iran-Iraq War. The SEALs, as part of the concurrent covert Operation Prime Chance, deployed with assets from the Army's 160th Special Operations Aviation Regiment. Launching from mobile sea bases, these special operators, including boat teams, EOD personnel, and marines, operated against the Iranians mining international waters. They seized and scuttled the minelayer *Iran Ajr* and attacked Iranian oil platforms in Operation Nimble Archer and Operation Praying Mantis.

Shortly after these operations concluded, the SEALs and their supporting boat and EOD teams participated in Operation Just Cause, the December 1989 invasion of Panama. Charged with attacking the Punta Paitilla Airport, the SEALs met unexpectedly stiff resistance from the Panamanian defenders and lost four killed. With the Iraqi invasion of Kuwait in August 1990, the SEALs were among the first U.S. assets deployed to the region. During Operation Desert Shield, SEAL teams conducted embargo and deception operations in addition to beach reconnaissance for prospective amphibious landings. Similar to the SEALs' early days in Vietnam, they also trained Saudis and Kuwaitis in special operations.

The SEALs remained engaged in supporting national objectives throughout the 1990s. In 1992, the SEALs were the first assets ashore in Somalia for the Operation Restore Hope famine relief effort. Later, during President William J. Clinton's administrations, SEALs operated in Haiti and team members, along with U.S. Army and British special operators, apprehended accused war criminals as part of NATO's intervention in the former Yugoslavia.

Things also changed for the EOD units during the post-Vietnam drawdown. The DOD consolidated EOD training under Navy control in 1971. This standardized and improved instruction for all EOD technicians. The consolidated training facility at Eglin Air Force Base, Florida, became the center of the joint service EOD training mission. Concurrently, the Navy EOD community became more integrated with special warfare and the other services' special operations units, while also cooperating with the U.S. Secret Service and the Diplomatic Security Service.

NHHC 91-159-AC

Navy artist Chip Beck painted a Navy EOD diver and a Saudi Navy counterpart approaching a live Iraqi mine in the Arabian Gulf for retrieval and examination at the EOD unit at Jubayl, Saudi Arabia, 1991.

After observing the British in the 1982 Falklands War, the Navy determined that it was necessary to pre-position EOD personnel onboard ships at sea. The conflict also prompted the training of EOD technicians as parachutists and in helicopter insertion techniques after the Royal Navy realized the advantages of having ordnance experts who could rappel onto damaged ships to destroy unexploded ordnance. The United States now had EOD technicians who could dive, parachute, and insert by helicopter individually or in small groups with the requisite equipment. In addition, they had developed the tactics, techniques, and procedures to respond to a multitude of missions via these varied insertion methods. These technicians proved their worth, particularly in multiple countermine operations in the Arabian Gulf. As mentioned above, EOD units

supported Operation Just Cause and also later disarmed booby traps and other IEDs during NATO operations in the Balkans in the 1990s.

THE GLOBAL WAR ON TERRORISM

The terrorist attacks by Osama bin Laden's al-Qaeda on 11 September 2001 and the subsequent Global War on Terrorism generated significant growth and organizational change for the Navy special warfare and EOD communities. Increased personnel and sustained operational tempo amplified support demands and required the development of new strategies, tactics, and techniques in addition to the requisite equipment to accomplish them. Even before 2001, special warfare leaders had advocated expansion beyond their maritime origins to engage in land-based special operations. The war against al-Qaeda and its Taliban allies accelerated that effort. In 2002, DEVGRU provided personal security for Afghan President Hamid Karzai, and SEAL teams of Task Force Blue deployed for Operation Anaconda, the hitherto largest ground combat operation against al-Qaeda and the Taliban.

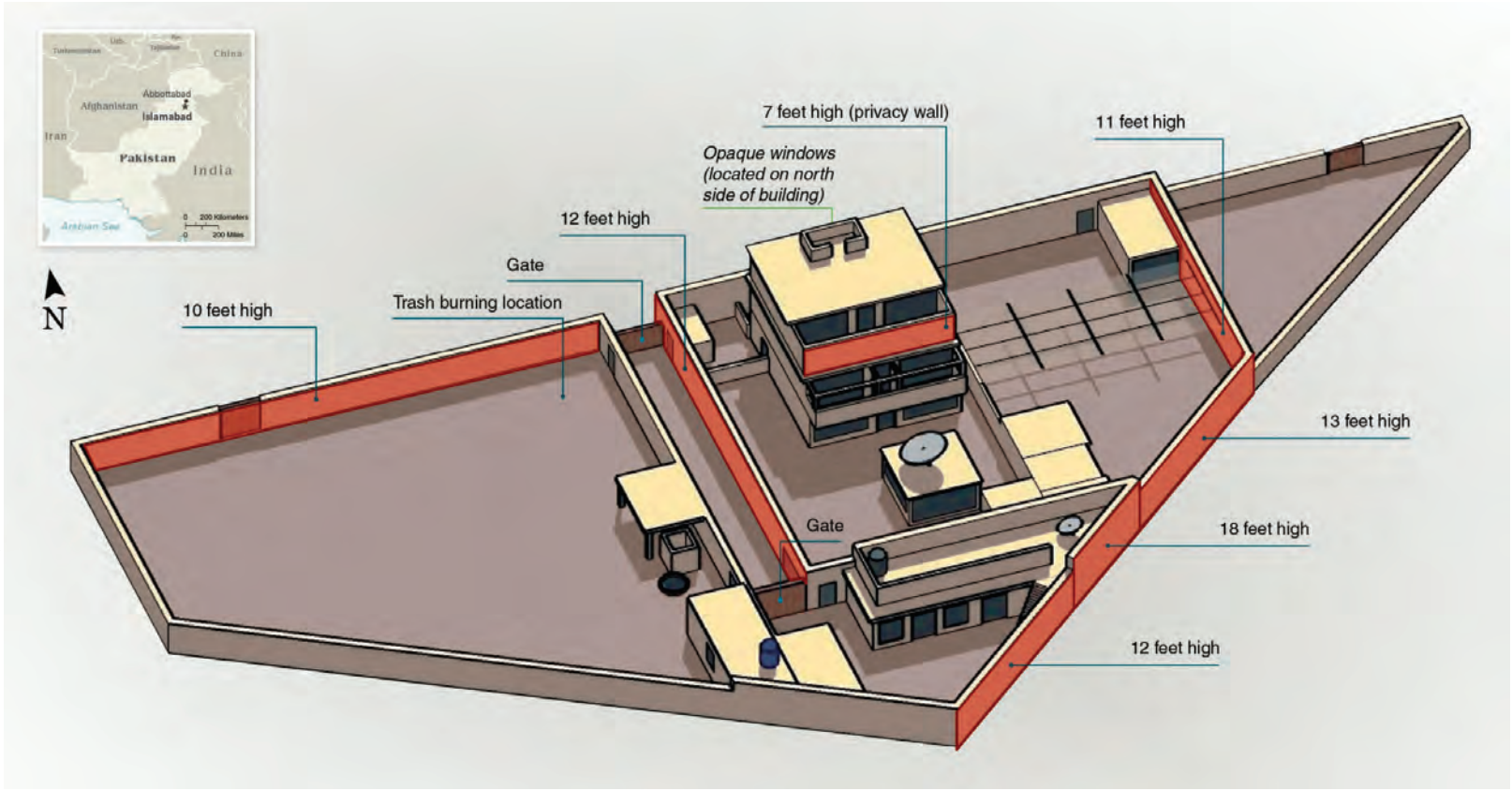
Navy SEALs continued to operate in land-locked Afghanistan for nearly two decades, engaging in intelligence gathering, reconnaissance, and counterinsurgency (COIN) operations. During this time, DEVGRU members conducted Operation Neptune Spear, the SEALs' most famous mission. After the CIA had identified the location of Osama Bin Laden in a compound in Abbottabad, Pakistan, President Barack Obama authorized the launch of a mission to capture or kill the world's most wanted man. On 1 May 2011, a select group of operators departed Jalalabad, Afghanistan, in two specially modified MH-60 Black Hawk helicopters. They crossed into Pakistan and despite the unexpected crash of one of the helicopters at the landing site, they breached the compound wall. Entering the main building's ground floor, they methodically cleared rooms upward until they encountered a tall, bearded man. With a few shots, the man was down. A short, coded radio transmission—"Geronimo, Geronimo"—confirmed to leaders in Washington that Osama bin Laden was dead. The team then gathered as much intelligence as they could while an EOD technician placed charges on the downed helicopter. The SEALs, with Bin Laden's

NARA 6640990

Operation Enduring Freedom: During a search-and-destroy mission, members of a SEAL team discover a large cache of al-Qaeda and Taliban munitions in a cave in the Zhawar Kili area of eastern Afghanistan, January 2002.

corpse, boarded the intact Black Hawk and an arriving MH-47 Chinook helicopter and exfiltrated back to Jalalabad.

Naval special warfare teams also served in Iraq. SDV team members covertly reconnoitered Iraqi offshore oil platforms in advance of Operation Iraqi Freedom's launch on 20 March 2003. When the invasion commenced, SEALs, EOD technicians, and a U.S. Air Force combat controller cut Iraqi access to their strategic resources by capturing an oil terminal while SEALs and British Royal Marines seized the oil-pumping stations at Umm Qasr and Al-Faw. In further operations in Iraq, SEAL sniper teams provided covering fire for the ground assault on insurgent-held Fallujah, Operation Phantom Fury, in October 2004. In the following years, they also regularly worked with U.S. Army units to achieve counterinsurgency objectives.



Defense Intelligence Agency

Osama Bin Laden's compound in Abbottabad, Pakistan.

It must be noted that throughout the commitment to the wars in Afghanistan and Iraq, SEAL team members continued to deploy throughout the world in counterterrorism operations. SEALs conducted operations against al-Qaeda allies al- Shabaab in Somalia. They also cooperated with Philippine and Australian special operators to confront the al-Qaeda–allied Abu Sayyaf in the southern Philippines. In other operations off East Africa, it was a DEVGRU sniper team operating with the anti-piracy Combined Task Force 151 that killed three of the four Somali pirates who had seized the cargo vessel *Maersk Alabama* and captured its captain, Richard Phillips, in April 2009. DEVGRU team members also undertook hostage rescue missions in Yemen in 2014 and 2015.

As a combat support force, Navy EOD personnel routinely operated with Navy special warfare components throughout the Global War on Terrorism. Early in Operation Iraqi Freedom, EOD units removed waterborne mines, enabling the unencumbered delivery of military supplies and humanitarian aid into Iraqi ports. Subsequent operations, however, mandated the erstwhile abandonment of their maritime heritage. Trained and equipped for a spectrum of threats, mobile detachments deployed accordingly, deftly applying their skills to defuse IEDs in Afghanistan and Iraq. In the course of ordnance disposal, they improvised and innovated. The creation of the Combined Explosives Exploitation Cell is illustrative of the force's reorientation in support of counterinsurgency operations. A collaboration of intelligence, law enforcement, and explosive experts collected data, generated analyses, and coordinated the dissemination of that information to counter the emergent Iraqi insurgent IED threats in 2003. Armed with this information, teams disarmed IEDs in buildings and along roads. However, after decades of working to clear roadside bombs and other threats in Afghanistan and Iraq, Navy EOD ultimately returned to its maritime roots. As an EOD commanding officer stated in 2020, "The water is our primary domain. Now that we have less capacity dedicated to those land missions…we are spending a bit more time in the maritime domain."

U.S. Navy 081205-N-6278K-346

Petty Officer First Class Ben Jones, EOD technician assigned to Explosive Ordnance Disposal Mobile Unit 1, gathers intelligence by photographing an unidentified projectile fuse in Tikrit, Iraq, 5 December 2008.

THE EMERGING STRATEGIC PARADIGM IN THE TWENTY-FIRST CENTURY

Employing special warfare and explosive ordnance disposal capabilities contributes to the Navy's preferred method of warfighting—on the doorstep of the enemy, away from the homeland. Fighting wars in this manner, as scholar Bruce A. Elleman has noted, "requires enormous logistical capabilities to transport, land, and sustain forces, often at great distance, which usually only a great sea power can muster." Fortunately, the United States is such a power.

In October 2005, with the United States fighting two wars, CNO Admiral Michael G. Mullen ordered the establishment of a Navy type commander to man, train, and equip the Navy's multiple expeditionary forces. The Navy Expeditionary Combat Command (NECC), of which the EOD community is a primary component, was accordingly stood up on 13 January 2006 to meet the demands of the ongoing wars in Afghanistan and Iraq, as well as to respond to future emergent requirements. Subordinate to Navy Fleet Forces Command, it is not a combat command. Rather, it is a protection force that provides capabilities to operational commanders. It exists to transport, land, and sustain U.S. and allied/partner forces throughout an expeditionary campaign. In addition to EOD, the other components include the Seabees of the Naval Construction Forces; the Maritime Expeditionary Security Force; the Navy Expeditionary Intelligence Command; the Navy Expeditionary Logistics Support Group; and the Expeditionary Warfighting Development Center. In addition to supporting naval special warfare and EOD operations directly, each contributes to a range of related naval operations including amphibious; maritime pre-positioning force off-load; coastal and riverine; and expeditionary advanced bases. Like Navy special warfare, these forces are scalable and adaptive to mission requirements. They are task-organized to conduct hybrid warfare and operate between maritime and land domains in order to rapidly support fleet warfighting. With its formation at NAB Little Creek, the Navy organized the NECC to clear hazards; secure sea lines of communication; build infrastructure, logistics, and partnerships; protect forces and facilities; and deploy command and control to reinforce maritime lethality across the Navy's full spectrum of operations.

The Navy successfully instituted organizational changes to meet the demands of concurrent wars in 2006, but in the years since, the world has changed. Although terrorism remains an ever-present threat, the unipolar world with the United States as the lone superpower has seemingly come to an end. The reemergence of great power competition has generated a seismic shift in the strategic paradigm and presented the United States with significant challenges, with which the Navy and its full array of capabilities must contend. The People's Republic of China, no longer content to be a regional power, seeks to revise the world order in its favor. The Russian Federation, meanwhile, seeks to restore its Soviet-era preeminence, while provocateurs—nuclear-armed Democratic People's Republic of Korea and the Islamic Republic of Iran—continue to be destabilizing influences in their respective regions. Collectively, they endeavor to undermine the United States and its allies/partners. As part of the Navy's efforts to surmount these and other unforeseen challenges, the Navy's special warfare and explosive

ordnance disposal communities must re-orient and adapt to meet these challenges. It should be expected that both communities, as they have throughout their respective histories, will pivot and evolve to meet the requisite demands of these and other new tests to fulfill the Navy's obligations in the accomplishment of national objectives.

6 NAVAL INTELLIGENCE AND INFORMATION WARFARE

M. ASHLEY VANCE

Rear Admiral Albert P. Niblack, the Navy's Chief Intelligence Officer after World War I, wrote that the Navy "realizes the importance of information. Its existence depends upon it." Since its formation, the Navy has worked to find the answers to the fundamental questions: who and where are the nation's adversaries and what are their capabilities and plans? The quest for this information propels naval intelligence along two interconnected paths: planning for future wars and supporting current operations. As Admiral Niblack explained, "accurate and timely information" lays "the groundwork upon which all plans are constructed." From standardizing light signals on sailing ships to leading the way in cyber defense, the Navy has leveraged the newest technologies to ensure intelligence is collected, analyzed, and disseminated across the Fleet as quickly and efficiently as possible. By embracing cutting-edge technologies, Navy intelligence officers can achieve their mission to "gain and hold a decisive information advantage over America's potential adversaries." While the sources and methods have changed over the last 250 years, the need for information has remained a constant for the Navy.

INTELLIGENCE DURING THE AGES OF SAIL AND STEAM

Since the nation's fight for independence, the Navy has relied on intelligence to inform planning and operations. During the American Revolution, the short-lived Continental Navy used information on Royal Navy activities to disrupt the movement of British troop and supply transports. Ashore, Navy commanders leveraged information acquired from spies and confiscated messages. Commanders at sea deployed various signals to identify friendly ships or alert the fleet of arriving enemy ships. For example, one directive explained that if a "strange sail" was detected, ship commanders should "hoist a lantern in the best place to be seen and fire a gun, if he has one," either to sound the alarm or provoke the appropriate countersignal, identifying an ally. The Navy also hoisted various colored flags to relay distress signals and other messages. Intelligence and information were fundamental to operations at sea and helped deliver America's victory over the British.

By 1800, after nearly a decade of watching European hostilities escalate, U.S. political and military leaders agreed that they needed more information on potential adversaries to defend America's ships and coasts. That year, President John Adams

directed the first Secretary of the Navy, Benjamin Stoddert, to create a catalog of foreign navies, particularly the British, Dutch, French, and Spanish fleets, and to appeal to Congress for funding to accomplish the task, if needed. The Department of the Navy soon began to compile and maintain its first intelligence library for current and future planning. The collection included foreign treatises on gunnery, naval architecture, navigation, and mathematics, as well as foreign admirals' writings and personal biographies.

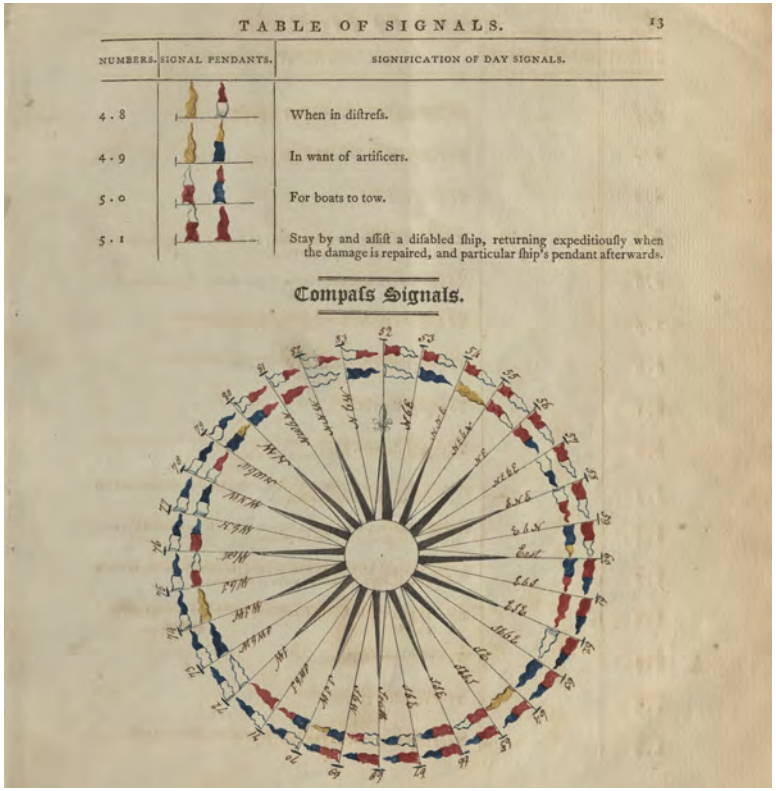


TABLE OF SIGNALS. 13

NUMBERS.	SIGNAL PENDANTS.	SIGNIFICATION OF DAY SIGNALS.
4 . 8		When in diſtreſs.
4 . 9		In want of artificers.
5 . 0		For boats to tow.
5 . 1		Stay by and aſſiſt a diſabled ſhip, returning expeditiouſly when the damage is repaired, and particular ſhip's pendant afterwards.

Compaſs Signals.

NHHC

A table of eighteenth-century flag signals that includes different signals based on wind direction and situation. Thomas Truxtun, "Instructions, Signals, and Explanations, Ordered for the United States Fleet" (1797) reprinted in Thomas Truxtun Moebs, *America's Naval Heritage: A Catalog of Early Imprints from the Navy Department Library*.

For nearly a century, the Navy relied on human networks to gather, analyze, and transmit naval information. Commanders at sea received information from beyond the horizon in the form of messages transported on dispatch vessels or visual and audible signals. This information ranged from the Secretary's general orders to intelligence on foreign activities. Unfortunately, both means of communication were fraught with problems. Dispatch vessels could take weeks or months to deliver messages, and signals were reliant on good weather conditions. Given the technological limitations, the Secretary of the Navy was forced to trust ship and squadron commanders to operate autonomously.

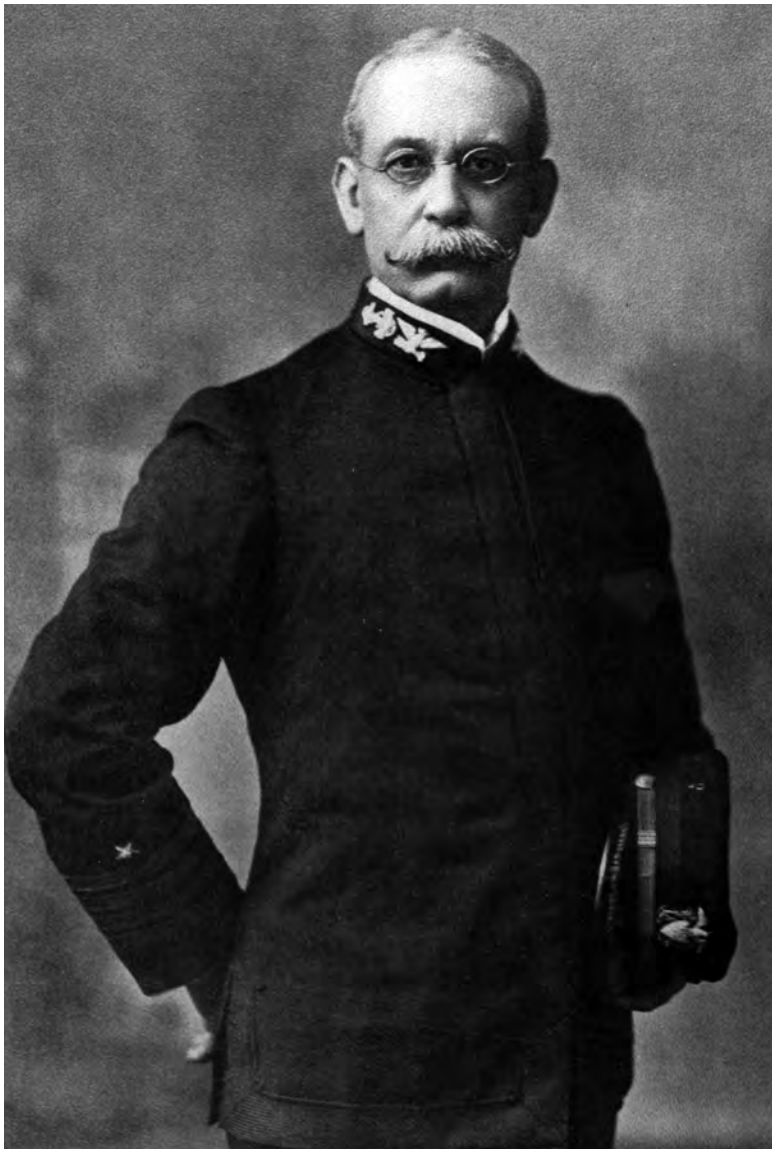
The Navy expanded and professionalized throughout the nineteenth century. Naval intelligence developed in tandem to support this growing force. In 1845, Secretary of the Navy George Bancroft opened the Naval School, later renamed the U.S. Naval Academy, in Annapolis, Maryland, to standardize and improve officer education. The new school's curriculum eventually included courses on intelligence and strategic planning. By the end of the 1850s, the Navy had adopted new technologies such as the telegraph and steam power, both of which promised faster and more efficient information gathering and communications between ship and shore. In 1861, the Navy Department revised its 1813 manual *Signals for the Use of the United States Navy* to include thousands of numeric and visual codes to improve fleet coordination and operations.

The Civil War tested both the Navy's ability to effectively gather and deploy intelligence for combat operations and the limits of telegraph and signaling techniques. During the Navy's blockade of the Confederate states, ship captains utilized intelligence dispatches from Washington and exploited information obtained from captured vessels and enslaved individuals who escaped bondage. Intelligence also proved vital for the success of the United States' riverine campaigns, as Navy and Army officers shared information on local defenses and tactical plans to defeat the Confederacy inland. Advances in signaling technology facilitated much of this coordination. In addition to human messengers who delivered on-the-ground intelligence, the Navy deployed visual, phonetic, and telegraphic signals to inform strategic and operational decisions. The Navy's cutting-edge adoption of the newest technologies improved intelligence gathering and communications among commanders and planners alike.

COMMUNICATIONS FOR A MODERN NAVY

Amid a backdrop of naval modernization that included new steel warships and a growing reliance on signal technology, the Navy sought to coordinate intelligence and communication across the organization. The Navy Signal Office, formed in 1869, connected various telegraphic stations but was not large enough to solve broader coordination and planning issues. To resolve this problem, Secretary of the Navy William H. Hunt directed the Bureau of Navigation, which was broadly responsible for compiling and distributing information such as nautical charts and research, to establish the Office of Naval Intelligence (ONI) in the spring of 1882. Secretary Hunt's order defined 14 categories of information that the United States' first intelligence organization should collect and study, including intelligence on foreign powers and their military and commercial capabilities as well as domestic information on coastal defense, commercial shipping, and assessments of the Navy's overall readiness. To acquire information on foreign nations and their militaries, naval attachés stationed at U.S. embassies around the globe amassed and transmitted information back to ONI in Washington.

The small ONI headquarters, staffed with fewer than 10 officers, served as an information clearinghouse, processing and distributing information collected by attachés and ship commanders to the relevant bureaus. Most collection efforts focused on foreign naval activities, including other nations' newest warship designs. Naval intelligence officers were also involved in national strategic planning, using the intelligence at their disposal to create long- and short-term war plans. The creation of the Naval War College in 1884 initially threatened to undercut ONI's authority over war planning, but gradually the two entities began to work collaboratively. Naval War College officers also used intelligence reports to construct specific war plans against France, Germany, and Great Britain. Further, by the mid-1890s, multiple boards had theorized and prepared for a conflict with Spain over Cuban independence.



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Rear Admiral Charles D. Sigsbee (pictured here as captain), Chief Intelligence Office (1900–1903), Office of Naval Intelligence, c. 1904.

The Navy continued to deploy new technologies to enhance communications and intelligence gathering. By 1890, the Bureau of Navigation installed undersea cables at nearly all the ports that Navy ships commonly frequented. Meanwhile, the Bureau of Equipment installed networks of electrical systems and light-signaling apparatuses aboard Navy ships. Together, these signal stations and tools provided more rapid communication among ship commanders, ports, and the Navy Department in Washington. Commanders and naval attachés overseas used the new systems to share a greater variety of timely information, including intelligence on foreign operations and local political developments. From Washington, Navy leaders issued operational directives to commanders and policy guidance and information requests to the attachés. Although beneficial for information sharing, the technological boon decreased the autonomy of commanders and attachés. As one officer at a signal station in China lamented, "Now we have become mere messenger boys at the end of the cable." Even so, faster and more efficient communication systems became strategic and tactical assets when the United States declared war on Spain.

The importance of naval intelligence during the Spanish-American War of 1898 prompted Congress to officially recognize and fund the Office of Naval Intelligence. In 1900, Captain Charles D. Sigsbee, who had commanded the ill-fated battleship *Maine* when it sank in Havana Harbor, Cuba, took up the mantel as the ONI Chief Intelligence Officer (later renamed the Director of Naval Intelligence). During Sigsbee's tenure, he oversaw sweeping improvements to the office, including expanding officer training, separating intelligence duties to

encourage specialization, and hiring ONI's first civilian team, mostly comprised of highly trained women, for support functions such as translations. Over the next decade, intelligence officers expanded war planning and coordination with outside groups. In addition to working with the faculty of the Naval War College, intelligence leaders joined the General Board, created in 1900 to centralize Navy policy coordination. When the Secretaries of the Army and Navy formed the Joint Army–Navy Board in 1903, the new body made use of intelligence reports to coordinate joint war planning and increase inter-service collaboration. Together, they developed two key strategic plans that laid the groundwork for how the Navy would fight World War I and World War II.

From 1900 to 1916, the Navy streamlined its management of new technologies, which increased ONI's collection capabilities. In 1902, after three years of piecemeal experiments, Secretary of the Navy John D. Long created the Wireless Telegraph Board to centralize radio testing. The Bureau of Equipment's new Wireless Division installed radios and wireless machines at ports across the country and aboard several of the Navy's ships, and then trained sailors to operate the new equipment. In 1912, the Navy created the Naval Radio Service (NRS) to centralize and regulate naval wireless communications, which included commercial and military traffic. When Congress established the Office of the Chief of Naval Operations (OPNAV) in 1915, the NRS and naval intelligence offices moved from the Bureau of Navigation to OPNAV. From this point, ONI became more independent and reported directly to the Chief of Naval Operations. The following year, NRS became OPNAV's Office of Communication and created the subordinate Naval Communication Service to manage all Navy communications, including radio, telegraph and telephone lines, and mail and courier services.

Meanwhile, ONI continued to expand its purview and capabilities. Intelligence officers became responsible for classifying information, expanded their involvement in war planning, and started to censor articles and photographs created by Navy personnel. As the office grew, so too did questions about its role in U.S. foreign policy. When President William Howard Taft implemented his "Dollar Diplomacy" agenda, Secretary of State Philander C. Knox employed ONI officers and naval attachés to sell American goods, including war equipment, overseas. The task was problematic, in part because it opened previously closed naval assets such as ships, ports, and testing grounds to foreign powers, threatening the security of those facilities. The small intelligence and attaché staff struggled to fulfill the new duties, and Navy leaders requested more funds to support ONI's increasing responsibilities. In 1916, Congress authorized the office's first major expansion of personnel and funding to support domestic and overseas activities.

INTELLIGENCE FOR GLOBAL WARFARE

When the United States entered World War I in April 1917, ONI had stationed an attaché in Berlin for the previous 31 years almost without break, the longest established attaché post in Germany at the time. The office dramatically expanded its size and operations to meet wartime demands. During peacetime, ONI dedicated much of its resources to strategic planning. Once mobilized for war, the office's growing proficiency in radio tech-

nology allowed officers to process and transmit real–time operational intelligence (OPINTEL) to commanders at sea. They also collected non-attaché intelligence, which included investigating and thwarting foreign and domestic threats. Other ONI activities ranged from installing radio detection–finder stations on Navy ships to conducting aerial reconnaissance.

The rapid expansion of communications, both in terms of technological capability and the Fleet's demand for information, underscored the growing importance of naval intelligence. In a limited capacity during the war, ONI used radio frequencies to intercept foreign communications. This collection, first termed radio intelligence, later expanded into signals intelligence (SIGINT) and to the broader category of communications intelligence (COMINT) as the means of transmission evolved. While the bulk of this information was shared on publicly accessible wavelengths, in what is now called "open source intelligence" (OSINT), some of the most important intelligence was sent on secure networks.

To protect the Navy's information sharing during World War I, officers focused on cryptography, the practice of encrypting messages, to protect naval intelligence from enemy interception. Although the practice of using ciphers dates back thousands of years, encryption technology developed rapidly during the early twentieth century. Lieutenant Russell Willson, an engineer and Naval Academy graduate, created the Navy Cipher Box to encrypt communications with ships. The Navy produced more than 1,000 of Willson's cipher boxes for ships and shore stations during the war, distributing the machines with their alphabet strips and code books across the globe. Willson later earned

NHHC UG 21-10.05

Radio equipment in the operating room, Eureka (Table Bluff) Naval Radio Station, Oregon, 1921.

$15,000 (roughly $350,000 in late-2025 dollars) and received the Navy Cross for his contribution. The Navy's cryptographic work quickly branched to cryptanalysis, or codebreaking, to intercept and decode foreign intelligence. In addition to using decoded information to protect the Fleet and facilitate its operational successes, intelligence officers deployed that information to conduct counterintelligence operations during the war, which included dual lines of effort to destroy the enemy's ability to transmit encrypted intelligence and thwart their espionage and subversion attempts.

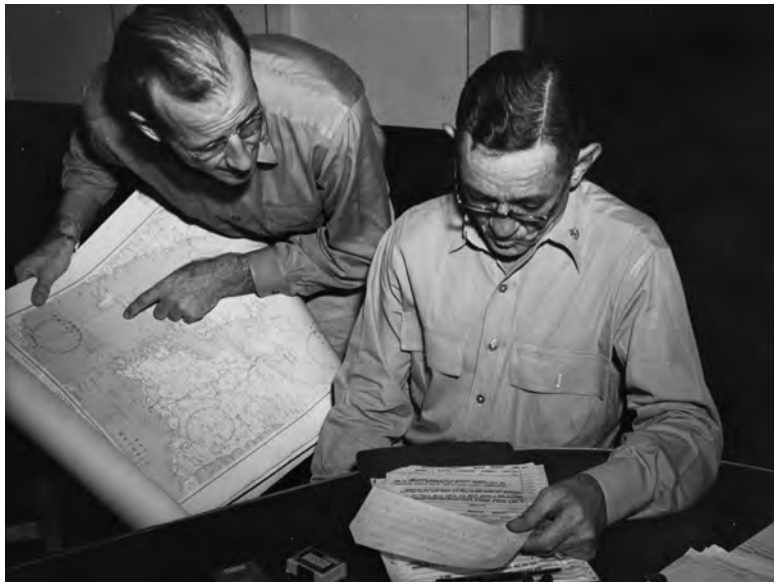
With the massive rise in intelligence needs during World War I, the Navy established a larger standing body of trained intelligence specialists. In 1918, CNO Admiral William S. Benson directed all ships and stations to designate a confidential intelligence officer to increase coordination with ONI headquarters. Where ONI officers in Washington mostly focused on strategic intelligence, fleet intelligence officers collected OPINTEL for their chain of command, including conducting some cryptanalysis and counterintelligence. In 1924, ONI's Research Desk, created shortly before the war ended to focus on cryptology, moved to the Office of Naval Communications as OP-20-G. After breaking away from ONI, the desk worked closely with the newly formed Naval Research Laboratory to test radio remote controls, high frequency transmitters, radar, and sonar. The next year, the Navy created the Naval Intelligence Volunteer Service, a reserve force that recruited trained professionals, from professions ranging from law enforcement to journalism, who could be activated for intelligence support. By the mid-1930s, the service had more than 500 officers trained and ready to mobilize.

Within OP-20-G, Lieutenant Laurance F. Safford hired a small cohort of dedicated codebreaking officers. He recruited personnel with advanced skills in solving puzzles, including Lieutenant (j.g.) Joseph J. Rochefort and Agnes Meyer Driscoll, a former chief yeoman (F). The team became known as the "On the Roof Gang" because they conducted their secretive work in a shed on the roof of the Navy Department building. After their arrival in October 1925, Rochefort, Driscoll, and the other OP-20-G officers began intercepting Japanese naval messages. Rochefort later completed advanced language training in Japan, and in June 1941 he assumed command of the Navy's cryptanalyst unit (Station Hypo) in Hawaii. Driscoll, known as "Miss Aggie" by her coworkers, was the first person to decipher the Japanese navy's secret operation codebooks, including the "Red Book" in the 1920s and the "Blue Book" in 1933. During World War II, Driscoll worked to break the Enigma code, Germany's encryption machine that was updated daily and ultimately required the British "Bombe" machine at Bletchley Park to break. After decrypting Japanese and German codes, Driscoll spent the last year of the war decoding Soviet messages.

Naval intelligence dramatically expanded its size and operations to meet the demands of World War II. The ONI headquarters grew from 60 officers and 100 enlisted and civilian personnel in the summer of 1938 to approximately 540 officers, 675 enlisted, and 330 civilians by July 1945. In the field, the number of intelligence officers assigned to the Fleet ballooned from single digits to thousands. For example, by the end of the war, around 4,500 personnel conducted intelligence work at Pearl Harbor to support the Pacific Fleet. The Navy also began to rely on air intelligence (air intel). In 1941, the Bureau of Aeronautics created an aviation intelligence branch with officers who would brief and debrief aircrews before and after missions. The next year, the Navy formalized training for these officers when it opened the Naval Air Combat Intelligence Officers School. Despite multiple administrative reorganizations during the war, ONI and OP-20-G conducted interconnected tasks: intelligence analysis for strategic planning and information transmission to commanders for immediate action. Their work

heavily relied on COMINT, which included cryptology and counterintelligence, to provide OPINTEL to the Fleet and Allied partners.

Perhaps the most notable success of the Navy's intelligence efforts during World War II came in the weeks leading up to the Battle of Midway. In late April 1942, Commander Rochefort, from his basement OP-20-G office at Pearl Harbor, intercepted and translated Japanese COMINT that indicated a planned attack on a location coded as "AF." Rochefort notified Lieutenant Commander Edwin T. Layton, the Pacific Fleet intelligence officer, that he believed "AF" was code for Midway Atoll.



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Lieutenant Commander J. E. Lawrence (*left*), air plot officer, and Commander M. C. Cheek, staff intelligence officer, review intelligence aboard the battleship USS *New Jersey* (BB-62) en route to the Philippines, December 1944.

In response to skepticism in Washington that this interpretation was correct, Rochefort and Lieutenant Jasper Holmes devised a simple test. They instructed the radio station on Midway to broadcast a false report in plain English stating that the garrison's saltwater evaporators had failed and Midway was short of fresh water. As Rochefort and Holmes predicted, the Japanese Navy intercepted the message and sent a coded message two days later that "AF" was low on drinking water. When Rochefort's team decrypted this message, they conclusively proved "AF" was Midway. Commander Layton then briefed Admiral Chester W. Nimitz, the commander in chief of the Pacific Fleet, on the expected attack. Over the next month, naval intelligence continued to intercept Japanese messages that hinted at more details of the attack, including its start date, 4 June. Admiral Nimitz used this information to deploy nearly all available resources to defend Midway. He later reported that, "had we lacked early information of the Japanese movement . . . the Battle of Midway would have ended far differently." The victory at Midway cemented the value of COMINT and cryptology, and confirmed that OPINTEL is most successful when there is a direct link between intelligence officers and commanders, a perennial communications challenge for all militaries.

COMPUTERS AND THE COLD WAR

The end of World War II did not lessen the Navy's demand for intelligence. Rather, it became more important, particularly for strategic and operational planning. Over the decades-long Cold War, the United States relied on diplomacy and military deterrence to prevent another global war. This approach, which

was heavily dependent upon timely, accurate intelligence, was broadly successful, though regional armed conflicts, namely the Korean and Vietnam wars, threatened to destabilize the status quo. Much of the Navy's sustained intelligence efforts during the Cold War focused on Soviet and satellite-state planning, capabilities, and activities that were largely influenced by rapidly evolving weapons and communication technologies.

During the first two decades of the Cold War, ONI conducted a series of reorganizations to meet the changing technological and international landscapes. In 1946, the office's Operational Intelligence Branch added a Special Intelligence Branch to focus on cryptology. The office also included a Fleet Intelligence Unit in the Pentagon and a Current Intelligence Section. Meanwhile, the Navy expanded its officer education and created the Naval Intelligence School in Anacostia, Maryland, where officers qualified for new billets that required the extra training. After Congress reorganized the defense establishment in 1947, the OPINTEL branch, which later expanded to the Navy Field Operational Intelligence Office, moved to Fort Meade, Maryland, where it was co-located with the newly formed National Security Agency. In 1954, OPNAV reorganized and moved ONI under the Vice CNO to match its counterparts in the Army and Air Force. A little more than a decade later, the Navy centralized its various intelligence offices and separate lines of effort under a new Naval Intelligence Command (NAVINTCOM). From this point, the director of ONI concurrently served as the commander of NAVINTCOM.

To meet the demands of the Cold War, the Navy continued to increase its strategic and OPINTEL coordination. During the Korean War, air, ship, and shore intelligence were siloed, separated by technological limitations and their inability to transmit highly classified information. Further, fleet commands managed OPINTEL during combat operations, which hindered ONI's ability to synchronize strategic, operational, and tactical planning. To correct this shortcoming, the Navy created fleet intelligence centers, shore-based commands that centralized regional intelligence production and communication among OPINTEL, air intel, and submarine reconnaissance. Over time, these centers expanded their capabilities. For example, in 1962, the fleet centers added an integrated air intelligence system that combined airborne data collection with shipboard integrated air intelligence centers. The deployment of new weapons systems prompted intelligence officers and analysts to adapt their war planning to meet the adversary's growing capabilities. Most notably, the proliferation of nuclear weapons fundamentally changed how naval intelligence teams envisioned future wars. In the summer of 1949, the United States lost its nuclear monopoly when the Soviet Union successfully tested its first atomic bomb. Over the next two decades, the Soviets deployed nuclear-armed ballistic missile submarines (SSBNs) and fielded inter-continental ballistic missiles (ICBMs), both of which could threaten the United States from afar. Given that submarines are more difficult to track than traditional land forces, naval intelligence planners increased OPINTEL efforts. Intelligence production also reached past the earth's atmosphere when the Naval Research Laboratory introduced multiple reconnais-

sance satellites, including Grab (Galactic Radiation and Background) and Poppy, to collect electronic intelligence (ELINT) across the globe. These systems provided richer, timely intelligence far beyond what could be collected on the ground or by air. Satellite-gathered intelligence quickly impacted planning at all levels, from strategic contingencies for nuclear war to the movement of ships and submarines around the globe.

With the flood of new information, the Navy introduced new ELINT systems and centers to automate intelligence production. The Sound Surveillance System (SOSUS), launched in the 1950s, collected acoustic intelligence (ACINT). Among its many duties, SOSUS supported antisubmarine warfare planning at ONI's Undersea Warfare Intelligence Section. The office later created a special acoustic intelligence data system to manage ACINT. ONI also automated image collection. In 1963, the Naval Photographic Interpretation Center, which later expanded to the Naval Reconnaissance and Technical Support Center, provided crucial OPINTEL during the Cuban Missile Crisis. By the early 1980s, the Naval Operations Intelligence Center, launched in the 1970s to provide a constant stream of OPINTEL to the Fleet, unveiled the Integrated Automated Intelligence Processing System to connect analysts with information across multiple computer systems.

With the new systems, centers, and technologies coming online, Navy leaders sought to streamline intelligence collection, analysis, and dissemination. By the end of the 1960s, the Navy established two key processes to manage intelligence. First, the fleets installed computers and integrated operational intelligence centers (IOICs) aboard ships to automate the collection and transmission of near-real-time air, sea, and subsurface intelligence. The new shipboard systems allowed commanders to finally share classified information. At the same time, the Navy developed the Ocean Surveillance Information System (OSIS). In essence, OSIS was, as one naval officer described it, "OPINTEL painted on a global canvas." The new system collated the information automatically collected from the IOICs, satellites, and other intelligence production venues into a single process to marry strategic, operational, and tactical planning. OSIS automation led to the creation of the Naval Intelligence Processing System, an intelligence database for commanders at the fleet intelligence centers.

NHHC UA 465.05

A sailor stands watch in the communication facility control room at the Naval Computer and Telecommunications Area Master Station Atlantic, Norfolk, Virginia, October 1964.

Naval intelligence officers, though aided by new technologies and communications processes, remain vital for the collection of human intelligence. During the Vietnam War, these officers entered combat zones to support U.S. military operations throughout the region. The Navy deployed dozens of naval intelligence liaison officers (NILOs) to independently conduct on-the-ground surveillance, negotiate agreements with local and regional governments, and transmit information directly back to fleet commanders and Washington. For example, in early 1970, NILO Lieutenant Lawrence Serra conducted upriver reconnaissance in the Mekong Delta, covert operations in Cambodia to intercept Soviet messages to the North Vietnamese, and brokered a top-secret weapons agreement between the U.S. and Cambodian navies. Serra was later awarded a Bronze Star for his efforts.

NHHC USN 1129207

USS *Pueblo* (AGER-2) off San Diego, California, October 1967.

Intelligence officers at sea also risked their lives in Vietnam. On 23 January 1968, the North Korean navy attacked the intelligence-collection vessel USS *Pueblo* (AGER-2), a World War II–era ship conducting electronic surveillance in international waters. Lacking the weapons to defend the ship or an engine that could outrun the attackers, the *Pueblo* commanding officer Commander Lloyd M. "Pete" Bucher made the controversial decision to surrender rather than risk the lives of those aboard. Of the 83 members of the crew, which included two marines and two civilians, nearly a quarter were wounded during the firefight, and Fireman Duane D. Hodges succumbed to his injuries. The North Koreans captured the crew and subjected them to 11 months of torture and malnutrition, demanding they admit wrongdoing. Despite enduring horrid conditions, however, the men refused. When the captors attempted to photograph them for propaganda posters, the sailors defiantly held up their middle fingers, claiming it was a Hawaiian goodwill gesture. Two days before Christmas, the North Koreans finally released the 82 surviving sailors and Hodges' remains at the Bridge of No Return along the South Korean border. The North Koreans did not release the ship, however, and *Pueblo* is anchored in Pyongyang as a tourist attraction today. After the sailors returned home, many received Purple Hearts, and the Navy awarded one Navy Cross, two Silver Stars (one posthumously to Hodges), and six Bronze Stars (with Combat "V") to sailors aboard *Pueblo* for their dedicated service. Following the tragedy, the Navy began to upgrade the armament of intelligence-collection ships to improve the ships' capabilities to defend themselves.

By the mid-1980s, U.S. leaders understood that modern warfare was a global venture that required a new approach, one that facilitated joint cooperation and leveraged new technologies. In early 1986, CNO Admiral James D. Watkins announced the forward-deployed, offensive Maritime Strategy. Navy planners studied years of OSIS-gathered intelligence on Soviet naval planning when they developed the new strategy. Noteworthy signals and human intelligence successes, the latter in the form of deep penetrations of the Soviet leadership, yielded new revelations about how the Soviet navy perceived both its own and U.S. Navy capabilities. Concrete evidence that the Soviets did not think about strategic problems in the same way that U.S. naval officers did resulted in a profound reconceptualization of U.S. naval strategy. Months later, the Goldwater-Nichols Act initiated the largest defense reorganization since the National Security Act of 1947. The legislation increased the Joint Chiefs of Staff's oversight of coordinated strategic and operational planning, which impacted how the Navy managed intelligence and cross-platform operations.

During the 1980s, Navy leaders also developed new planning concepts. From the seeds of cryptology and counterintelligence during the world wars, analysts embraced the idea of a new "information warfare" domain, where success required the simultaneous protection of one's own intelligence and disruption of an adversary's intelligence. Additionally, an internal tactical memo on counterintelligence looked to future wars when it

NHHC K-67346

USS *Pueblo* (AGER-2) crewman Sergeant Robert J. Chicca, USMC, reunites with his wife at Naval Air Station Miramar, California, on 24 December 1968 after 11 months of captivity in North Korea.

NARA DN-SN-83-02927

Personnel work in the computer room at Headquarters, Naval Space Surveillance System, Dalgren, Virginia, November 1982.

combined the concepts of electronic warfare, military deception, operations security, and physical destruction into a single policy. By the end of the decade, CNO Admiral Carlisle A. H. Trost described this combination as space and electronic warfare (SEW), which he designated as a new warfare mission area. When the Soviet Union collapsed and the Cold War came to an abrupt end in late 1991, naval intelligence shifted its focus but remained dedicated to the new global strategies.

THE INFORMATION WARFARE ERA

In the early 1990s, naval intelligence offices increasingly supported joint operations, including Operations Desert Storm and Desert Shield in the Middle East. During the Gulf War, the Navy mobilized its largest fleet since World War II (six carriers and more than 100 ships and submarines) to support U.S. Central Command, led by U.S. Army General H. Norman Schwarzkopf Jr. To support these operations, ONI combined its human intelligence branch with the technical and operational intelligence centers in a single command, the National Maritime Intelligence Center (NMIC), which included a Naval Maritime Operations Center. The NMIC provided naval intelligence to the new joint intelligence centers (JICs) that combined the Air Force, Army, and Navy's separate OPINTEL to support theater-level commands. In 1994, three years after the Gulf War, the JICs incorporated combined intelligence and lessons learned when U.S. forces conducted Operation Uphold Democracy in Haiti. Naval intelligence planning and OPINTEL proved vital for the success of those operations.

U.S. Navy 4139411

Sailors on watch in the Fleet Operations Center at Fleet Cyber Command/Tenth Fleet headquarters, Fort Meade, Maryland, December 2017.

The Navy increased its intelligence production and OPINTEL coordination by installing the newest computers and internet systems throughout the Fleet, allowing ships at sea to better communicate and share intelligence with one another and shore commands. In 1995, Secretary of the Navy John H. Dalton established the Navy Computer Incident Response Team as part of the new Fleet Information Warfare Center (FIWC) to provide computer security support for sea and shore commands. Within five years of creating the response team, the rate of intelligence collection had grown so quickly that the center began to operate around the clock. To support this work, the Navy created the cryptologic technician networks rating, which was later replaced by the cyber warfare technician rating, to

support the Fleet's cyber needs. The fleet center later expanded to distinct naval information warfare centers for the Atlantic and Pacific that are managed by the larger Naval Information Warfare Systems Command.

At the dawn of the twenty-first century, the global adoption of personal computers, the internet, and cellphones changed how the Navy conducted intelligence and war planning. Where the Cold War was a seemingly traditional global contest with the Soviet Union that was marked by more years of peace than war, the proliferation of personal technology in the 1990s meant that non-state actors and terrorist organizations had a greater capacity to harm the United States and its allies. This new threat culminated with the al-Qaeda terrorist attacks on the United States on 11 September 2001. To combat these asymmetrical threats, naval intelligence adopted a protracted wartime stance in which the gulf between long-term strategic planning and short-term operational intelligence significantly narrowed. By virtue of the sheer volume of new, digital information being produced, the Navy's intelligence operational tempo rapidly increased. Put simply, the first line of defense in the new irregular warfare domain would be waged in cyberspace, and the Navy rose to meet the challenge.

U.S. Navy 9506456

Navy Intelligence Specialist Second Class Valles Emanuel stands watch aboard aircraft carrier USS *Theodore Roosevelt* (CVN-71) near Puget Sound, Washington, February 2026.

In addition to global counterterrorism efforts, the Navy provided intelligence support to joint forces conducting Operation Enduring Freedom in Afghanistan, Operation Iraqi Freedom, and the ongoing Operation Inherent Resolve mission in Iraq and Syria. Most notably, in May 2011, the Naval Special Warfare Development Group, commonly known as SEAL Team 6, provided the Central Intelligence Agency (CIA) with both pre-operation intelligence and operational reconnaissance when it conducted Operation Neptune Spear, the raid that killed Osama bin Laden. After the SEALs accomplished the mission, they transported the intelligence that they had gathered at the scene and bin Laden's remains to the aircraft carrier USS *Carl Vinson* (CVN-70). The intelligence was processed and shared with the CIA, and bin Laden was buried at sea. Alongside other agencies like the CIA, the Office of Naval Intelligence is now one of 18 American intelligence organizations working together to defend the nation against possible threats.

In the years since the 9/11 attacks, naval intelligence continues to provide crucial support to U.S. forces around the globe. In 2002, the Navy merged more than 20 organizations, including the Naval Space Command and Naval Security Group, into the Naval Network Warfare Command (NETWARCOM) within the Information Warfare Community to meet the growing volume of digital intelligence created worldwide. In 2009, the Navy established Tenth Fleet as the operational arm of the new U.S. Fleet Cyber Command to facilitate both the Navy's broader information warfare initiatives and to collaborate with joint agencies such as the National Security Agency and U.S. Strategic Command. The same year, the Office of Naval Intelligence reorganized its subordinate offices into centers of excellence to manage and coordinate intelligence efforts. Today, ONI has three analysis centers that provide warfare, technical, and maritime intelligence across the Navy; a communications center that provides information technology support; and a maritime engagement center to facilitate global strategic collaboration. From its humble beginning with only a handful of naval officers in 1882, ONI now comprises more than 3,000 military and civilian personnel. Although technology has dramatically changed since ONI's formation, naval intelligence officers have remained dedicated to providing timely strategic, operational, and tactical intelligence across the Fleet.


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7 NAVY MEDICINE

ANDRÉ B. SOBOCINSKI, U.S. NAVY BUREAU OF MEDICINE AND SURGERY

In November 1775—less than one month after the Second Continental Congress authorized the establishment of a navy—Drs. Joseph Harrison of Kent County, Delaware, and Henry Hendren Tillinghast of Providence, Rhode Island, reported aboard *Alfred*, the flagship, and, in turn, earned the distinction of being the first physicians of record in the U.S. Navy. Other physicians soon followed and several reported as plank owners of the Navy's first ships. They included Surgeon Thomas Kerr and Surgeon's Mate Michael Jennings of the 14-gun brig *Andrea Doria* (December 1775); Surgeon John Ernest Kessler and Surgeon's Mate Thomas Burns of the 24-gun *Columbus* (January 1776); Surgeon Henry Malcolm of the 12-gun sloop-of-war *Providence* (January 1776); Surgeon John (Johan) Wiesenthal (Wisenthall) of the 8-gun sloop-of-war *Wasp* (January 1776); Surgeon William Adams of the 10-gun sloop of war *Hornet* (January 1776); and Surgeon Robert Wilcox of the 14-gun brig *Cabot* (February 1776).

The field of medicine in the colonies was in its infancy during the American Revolution, and holding a medical degree was not a requirement for Navy physicians at the time. The Navy did expect, however, that most applicants would have been apprenticed to a practicing physician for a period of two years and be familiar with existing medical literature. Medical degrees (MDs) were still uncommon at the start of the war with Great Britain. Of the approximately 3,500 practicing physicians in the 13 colonies, only about 11 percent (or 400) possessed MDs. Most of these academically trained physicians had graduated from medical schools in Europe such as the University of Edinburgh. At the time, only two medical schools existed in the colonies—the College of Philadelphia (later University of Pennsylvania) and King's College (later Columbia University of Medicine). In 1775, about 13 percent (or 500) of MDs in the colonies were graduates from these American schools.

The role of these trailblazing naval physicians was straightforward yet challenging: provide shipboard medical care to the crews and ensure that no health issues (wounds, sickness, or injury) prevented them from performing their duties. From the moment American sailors hoisted the sails on the Continental Navy's first warships, a profound and enduring culture of medical care began to take shape. It was a culture born not just of naval tradition, but of a solemn commitment to the health and readiness of every sailor and marine. This commitment and

shared purpose continue to this day and remains the foundation for what is termed "Navy Medicine."

Throughout Navy Medicine's 250-year history, it has evolved from a small group of shipboard surgeons and surgeon's mates serving with the fledgling Continental Navy fleet into a global enterprise encompassing physicians, nurses, dentists, medical administrators, clinicians, scientists, and hospital corpsmen, among others. In time, the limited roles of medical departments aboard sailing ships similarly expanded to shore-based hospitals, schools, medical laboratories, public health activities, and a host of operational units. Whatever name it has been called—the Navy Medical Department, or just Navy Medicine—this collective shares a singular history forged in the crucible of battle, tested by the rigors of naval service, and united by an ever-present mission of medical readiness that remains unchanged from the days of the American Revolution.

At the heart of Navy Medicine's story are its people. The Navy medical standard has been carried by four staff corps and an enlisted rating—Medical Corps, Nurse Corps, Dental Corps, Medical Service Corps, and the Hospital Corps. Additionally, the medical community includes a host of support personnel including chaplains, Judge Advocate General officers, public affairs officers, Civil Engineer Corps officers, an assortment of enlisted rates, civilians, and contractors. The collective responsibilities and accomplishments of individuals representing these specialties—as well as those of medical personnel who served prior to their establishment—are the basis of all Navy medical history.

BUILDING THE FOUNDATIONS OF NAVY MEDICINE

After the Revolutionary War, the Continental Navy was disestablished, yet the need for a naval force soon returned, and with it, the need for medical care. The Naval Act of 1794 authorized construction of the U.S. Navy's first frigates, and on 30 April 1798, the Department of the Navy was founded. That same year, the department appointed 14 Navy surgeons and surgeon's mates. These numbers grew as the needs of the service changed. By 1812, there were 52 surgeons and surgeon's mates on the Navy's rolls; a decade later, the Navy counted 87 surgeons and surgeon's mates—an expansion that corresponded with the Navy's emergence as a permanent global force.

Navy physicians in the early nineteenth century, similar to their forebears, practiced without the aid of antibiotics, anesthesia, or even a basic understanding of germ theory. Treatments often involved brutal methods such as bloodletting, blistering, and purging. The surgeon's craft was a grisly, hands-on trade focused on repairing the damage from cannon fire and musket shot, as well as treating the rampant diseases and injuries common to life at sea. Amputations, tourniquets, and crude bandaging were the hallmarks of their work. During this period, Navy physicians including Drs. Edward Cutbush, William P. C. Barton, Thomas Harris, and others played a role in defining what Navy Medicine would be.

Surgeon Cutbush's 1808 textbook, *Observations on the Means of Preserving the Health of Soldiers and Sailors*, written nine years into his naval career, was a pivotal work in military medicine. In this groundbreaking text, Cutbush introduced revolutionary practices for sanitation and hygiene aboard naval

vessels. He championed specific techniques for cleaning, disinfecting, ventilating, and drying ships to prevent the spread of disease. Additionally, he recommended strict physical examinations for all new recruits to screen out illnesses before they came aboard. Cutbush also promoted personal hygiene, urging sailors to keep their hair short, shave regularly, and wash both themselves and their clothing. Perhaps his most significant contribution was the book's inclusion of the first-ever proposal for a "Medical Department of the [U.S.] Navy." Although this notion of an organized Navy medical department remained only an idea for the next several decades, one can infer from Cutbush's reference that some medical personnel saw themselves as a unique component of the Navy.

Surgeon William Paul Crillon Barton, a prominent medical botanist and a prolific author, advocated for significant reforms in naval medicine in the first decades of the 1800s. He proposed equipping Navy ships with better facilities to care for the sick and wounded, devised a system for organizing marine hospitals, and emphasized the need for stricter physical standards in recruiting, pointing out that many sick days were a direct result of accepting mentally and physically unfit sailors for duty. Barton also experimented with using lime juice and lemonade on ships to combat scurvy years before the Navy officially recognized the importance of antiscorbutic treatments for this dreaded vitamin C deficiency.

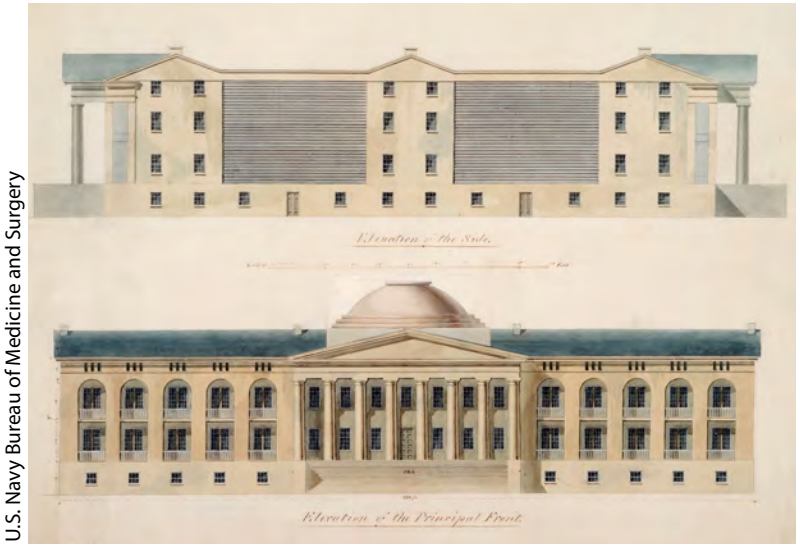
In 1823, Navy Surgeon Thomas Harris established a dissection laboratory in Philadelphia to teach medical students and, specifically, newly commissioned naval medical officers anatomy and operative surgery, and to share his experiences as a

Philadelphia Museum of Art: Gift of Dr. William Barton Brewster for the W. P. Wilstach Collection, W1919-2-1

Portrait of Surgeon William Paul Crillon Barton by Thomas Sully, 1809. Barton was a foundational figure in Navy Medicine. He helped introduce the vitamin C ration aboard sailing vessels in the 1810s and later produced some of the first writings on service medicine. In September 1842, he was appointed the first chief of the Bureau of Medicine and Surgery and the nominal head of the Navy Medical Department.

naval surgeon. This educational experiment proved such a success that Dr. Harris' students encouraged him to "give the course under government auspices." His "school" (sometimes referred to as the Naval Medical School) operated for 20 years and helped foster an identity for Navy Medicine.

In the ensuing decades, Cutbush and other senior naval physicians based in Washington, DC, played a de facto role as medical consultants to the Secretary of the Navy and the Board of Naval Commissioners. The doctors brought attention to issues of the day, such as establishing rigorous entrance examinations and standards for prospective Navy physicians, as well as addressing issues relating to medical logistics and hospitalization.



U.S. Navy Bureau of Medicine and Surgery

Original plans for Naval Hospital Norfolk (Portsmouth), Virginia, submitted to the Secretary of the Navy by architect John Haviland, 1826. In the 1820s, the Navy acquired land for the construction of the first permanent naval hospitals. In 1830, the Haviland-designed hospital was the first to open for patients.

In the early 1800s, Navy physicians commonly served aboard warships, receiving ships, and at rendezvous; the primary shore-based platforms were hospitals and navy yards. Most hospitals were temporary facilities located along the eastern seaboard on or near navy yards. There were also forward-deployed facilities established overseas in Syracuse, Sicily, and Port Mahon, Minorca, supporting fleet operations.

On 26 February 1811, Congress approved "An Act establishing Navy Hospitals." The act directed that all funds collected from naval personnel and the unexpended balance from the Marine Hospital Fund would be overseen by three newly designated "Commissioners of Navy Hospitals." The Secretary of the Navy oversaw the Navy's hospitals for the next three decades, first as a member of the congressionally mandated "commissioner" board and after 1832 as the sole trustee of the Naval Hospital Fund. In the 1820s, Navy leaders selected the first permanent naval hospital sites in Washington, DC; Philadelphia; Norfolk (Portsmouth), Virginia; Chelsea (Boston), Massachusetts; and Brooklyn, New York. In 1830, Naval Hospital Norfolk (Portsmouth) became the first to admit patients. The hospital remains in operation today as part of the Naval Medical Center Portsmouth, which is known by its moniker: "first and finest."

On 31 August 1842, Congress established five bureaus to administer the needs of the Navy—Yards and Docks; Construction, Equipment, and Repair; Provisions and Clothing; Ordnance and Hydrography; and Medicine and Surgery. The Bureau of Medicine and Surgery (BUMED) soon became the central administrative headquarters for Navy Medicine, a role it continues to perform today. The act that created the bureau system

also established the position of chief of BUMED. One month later, William P. C. Barton, then entering his 33rd year of naval service, was appointed as the first chief of BUMED. The General Order of 26 November 1842 codified BUMED's duties, charging it with overseeing every aspect of medical support, from medical supplies of all kinds to the management of hospitals, across the Navy. It was a foundational change that greatly contributed to Navy Medicine's development and effectiveness.

On 3 March 1871, a congressional act formally recognized Navy physicians as part of a staff corps called the Medical Corps, standardized relative ranks for medical personnel, and granted the chief of BUMED the additional title of Surgeon General of the Navy. The individuals appointed to this role were thereafter dual-hatted as both chief of BUMED and surgeon general of the Navy, serving as administrators and directors of professional medical services, including all naval physicians. By 1871, Navy Medicine was comprised of the administrative headquarters (BUMED), hospitals, a medical supply depot, and Navy physicians serving as Medical Corps officers. Subsequently, Navy surgeons general focused on strengthening Navy Medicine's foundations and advancing medical science in order to preserve the health of sailors and marines.

In 1886, the Navy Medical Uniform Board adopted the spread oak leaf specialty insignia for the uniforms of Medical Corps officers, a motif intended to represent the strength and resilience of an oak tree. Some Navy Medicine staff corps, such as the Nursing Corps, chose to use this design unchanged, while others adopted variations. The Dental Corps added two acorns to honor the first two dentists, Emory Bryant and William Cogan, who were appointed in 1912. The Medical Service Corps placed a twig atop the oak leaf to represent the service the corps provides to the entire Navy. The oak leaf continues to adorn the uniforms of Navy physicians today.

BUILDING THE FOUNDATIONS OF THE HOSPITAL CORPS

In the age of sail, shipboard physicians were not alone in caring for their crews. Aboard the Navy's sailing vessels launched in the Quasi-War with France were the curiously named "loblolly boys." Although "loblolly boy" may seem like a less-than-flattering appellation today, the name was a carryover from the British Royal Navy. The word is derived from "lob" meaning "to bubble and boil" and "lolly" meaning "broth or soup." The term loblolly was associated with a porridge or thick gruel, and loblolly boys administered this form of nourishment to the sick and injured. In addition to feeding sailors, loblolly boys also supported onboard physicians.

The Navy officially adopted "loblolly boy" as a rate in 1814. Four years later, Navy regulations defined the duties of a loblolly boy. They were tasked with ringing a small bell fore and aft to notify the crew of sick call; using small washtubs of sand to prevent the deck of the cockpit (the location of the sickbay) from becoming slick with blood; and ensuring the surgeon had all necessary provisions and hospital stores for treating the sick and injured. Although the Navy never officially disestablished the loblolly boy designation, the term faded from use and was superseded by "surgeon steward" at sea and "hospital steward" at naval hospitals beginning in the 1840s. Whereas "surgeon"

was the original name for Navy physicians—all of whom in the days of the sailing ship were expected to perform surgery at sea—"steward" defined the scope of these enlisted medical sailors. Aboard brigs and schooners, surgeon stewards were the second-highest enlisted rank (after the master–at–arms) and were responsible for maintaining a medical journal, compounding and dispensing drugs, applying bandages, and performing other first aid measures such as cupping and leeching.

Beginning on 16 June 1861, surgeon stewards were joined by the new enlisted rate of "nurse." Like surgeon stewards, nurses were enlisted sailors assigned to medical service by the commanding officer of the vessel upon the recommendation of the senior surgeon. As the profession of nursing was still in its infancy in the United States, these shipboard "nurses" did not have any formalized training, but rather were sailors selected to attend to the infirm. Naval vessels with a complement of 200 or fewer were allotted one nurse, while ships with more than 200 sailors were allotted two designated nurses. Serving alongside sailors in all conditions, four surgeon stewards and two nurses were among the more than 2,000 U.S. Navy personnel killed in action during the Civil War.

In the two decades following the Civil War, medical support positions were renamed to reflect the professionalization of Navy Medicine. In 1866, the position of surgeon steward was superseded by "apothecary" and organized into three rates (apothecary first, second, and third class). Beyond the steward's training, apothecaries were specialized senior enlisted positions that required some pharmacy training. Apothecaries were the first sailors to don the caduceus (a winged staff with entwined snakes) on their uniform, a symbol that later became synonymous with the medical profession. In 1873, enlisted nurses were redesignated as "baymen." In all likelihood, the name referred to the place on the ship where they practiced their trade—the sick bay. Like their predecessors, baymen were designated for this role by a ship's commanding officer and risked their lives to serve the Navy. When the *Maine* exploded in Havana Harbor, Cuba, in February 1898, two baymen were among those killed. In the war with Spain that followed, five baymen assigned to the 1st Marine Battalion in Guantanamo Bay, becoming some of the first medical sailors embedded with the Marines.

U.S. Navy Bureau of Medicine and Surgery

First graduating class of Hospital Corps School, Portsmouth, Virginia, 1902. Soon after the Hospital Corps was established, there arose a need for a basic school for imbuing sailors with requisite medical knowledge and skills. The first of these basic or "A" schools opened in Portsmouth in 1902. With the exception of a brief period from 1911 to 1914, Hospital Corps "A" schools have played a pivotal role in producing medical sailors since 1902.

In June 1898, the Navy organized the loose conglomeration of apothecaries, baymen, medical attendants, and purveyors into the Hospital Corps. The corps comprised three enlisted rates (hospital steward, hospital apprentice first class, and hospital apprentice) and a warrant grade (pharmacist, formerly designated as apothecary). With this structure, the corps allowed little room for sailors to advance. In August 1916, BUMED rectified this problem when it reorganized the corps into six enlisted ratings (chief pharmacist's mate, pharmacist's mate first, second, and third class, and hospital apprentice first and second class). The name "pharmacist's mate" did not mean these sailors were relegated to roles in the pharmacy. Rather, the name denoted that they were subordinate to the pharmacist—much like junior physicians a century earlier served as "surgeon's mates" alongside the more senior "surgeons." The pharmacist mate rating remained in place until 1948 when the corps again reorganized. A decade later, the corps adopted the "senior" and "master chief" grades that are in use today. The Hospital Corps eventually grew into one of the largest occupational enlisted ratings and one of the most highly decorated in the U.S. Navy. Since 1898, the Hospital Corps, whose members have been known as "hospital corpsmen" or simply "corpsmen," has also served as a critical bridge between the medical establishment and the operational force.

Hospital corpsmen provide essential care wherever they are needed, from shipboard sickbays and submarines to being embedded within U.S. Marine units on the battlefield. Throughout most of the corps' history, specially trained corpsmen—known as independent duty corpsmen (IDC)—have been a key component. The need for IDCs arose in the early twentieth century as the Navy's fleet expanded beyond the capacity of its physicians. In 1909, with just 124 physicians to serve more than 290 ships, the Navy began assigning experienced IDCs to smaller vessels to provide frontline medical care. The advent of submarines created an additional need for medical personnel who could operate autonomously in confined and hostile environments. In 1924, Chief Pharmacist's Mate John Harrison Davis became the first submarine IDC, serving aboard USS *V-1* (SF-4). Today, there are more than 1,600 IDCs serving in various roles: on surface ships and submarines, with special operations

U.S. Navy Bureau of Medicine and Surgery

Hospital corpsmen at the Battle of Belleau Wood, June 1918. Hospital corpsmen have saved lives throughout the wars and conflicts of the twentieth and twenty-first centuries. It is little surprise that the Hospital Corps is one of the most decorated ratings in the Navy, with 22 recipients of the Medal of Honor and more than 190 Navy Crosses.

forces and marine units, and as deep-sea dive technicians. Their ability to provide advanced, independent medical care in isolated and high-stress environments makes them indispensable to the Navy's operational readiness.

Since the early 1970s, Navy Medicine's enlisted community has been led by the force master chief of BUMED (originally known as "Master Chief Petty Officer of BUMED"). In July 1971, Surgeon General Vice Admiral George Davis selected Master Chief Petty Officer Robert Swartout, then serving as head of the enlisted training program at BUMED, as the first force master chief. Separate from the force master chief is the position of the director of the Hospital Corps, which was typically held by commissioned staff officers. The positions were combined, however, in 1994. Since then, every force master chief has also served as the director of the Hospital Corps.

THE SACRED TWENTY OF THE NURSE CORPS AND BEYOND

Individuals have served in nursing roles for as long as the concept of healthcare has existed. In the nineteenth century, due to the efforts of Florence Nightingale and others, nursing—and especially what could be termed military nursing—developed as a distinct profession. Throughout the American Civil War, there was widespread utilization of nurses, most of whom served as volunteers. Many of the nurses employed during the war were civilians sponsored by the Sanitary Commission, a private relief agency established in 1861 to provide assistance to the military. Members of religious orders also provided critical nursing services to the military. In 1862, sisters of the Order of the Holy Cross reported aboard *Red Rover*, one of four Navy hospital ships used during the war. These nurses helped care for more than 2,500 casualties on board the ship during the next three years as it steamed up and down the Mississippi River. Among the casualties were soldiers who fought in the Battle of Vicksburg in 1863. Collectively, the enlisted nurses and civilian volunteers represented the first large-scale nursing care in Navy Medicine.

Soon after the outbreak of the Spanish-American War in April 1898, Congress authorized the Army and Navy to employ nurses on a contract basis. Eleven trained nurses (five of whom were from the Sisters of Charity in St. Vincent's Hospital in Norfolk) were employed at what is now Naval Medical Center Portsmouth in Virginia. Additional contract nurses from Johns Hopkins University and the American Red Cross served at the Naval Hospital Brooklyn, New York, and Naval Hospital Portsmouth, New Hampshire, where they helped care for Spanish prisoners of war. After the war, military leaders recognized the value of trained nurses and sought permanent roles for them. Navy Surgeon General Rear Admiral Presley M. Rixey emphasized the need for nurses by proposing a nursing corps as early as 1902. Although the Army created its own nurse corps in 1901, Congress took an additional six years to approve Surgeon General Rixey's concept. The Navy established the Nurse Corps on 13 May 1908, and it quickly became a fundamental component of Navy Medicine.

The Bureau of Medicine appointed Esther V. Hasson as the inaugural superintendent of the Nurse Corps. As the first nurse and leader of the corps, Hasson was responsible for selecting

Navy nurses. The first 20, appointed in 1908, were all experienced nurses who would forever be known as the "Sacred Twenty." After a period of indoctrination at the Naval Hospital Washington, DC, they reported to multiple Navy hospitals to build the first clinical nursing programs in the Navy. In 1911, Lenah Sutcliffe Higbee assumed the role of superintendent and oversaw a rapid growth of the Nurse Corps during her tenure, including its first overseas wartime deployments, and the Navy's adoption of the first nursing specialties (dietetics, laboratory technique, anesthesia, physiotherapy, and education). In 1917, the Navy Nurse Corps increased from 160 active-duty nurses to more than 1,000 active and reserve nurses. During Higbee's time as superintendent, Navy nurses began to serve as educators on the wards with corpsmen, at hospital corps school, and at special nursing schools established in Guam, the Virgin Islands, Haiti, and American Samoa. Higbee lobbied for Navy nurse assignments to hospital ships and transports and stood at the helm during the fight against the Spanish influenza pandemic. For her efforts, Higbee became the first nurse awarded the Navy Cross.

U.S. Navy Bureau of Medicine and Surgery

Navy aeromedical evacuation nurse Lieutenant (j.g.) Jane Kendeigh caring for patients from Iwo Jima on a flight to Guam. During World War II, Navy nurses served in a wide spectrum of wartime roles including Navy aeromedical evacuation nurses (i.e., flight nurses), helping to care for and transport casualties from active battlefields such as Iwo Jima and Okinawa.

U.S. Navy Bureau of Medicine and Surgery

Navy nurses aboard the hospital ship USS *Solace* (AH-5), 1945. The Navy Nurse Corps was established in May 1908 and soon thereafter Navy nurses began establishing the first clinical nursing programs at stateside hospitals and nursing training schools. Beginning during World War I, Navy nurses have served in support of wartime operations. By the 1920s, the Navy regularly assigned nurses to hospital ships. In World War II, Navy nurses served aboard all Navy hospital ships, at Navy hospitals and dispensaries, and overseas at base and fleet hospitals.

Similar to the Navy as a whole, the Nurse Corps expanded to meet the needs of national defense. In 1942, nearly 34 years after the corps was formed, the nurse's quasi-military status ended when the Navy granted its members formal ranks. After World War II ended, the Army–Navy Nurses Act recognized nurses as part of the permanent force and changed the corps' leadership title from superintendent to director. The designation remained in place until it was replaced by chief in 2024. During this time, Nurse Corps Director Alene Duerk became the first nurse to achieve flag rank when she was selected for rear admiral in 1972. Just seven years later, Rear Admiral Frances Shea became the first nurse placed in charge of a command. Finally, in 2002, Rear Admiral Kathleen Martin became the first nurse to serve as deputy surgeon general of the Navy. Their achievements reflect the fundamental importance of nursing to the Navy.

NAVY DENTAL CARE

The origins of the Navy's Dental Corps date back to the beginning of the U.S. Navy in the age of sail, when all medical—including oral—care was in the domain of the shipboard surgeons and surgeon's mates. Sailors' oral health was at its nadir, owing in part to the lack of preventive dentistry. A typical sailor's teeth could be damaged by the ever-present habit of chewing tobacco, prolonged or exorbitant use of mercury-based medicines like calomel, and a daily diet of hard tack and salt beef. Additionally, before the introduction of antiscorbutic rations, scurvy was a viable risk to one's teeth and gums. Knowing this, odontalgia—toothaches—was a regular occurrence aboard sailing ships in the first decades of the Navy. The most common treatment for dental pain was extraction, a procedure performed with gruesome tooth extractors. A fully equipped shipboard surgeon's kit included these devices. According to one Navy surgeon, "If the tooth be much decayed, extraction is the only sure remedy." And, when extraction proved "impracticable" because of the level of decay, the Navy surgeons used opium and camphor, laudanum (alcohol with a tincture of opium), but also the application of peppermint oil.

By the 1840s, apothecaries and other individuals with dental knowledge or training often treated sailors' oral issues as an additional duty. This was a necessity because most naval medical officers lacked the training for practical dentistry work. The modern field of dentistry emerged by the mid-nineteenth century with the publication of the first professional dental textbook and journals, the establishment of the first dental school in the United States (Baltimore College of Dental Surgery), the invention of the first dental instrument case, the formation of the American Dental Association, and the formulation of the profession's first ethical code. Dentists were also gaining recognition through pioneering the use of ether anesthesia and unlocking the basis for dental decay.

After 1898, hospital corpsmen provided regular dental care to the fleet. The following decade, the *Annual Reports of Surgeon General of the U.S. Navy* began to routinely include shipboard dental statistics. For example, from 1 September 1903 to 1 January 1904, hospital corpsmen assigned to the receiving ships *Franklin* and *Richmond* performed more than 500 fillings, extracted 176 teeth, and conducted 28 root canal procedures.

Aboard *Wabash*, another receiving ship based in Boston, the hospital steward performed "1,454 operations of almost every character of dental disorder."

Navy leaders quickly concluded from the tracking that the number of hospital corpsmen serving as dentists was inadequate. The Navy lacked enough corpsmen to meet the growing need for oral hygiene and dental care throughout its ranks, especially since the service had grown under President Theodore Roosevelt. From 1898 to 1912, nine separate congressional bills proposed a naval dental corps. Although the Army established its dental corps in March 1911, the Navy was not granted one until August 1912.

Once the Navy established the Dental Corps, Drs. Emory Bryant and William Cogan, the first appointed Navy dentists, got to work building the corps' foundation. Both were well-established figures in the Washington, DC, dental scene. Bryant, a successful private practitioner, counted President Roosevelt among his patients, while Cogan had been the first dean of Georgetown's dental school. Together, they developed the criteria for the first Dental Corps appointees, requiring prospective candidates to pass a rigorous series of physical and competitive professional examinations. The screening was so difficult that only four of the first fifteen dentists passed the examination board in late 1912 and were appointed to the corps. By the summer of 1913, the Dental Corps expanded to 15 approved

U.S. Navy Bureau of Medicine and Surgery

Lieutenant (j.g.) Weedon Osborne, Dental Corps, USNR, 1918. The Navy Dental Corps was established on 22 August 1912. During World War I, Navy dentists served with distinction on battlefields in France. Two of these dentists—Osborne and Lieutenant Commander Alexander Lyle—received the Medal of Honor for their actions in combat.

U.S. Navy Bureau of Medicine and Surgery

Interior of a Navy dental prosthetic unit truck with 1st Marine Division in Korea, 1952.

dentists, with an additional nine serving on temporary duty as part of the new Dental Corps Reserve.

These dentists all held the same rank, "acting assistant dental surgeon," equivalent to lieutenant (j.g.). Despite there being no provision for the dentists' promotion until 1916, they were required to serve three years of reserve status before transferring into the regular Navy. Within a year, the Dental Corps began to provide care to the Marine Corps as well. In August 1913, Acting Assistant Dental Surgeon Lucian C. Williams of Texas reported to Parris Island, South Carolina, becoming the first Navy dentist to serve with the U.S. Marine Corps. Just two years later, Navy dentists were regularly embedded with Marine Corps units in Haiti, and in 1917, they deployed to active battlefields in World War I. Among them were Lieutenant Weedon E. Osborne and Lieutenant Commander Alexander G. Lyle—the first Navy dentists to be awarded the Medal of Honor.

U.S. Navy Bureau of Medicine and Surgery

Navy malaria control unit doing field work on Guadalcanal in 1943. The Navy Medical Service Corps remains one of the most diverse staff corps in the Navy today, comprised of 31 specialties and subspecialties organized in administrative, clinical and scientific divisions. Although the Medical Service Corps was established in August 1947, many of its specialties had existed in the Navy during World War II. Some, like entomologists, were among the first uniformed scientists to deploy to an active battlefield.

THE TWIG THAT HOLDS THE LEAF

The rapid growth of Navy Medicine during World War II, including the formation of convalescent and rehabilitation services, required specially trained hospital corpsmen to perform a range of duties from administrative work to physical therapy. Hospital Corps officers and hospital volunteer specialists served temporary wartime roles, but the Navy continued to need sailors with those skills after the war ended. In August 1947, to address that demand, the Army–Navy Medical Service Corps Act created the Navy Medical Service Corps (MSC). MSC is the most diverse and multifaceted of all the staff corps in Navy Medicine, being comprised of 31 unique specialties and subspecialties organized into three groups: healthcare administrators, healthcare clinicians, and healthcare scientists.

Some 251 individuals answered the call to become plank owners of the Navy Medical Service Corps. Their expertise was vast and varied, including entomology, biochemistry, podiatry, pharmacy, optometry, and aviation psychology. The corps also included trained occupational and physical therapists. During World War II, these roles were primarily filled by women who joined through the Navy's Women Accepted for Volunteer Emergency Service (WAVES) reserve program. Among the Navy's first physical therapists were Lieutenants Signe

Brunnstrom and Edith Vail, who spearheaded groundbreaking amputee care programs at naval hospitals at Mare Island, California and Philadelphia, Pennsylvania, respectively. After the war, the Navy phased out the WAVES and began to rely on nurses to care for returning sailors, though they needed specialized training to offer therapy treatments. By 1953, 53 Navy nurses graduated from the Baruch Center of Physical Medicine of the Medical College of Virginia with physical therapy training. Most of them returned to the corps after graduation, including Lieutenant Ruth Moeller, who later became the Navy's first physical therapist to achieve the rank of captain.

The diverse staff resulted in an organizationally disjointed corps when it initially formed. At BUMED, the Professional Division and Personnel Division split management of the corps into four sections. The top physicians in those divisions oversaw MSC's various components, including the optometry, pharmacy and allied sciences, and the administration and supply section. The result was officers who lacked a vested interest in making decisions for the corps. Medical Service Corps officers, including Captain Willard C. Calkins, soon called for the MSC to have its own leadership, centralization, and *esprit de corps*. The BUMED Policy Board, however, disagreed with Calkins' idea, instead proposing that the corps centralize under the chief of the personnel division. In essence, this idea relegated the head of the MSC to a consultant. Over the next decade, as more MSC officers rose in rank and influence, BUMED leadership reversed course and accepted the value of a centralized office headed by a senior Medical Service Corps officer. On 23 August 1954, Congress established the chief of the Medical Service Corps position and granted the Secretary of the Navy the right to appoint the first chief. Like the other Corps, MSC expanded and professionalized over time, which prompted the position of chief to be redesignated as director of the Medical Services Corps.

The sheer diversity of the Medical Service Corps has long been its greatest strength. Its officers have helped Navy Medicine navigate countless challenges, from postwar demobilizations to organizational transformations and global pandemics. Whether they are managing the logistics of a deployed medical facility, conducting research to combat infectious diseases, or providing psychological support to a unit, Medical Service Corps officers are the unsung heroes who ensure that Navy Medicine is able to execute its eternal readiness mission.

U.S. Navy Bureau of Medicine and Surgery

The first commissioned physician assistants, May 1989. Navy physician assistants—originally part of the Hospital Corps—were incorporated into the Medical Service Corps in 1989. Today they are the largest clinical specialty in the Medical Service Corps.

NAVY MEDICAL PLATFORMS ASHORE

Platforms are the vehicles used to execute the Navy's medical missions, including healthcare delivery, medical support, medical research, environmental health, and preventive medicine assistance. For much of its history, the naval hospital has been a key platform where Navy medical personnel provide their services. From core hospitals established on the East Coast in the early nineteenth century, the Navy later expanded hospital services to Mare Island, California, in 1870, and overseas in Yokohama, Japan, in 1872. At the turn of the twentieth century, the Navy operated its first station and specialty hospitals. Specialty hospitals such as Naval Hospital Fort Lyon, Colorado, focused on care for tuberculosis patients. During World War I, the Navy operated forward-deployed base hospitals in France, England, Ireland, and Scotland.

World War II prompted an unprecedented expansion of Navy hospitals. By the war's end, the Navy had 114 hospitals, a number that included 52 regular hospitals, 20 base hospitals, 19 convalescent hospitals, 16 mobile/fleet hospitals, and 7 special augmented hospitals. Although this war was the most significant test for Navy hospitalization, subsequent challenges have also reshaped the naval medical system. Two of the most notable challenges were the post–Cold War Base Realignment and Closure process during the 1990s and the 2017 National Defense Authorization Act, which transferred command and control of military treatment facilities to the Defense Health Agency (DHA). In October 2018, Naval Hospital Jacksonville, Florida, was the first Navy hospital to make the shift.

To complement the transition to the DHA, the Bureau of Medicine and Surgery established Navy Medicine Readiness and Training Command (NMRTC) to ensure that Navy Medicine maintains its core readiness mission. After the first NMRTC opened at Jacksonville, more were established at other naval medical centers, hospitals, and clinics. By the summer of 2025, the Navy operated 29 NMRTCs around the globe with more than 19,000 individuals staffing the commands. Smaller Navy Medicine Readiness and Training Units (NMRTUs) were also created at branch clinics to support this mission. Ultimately, both the NMRTCs and NMRTUs were created with the purpose of "organizing, and equipping sailors, ensuring they are prepared to address current and future threats."

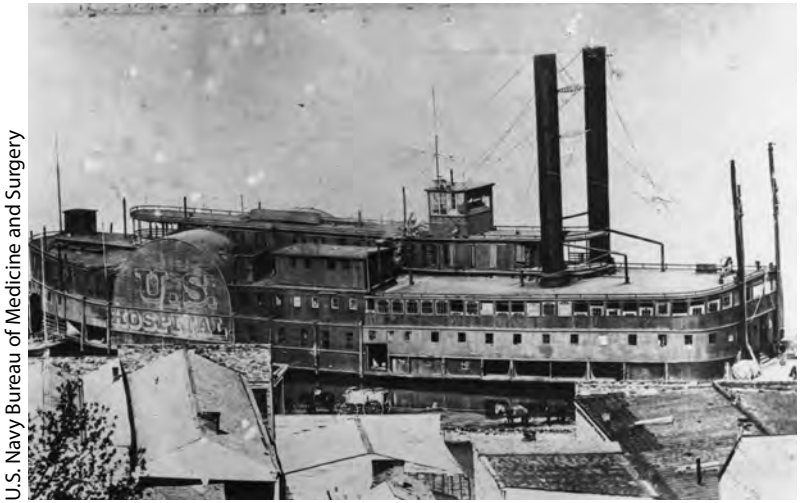
NMRTCs also have command and control over Navy medicine expeditionary medicine systems (EXMEDs), which provide the "modular, adaptive, and scalable capabilities required to win in a distributed maritime environment." EXMEDs on the horizon include *Bethesda*-class expeditionary medical ships—USNS *Bethesda* (T-EMS-1), USNS *Balboa* (T-EMS-2), and USNS *Portsmouth* (T-EMS-3)—that will provide medical support to our forces across the distributed maritime environment and serve as the backbone of future missions, allowing Navy Medicine to deliver agile and responsive medical care.

NAVY MEDICAL PLATFORMS AFLOAT

For much of its history, Navy Medicine has been defined by its hospital ships, which have played a crucial role in saving lives during both peacetime and war. This tradition dates to the Barbary Wars, when the Navy utilized the former bomb ketch

Intrepid to treat and transport casualties. During the Civil War, after capturing a former Confederate paddlewheel steamer, the U.S. Navy relaunched it on the Mississippi River as the hospital ship *Red Rover*. (The name likely came from a popular James Fenimore Cooper novel published in 1827.) The mission requirement of a hospital ship is to provide a "mobile, flexible, rapidly responsive medical capability afloat and to medically support deployed forces." As a secondary role, these ships have been used extensively to support humanitarian assistance and disaster relief missions around the world, including deployments to New York and Los Angeles as part of the COVID-19 pandemic response.

Since the commissioning of *Solace* in 1898, every Navy hospital ship has had a soothing name. The naming convention began when Secretary of the Navy John Davis Long's daughter named *Solace*. Based on Long's recommendation, this has been a tradition ever since. It is also remarkable that in the entire history of hospital ships only one ship (*Relief*) was constructed from the keel up to be a hospital ship. All of the other ships were converted from other uses. The Navy's fleet of hospital ships peaked at 15 vessels at the end of World War II. The longest-operating hospital ships in the Navy's history are USNS *Mercy* (T-AH-19) and USNS *Comfort* (T-AH-20), which have been in operation since 1986 and 1987, respectively, and continue to play important roles in humanitarian operations such as Pacific Partnership and Continuing Promise.



U.S. Navy Bureau of Medicine and Surgery

Hospital ships have served as important medical platforms in the U.S. Navy since the early nineteenth century. In the Civil War, the Navy employed several ships as hospital ships, most notably the side-wheeler *Red Rover*.

U.S. Navy Bureau of Medicine and Surgery

Navy hospital ship USNS *Comfort* (T-AH-20) sails past the Statue of Liberty as it steams into New York City, September 2001.

NAVY MEDICINE HEROES INSPIRE THE FUTURE

Navy medical personnel have long been on the forefront of innovation, making important contributions that have improved the health and readiness of sailors and marines. Navy medical personnel were responsible for authoring the first U.S. textbook on military medicine, inventing the jeep ambulance, developing pioneering treatments for cholera, founding the world's first tissue bank, spearheading the concept of saturation diving, initiating the first military alcohol and drug treatment centers, developing the artificial acrylic eye prosthetic and first trauma mannequin, and playing a role in establishing the White House Medical Unit.

Heroism has also not been uncommon among members of Navy Medicine. Since 1900, Navy medical personnel have been awarded 28 Medals of Honor and more than 280 Navy Crosses. Eight Navy physicians have travelled to space as NASA astronauts—they include Captain Joseph P. Kerwin, the first American physician in space, and Lieutenant Commander Jonny Kim, who boarded the International Space Station on 8 April 2025. It is no surprise that Navy medical personnel have also been honored as ship namesakes. Since 1920, 49 ships have been named for Navy medical personnel, including most recently the *Arleigh Burke*–class destroyers USS *Lenah Sutcliffe Higbee* (DDG-123), USS *William Charette* (DDG-130), and USS *John E. Kilmer* (DDG-134). These vessels are a fitting tribute to the legacy of Navy Medicine and its personnel who continue to push the boundaries of science and risk their own lives in the quest to ensure American sailors' well-being no matter where their duties take them.

8 U.S. NAVY DIVING

GEORGE R. SCHWARZ

Divers form a unique operational component of the U.S. military that provides an essential capability to perform specialized underwater tasks. From defense tactics and undersea warfare to research, rescue, salvage, construction, ship husbandry, and humanitarian efforts, Navy deep sea divers undertake critical missions for the nation while honoring a tradition that began during the age of the modern torpedo. Put simply, divers are "the underwater problem-solvers of the Navy." Submerged operatives were part of naval tactics even before the widespread use of underwater breathing systems in warfare. During the Civil War, Navy swimmers located and disarmed Confederate mines ahead of Union ships. The Navy has advanced this undersea capability immensely, and today, Navy divers have the ability to make 2,000-foot dives in one-atmosphere suits to accomplish their mission. This chapter traces the origins of Navy diving and highlights some of its major developments and the people involved in making it the specialized and respected program that it is today.

ORIGINS OF MILITARY DIVING AND THE DEVELOPMENT OF A U.S. NAVY DIVE PROGRAM

Military diving operations have existed for thousands of years, with the first combat divers setting enemy ships adrift, perforating hulls, and building and destroying harbor defenses. For centuries, the only dive gear that these breath-hold divers carried was heavy stones to help them descend to depth to perform short tasks. In the sixteenth century, Italian inventor Leonardo Da Vinci finally designed a leather diving hood connected to a long breathing tube, but until air could be pumped to depth there was no way to supply air to a diver on the seafloor. Instead, sixteenth-century divers used diving bells, large tubs that could trap enough air to allow a diver to periodically return for breaths between salvage tasks. At the end of the seventeenth century, French physicist Denis Papin proposed using bellows and a flexible tube to pump fresh air to a diving bell. Though Papin's innovation failed because of the limitations of contemporary bellows, his proposal paved the way for surface-supplied diving technologies.

In the first decades of the nineteenth century, designs for diving suits began to appear that gave divers greater control and autonomy underwater. Around 1828, English inventors John and Charles Deane achieved a major advancement in diving technology when they designed the "diving dress," a heavy suit and helmet with a glass viewport into which breathable air could be pumped. Multiple iterations of the diving suit followed, and by 1837 Augustus Siebe patented the forerunner of the modern diving outfit. "Siebe's Improved Diving Dress" comprised two pieces, a full-length waterproof suit with a rubber collar and a helmet with a breastplate that clamped onto the suit to prevent helmet flooding. Like the Deane suit, Siebe's version pumped air to the diver from the surface. Three years later, divers used Siebe's suit for extended periods underwater to salvage the Royal Navy warship HMS *Royal George* in Portsmouth Harbor.

Siebe's design became the model for future suits, and by the turn of the twentieth century, diving equipment was being manufactured in England, Germany, Italy, France, Japan, and the United States. Around this time, Scottish physiologist John Scott Haldane increased diving safety when he established protocols that standardized how divers received air from the surface. Haldane created a standard air supply rate to be pumped into Royal Navy diver helmets. He later developed a set of diving tables (the basis of modern tables) that established a method of staged decompression to prevent decompression sickness, also called the bends, caused by dissolved gases emerging from solution as bubbles inside the body tissues during decompression. These achievements in science and engineering enabled the conception and execution of complex underwater military operations.

In the late nineteenth century, the U.S. Navy began experimenting with new underwater technologies to enhance its own capabilities. In 1882, the Navy established a school to train divers at Newport, Rhode Island. The course of study consisted of a short two-week program limiting helmeted divers to a depth of 60 feet. Initially, the Navy employed diving technology for salvage operations, including recovery of newly developed Navy torpedoes, and in 1898, the battleship *Maine* in Havana Harbor, Cuba. In 1905, the Bureau of Construction and Repair designed the Mark V diving helmet specifically for rugged underwater work, but other Navy diving equipment still required further development.

An early surface-supplied diver descending from a launch alongside a battleship c. 1907–1908.

NHHC NH 106072

Divers reached greater depths as technology advanced in the early twentieth century. In December 1912, Chief Gunner George D. Stillson submitted a critical report to the Bureau of Construction and Repair, declaring that "our methods of diving are obsolete and our diving apparatus capable of great improvement." He called for a program revision, writing that the Navy's diving equipment was inadequate, not standardized, and that medical aspects of diving were unknown. Shortly thereafter, Stillson was ordered to initiate a research program that yielded significant improvements in Navy diving operations, including the creation of an experimental diving school at the Brooklyn Navy Yard to extend diving capabilities beyond the 60-foot threshold. Stillson and his students at the school began diving to record-breaking depths soon after its establishment. In November 1914, Chief Gunner's Mate Stephen J. Drellishak descended to 274 feet in Long Island Sound. Following the sinking of the submarine USS *F-4* (SS-23) near Honolulu, Hawaii, in March 1915, Stillson's students reached the boat at an unprecedented depth of 304 feet.

As the Navy standardized its diving practices and adopted new equipment, it became a leader in advancing diving technology. In 1916, the Navy formally established the Navy Diving School at Newport and released an expanded *U.S. Navy Diving Manual*. The same year, the construction bureau modified the Mark V to include four viewports—a faceplate, one port on each site, and one above the forehead to aid in looking upward. The modified helmet had a basic communications system and better exhaust valve, and now included a dress, weight belt, and shoes. For the next decade, the Mark V became the Navy's classic, rugged, versatile diving dress. During World War II, this dress, along with its accompanying deep-sea suit and umbilical, was the standard for submarine rescue and salvage work, and would not be replaced until the early 1980s by the Mark 12 surface-supplied system.

As methods and equipment improved and diving depths increased, the Navy undertook extensive research to solve the problem of nitrogen narcosis, an intoxicating effect from breathing nitrogen at depth that can cause the diver to lose all sense of danger. In the 1930s, Navy scientists discovered that by substituting helium for nitrogen in the diver's air mixture, this effect was eliminated, allowing divers to more safely reach depths beyond 300 feet. This helium-oxygen mixture also shortened decompression time and relieved decompression sickness symptoms. Navy divers adapted the Mark V to accommodate the new mixture by adding a Venturi system to the helmet to remove carbon dioxide and recirculate the helium-oxygen mixture. Within a decade, the mixture became prominent in the diving industry and led to advanced undersea operations.

DIVING DEVELOPMENTS DURING THE WORLD WARS

Although the Navy's dive program gradually improved, dive training during World War I was underfunded and largely stalled. After the war, Captain Ernest J. King, later commander in chief of the U.S. Fleet during World War II, oversaw multiple salvage operations from the submarine base at New London, Connecticut. In 1925, the submarine USS *S-51* (SS-162) sank in 132 feet of water after a collision off Block Island, Rhode Island. In part due to the shortage of qualified divers, none of the

submarine's crew who were trapped when it sank could be rescued. Salvage of *S-51* was the Navy's most complex and difficult salvage operation to date, requiring more than 500 dives to accomplish. Then, in December 1927, another submarine, USS *S-4* (SS-109), sank after a collision off Massachusetts. During the initial sinking, six of the 40 sailors aboard survived. Tragically, even though divers quickly reached the scene, they lacked the equipment to rescue the trapped men and all perished. Captain King ordered an immediate salvage operation regardless of the impending winter weather. The tragedy of *S-4* vindicated Congress' decision that same year to fund a new Navy Experimental Diving Unit (NEDU) and reestablish the Naval School, Diving and Salvage, the Navy's first organized deep sea diving school, at the Washington Navy Yard.

Partly as a result of the loss of all hands on *S-4*, the new school developed a submarine escape chamber. In 1939, when the submarine USS *Squalus* (SS-192) sank in 243 feet of water off the Isles of Shoals in the Gulf of Maine with 56 sailors and 3 civilians on board, helmeted divers descended to the submarine to tap on the hull and signal that help was on the way. The McCann submarine rescue chamber, an early submariner rescue device, was used over the course of 12 hours to bring 33 survivors back to the surface. Due to the technological advancements of the helium-oxygen mixture and decompression tables,

NHHC NH 114650

A diver going over the side for salvage activities on USS *S-51* (SS-162) with a Westinghouse lamp used for underwater lighting, 1926.

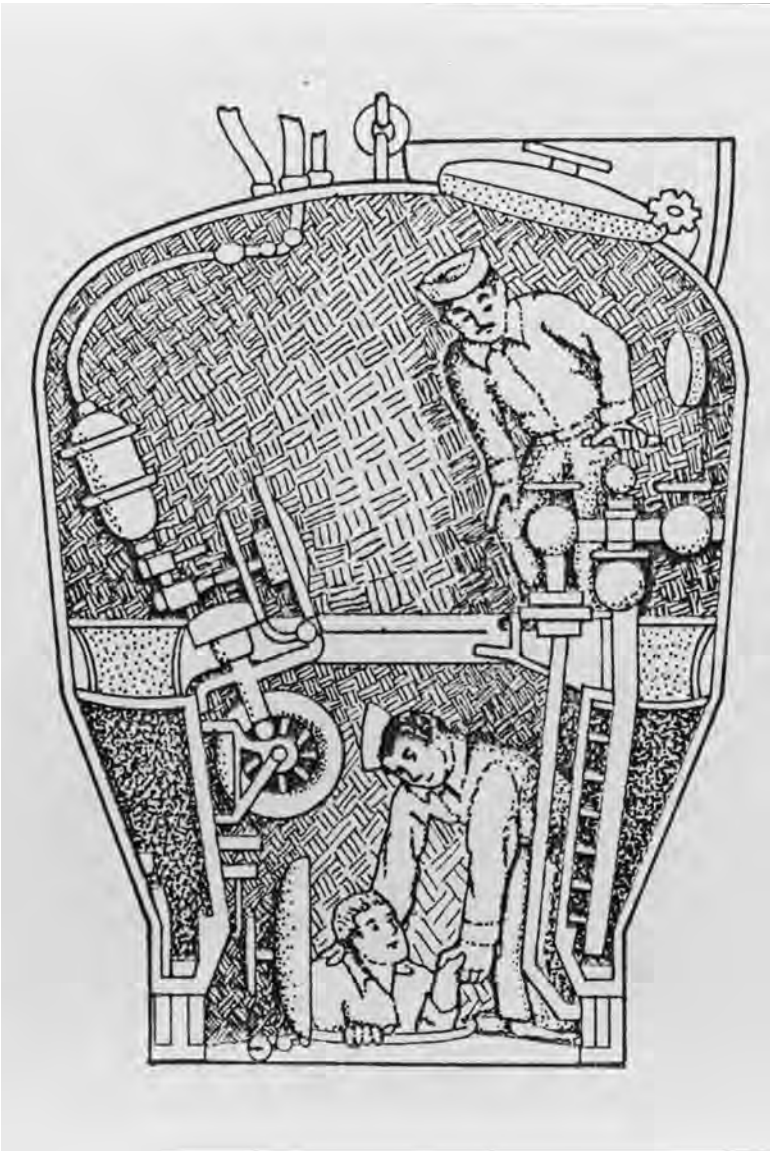
NHHC NH 57887

Secretary of the Navy Charles Edison presents Medals of Honor to four divers for heroism during rescue and salvage operations following the sinking of USS *Squalus* (SS-192) in May 1939.

Navy divers raised the submarine, which was later recommissioned as *Sailfish* and served during World War II. This incident, among others in the 1940s, convinced naval authorities that divers were an essential component of the Navy that warranted additional funds to build the program and increase the number of divers.

Although U.S. Navy divers proved critical for salvage operations, they had little experience operating against enemy forces. During World War I, the British and Italian navies conducted espionage and underwater demolitions with swimmers called "frogmen." The U.S. Navy spent the following decades testing the possibility of deploying its own frogmen for combat operations. In preparation for a possible conflict in the Pacific, the Navy, Marine Corps, and Army worked together to develop amphibious landing techniques, which included joint exercises at the Amphibious Training Base in Little Creek, Virginia. The training was particularly important because contemporary aerial photographs only showed the terrain and not the depth of water over the reefs around islands that might potentially be assaulted. Beyond using divers for reconnaissance, the Navy began to develop underwater demolition capabilities to support landing operations.

In January 1942, the Navy ordered Lieutenant Commander Draper L. Kauffman to establish the Bomb Disposal School because of his unique experience defusing German mines for the Royal Navy. Following his success at this school, Kauffman was ordered to stand up yet another school for underwater demolitions in June 1943. He selected Fort Pierce, Florida, as the site of the new school and began recruiting trainees from



NHHC NH 97291

A drawing of the device—the McCann submarine rescue chamber—used to rescue 33 survivors from the sunken submarine *Squalus* in May 1939.

the Navy's Construction Battalions (Seabees), who agreed to volunteer for "hazardous, prolonged, distant duty." Kauffman established a rigorous training program at Fort Pierce, where students learned how to destroy landing obstructions and mines on hostile shores. Although Kauffman requested self-contained diving equipment similar to what the Italians used, the Allies did not yet possess equipment deemed safe enough to deploy and so the sailors instead practiced wading through the surf with their explosives carried in rubber boats. Early rebreathers were still under development at the time and therefore were not fully adopted by military divers in the early 1940s. However, they were significant in that they allowed for untethered breathing through a self-contained device that recycled exhaled air, scrubbing out carbon dioxide and adding oxygen to the breathing mixture.

The first detachment of sailors trained in underwater demolition deployed in the fall of 1942 as part of the invasion of North Africa, codenamed Operation Torch. The following spring, the Navy created the first naval combat demolition unit (NCDU) comprised of 13 volunteers from the dynamiting and demolition school at Camp Perry, Virginia. The team trained at the Naval Amphibious Training Base at Solomons Island, Maryland, before taking part in the invasions of Sicily and Normandy. At Normandy, NCDU teams generally landed after the initial assault waves and cleared the beaches of enemy mines and obstacles to facilitate the rapid movement of follow-on waves of soldiers across the beaches. Upon their return to the United States, many NCDU members proceeded to the Naval Amphibious Training Base at Fort Pierce for further training.

In the Pacific, the invasion of Tarawa Atoll in November 1943 prompted U.S. Navy leaders to form a new type of demolition unit trained to land on hostile beaches ahead of assault troops and destroy enemy obstacles. The landing of the 2nd Marine Division on strategic Tarawa Atoll followed more than two hours of intensive naval and air bombardment of Japanese positions. Planners had miscalculated the depth of the water around the atoll, however, believing it to be deep enough for landing craft to pass over the surrounding coral reefs. When the attack began, American landing craft became stranded on the reefs, forcing marines to wade into heavy Japanese fire from virtually intact defenses. Artillery and machine-gun fire killed or wounded hundreds of marines before they even reached the beach. Although the U.S. commander declared Tarawa secure three days later, the planning failures made it one of the bloodiest battles that the marines had ever fought. More than 1,000 marines and sailors lost their lives and nearly 2,300 more were wounded on the atoll. Military leaders opined that if underwater swimmers had mapped the reefs beforehand, other strategies would have been adopted to counter the geography of the atoll and much of the bloodshed might have been avoided.

Following this hard-earned experience, the Navy formed underwater demolition teams (UDTs), the Navy's frogmen. Volunteers for this extra hazardous duty were required to be extremely strong swimmers. Their training consisted mainly of long distance swimming and explosives handling. The first corps entered the water without masks or fins, carrying only goggles and knives to perform their duties. UDTs deployed to Hawaii for additional training, where they practiced assaulting

re-creations of obstacles and mines found on Tarawa. They also trained with new Stingray drone boats, remote-controlled landing craft stocked with explosives, designed to preemptively detonate obstacles and underwater mines before landing forces reached the shore.

Two UDTs deployed to the Pacific in early 1944. The Stingrays suffered from myriad mechanical breakdowns when deployed against obstacles on Enubuj and Kwajalein, but the UDT men reconnoitered the reef and used explosives to blast openings through the coral. They also swam along shore and spotted enemy guns. Commanders used this intelligence to bombard and destroy the guns before American troops landed on the island. The UDTs were so successful that Chief of Naval Operations Admiral Ernest J. King ordered future teams to be all–Navy units. As a result, the frogmen, now supplied with masks and fins and deployed from rubber boats, further developed and undertook numerous missions throughout the war, including clearing mines from hostile beaches.

NAVY'S EXPERIMENTATION AND USE OF ADVANCED DIVING SYSTEMS

Similar to earlier periods of technological innovation, the Navy continued to study and experiment with new diving equipment during and after World War II. While traditional surface-supplied diving systems were optimal for most salvage and rescue operations, they were impractical for clandestine subsea missions that needed to be independent of topside breathing support. These high-risk operations could not be conducted until a safe and reliable self-contained underwater breathing apparatus (SCUBA) appeared. Dr. Christian J. Lambertsen offered his closed-circuit 100 percent oxygen SCUBA, a device he named the Lambertsen Amphibious Respiratory Unit (LARU), to the U.S. Navy in 1940. Although the Office of Strategic Services Maritime Unit adopted the LARU, the UDTs only employed the device on a limited basis for testing after the war ended.

In 1943, French Navy Captain Jacques-Yves Cousteau and engineer Émile Gagnan built on earlier rebreathers and closed-circuit breathing systems when they combined a demand regulator with a steel compressed-air cylinder to create the Aqualung, the first widely adopted SCUBA. The Aqualung allowed divers to dive independent of an umbilical to the same

An underwater demolition team diver demonstrating early Navy SCUBA gear with full face mask in 1944.

NARA 80-G-264620

depths as helmeted divers given the appropriate breathing mixture. Cousteau and his partners continued to develop the Aqualung as they explored and photographed shipwrecks, developing new diving techniques and testing their equipment. After the end of World War II, the Aqualung became a commercial success, resulting in the rapid advancement of the design and manufacture of diving equipment.

UDTs adopted the Aqualung after World War II due to its reliability and its easy-to-maintain design. The stream of bubbles it released underwater, however, limited its operational uses. Nevertheless, the employment of SCUBA eventually enabled UDTs to conduct far-reaching underwater operations from submarines, deploying from swimmer propulsion units. In 1952, the Navy called upon UDT divers to dive on an aircraft wreck at a depth of 253 feet on SCUBA using a helium-oxygen-nitrogen mixture. Soon after, the *Navy Diving Manual* began to include techniques for SCUBA diving after the technology proved indispensable. During the Korean War, UDTs used SCUBA divers to destroy port facilities at Hungnam to keep it out of enemy hands during a strategic withdrawal.

Innovations and enhanced use of explosives leading up to and during World War II necessitated a bomb disposal function within the Navy. During the war, two schools opened at the Naval Gun Factory in Washington, DC. The Advanced Mine

NARA 80-G-443227

An underwater demolition team diver demonstrating a Lambertson rebreather unit at a National Research Council Symposium in 1951.

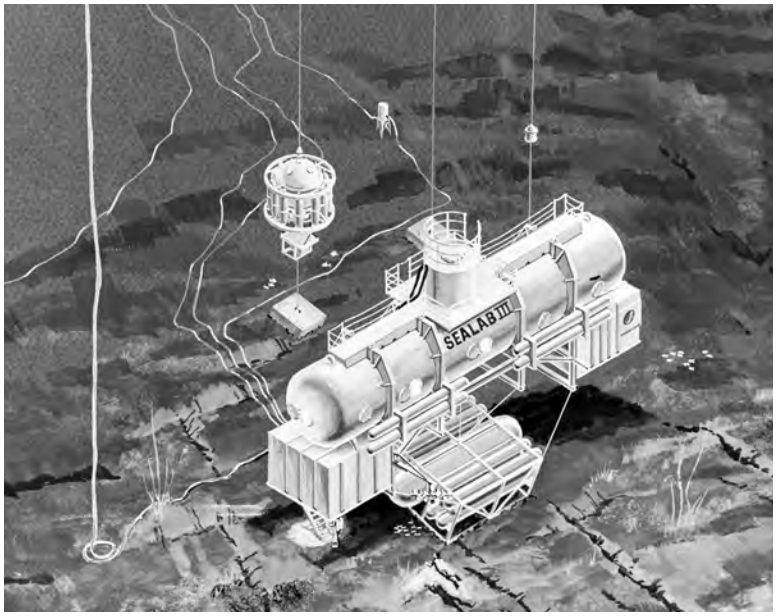
NARA 80-G-688330

Underwater demolition team frogmen en route to a training area with full scuba gear in 1953.

School opened in 1941, followed by the Bomb Disposal School the following year. In 1945, the schools combined at the Naval Powder Factory, Indian Head, Maryland; the training became known as explosive ordnance disposal (EOD). By the end of the decade, the Navy assumed responsibility for providing EOD training to all branches of the military, resulting in the facility's expansion and eventual consolidation at Eglin Air Force Base in Florida in 1985.

EOD divers are responsible for detonating and demolishing hazardous munitions, neutralizing sea mines, torpedoes, and depth charges, and clearing waterways of mines in support of ships and submarines, among other tasks. EOD divers relied on SCUBA for underwater mobility, but because of their work with explosives, they also required equipment with low magnetic signatures to perform underwater tasks. In 1964, the Navy adopted the MK 6 underwater breathing apparatus (UBA) semi-closed circuit mixed-gas rebreather and decompression procedures developed by the Navy Experimental Diving Unit (NEDU). With the new technology and protocols, divers reached depths of 200 feet and bottom times of three hours. This technology steadily advanced, and eventually low magnetic signature versions of the rebreather were approved for EOD use.

In the early 1960s, the Navy also explored saturation diving for submarine rescue and salvage, seabed implantments, construction, scientific testing, and observation. Saturation diving allowed divers to work extended periods, sometimes days, underwater with only one long decompression afterward. Captain George F. Bond's ground-breaking experiments in saturation diving led to the Navy developing the Sealab program in 1963, which placed divers in seafloor habitats at steadily increasing depths of hundreds of feet for weeks at a time. This culminated in Sealab III, which aimed to send divers to 600 feet. In 1968, during the buildup to Sealab III, the Navy and Duke University achieved the record-breaking accomplishment of a series of hyperbaric chamber dives to 1,025 feet for a three-day saturation. The program ended in tragedy the following year, however, when Aquanaut Berry L. Cannon descended to 600 feet in the seafloor habitat and drowned as a result of an equipment failure. The Navy ended its seafloor habitat testing, but saturation diving experiments to test deeper and longer dives



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An artist's concept of Sealab III, showing the personnel transfer capsule (PTC) used to get men to and from the habitat, 1967.

continued. By 1988, experiments with hydrogen, helium, and oxygen resulted in an open-sea dive to 1,650 feet. Out of the Sealab experiments, NEDU and other Navy laboratories developed the Deep Diving System, which included a deck decompression chamber (a saturation system made of multiple pressurized chambers) with an attached personnel transfer capsule (PTC). The PTC detaches from the decompression chamber, allowing divers to exit at depth, perform their mission, then reconnect with the decompression chamber while still pressurized at working depth. Divers either slowly decompress to the surface or rest until needed in the decompression chamber.

Building on its deep-water capabilities for salvage work and submarine rescue missions, the Navy began experimenting with one-atmosphere suits in the mid-1970s. Unlike earlier ambient–pressure soft suits, these hard-suit atmospheric diving systems (ADS) allowed divers to work at depths of up to 2,000 feet while remaining at one atmosphere of pressure. This suit eliminated the need for decompression and permitted divers to work for extended periods at depth. The Navy did not initially adopt early versions because of material uncertainties, though testing for deep sea naval operations continued. In 2006, the Navy finally certified the ADS 2000, and its newest experiments are with the Deep Sea Expeditionary with No Decompression (DSEND) suit, which provides divers with greater mobility and safety. As Navy program officer Dr. Sandra Chapman explained, the DSEND "is, in essence, a one-person submarine, but form-fitted to the point where the person can operate like a diver."

Organizing, planning, and overseeing dive operations using these increasingly complex systems requires a high level of knowledge and expertise in all aspects of diving and salvage. The Navy's master divers serve in this elite role. Master divers undergo rigorous training, build extensive knowledge and leadership skills, and at times face high risk. One of the most notable examples of a Navy diver overcoming tremendous hardship on the path to becoming a master diver is the experience of Master Chief Boatswain's Mate Carl M. Brashear. In March 1966, almost two years after qualifying as a first class diver (an advanced diving qualification indicating mastery of complex diving operations), a towing line from a bomb recovery operation broke loose, striking and severely injuring Brashear's left

Master Chief Boatswain's Mate Carl M. Brashear qualified as a Navy master diver in 1970. Painting by Annette Adrian Hanna, c. 1979.

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leg, which eventually had to be amputated. After recovering from his injuries a year later, he reported to the Diving School at Harbor Clearance Unit Two at Little Creek, Virginia, for rehabilitation and training. The following year, Brashear was recertified, becoming the Navy's first certified amputee diver. In June 1970, Brashear graduated from the Deep Sea Diving School at the Experimental Diving Unit located at the Washington Navy Yard. Brashear retired from active duty in 1979 as a Master Chief Boatswain's Mate. He then continued serving as a Navy civilian until 1993.

Another notable figure in the history of Navy master divers is Master Chief Electrician's Mate Mary Bonnin. Bonnin qualified as a first class diver (graduating at the top in her class in 1981) and was certified in both air and gas diving. While diving underneath aircraft carriers in Alameda, California, Bonnin devised a safer and more efficient way for divers to navigate underneath the giant ships, which included training divers on new safety procedures. She then spent seven years as an instructor for Second Class Dive School in San Diego, training more than 1,000 divers. In 1990, Bonnin was selected by unanimous decision to serve as USNS *Grasp*'s (ARS-51) master diver. She was inducted into the first class of the Women Diver's Hall of Fame in 2000.

SPECIAL OPERATIONS TO SCIENTIFIC RESEARCH

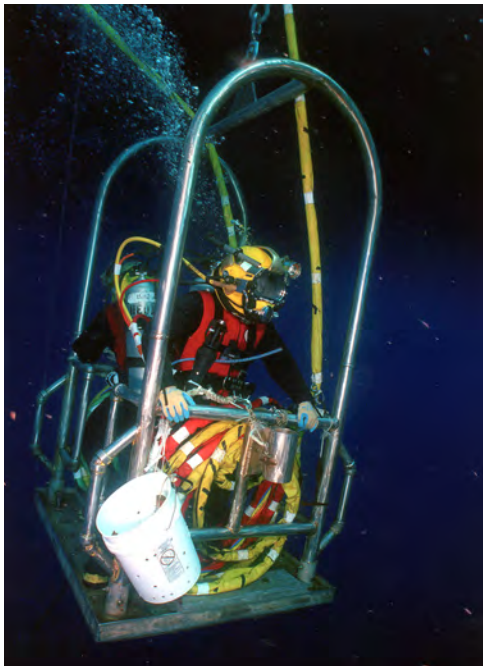
Through the 1950s and 1960s, the Navy's experience with limited and unconventional conflicts such as those in Korea and Vietnam highlighted an increasing need for special warfare capabilities. In 1962, the Navy established Sea, Air, and Land (SEAL) Teams 1 (Pacific) and 2 (Atlantic) to conduct counter-guerilla warfare and other clandestine operations in riverine and maritime environments. The first SEAL teams were composed of UDT veterans. Since the teams' inception, SEAL training has been intensive and includes diverse weapon handling, hand-to-hand combat, parachuting, and expertise in SCUBA and other diving and swimming techniques, among a host of other skills. Basic UDT/SEAL, or BUD/S, training maintained the strenuous rigor of the UDT school including the notorious "Hell Week" instated by UDT pioneer Draper Kauffman. Additional months of intense training are required to become an operationally qualified SEAL.

SEAL teams have conducted seaborne, undersea, and airborne direct-action missions in Vietnam, Grenada, Panama, the Arabian Gulf, Somalia, Bosnia, Haiti, Liberia, and Afghanistan, among many others. The SEALs' largest deployment to date took place during Operation Iraqi Freedom, though the units conducted more notable operations during Operation Enduring Freedom. In addition to the more than 75 special reconnaissance and direct-action operations that various teams conducted, SEAL Team 6 successfully carried out the 2011 raid on terrorist leader Osama bin Laden's compound in Pakistan. Moreover, during the early decades of the U.S. manned space program, SEAL divers supported the program by securing flotation collars to returned space capsules and assisting astronauts during helicopter pickups and small boat recoveries.

Beyond special operations, the Navy dive program widened its scope by offering its expertise to national maritime heritage projects. From 1998 to 2003, Navy Mobile Diving and Salvage

Unit 2 (MDSU-2) divers, in collaboration with National Oceanic and Atmospheric Administration (NOAA) National Marine Sanctuary program divers, took part in a historic documentation and recovery operation on *Monitor*, the Civil War–era ironclad that took part in the Battle of Hampton Roads. After the battle, *Monitor* sank while being towed during a gale off Cape Hatteras, North Carolina. The vessel sank in 240 feet of water with the loss of 16 sailors.

After extensive coordination, planning, and congressional fundraising, the Navy recovered significant portions of the wreck along with the remains of two sailors entombed in the vessel's turret. Utilizing MDSU-2, various other diving commands, and Navy saturation divers, notable items recovered included the propellor, 11 feet of engine shaft, deck plates, the 35-ton engine, and incredibly, the turret. After the complex diving and salvage operations, these artifacts, along with smaller finds recovered from the wreck, were transported to the *Monitor* Center of the Mariners' Museum in Newport News, Virginia, for conservation, interpretation, and eventual display. This long-term project also led to an improvement in Navy diving procedures. Between 1995 and 2004, Navy dives at the *Monitor* sanctuary accumulated valuable data that resulted in the Navy modifying its mixed gas decompression tables. Lessons from the dives also eventually resulted in the Navy's acquisition of its own saturation diving system.



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Mixed-gas surface-supplied Navy divers on a diving stage during recovery operations on the *Monitor* shipwreck.

Beyond partnering with NOAA, Navy divers have also provided maritime heritage support to the U.S. Army Corps of Engineers. The Army's harbor-expansion and channel-deepening projects have included archaeology rescue operations to recover and preserve the Civil War wrecks CSS *Georgia* in the Savannah River and USS *Westfield* in the Texas City Channel. MDSU-2 and EOD divers assisted with operational safety by managing the historic ordnance, and worked alongside archaeologists, engineers, and other stakeholders in challenging underwater conditions.

Complementing its active and reserve-duty personnel, the Navy has a long history of incorporating civilian engineers, technicians, construction workers, and scientists into its dive program. One of the earliest integrations of civilian divers came with the development of what would later become the Naval Undersea Warfare Center (NUWC) Engineering and Diving

Support Unit (EDSU). During World War II, the Navy created the Underwater Sound Laboratory (USL) as a military-funded program within the New London Lab, part of Columbia University's Division of War Research, to develop antisubmarine warfare technologies that could be employed against German U-boats. After a few agency mergers, the Navy eventually established the USL within the Naval Sea Systems Command as NUWC. In 1958, just four years after UDT swimmers started training with SCUBA, a USL engineer became Navy dive-qualified to participate as an EDSU research diver. Since the Cold War, these divers have engaged in a multitude of underwater assignments. Though these divers are mostly associated with the deployment and testing of submarine sonar systems, they also perform other tasks such as submarine repairs and torpedo tube maintenance in diverse and challenging environments.

Beyond service personnel, the Navy employs a variety of civilians for technical diving support. Underwater Ship Husbandry (UWSH) divers are often civilians who perform hull inspections, underwater ship repair, and ship maintenance for shipyards and maintenance centers. Working alongside military divers, they also work in ballast tanks and perform tasks such as inspecting dry dock infrastructure. Navy civilian scientists perform underwater work for research, habitat assessments, and environmental compliance. Marine biologists and other researchers are responsible for managing the natural and cultural resources and marine habitats under their purview and conduct environmental assessments on behalf of the Navy to ensure compliance with laws pertaining to the planning, design, and construction of naval shore facilities. Hydrographers and other experts conduct diving operations in support of marine surveys and recovery of subsea assets, and underwater archaeologists are responsible for the preservation and study of the Navy's global collection of historic sunken military craft.

From the diving program's modest origins on 1 August 1882, when the first torpedo recovery diving course formed in Newport, the Navy diving program today is among the strongest in the world, consisting of more than 1,300 rated Navy divers and more than 7,700 dive-qualified Navy personnel. The Naval Diving and Salvage Training Center in Panama City, Florida, the largest diving facility in the world, trains in excess of 1,200 students each year, including personnel across all U.S. military services, government civilians, and international partners. To become qualified military divers, students use a range of apparatuses, including scuba, rebreathers, surface-supplied air and mixed gas, deep-sea saturation systems, and submarine escape systems among others, and continually test and experiment with new diving technologies. Since their inception, Navy divers have been involved in almost every major conflict, and seven have been awarded the Medal of Honor. Although this chapter has described just a handful of the prominent contributors to Navy diving, there are many more individuals whose collective accomplishments could fill volumes. There are also, of course, those stories told by thousands of Navy divers, past and current, that have inspired and helped recruit the newest generations of Navy "Deep Sea."


CHAMPIONSHIP
BASE BALL
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9 CIVIL ENGINEER CORPS AND SEABEES

GINA L. NICHOLS

EARLY CIVIL ENGINEERS

The U.S. Navy officially established the Civil Engineer Corps (CEC) in 1867, but the involvement of civil engineers in Navy public works dates back to the early nineteenth century. In 1801, President Thomas Jefferson secured congressional approval to reduce the size of the Navy and hired Benjamin Henry Latrobe to design a dry dock to store twelve 44-gun frigates. Three years later, Jefferson appointed Latrobe as the chief engineer of the U.S. Navy. By 1805, Latrobe developed master plans for the Washington Navy Yard, along with designs, estimates, and reports for buildings at both the New York and Norfolk navy yards.

In 1820, the Board of Navy Commissioners appointed Colonel Loammi Baldwin as the Navy's first civil engineer to study improvements at the yards and oversee the construction of dry docks. Baldwin designed the graving docks at both the Boston and Norfolk navy yards, employing civil engineers as representatives known as "resident engineers." The Navy Department appointed Resident Engineer William P. S. Sanger to be the civil engineer for the Navy in 1836.

By 1842, the responsibilities of naval administration had expanded, creating the need for a more organized system under the Secretary of the Navy. On 31 August 1842, Congress established a bureau system to replace the Board of Navy Commissioners. This new system consisted of five bureaus, with the Bureau of Yards and Docks (BuDocks) responsible for constructing and maintaining the docks, wharves, and buildings within the navy yards.

BIRTH OF THE CIVIL ENGINEER CORPS

From the start of Sanger's Navy career, he pushed for a dedicated staff corps for commissioned civil engineers. Before the Civil Engineer Corps was established, Navy yards depended on civilian engineers. On 2 March 1867, Congress allowed the President to appoint civil engineers as naval officers, but the law was ambiguous about their status. It was not until January 1869 that CEC officers were listed in the *Navy Register*, and two years later, Congress mandated formal ranks for civil engineers, limiting appointments to 10.

In February 1881, the President established the Civil Engineer Corps with a staff of 10 officers, holding ranks from lieutenant to captain. That same year, CEC officers were required to wear a regulation uniform for the first time. Its collar and sleeve cuffs featured light blue cloth center fields and gold embroidery with "C.E." embroidered in silver. Civil engineers did not wear the star insignia that signifies line officer status. In 1898, Mordecai T. Endicott became the first CEC officer appointed chief of the Bureau of Yards and Docks, meriting the rank of commodore and later rear admiral. Previously, the chief position was reserved for line officers, while CEC officers managed technical engineering decisions for naval public works. In March 1899, an act abolished the custom of relative rank and conferred actual naval rank on CEC officers. They continued to be addressed as "civil engineer" and "assistant civil engineer" until a 1918 naval regulation stipulated that every naval officer be addressed by rank.

U.S. Navy Seabees Museum

This photograph features the first officers of the Navy Civil Engineer Corps (*from left to right*): B. F. Chandler, F. C. Prindle, W.P.S. Sanger, F. A. Hastings, and Charles Hastings. The Navy officially established the Civil Engineer Corps on 2 March 1867. The original responsibilities of the corps included overseeing, constructing, and maintaining all buildings, docks, and wharves.

After the Spanish-American War, BuDocks significantly increased its public works projects, expanding its number of CEC members to manage the growth in construction work, which had quadrupled following the war. To support the fleet, BuDocks constructed new coaling stations, extended existing drydocks, and built new ones to accommodate the latest generation of battleships. Additionally, the bureau initiated construction at key naval bases in newly acquired U.S. territories, which served as essential outposts and logistical support bases for naval operations.

The Naval Act of 1916 laid the foundations for the U.S. Navy to get on a war footing in response to World War I. As part of this transformation, the act mandated an increase in the size of the CEC, setting its strength at 2 percent of the number of line officers. Within two years, the number of active CEC officers grew from 41 to 75. Additionally, the act created a Civil Engineer Corps Reserve Force, which successfully recruited more than 100 reserve CEC officers. Furthermore, prior to the act's passage, CEC officers held the rank of rear admiral only while serving as chief; once they stepped down, they reverted

to their previous rank for the remainder of their naval careers. Subsequently, they retained their rank permanently.

During the interwar years, the Navy assigned CEC officers to various detached duties. These included construction projects in the Virgin Islands as well as the occupation of Haiti and Santo Domingo from 1915 to 1934. The treaty obligations between the United States and these nations required the conservation of revenues and the development of local economies. The CEC managed local public works and trained local engineers.

By the early 1930s, the naval shore establishment was in decline. The First Deficiency Act of 1931, followed by the creation of the Works Progress Administration in 1935, enabled BuDocks to initiate a public works construction program. This initiative created job opportunities and facilitated essential maintenance improvements, as well as new construction projects at naval installations. By 1939, BuDocks had managed more than $109 million in contracts to enhance the shore establishment and help reduce civilian unemployment.

ON THE PRECIPICE OF WAR

In the late 1930s, the United States began to rearm and rebuild its military and supporting infrastructure in response to aggression by Germany, Japan, and Italy. In 1938, the Second Vinson Act authorized the largest U.S. naval expansion since World War I. This legislation mandated a 20 percent increase in the number of ships and raised the number of naval aircraft to 3,000. The law also directed the Secretary of the Navy to appoint a board to identify the necessary shore facilities required to support the planned fleet.

On 7 June 1938, Assistant Secretary of the Navy Charles Edison convened the Hepburn Board to assess the additional shore facilities needed to support the Navy. The board conducted a thorough analysis of the Navy's strategic defense requirements, highlighted deficiencies in the current infrastructure, and made a series of recommendations. Its members proposed building three major air bases on each coast, plus one in the Panama Canal Zone, and one in Hawaii. The board further recommended creating more operational bases in the West Indies, Alaska, and all U.S. territories in the Pacific. During this period, the Navy had one advanced fleet base at Pearl Harbor, which temporarily became the homeport for the Pacific Fleet in mid-1940. Contracts for new and expanded naval bases were expedited. Yet, when war broke out in Europe in September 1939, the naval shore establishment was unprepared for the global conflict about to unfold.

The Two-Ocean Navy Act, approved on 19 July 1940, launched a shipbuilding program to create two balanced fleets in the Pacific and Atlantic Oceans. This $4 billion initiative provided for the construction of 257 ships over an eight-year period. Due to insufficient funding for base construction, however, the act also authorized expenditures of $150 million for equipment and facilities, $65 million to produce ordnance and munitions, and $35 million to expand armament production facilities. The United States' acquisition of 99-year leases on eight British bases in the Western Hemisphere as part of the destroyers-for-bases deal agreed to in September 1940 only served to bolster the Navy's efforts to construct bases for hemispheric defense.

Between 1940 and 1941, BuDocks leaders recognized the difficulties contractors faced in potential combat zones, where military law prohibited them from defending themselves against enemy attacks. Civilians found carrying weapons faced severe consequences if captured, and they lacked the necessary military training. This became evident when the Japanese captured the U.S. military garrisons at Wake Atoll, Cavite in the Philippines, and Guam in December 1941. The surviving personnel faced imprisonment or execution. Navy leaders debated the possible solutions to this issue; they could either allow civilians to defend themselves or they could employ exclusively military personnel for construction.

CREATION OF THE SEABEES

In response to the Japanese attacks, then–Rear Admiral Ben Moreell, chief of the Bureau of Yards and Docks, emphasized that only military personnel operating under direct military leadership could effectively manage construction projects in combat zones. To address this need, he advocated for the creation of the Naval Construction Force, composed of construction battalions (CBs), commonly known as the Seabees, to build the Navy's advanced bases. Moreell also selected their official motto: "Construimus, Batuimus," which translates to "We Build, We Fight." This motto highlighted the battalions' critical dual role in both construction and combat.

The construction force was initially organized under the Bureau of Navigation. Moreell and BuDocks needed to convince Navy leadership, however, of the need for CEC officers to command the newly established construction battalions. These officers possessed specialized skills essential for executing and managing construction projects. Although Navy regulations restricted military command of naval personnel to line officers, Moreell successfully overcame this obstacle by appealing directly to Secretary of the Navy William F. Knox. Knox approved CEC to manage the construction force with their own officers, moving the new units to BuDocks. With the authority to manage the Seabees secured, the next task was to fill the ranks.

The first Seabee volunteers possessed specialized skills but lacked military experience. The recruitment process sought candidates with civilian expertise in construction that could be adapted to the military's needs. To attract qualified individuals, the Seabees had less strict requirements compared to other military branches. Applicants could be between the ages of 18 and 50, with the average age being 37. In December 1942, President Franklin D. Roosevelt suspended voluntary enlistments, and men for the construction battalions were recruited through the Selective Service System. This resulted in younger Seabees who possessed only basic skills. After completing three weeks of basic training in Virginia, the Seabees were organized into construction battalions. These battalions then underwent advanced training at various advanced base depots located in Davisville, Rhode Island; Port Hueneme, California; and Gulfport, Mississippi, before being deployed overseas for base construction.

The naval construction battalion (NCB) was the core unit of the Seabee organization and comprised four companies, each providing essential construction skills, as well as a headquarters company that contained medical, dental, administrative, and technical staff. A typical battalion consisted of 32 officers and

1,073 enlisted personnel. There were different types of NCBs, each with distinct specialties. The construction battalion maintenance unit (CBMUs) comprised one-quarter of the personnel of a regular construction battalion and was responsible for base maintenance. Construction battalion detachments (CBDs) varied in size, ranging from 6 to 600 men, and performed tasks such as tire repair, dredging operations, and assembling and launching pontoon causeways. Other specialized units included motor transportation battalions, pontoon assembly teams, and petroleum detachments, which contained experts in installing pipelines and petroleum facilities. BuDocks also created 39 special naval construction battalions, known as the Seabee Specials, comprised of stevedores and longshoremen who efficiently loaded and unloaded ships in combat zones. Ultimately, 190 construction battalions and numerous smaller detachments totaling more than 325,000 sailors enabled the U.S. Navy to create and sustain the logistical network required to wage war on a global scale.

WORLD WAR II

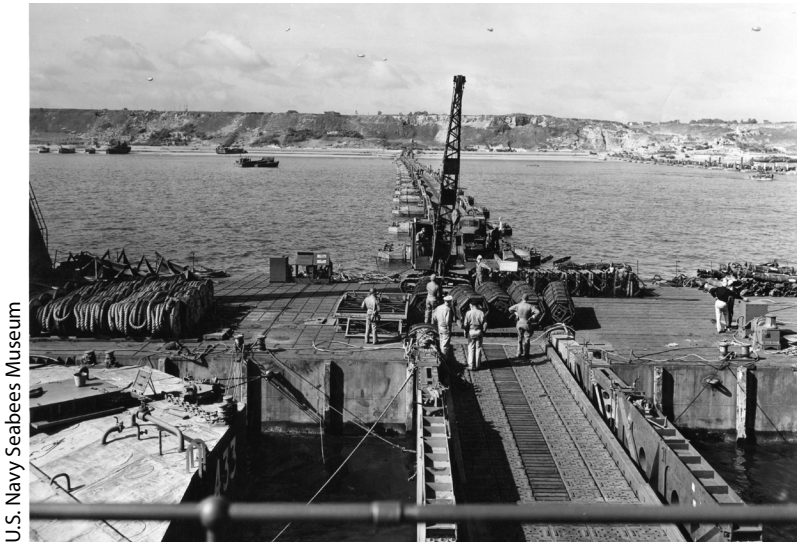
During World War II, the Seabees constructed essential Navy bases worldwide, helping to achieve victory in the Atlantic and Pacific theaters. By the end of the war, they had built more than 400 bases, 111 airfields, 441 piers, and hospitals with beds for 70,000 patients, as well as housing for 1.5 million service members. The Seabees contributed to the Allies' success across four continents, and they often worked under dangerous conditions within range of enemy guns. The Navy awarded more than two thousand Purple Heart medals to members of construction battalions, and more than three hundred Seabees died as a result of enemy action.

In the European theater of operations, the Seabees constructed bases in North Africa and Great Britain to support amphibious assaults in Italy and France. One notable innovation that the Seabees deployed in combat for the first time during the landings on Sicily and at Salerno in 1943 was the steel pontoon. Although pontoons were not a new concept in naval warfare, the Seabees adapted and improved these structures for modern amphibious operations. BuDocks developed pontoons that could be assembled into causeways, piers, and other structures for amphibious invasions. One Seabee pontoon assembly detachment could produce about 1,800 steel pontoons per month.

When the Allies invaded Normandy, France, on 6 June 1944, the Seabees were among the first to land as part of the naval combat demolition units. They collaborated with U.S. Army engineers to clear German minefields and steel obstacles intended to destroy landing craft. Even before the Seabees exited their landing craft, they came under artillery and machine-gun fire. Despite suffering heavy casualties, the Seabees managed to accomplish their mission of clearing landing lanes for follow-on waves of soldiers. As the assault troops moved inland, a contingent of 10,000 Seabees, commanded by the 25th Naval Construction Regiment, began to maneuver pontoon causeways onto the beach. Reinforcing U.S. Army infantry subsequently came ashore via these causeways. While under accurate German fire, the Seabees still successfully positioned most of the pontoon causeways. As a result, the Allies were able to

quickly land soldiers and heavy equipment to secure their beachhead in France.

The Seabees displayed their exceptional skills and versatility during the invasion. In addition to constructing essential pontoon causeways, they operated ferries known as "Rhinos," which transported personnel and supplies from tank landing ships (LSTs) to the beaches. These vessels, equipped with powerful outboard motors, were vital to ensuring that necessary equipment reached the shore. The Seabees constructed offshore facilities, including piers and breakwaters, using decommissioned cargo ships, concrete structures, and steel pontoons. This effort resulted in the creation of two artificial harbors known as Mulberry A and Mulberry B, which were constructed off of Omaha Beach and Gold Beach respectively. Although a storm severely damaged Mulberry A barely three days after it became fully operational, the artificial pier had by that point been used to unload hundreds of thousands of tons of war materials successfully each day. By 4 July, just 28 days after D-Day, the harbors had helped facilitate the landing and supply of more than one million Allied troops.



U.S. Navy Seabees Museum

The Mulberry Harbor at Omaha Beach consisted of several key components, including sheltered breakwaters known as "gooseberries," which were made up of scuttled block ships, along with large steel and concrete caissons, referred to as "Phoenixes," each weighing 7,000 tons. Once these were strategically positioned and sunk, they created the walls of the Mulberry harbor. Inside the harbor, there were a series of floating pier heads, multispan bridges, and floats that provided moorings for cargo ships.

While the Seabees' made notable contributions in the European Theater, 80 percent of the Naval Construction Force served in the Pacific Theater of Operations. The Seabees created new forward bases across the Pacific that facilitated the Navy's island-hopping campaign. In the process of building airstrips and infrastructure on terrain recaptured from the enemy, Seabees often found themselves engaged in direct combat with Japanese forces. In June 1942, Japan captured the U.S. islands of Attu and Kiska in the Aleutians. Later that same month, the first Seabee regiment deployed to Alaska to build bases on Adak, Amchitka, and other strategic islands. Although activity in the North Pacific decreased after 1943, the Alaskan bases continued to pose a threat to Japan, prompting them to remain alert for possible attacks from the north. When the War Department's Alaskan Department formed that year to oversee U.S. military installations in the region, BuDocks officers served as coordinating agents to facilitate local construction.

In the South Pacific, the Seabees began the war by deploying to Bora Bora in January 1942. The 1st Naval Construction Battalion became the first Seabee battalion deployed to the Pacific Theater. Its mission was to build a fueling station to service the ships and planes required to protect and maintain an open sea route to Australia. The Seabees subsequently deployed to Tongatapu, Efate, and Espiritu Santo to construct other necessary infrastructure including fuel tanks, airfields, and supply depots. These bases marked the start of a strategic network of Allied installations built across the Pacific, which were indispensable for the island-hopping campaign. On 2 September 1942, the 6th Naval Construction Battalion arrived on Guadalcanal, marking the first time the Seabees operated under combat conditions. Despite the persistent threat of Japanese bombing, the Seabees quickly repaired Henderson Field, ensuring that this crucial airstrip remained operational for Allied pilots.

U.S. Navy Seabees Museum

In 1943, the 36th Naval Construction Battalion developed an emergency repair truck to quickly fix damaged airstrips while under enemy fire on Bougainville. The Seabees created this specialized truck in response to frequent Japanese bombings and equipped it with essential supplies to patch shell holes and maintain airstrip functionality. This innovation ensured continuous operations of Allied aircraft during the pivotal Guadalcanal campaign.

In the Southwest Pacific, the Seabees built supply, air, and operational bases to support General of the Army Douglas MacArthur's forces. The 3rd Naval Construction Brigade accompanied MacArthur's soldiers during the campaign to liberate Leyte. The brigade operated pontoon barges and causeway units, which facilitated the landing of Allied forces. The Seabees constructed airfields for the U.S. Navy and Army throughout the Philippines. They built supply depots, training sites, and camps. When the headquarters of the Seventh Fleet was relocated to the Philippines, the Seabees developed essential anchorages, submarine bases, ship repair facilities, and fast torpedo boat bases.

As Seabee battalions in the Southwest Pacific built infrastructure that assisted in the liberation of the Philippines, their fellow Seabees in the Central Pacific drew steadily closer to Japan's home islands. The Seabees played a key part in the campaigns across the Gilbert, Marshall, Caroline, and Mariana Islands. The Seabees built advanced bases on more than 250 islands, providing support for U.S. forces as they moved toward Japan. After marines captured the damaged main airfield on Saipan, Seabees took just four days to make the field operational once again. Following the Marianas campaign, Allied

forces required an emergency airfield for bombers closer to the Japanese homeland. Such an airfield would also enable fighter planes to escort American bombers based in the Marianas to their targets. The Joint Chiefs of Staff selected Iwo Jima for this strategic purpose.

On 19 February 1945, the V Marine Amphibious Corps, which included two construction battalions, the 133rd NCB and elements of the 31st NCB, landed on the beaches of Iwo Jima. These Seabees provided essential supplies to the Marines and performed minor construction tasks. During this assault, the 133rd NCB suffered more fatalities and injuries than any other Seabee battalion in either previous or subsequent engagements. Its members later constructed an emergency landing field on Iwo Jima along with fighter airstrips. By July, the Seabees had built two major airfields that were instrumental in conducting the bombing campaigns against Okinawa and Japan. When U.S. forces invaded Okinawa on 1 April, the Seabees landed on the island's Hagushi beaches. In preparation for the planned invasion of Japan, the Seabees constructed ports, airfields, a seaplane base, camps, hospitals, and ship repair facilities on Okinawa.

The Bureau of Yards and Docks, the Civil Engineer Corps, and the Seabees made significant contributions to victory during the final months of World War II. On 6 August 1945, the *Enola Gay* departed from Tinian's North Field, which the Seabees had built, to carry out its mission to drop an atomic bomb on Hiroshima. On 15 August, Emperor Hirohito announced Japan's acceptance of the Potsdam Declaration, which called for the unconditional surrender of Japan's military forces. Japanese representatives formally surrendered aboard USS *Missouri* (BB-63) during a ceremony in Tokyo Bay on 2 September 1945. In the war against Japan, the Seabees' primary mission had been to support the Fleet through quick action, rapid expansion, and innovative solutions. The Seabees excelled in developing the naval shore establishment even in hostile environments, which facilitated a swift victory in the war.

THE SEARCH FOR SOLID FOOTING

After achieving victory over the Axis powers, the United States and its allies began the process of demobilizing much of their armed forces. By June 1946, the number of Seabee personnel had decreased from 250,000 to just 20,000. BuDocks closed bases and depots, and consolidated all Seabee operations in Port Hueneme, California. As the number of personnel continued to decline, only a few battalions remained stationed at overseas naval bases.

The Navy's experience during World War II demonstrated that Seabees should become a permanent part of the nation's naval force. Shortly after the United States entered the war, the Seabees were created especially to support the Navy's requirement for unprecedented numbers of temporary overseas bases in hostile areas. After the war ended, BuDocks supported the integration of the Seabees into the regular Navy. In September 1945, a contingent of Seabees deployed to Petropavlovsk in Siberia to establish a U.S. Navy Fleet weather central base. From 1945 to 1946, six Seabee battalions were dispatched to China to construct harbors and airfields necessary for the evacuation of demobilized Japanese troops and the delivery of critical supplies.

The Seabees continued to support naval operations throughout the Pacific after Japan's surrender by erecting and maintaining important infrastructure, such as airstrips, docks, and housing. In mid-1946, they built facilities and camera towers on Bikini Atoll as part of the atomic bomb tests. Later that year, a team of 173 Seabees joined Rear Admiral Richard Byrd on his mission to Little America, Antarctica, as part of Operation High Jump, where they constructed additional facilities. In December 1947, the Navy established the Seabee reserve force to provide support to active-duty Seabees during emergencies. By 1949, only 3,300 active-duty Seabees remained, but the reserve force was prepared when war broke out on the Korean peninsula.

THE COLD WAR BUILDUP

During the Cold War, the United States expanded its military forces, both conventional and nuclear, in response to the threat posed by the Soviet Union. In 1950, National Security Council Report 68 (NSC-68) outlined U.S. policy under President Truman, advocating for a significant military buildup and increased defense spending to contain communism. The onset of the Korean War intensified these efforts, leading both Congress and the public to support an increase in U.S. military, economic, and political power. In response, the Navy reorganized and expanded its permanent Seabee force, commissioned 13 new naval mobile construction battalions (NMCB) between the years 1949 and 1953, and restructured two existing units into amphibious construction battalions.

In June 1950, the service mobilized 14,000 Seabee reserve personnel for operations in Korea. On 15 September, American forces carried out landings behind enemy lines at Inchon, which became one of the most strategically significant amphibious assaults in military history. Despite facing challenging 30-foot tides and a swift current while under constant enemy fire, the Seabees successfully positioned pontoon causeways. These enabled LSTs to dock, allowing reinforcements and supplies to be brought ashore. As supplies accumulated on shore, a group of Seabees volunteered to recover abandoned locomotives from enemy territory to transport materials to U.S. forces. They successfully returned with the engines, and the mission became known as the "Great Seabee Train Robbery." One of the most impressive achievements of the Seabees during the war took place on tiny Yo Do Island. As part of Operation Crippled Chick, the Seabees were ordered to construct an emergency airstrip in just 35 days within range of North Korean artillery. Remarkably, the Seabees completed the 2,400-foot runway in just 16 days. The construction was finished on 25 June 1952, and shortly afterward, nine damaged aircraft successfully landed on the new runway.

Through the 1950s, the Seabees expanded and maintained military bases around the world, including installations in Japan, Guam, Okinawa, Midway, the Philippines, Cuba, Newfoundland, and Spain. Their work included building roads, installing sewer lines and water mains, constructing airfields and harbors, restoring buildings, and erecting power lines at these early Cold War bases. One remarkable project completed during this time was the construction of Cubi Point Naval Air

Station in the Philippines. Civilian contractors deemed this task impossible due to the formidable Zambales Mountains and the dense jungle. Begun in the summer of 1951, the project spanned five years and required 20 million man hours to complete. The Seabees carved a mountain in half to build a nearly two-mile-long runway, blasted coral to fill part of Subic Bay, drained swamps, and removed massive trees. The result was a major air station capable of accommodating the Navy's largest aircraft carriers.

U.S. Navy Seabees Museum

This iconic image shows Seabees unloading a concrete bucket at Cubi Point Naval Air Station in the early 1950s. The most significant project undertaken by the Seabees during this decade was the construction of this air station in the Philippines, which took five years and an estimated 20 million man-hours to complete.

Beginning in 1955, the Seabees began deployments to Antarctica as part of Operation Deep Freeze, which continued until 1993. The objective was to establish and advance the National Science Foundation's operations. The first winter-over party consisted of 200 Seabees who built an ice runway for the advance party of Operation Deep Freeze II, making them the first group to arrive at the South Pole by plane. Despite the harsh conditions, they constructed snow-compacted roads, storage facilities, laboratories, and living quarters. Additionally, the Seabees erected a portable nuclear power plant at McMurdo Sound in 1962 to power these installations.

HELPING OTHERS HELP THEMSELVES

In the late 1950s, BuDocks established the Seabee Teams, which became an essential asset for the United States in global humanitarian, diplomatic, and counterinsurgency efforts. These small groups assisted military operations and State Department initiatives in developing countries. By 1963, the aid program had become better organized and was a standard component of Seabee work abroad. A typical Seabee team included 13 members: a junior Civil Engineer Corps officer, 11 Seabees, and a hospital corpsman. The teams effectively supported rural development and taught construction skills in regions such as Africa, Central and South America, Southeast Asia, and the Trust Territories of the Pacific Islands (TTPI). Early efforts involved sending a Seabee team to Haiti to repair a municipal pier and to Santo Domingo to build a school. Additional Seabee teams deployed to remote locations around the world to construct various infrastructure projects.

In 1955, Navy leadership assigned BuDocks responsibility for overseeing defense design and construction in the Pacific region. The Officer in Charge of Construction (OICC) in Bangkok managed all projects in Southeast Asia, overseeing contracts related to airfields and military initiatives in Thailand, as well as military assistance programs in Vietnam, Laos, and Cambodia. Starting in 1963, Seabee teams deployed to Thailand to assist with rural development initiatives. They worked with local communities in the northern provinces to establish public works projects. In November 1966, the teams shifted their focus to the Thai Border Patrol Police Program, which aimed to enhance security and support villagers affected by the communist insurgency.

U.S. Navy Seabees Museum

Members of Seabee Team 1104 gathered in Port Hueneme, California, prior to their deployment to Vietnam in 1965. The individuals in the photograph are identified as follows (*from left to right standing*): J. Klepher, D. Brakken, W. Hoover, Lieutenant (j.g.) Peterlin, Commander L. W. Eyman, D. Mattick, J. Keenan, J. R. McCully, and M. Shields; (*kneeling*): R. Supczak, F. J. Alexander Jr., J. Wilson, and J. Allen.

In South Vietnam, Seabee Teams constructed support points to counteract the Viet Cong's political influence in local villages. They built camps for U.S. Army Special Forces, participated in civic action initiatives, and carried out essential military engineering projects as part of the Civil Irregular Defense Group Program. Their efforts not only enhanced military operations but also fostered community development and support.

THE VIETNAM WAR

Similar to the Seabees' contributions in World War II, these sailors provided critical services to naval units during the Vietnam War. In 1961, BuDocks designated the civilian construction consortium RMK-BRJ to oversee and manage all military construction projects in Vietnam. On 1 July 1965, BuDocks appointed the Officer in Charge of Construction for the Republic of Vietnam (OICC RVN) to supervise the growing number of construction projects. The OICC RVN operated with more than 100 CEC officers stationed across 47 locations, overseeing a total of 782 RMK-BRJ construction projects valued at $1.9 billion. During its 10-year contract, RMK-BRJ trained more than 200,000 Vietnamese individuals in construction and administrative operations.

Beginning in 1964, the U.S. military presence in South Vietnam increased. In 1965, the Viet Cong intensified their attacks, leading the United States to deploy additional troops to the country. Although Seabee teams and battalion detachments

began arriving in Vietnam in 1963, the first full Seabee battalion did not arrive until 1965 to construct the airfield at Chu Lai. From 1965 to 1969, the number of Seabees in Vietnam increased rapidly. By autumn 1968, when the demand for support in Vietnam peaked, the Seabees had more than 26,000 personnel in the country. This force included 21 full-strength naval mobile construction battalions, two construction battalion maintenance units, and two amphibious construction battalions.

U.S. Navy Seabees Museum

Seabees deployed with Naval Mobile Construction Battalion 128 install fence posts in a rice paddy at Ammunition Supply Point No. 1 in Da Nang, Republic of Vietnam. The battalion's Delta Company was assigned the critical responsibility of establishing perimeter security through the construction of a six-mile chain-link fence. This task posed significant challenges, as the installation had to traverse varied and difficult terrain, including swampy rice paddies and steep, rocky hillsides.

The Seabees supported the Vietnam War effort by constructing essential infrastructure. They built large fortified coastal bases in the I Corps Tactical Zone and established three key bases in the northern part of South Vietnam to support combat forces, which enabled larger operations to be launched inland. During the Tet Offensive in 1968, the Seabees provided support to the Marine Corps and Army during the battles of Hue, Khe Sanh, and Dong Ha. They rebuilt two essential concrete bridges and repaired the railroad that connected Da Nang to Hue, ensuring that U.S. forces' supply lines remained intact. In 1970, the planned withdrawal of U.S. troops from Vietnam resulted in a drawdown of Seabee operations. In a conflict in which winning the hearts and minds of the local population was crucial to success, the Seabees' exceptional construction skills and medical assistance played a pivotal role in building trust and goodwill.

Seabee teams primarily served as builders and instructors in Vietnam, but they also participated in combat actions. During the Battle of Dong Xoai in June 1965, Viet Cong and North Vietnamese troops attacked a Special Forces camp that housed 400 South Vietnamese and allied troops, including 11 members of the U.S. Army Special Forces and nine members of Seabee Team 1104. Two Seabees, Construction Mechanic Third Class Marvin G. Shields and Steelworker Second Class William C. Hoover, were killed, and seven other Seabees were injured in the assault. Shields was posthumously awarded the Medal of Honor for his extraordinary bravery in carrying a critically wounded man to safety and destroying a Viet Cong machine-gun emplacement, sacrificing his own life in the process. He

became the first Seabee to receive the nation's highest military honor and the first Navy service member to be recognized for actions in Vietnam.

POST-VIETNAM GLOBAL DEVELOPMENTS

In the decades that followed the Vietnam War, the Seabees took on a variety of peacetime projects that had been postponed to support the war effort. They initiated construction efforts across the globe, working in the Indian Ocean, the Trust Territories of the Pacific Islands (TTPI), Europe, and on the ocean floor. In 1971, Seabees deployed to construct a naval base on Diego Garcia. This facility aimed to create a vital link in the U.S. defense communications network, improving communication support for U.S. and allied naval operations in the Indian Ocean. By March 1973, the U.S. Naval Communication Station Diego Garcia was officially commissioned after the Seabees completed a permanent 8,000-foot runway.

Seabee teams also facilitated U.S. military civic action projects as part of the nation's foreign policy. Beginning in June 1969, these teams were deployed to the TTPI to construct facilities, roads, and utilities. The TTPI, a United Nations trust administered by the United States, was undergoing political and economic development at the time. The teams aimed to improve health and promote economic growth in the region. Later renamed civic action teams, they provided construction skills training and empowered local community members to independently carry out important projects.

Although the primary mission of the Seabees is to provide construction support, they are also exceptionally qualified to assist with humanitarian aid and disaster relief operations. Seabees are often involved in building essential facilities such as schools and playgrounds, as well as drilling wells to enhance the lives of millions. Since the early 1950s, the Seabees have played key roles in disaster relief efforts and are frequently among the first U.S. forces on the scene when disasters occur. This important aspect of their mission has earned them the nickname "the Navy's Peace Corps."

Seabee divers have been an integral part of the Naval Construction Force since World War II. In the mid-1960s, the Navy recognized a growing need for underwater construction skills. In 1968, a team of Seabee divers successfully launched and recovered the Tektite underwater habitat in the Caribbean. This achievement led to more underwater construction assignments and the establishment of Underwater Construction Teams (UCT) 1 and 2. UCTs carry out a variety of operations, including the installation and repair of submarine cables and pipelines, as well as the placement and recovery of moorings and other systems. They also perform underwater surveys and inspect harbors and dry docks. The skills of the UCTs have enhanced the capabilities of the Seabees, which had previously focused mainly on land-based operations.

THE POST–COLD WAR ERA

The Seabees continued their tradition of supporting the Navy's diverse missions across the globe after the tensions of the Cold War subsided. During the Gulf War, more than 5,000 Seabees

took part in Operations Desert Shield and Operation Desert Storm. In Saudi Arabia, they constructed 10 camps to house more than 42,000 personnel and dining facilities capable of feeding 75,000 people. The Seabees built four airfields and created six million square feet of aircraft parking and runways, in addition to establishing more than two hundred helicopter landing zones. Furthermore, they constructed and maintained two fleet hospitals.

The Seabees built the critical road network that supported General Norman Schwarzkopf's end-run attack strategy. This network extended more than 30 miles across the desert, linking al-Mishab to al-Kabrit in Saudi Arabia, and included the construction of more than 200 miles of roads to the north and west of the Kuwaiti border. On 25 February 1991, Allied forces launched a significant ground assault against Iraqi troops. The following day, an advance team of Seabees entered Kuwait to prepare positions for the I Marine Expeditionary Force. While in Kuwait, they repaired airfields, maintained roads, and constructed additional prisoner-of-war camps.

In June 1991, Mount Pinatubo, on the Philippine island of Luzon, erupted, covering U.S. military bases in the region with ash. Following the eruption, Typhoon Diding brought heavy rainfall, which soaked the ash and caused the collapse of several buildings. This series of events prompted Operation Fiery Vigil, in which Seabees worked to clear roads, unclog drains, repair power lines, and restore electricity in the archipelago. They provided food and clean water, evacuated personnel to safety, and removed 250,000 tons of ash.

In 1992, the United States provided military support to Somalia as part of a United Nations coalition during Operation Restore Hope. The primary task of the Seabees was to construct base camps to support humanitarian relief efforts. They also repaired and improved roads and bridges. One significant project involved renovating and expanding the Baidoa airstrip to accommodate relief flights. Additionally, the Seabees participated in various civic action projects, drilled wells, and built a schoolhouse.

U.S. Navy Seabees Museum

Naval Mobile Construction Battalion 40 deployed to Bosnia-Herzegovina in 1996 as part of Task Force 519, NATO Implementation Force, in support of Operation Joint Endeavor. During the harsh winter conditions and muddy terrain, the unit's Seabees successfully retrofitted U.S. Army base camps. They transported materials, dismantled camps, supported Camp Colt's logistics support area, and removed snow and ice—among other missions that distributed personnel throughout the sector.

On Christmas Day in 1995, Seabees arrived in Croatia to construct camps and support the U.S. Army as part of Operation Joint Endeavor, the peacekeeping mission in Bosnia and Herzegovina. In early 1996, a team of 170 members from the 133rd NMCB built the first substantial tent camp at the Sava River crossing in Županja. In September 1996, 334 Seabees from the 40th NMCB deployed to dismantle 14 base camps and completed 19 additional support projects, contributing a total of 9,600 man-days to these efforts.

THE GLOBAL WAR ON TERRORISM

The Global War on Terrorism was launched after the 11 September 2001 terrorist attacks on the United States to dismantle extremist groups. On 7 October 2001, the U.S. military, with support from British forces, initiated a bombing campaign against Taliban forces in Afghanistan, officially launching Operation Enduring Freedom (OEF). On 26 November 2001, the advance party of 133rd NMCB Air Detachment (Heavy) became the first Seabees to participate in OEF when they departed from Guam for Afghanistan as part of Brigadier General James Mattis' Joint Task Force 58. On the night of 28 November, the Seabees entered blackout conditions for the first of two C-17 flights to Camp Rhino, a desert camp 70 miles southwest of Kandahar, Afghanistan. Their mission was to upgrade the forward operating base and to repair the airfield to accommodate incoming C-17 and C-130 flights. Seabees constructed aircraft parking aprons, ammunition storage areas, hot refueling points, helicopter parking pads, and tent camps to support combat forces. These efforts enabled coalition forces to advance quickly through the area. Although the United States transferred substantial forces from Afghanistan to Iraq beginning in early 2003, Seabee detachments continued to serve in the former country.

America's prosecution of the war heightened the need for more effective management of the Naval Construction Force. On 9 August 2002, the Navy established the 1st Naval Construction Division to unify all Seabees under a single command structure. The command's mission was to organize, train, operate, and maintain the Naval Construction Force. At the time, the force consisted of 18,000 Seabees. In addition to serving under the new division, Seabees also supported the U.S. Marine Corps. During Operations Enduring Freedom and Iraqi Freedom, Seabees formed the core of the I Marine Expeditionary Force Engineer Group. The creation of the group allowed the Seabees to fully integrate with the Marine Corps and implement innovative, interoperable command doctrines that had never been tested in combat before.

In the spring of 2003, the Seabees joined the I Marine Expeditionary Force as part of Operation Iraqi Freedom (OIF). The previous fall, Seabees deployed to Kuwait to complete essential construction projects to prepare for the marines' arrival. During OIF, the Seabees entered a transformative era that redefined their methods of building, living, and sustaining their missions. The situation called for a smaller, more flexible force capable of quickly addressing urgent needs. They served as a combat engineering force, which enabled them to adapt to rapidly changing conditions. For the first time, they worked closely with Task Forces Mike and Charlie alongside the 1st Marine Division,

enhancing their capabilities and demonstrating their significance in modern military operations.

The Seabees supported the marines in Iraq by constructing semi-permanent steel bridges over rivers and canals during the advance to Baghdad. They traveled 400 miles from Kuwait to Baghdad in just 22 days, and in four months built more than 100 kilometers of highways and completed 158 construction projects. Task Force Charlie installed Mabey-Johnson portable prefabricated bridges over the Diyala River, repaired a bridge over the Tigris River near Hillah, and built a 200-meter Mabey-Johnson pontoon bridge over the Tigris River at Az Zubaydiyah. Additionally, they repaired the airfield at al-Kūt by filling 30 bomb craters on two runways and the taxiway. U.S. and multinational forces supported the Iraqi people in their efforts to establish a functioning democracy. As part of Operation Iraqi Freedom, the Seabees' contributions were essential to fostering development and stability throughout the region.

In December 2008, Seabee units in Iraq received orders to conclude their operations and redeploy to Afghanistan as part of a larger strategic shift. In less than 40 days they transported

U.S. Navy

On 16 June 2006, Seabees began site preparation for construction of a bridge in Fallujah, Iraq. Personnel from Naval Mobile Construction Battalion 40 were tasked with rebuilding a damaged bridge that played a vital role for many Iraqi citizens. The battalion was deployed to provide essential support to coalition multi-national forces throughout Iraq.

U.S. Navy 148454

Seabees from Naval Mobile Construction Battalion 7 place dirt into Hescoe protective barriers using an up-armored excavator at a forward operating base in Afghanistan on 25 January 2009. The unit was deployed to the country to provide construction support for contingency operations in support of NATO's International Security Assistance Forces.

several units, along with their equipment, to Forward Operating Base Bastion in Helmand Province. The next year, President Barack Obama deployed an additional 30,000 troops to Afghanistan to combat al-Qaeda and the Taliban. The Seabees deployed two additional battalions to support these operations, focusing on infrastructure development, assisting Afghan forces, providing convoy security, and ensuring the safe movement of personnel. The Seabees remained in Afghanistan until 2014, when the United States officially concluded Operation Enduring Freedom.

U.S. Navy

Construction Mechanic First Class James Richardson enters the water, following fellow diver Constructionman First Class Steven Hentze, on 9 July 2004. Both men, along with other members of Underwater Construction Team 2, were in Diego Garcia to perform maintenance on pier facilities. Underwater construction teams are responsible for constructing, inspecting, repairing, and maintaining ocean facilities that support Naval and Marine Corps operations.

SEABEES TODAY

The Seabees have repeatedly demonstrated their unmatched capabilities since their creation during World War II. Whether taking part in active combat operations, building the facilities necessary to sustain U.S. deployments around the world, or acting as emissaries of goodwill abroad through the completion of civilian infrastructure projects, Seabees play a crucial role in ensuring the Navy's maritime supremacy. Their support includes constructing essential infrastructure, installing public works, and building advanced military bases worldwide. Their ability to respond swiftly to disasters and humanitarian efforts demonstrates their commitment to assisting communities in need. Through impactful civic action projects, they strengthen international relationships and serve as vital diplomatic representatives. Their remarkable work enhances military capabilities and contributes to a more stable and secure world, highlighting the vital nature of their service. As General Douglas MacArthur remarked, "The only problem with Seabees is that we don't have enough of them."

10 SUPPLY CORPS

JOHN E. FAHEY

In January 1946, Rear Admiral Murrey L. Royar, the new supply officer in command of the Naval Supply Center, Norfolk, Virginia, had a problem—two million pounds of contaminated sugar. "It had been on the beach under tarpaulins around the Philippines," Royar recounted, "and it was a mess. It was sticky . . . polluted with oil, and we didn't know what to do with it." After some thought, Royar arranged to have the American Sugar Refinery in Baltimore reprocess the sugar and keep a small percentage of it as payment, recovering tons of spoiled sugar for the Navy. As Royar explained later, "The thing to do was to act quick, get it done, and get what you could out of it, which I did." Navy logisticians have gone by many titles but at their best, they, like Admiral Royar, have worked to supply the fleet quickly, completely, and efficiently.

No ship or sailor can function without food, pay, fuel, ammunition, clothing, and thousands of other parts and supplies. Today's Naval Supply Systems Command (NAVSUP) ensures that the fleet is fed, fueled, armed, and paid. This function—logistical support for the fleet—has been around as long as the Navy and has required the efforts of thousands of hardworking committed personnel. NAVSUP and its predecessors, the Bureau of Provisions and Clothing (1842–92) and the Bureau of Supplies and Accounts (1892–1966), manned by pursers, paymasters, Pay Corps officers, Supply Corps officers, and enlisted and civilian personnel, have fed and fueled the Navy throughout its history. Their jobs have changed over the centuries as the Navy's supply service has grown from humble beginnings into one of the premier logistical organizations on the planet.

PURVEYORS AND PURSERS

The Naval Act of 1794 authorized the construction of America's first six frigates in response to the threat of the Barbary pirates. It also specified that each new ship was to have a purser. On 23 February 1795, Congress created the office of purveyor of public supplies, reporting to the Secretary of the Treasury, "to conduct the procuring and providing of all arms, military and naval stores, provisions, clothing, Indian goods, and generally all articles of supply, requisite for the service of the United States." Tench Francis Jr. served as the Navy's first purveyor of public supplies from 1795 to 1800. He outfitted America's first warships and is generally considered the "man to whom the Supply Corps traces its beginning."

The purveyor oversaw naval stores and purchasing agents, while pursers served onboard ships. Pursers had three main responsibilities during the era of sailing vessels. First, they paid officers and sailors. Second, they stored and issued provisions, which sailors prepared and served in small berth-deck messes. Third, they sold clothing and other assorted goods (called "slops") to the ship's company. They also sometimes took up additional financial duties at the captain's discretion. Benjamin Stoddert, the first Secretary of the Navy, emphasized that "the purser ought to be a good accountant and a man of integrity." Integrity was necessary as ships' accounts blended a purser's personal and official finances; pursers could make an enormous profit off the slops that they sold to the crew, on top of their regular pay. To prevent excessive profits, the Navy issued a regulation in 1809 that limited commissions on clothing to 5 percent, profits on food to between 5 and 10 percent (depending on the size of the ship), and toiletries or other "items of secondary necessity" were set at a 25 percent markup. The Navy's first pursers were civilians who were educated enough to maintain inventory and negotiate with merchants. They received commissioned officer status in 1812.

NHHC NH 49244

Purser Samuel Hambleton. Black-and-white photograph of an original painting by French artist Charles Balthazar Julien Févret de Saint-Mémin.

Pursers, their assistants, and stewards shared the opportunities and challenges of their shipmates as they sourced supplies in ports around the world. In August 1804, the ketch *Intrepid* even delivered "a cargo of fresh water, stock and vegetables" to the squadron off Tripoli—the U.S. Navy's first replenishment at sea. Pursers also played an active part in the Navy's early campaigns. During the War of 1812, Commodore Oliver Hazard Perry relied heavily on Purser Samuel Hambleton. It was Hambleton who acquired an ensign emblazoned with Captain James Lawrence's dying words, "Don't Give Up the Ship" for Perry's flagship. The flag went on to inspire Perry's victorious sailors at the Battle of Lake Erie in 1813. Hambleton also commanded a pair of guns and was seriously wounded in the engagement.

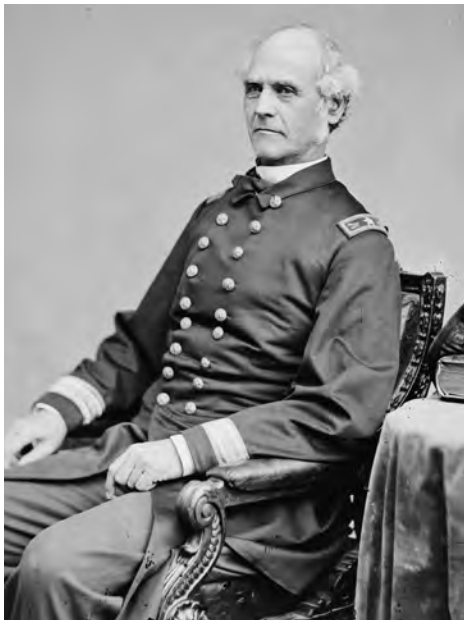
After the War of 1812, the newly formed Board of Navy Commissioners oversaw Navy purchasing, while pursers continued their duties afloat. In 1842, Congress introduced five bureaus to improve the administrative function of the Navy. The Bureau of Provisions and Clothing was responsible for pay, as well as "all provisions of every sort, whether solid or liquid; all clothing of every sort; all labor employed thereon;

[and] all contracts and accounts relating thereto," although the other four bureaus independently purchased supplies for their responsibilities. The same year, Congress passed legislation that gave pursers a standard rate of pay, ended their practice of profiting from slops, and required that they use public funds when purchasing supplies. These reforms professionalized and streamlined the Navy's logistical arm.

BUREAU OF PROVISIONS AND CLOTHING

The establishment of the Bureau of Provisions and Clothing was part of a broader move toward a more professional Navy. The long-serving chief of the bureau, Commodore Horatio Bridge, made it mandatory to advertise competitive bids for Navy contracts, simplified the process for purchasing preserved foods, and regularized the promotion system. Pursers' roles expanded as the Navy continued to spread American influence around the world. In 1854, Commodore Matthew Perry ordered two of his pursers to acquaint themselves "with all the peculiarities of the Japanese currency, and . . . with the laws pertaining thereto," so that they would be able to arrange "the rate of currency and exchange" for items from Japan, which had just been opened to American trade. To reflect these broader responsibilities, the Navy redesignated pursers as paymasters in 1858.

Commodore Bridge also led the bureau through the intense challenges of the Civil War. Thirteen paymasters, or 20 percent of the total Corps of Paymasters, resigned their commissions or were dismissed in 1860 and 1861. During the Civil War, paymasters had to supply an actively engaged Navy that expanded to more than 600 ships from just 63. Hundreds of ships blockaded southern ports and required constant provisions, supplies, and fuel. In order to meet the needs of the blockading squadrons, the Navy established depots in captured southern ports such as Port Royal, South Carolina. Early in the war, Secretary of the Navy Gideon Welles, who had served as bureau chief a decade before the war began, ordered Commodore Bridge to place "fresh beef, vegetables, and other supplies necessary for crews of blockading vessels" onboard a refrigerated ship. This initiative expanded into regular shipments of fresh meat and vegetables to the U.S. East Gulf, South Atlantic, and North Atlantic squadrons. Sailors also enjoyed a wider variety of food thanks to canning and "desiccation"—or drying—of fruits and vegetables.



Commodore Horatio Bridge, chief of the Bureau of Provisions and Clothing from 1854 to 1869.

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While paymasters primarily focused on the fleet's supplies, food, and pay, some took a direct part in combat operations. During the Battle of Hampton Roads in March 1862, acting Paymaster William Frederick Keeler relayed messages between the ironclad *Monitor's* turret and pilothouse and helped take the ship's wounded captain to safety. Acting Assistant Paymaster John Henry Stevenson of the sidewheel steamer *Satellite* led raids against a Confederate signal party and recruitment station near the Rappahannock River in December 1862 and later carried messages behind enemy lines. In June 1864, Confederates captured the gunboat *Water Witch*. Paymaster Luther G. Billings killed one of the boarders in hand-to-hand combat before being taken prisoner. The courage and efficiency of the Navy's paymasters contributed to the final defeat of the Confederacy in 1865.

In the years that followed the Civil War, the Navy shrank dramatically. To streamline management of the Bureau of Provisions and Clothing, Congress created the Pay Corps in 1871, which gave paymasters a formal administrative apparatus. In this era of tight budgets and limited opportunities, some paymasters found unusual jobs. For example, the Navy permitted Paymaster Jonathan Q. Barton to serve in the Imperial Japanese Navy from 1874 to 1877 to help create a Japanese naval pay department.

Congress revitalized the Navy in the 1880s in response to rapid technological developments abroad. The first U.S. steel cruisers were laid down in 1883. More modern ships soon followed, and the Pay Corps adapted in response. In 1886, Secretary of the Navy William C. Whitney put the Bureau of Provisions and Clothing in charge of the entire Navy's accounting, over the objections of the other four bureau chiefs. Bureau chief Commodore James Fulton centralized the Navy's supplies with the General Storehouse System. In 1889, the Bureau of Provisions and Clothing became the sole purchasing agent for the Navy. Three years later, in 1892, the Navy changed the bureau's name to the Bureau of Supplies and Accounts (BuSandA) to acknowledge its expanded procurement responsibilities.

BUREAU OF SUPPLIES AND ACCOUNTS

Less than a decade after the bureau expanded to manage all Navy purchasing, the Spanish-American War tested its capabilities. In February 1898, the battleship *Maine* exploded in Havana, Cuba, the victim of an onboard accident. At the time, the United States blamed Spain for the disaster and declared war in April of that year. Naval logistics strained to support combat operations in two main theaters—the Philippines and Cuba. Commodore George Dewey's fleet, accompanied by the collier *Nanshan* and the supply ship *Zafiro*, destroyed a Spanish squadron at the Battle of Manila Bay in May, and remained in the Philippines while the Navy and Army dispatched additional ships, supplies, and soldiers to the islands. In the Caribbean, Rear Admiral William T. Sampson and Commodore Winfield Scott Schley blockaded Cuba but were hindered by long supply lines and difficult at-sea refueling. Despite these challenges, Sampson's fleet supported the invasion of Cuba and won the Battle of Santiago Bay against the Spanish fleet on 3 July 1898.

After the Spanish-American War, the Navy made further refinements to its supply arrangements. In 1901, General Order

68 created a general mess system. Ships' pay officers became "solely responsible for the purchase and preparation of the food for the general mess, the care of the stores, and the judicious expenditure of mess funds," assisted by commissary stewards, cooks, bakers and messmen. To standardize the administration and food produced by the new mess system, the paymaster general issued a manual and cookbook for use aboard Navy vessels. They included recipes for delicacies such as roast beef, frankfurters and sauerkraut, liver and bacon, and boiled bacon with cabbage. Although turn-of-the-century Navy menus may not always appeal to modern palettes, sailors enjoyed good food by the standards of the day.

Paymasters tackled a wide variety of duties as the United States expanded its global role. For example, in 1905, Pay Director James S. Phillips managed Santo Domingo's customs service's finances. A little more than a decade later, in 1916, Paymaster Ignatius T. Hagner acted as that country's secretary of finance. When the Navy's Great White Fleet of 16 battleships and assorted support ships sailed around the world in 1907, it needed 1,500 tons of coal and meals for 14,000 men every day. The ships had to refuel at least 18 times, requiring dozens of contracted foreign colliers and grueling work as crew members carried coal and other supplies into storage bunkers below decks. The armada used a logistical plan written by Pay Inspector Samuel McGowan, who joined the fleet as its paymaster in San Francisco. As the Great White Fleet passed through the Mediterranean Sea, McGowan organized humanitarian aid for Sicily in the wake of a devastating earthquake. The fleet dispensed such a great quantity of supplies that McGowan had all ships compare and redistribute their stores, a practice that prefigured afloat inventory control points. The Great White Fleet's circumnavigation of the globe exposed a dangerous shortage of U.S. support vessels. Just as the fleet returned to the United States in early 1909, one *Scientific American* writer summarized, "with no colliers of our own available to carry the necessary fuel, our sixteen battleships . . . would have been as useless as so many anchored, floating batteries," in the event of war. In response, the Navy allocated 59 percent of its shipbuilding budget in 1908 to building colliers and supply ships.

NHHC NH 105827

A U.S. Navy collier transfers coal to a Navy warship, c. 1910.

The Pay Corps continued to professionalize and improve, briefly opening a Navy Pay Officer's School in 1905, creating formal commissaries onboard ships in 1909, and writing a Navy standard stock catalogue to simplify supply orders in 1913. Like the rest of the Navy, the Pay Corps grew steadily larger, especially as Europe plunged into World War I. Rear Admiral McGowan, now chief of BuSandA, prepared logistical plans for the Navy's potential involvement in the war, and sent representatives to London to discuss wartime logistical requirements with the Royal Navy in 1916.

The United States entered World War I on 6 April 1917, driven in part by German submarine attacks on American shipping. McGowan told his staff, "While the war of 1917 will be fought in France and in Belgium, and in Italy, and in Germany, it must be won in Washington." Lieutenant Commander John M. Hancock, who served as the Navy's main purchasing agent and McGowan's representative on the War Industries Board, obtained $2 million worth of materiel for the Navy every day of the war. The Navy had to bring vast amounts of supplies to Europe as the United States mobilized ships and troops throughout 1917 and 1918. To coordinate this flood of men and materiel, the Pay Corps' officer ranks swelled from 232 to more than 3,300 thanks to newly opened pay officer's schools at Catholic University and Princeton. The corps also expanded the number of civilians it employed, from just over a hundred to more than 1,600 by the end of the war. One supply officer wrote in 1917 that Pay Corps officers' daily duties included monetary administration, general supply, transportation, contracts and purchasing, disbursing, the commissary, and cost accounting in addition to their military, executive, and administrative duties. These flexible, professional Pay Corps officers helped to make Allied victory possible, and in 1919, Secretary of the Navy Josephus Daniels rewarded them by granting them equal status with line officers.

THE SUPPLY CORPS

In July 1919, the Naval Appropriations Bill formally redesignated the Pay Corps as the Supply Corps. The *Baltimore Sun* explained that the name change was "commonsense. This corps not only handles the pay of naval men . . . but it has become the great business end of the establishment. It purchases all supplies. It receives and disburses all the clothes for the enlisted men. It makes all purchases for the ships." The Supply Corps made several important changes in the 1920s and 1930s. The Naval Reserve Act of 1925 provided a ready pool of Naval Reserve officers, including Supply Corps officers, in case of war. The corps expanded education as well, opening a permanent school for supply officers at the Philadelphia Navy Yard in 1934 and the Supply Corps Naval Reserve Officers School in Washington, DC, in 1940. Throughout all these changes, the Supply Corps took advantage of both military and civilian business practices. Rear Admiral Charles H. Morris, chief of BuSandA, explained in 1928 that Navy logistics were "not a thing of mystery. In its work [BuSandA] constantly endeavors to keep pace with commercial practices. The fundamentals of sound business conduct apply here as well as in the business world." He compared the Navy's supply system to a giant department store, "with one important exception—it does not operate for profit."

Throughout these decades, war planners prepared for potential conflict, most notably in the Pacific. Supply Corps officers helped with logistical details for the various iterations of War Plan Orange, the U.S. plan for war with Japan. Any war in the Pacific would require an extensive network of supply bases, as well as underway replenishment. To prepare, the Navy started to acquire fast tankers that could refuel warships at sea. The Supply Corps expanded its operations as Japan and Nazi Germany went to war with their neighbors in the late 1930s, and the United States built up its fleet with the Two Ocean Navy Act of 1940 and offered materiel aid to the United Kingdom. To support this expansion, the Supply Corps opened new supply depots in Oakland, California, and Bayonne, New Jersey, in addition to its preexisting depots in Norfolk and San Diego. The Corps also worked to establish smaller depots in Argentina, the Canadian province of Newfoundland, and in the Panama Canal Zone. This preparation proved invaluable when the United States entered World War II.

WORLD WAR II

In 1941, the Navy broke ground on a new supply depot in Pearl Harbor, Territory of Hawaii, under the command of Captain John J. Gaffney to support potential operations in the Pacific. On 7 December, Japanese carrier-based aircraft attacked Pearl Harbor. Gaffney and other Supply Corps personnel directly experienced the attack. Ensign Vance Fowler, the disbursing officer aboard the battleship USS *West Virginia* (BB-48), was knocked off the listing ship when the nearby USS *Arizona* (BB-39) exploded. Other supply officers offered food, clothing, and aid to the thousands of sailors who lost everything as their ships sank. Congress declared war on Japan the next day. Nazi Germany declared war on the United States on 11 December and interned the staff of the U.S. embassy in Berlin, including Supply Corps Lieutenant Onnie P. Lattu, for several months before repatriating them.

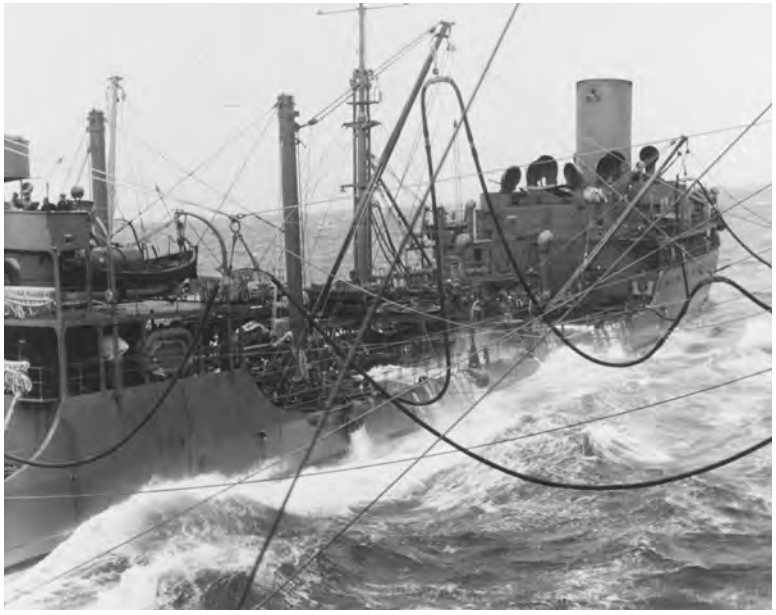
In the early days of the war, the Navy scrambled to mobilize men and materiel. The Navy consolidated all Supply Corps officer training at the Harvard Graduate School of Business. By the end of the war, the Navy Supply Corps School at Harvard had trained nearly 13,000 supply officers. As new ships and personnel prepared for action, Japan overran American outposts on Wake Island and Guam and captured thousands of American military personnel in the Philippines, including four Supply Corps officers—Ensign Kenneth R. Wheeler, Chief Warrant Officer Othello C. Bruun, Ensign Robert Granston, and Ensign Bill Elliot. These men endured four years in brutal Japanese POW camps. While in captivity, Wheeler rescued fellow prisoners from two separate sinking transports and worked to maintain morale among his comrades. Upon his liberation, he was awarded two Bronze Star Medals. Bruun and Elliot did not survive.

During World War II, Navy ships and personnel required unprecedented quantities of fuel, food, clothing, equipment, and other supplies. As Rear Admiral George W. Bauernschmidt, who served as a supply officer in the European theater, put it, "World War II developed logistics . . . to an astonishingly great degree. . . . Logistics were almost on a level with operations, it was so important." It took time to create the logistical

infrastructure to enable fleet actions. Naval Supply Depot Oakland opened on 15 December 1941, although it had been under construction since 1940. Under Rear Admirals William C. Fite and Arthur H. Mayo Supply Depot Oakland grew to more than 2,500 acres, with 21.5 million square feet of storage space. The depot processed an incredible amount of war materiel. In 1945 alone, its 16,000 military and civilian personnel loaded almost 500 ships. Supplies collected in the Navy's depots were then sent abroad via fleet support ships—tankers, oilers, ammunition ships, freighters, and other vessels. The Navy began the war with 200 such ships available, but wartime construction and mobilization meant that the Navy had 1,200 by the conflict's end. Supplies were then distributed to the more than 400 advance naval bases eventually scattered around the Atlantic and Pacific. Some of these bases were gigantic. The naval supply depot in Guam was so large that it featured 93 miles of roads. Naval supply facilities provided indispensable logistical support to critical operations such as the invasions of Guadalcanal, Sicily, Normandy, and the Philippines.

In the Atlantic theater, most U.S. naval supply facilities were located on the East Coast, in the Caribbean, the Mediterranean, and Latin America to support antisubmarine and convoy operations. U.S. ships also used allied naval facilities in the United Kingdom and later France and elsewhere in Europe and North Africa. The Pacific theater of operations required many more bases to support U.S. naval forces. The vast distances of the ocean meant that it was not always practical to supply ships at a base. As a result, the Navy mastered underway replenishment, in which tankers and supply ships refueled warships and transferred needed food and supplies. As one Supply Corps history put it, "No stopping, no waiting—while the Fleet was still under way, the lines were whipped over from supply ship to fighting ship and the Fleet was fueled, provisioned and supplied with all necessary replenishment items."

The invasion of Okinawa illustrated the immense capabilities of Navy logistics by 1945. When Admiral Raymond A. Spruance's U.S. Fifth Fleet began its assault on the island on 1 April, it numbered 1,600 vessels, ranging from battleships and aircraft carriers to destroyer escorts and landing ships, manned by 350,000 personnel. Every bullet, shell, meal, and boot used



NHHC 80-G-330659

The oiler USS *Sabine* (AO-25) refuels carrier USS *Enterprise* (CV-6) in rough weather during the Doolittle Raid on Japan in April 1942.

in the grueling 82-day campaign had to be shipped thousands of miles and overseen by a chain of Supply Corps officers, while the Navy fought off a sustained, harrowing attack by Japanese kamikazes. The corps grew along with its many responsibilities in the Atlantic and Pacific. The Supply Corps had 638 regular and 1,425 reserve officers in 1941. By 1945, it had 13,892 officers, 962 of whom were women. These men and women made Allied victory possible. Germany surrendered to the Allies on 8 May and Japan capitulated on 2 September, ending the bloodiest conflict in human history.

NHHC 80-G-330221

Seaman First Class M. D. McShore uses a forklift to move supplies into a Quonset hut warehouse at the naval supply depot on Guam on 8 June 1945.

EARLY COLD WAR

In the months after World War II ended, the Navy canceled hundreds of unneeded contracts as it decommissioned 2,000 ships, closed naval supply facilities around the world, and demobilized 2.5 million sailors. Some of the returning officers had unusual missions. Twenty-seven-year-old Lieutenant (j.g.) Edwin Goddard delivered a large cache of money to reopen the Bank of Guam. He spent more than a year as the local disbursing officer before transporting 11 tons of currency from Guam to the Federal Reserve in San Francisco. Two weeks after delivery, the Federal Reserve charged him for a $12.23 deficit. As thousands of Naval Reserve Supply Corps officers returned to their civilian lives, BuSandA organized a formal Naval Reserve Supply Corps program. Despite the postwar drawdown, the Supply Corps still had to manage a greatly expanded inventory owing to increases in the number, variety, and quality of assets such as submarines, naval aircraft, and electronic systems. The Navy's inventory rose from 250,000 distinct items to more than 3 million during World War II. To make sense of this massive stockpile, in 1947 the Navy introduced the Navy Supply System, in which specialized Supply Demand Control Points managed specific inventories. For example, Mechanicsburg, Pennsylvania, oversaw ship parts while Philadelphia tracked general stores ranging from office supplies to hardware.

Logistical changes took place in the context of a broader military reorganization and the early Cold War. President Harry S. Truman signed the National Security Act of 1947, which created a unified Joint Chiefs of Staff, National Resources Board, and a National Military Establishment, renamed the

Department of Defense (DOD) in 1949. Subsequently, the Navy took part in increasingly integrated joint supply systems and missions. During the Berlin Airlift (1948–49), the Navy provided planes from two squadrons and the Supply Corps worked with the U.S. Army Quartermaster Corps, the U.S. Air Force, and British Royal Air Force units to procure and transport food, fuel, and other supplies into West Berlin. This critical mission succeeded in keeping the three western sectors of the city free from Soviet domination. In 1949, the DOD created the Military Sea Transportation Service, later the Military Sealift Command, to coordinate at-sea logistics. When North Korea invaded South Korea in 1950, BuSandA reopened supply facilities, recalled reservists, and supported combat operations on the far side of the Pacific Ocean. Logistical work made it possible for American and allied troops to defend the Pusan Perimeter, conduct landings at Inchon, and hold their ground in a grinding war of attrition until an armistice halted the conflict in 1953.

NHHC 80-G-706691

Airman Apprentice Robert H. Davidson checks the lashings on the load of flour in his Douglas R5D before flying to Berlin as part of the Berlin Airlift in 1948.

During the 1950s, the Supply Corps transformed in response to social and technological changes, and the expanding Cold War. In 1951, it established a Special Weapons Supply Depot to manage nuclear weapons. Three years later, it opened a permanent Naval Supply Corps School in Athens, Georgia, which moved to Newport, Rhode Island, in 2011. As jet fighters, nuclear submarines, and other advanced systems required the Navy to source ever more parts, supply officers introduced "popularity storage" in 1954, organizing supply depots around the most requested items. In addition, the Aviation Supply Office in Philadelphia installed the Navy's first computer to track inventory that same year. Throughout the decade, logisticians also improved underway replenishment, using helicopters to transfer supplies. The Department of Defense directed the various services to centralize logistical functions in 1956. The Navy received responsibility for fuel and medical supplies and established the Military Petroleum Supply Agency and Military Medical Supply Agency. In 1961, the DOD centralized all logistics into the Defense Supply Agency, later the Defense Logistics Agency (DLA). The DOD then eliminated the Navy's bureau system and introduced systems commands in 1966. The Naval Supply Systems Command (NAVSUP) replaced BuSandA.

The constant bureaucratic shuffle can sometimes obscure the significant impact that defense spending had on the broader economy, and the resultant pressure on supply and purchasing

officers. As Chief of BuSandA Vice Admiral Murrey L. Royar explained in 1953:

> [The Purchasing Officer] is probably one of the most harassed individuals in the armed services today. . . . On the one hand, he is urged to buy from foreign sources to support NATO and the free world economy. On the other, he is badgered to "buy American." . . . He must funnel contracts into distressed labor areas by permitting suppliers in those areas to match revealed low bids, yet he is expected to keep the good will of all suppliers. He must integrate procurement with industrial mobilization planning and materials allocation. . . . He must encourage the dispersal of industry. Then he is told it must be centralized in a few big industries. . . . Meanwhile, in the face of these sharp and often wasteful conflicts, he must buy only what is needed, at the lowest cost to the Government and achieving the greatest utilization of manpower. The purchasing officer who can perform according to these specifications would have to be a combination of King Solomon, Dr. Einstein, and Dale Carnegie.

VIETNAM WAR

The long American involvement in Vietnam tested the capacity of new naval and DOD logistical systems, as well as the supply officers themselves. Between 1961 and 1975, more than 1,000 Supply Corps officers served in Vietnam, mostly at Naval Support Activity (NSA) Da Nang, where they supported hundreds of thousands of sailors, marines, and soldiers. Constructed in 1965, NSA Da Nang quickly became the largest American naval support center in the world. By 1969, warehouse spaces totaling 907,000 square feet facilitated the transfer of 50 million gallons of fuel per month along with other supplies. Da Nang featured an IBM System/360, the first time a computer was used to keep track of inventory in an active war zone. Service in Da Nang could be quite dangerous as the Viet Cong regularly attacked it with rockets, mortars, and infiltration attacks. Commander Richard E. Curtis, director of Naval Supply Depot (NSD) Da Nang, drove into a rocket barrage in February 1969 to search for two missing sailors. Finding them wounded, he took them to a hospital, despite his truck losing its front tires to shrapnel. Curtis was awarded a Navy and Marine Corps Medal for his actions.

In 1967, driven by Vietnam and other Cold War logistical problems, NAVSUP introduced the Uniform Automated Data Processing System, a state-of-the-art, computerized supply management system, and increasingly used new methods of shipping like containerization. With improved logistical systems, supply depots in the United States expanded their activity to support combat operations. NSD Subic Bay, Philippines, served as a crucial hub for U.S. forces in Vietnam, refueling and resupplying ships heading to and from the war zone. Naval Cargo Handling Battalion 2 at Subic Bay was awarded a Navy Unit Commendation for its activities in 1969 and 1970 in support of the Vietnam War.

By 1970, NSA Da Nang closed as the United States decreased its involvement in Vietnam. The Vietnamese navy, however, still required substantial logistical and administrative support from U.S. advisors. In 1971, Chief of Naval Operations Admiral Elmo R. Zumwalt Jr. assigned Rear Admiral Wallace R. Dowd Jr. to assess the Vietnamese supply system. Dowd was seconded

to the Vietnamese navy and oversaw the creation of a Vietnamese supply corps school and general modernization of South Vietnam's naval supply system before returning to the United States to command NAVSUP in 1973. Direct U.S. military involvement in Vietnam ended that year, but a few Supply Corps advisors remained in the country until the end of the war. Captain Henry E. Hirschy and Lieutenant Commander Peter A. Bondi helped to coordinate the last American evacuations out of Vietnam in April 1975 and had to be airlifted from the Defense Attaché Office in Saigon by helicopter.

NHHC K-81186

A UH-46A Sea Knight of Helicopter Combat Support Squadron 7 picks up cargo from the combat store ship USS *Niagara Falls* (AFS-3) during an underway replenishment of carrier USS *Constellation* (CVA-54) in the Tonkin Gulf in January 1970.

LATE COLD WAR

Like other post-war drawdowns, the Navy underwent administrative reorganizations following the end of the Vietnam War. Reduced budgets, an energy crisis, and inflation that peaked at more than 13 percent in 1980 forced NAVSUP and the Navy to get by with less for the remainder of the 1970s. The Naval Reserve supply programs were reorganized in 1977 as part of a broader effort throughout the Naval Reserve. This change streamlined training and established Supply Corps drilling units to support active duty commands. Despite increased efficiencies, the fleet aged while the Soviet Union's navy surged in both numbers and capabilities. Secretary of the Navy John F. Lehman promised to revitalize and expand the service. He proposed a 600-ship Navy to counter the Soviet navy's buildup, support U.S. defense coalitions, and adequately position U.S. ships across the globe. While the fleet grew rapidly, the rising costs of materiel and contracts drew intense criticism of the military-industrial complex and acquisitions officers. News media lambasted Navy purchases like an infamous $435 hammer and $900 ashtray. In response, the commander of NAVSUP, Rear Admiral Andrew A. Giordano, launched the Buy Our Spares Smart program, designed to cut out unnecessary contractors and advocate for competitive pricing. This and other initiatives helped reduce costs, although purchasing officers remained overworked as the DOD struggled to control its budget.

During the 1980s and 1990s, the Navy's logistical system adapted to meet the demands of new deployments, war, and large-scale humanitarian missions. In the mid- and late 1980s, the Middle East Task Force expanded in response to Iranian

and Iraqi attacks on merchant shipping in the Persian Gulf. The Navy conducted Operation Earnest Will, the deployment to protect and escort Kuwaiti oil tankers and other merchant ships traveling through the Strait of Hormuz. NAVSUP kept naval forces supplied, maintained warehousing facilities, and negotiated contracts for local supplies even as the DOD set up the United States Transportation Command in 1987. After Iraq invaded Kuwait in August 1990, the Navy surged its logistical footprint. A total of 2,440 Supply Corps reservists were activated for the Gulf War, including six reserve cargo handling battalions, which joined two active duty battalions. Naval Cargo Handling Battalion 4 (NCHB-4) provided critical support to the Army's 24th Infantry Division when one of the division's fast sealift support ships broke down. NCHB-4 transferred more than 5,000 tons of equipment from the old ship to a new one in just three days. Reservists brought unique skills from their civilian careers. One reserve storekeeper used his experience in an automobile agency to get dozens of forklifts operational at a Navy warehouse in Bahrain in a few hours, rather than the expected three weeks. Rear Admiral James E. Miller said of the Supply Corps reservists, "they didn't ask for things to happen; they made things happen." The United States delivered a staggering 18.3 billion pounds of supplies and equipment by sea for the Gulf War.

Although the Gulf War showcased the capabilities of the U.S. military, the end of the Cold War removed much of the justification for it. The Soviet Union formally dissolved in 1991, and much of the American public and Congress hoped for a "peace dividend," or reduction in military spending. Congress ordered the DOD to find billions in cost savings and cut a variety of programs no longer seen as necessary. Naval Supply Centers (NSCs) stopped carrying large amounts of supplies, since DLA facilities, often located nearby, carried the same materiel. Supply bases, including NSC Pensacola and NSC Oakland, shut down in the 1990s as part of the Base Realignment and Closure process, while the remaining facilities were redesignated Fleet and Industrial Supply Centers. To increase logistical efficiency, DLA further updated its supply process by automating its data processing system and introducing an internet-based ordering process in 1997. Even in this era of relative austerity, Navy logistics personnel shipped tons of food, water, and other critical supplies to Haiti, Somalia, and other regions suffering from humanitarian crises.

THE GLOBAL WAR ON TERRORISM

On 11 September 2001, al-Qaeda hijackers killed more than 3,000 people by crashing four planes in New York City's World Trade Center, Pennsylvania, and into the Pentagon, triggering the Global War on Terrorism. The same day, the Navy activated the Naval Ordnance Crisis Response Center to coordinate all Navy and Marine Corps ammunition. One week after the attack, Carrier Group 8, led by USS *Theodore Roosevelt* (CVN-71), sailed for the Middle East with only two days' worth of bombs on board. Carrier group commander Rear Admiral Mark P. Fitzgerald explained the challenges. "We had 102 ships from 12 different countries out there. We had to not only handle logistics for our own ships but also for the other ships that were under my command. It put a huge stress on the entire logistics

chain." Still, he concluded that the "supply system did terrifically." NAVSUP was able to keep Carrier Group 8 supplied as it, and other naval units, supported Operation Enduring Freedom. During the first six months, *Roosevelt's* air wing alone flew 10,000 sorties and dropped 1.7 million pounds of ordnance, requiring extensive logistical assistance. Navy personnel supported the long war in Afghanistan in many capacities, including as part of DLA's efforts to supply allied forces there.

In March 2003, a year and a half after Enduring Freedom began in Afghanistan, the United States launched Operation Iraqi Freedom. Now with two simultaneous operations in the Middle East, DLA, NAVSUP and other supply services expanded their logistical burden. The Navy Contingency Contracting Program's officers were particularly busy as military contractors supplied everything from tents and food to fuel and laundry, and other support services replaced much of the DOD's organic support services. Military contractors enabled the construction of Camp Patriot in Kuwait in just five weeks. The camp served as a key logistical hub for Navy activity in the Persian Gulf during both the Iraq and Afghanistan wars as most equipment and supplies for U.S. forces was shipped by sea. Supply Corps officers also served throughout the war, attached to headquarters and Navy units across the region.

While fighting two wars in the Middle East, the Navy also provided critical humanitarian aid around the world in the first decades of the twenty-first century. In 2005, warships and Military Sealift Command vessels delivered 2.2 million pounds of food and water, and provided medical aid, transportation, and other relief to communities along the U.S. Gulf Coast in the aftermath of Hurricane Katrina. The Seventh Fleet delivered 260 tons of food, water, and other assistance to devastated regions of Japan after an earthquake and tsunami in March 2011. Navy helicopters delivered much of this aid to areas without functional infrastructure despite poor weather and radiological contamination after the Fukushima nuclear power plant disaster. These and other aid missions showcased the Navy's ability to transport needed food and humanitarian assistance anywhere in the world.

Today, more than 22,000 civilian, enlisted, and officer personnel in NAVSUP provide critical logistical support for the U.S. Navy, overseeing supply chains, Navy Exchange stores, the Navy Food Service Program, fuel, weapons, payroll, and many

NHHC 2007-049-03

Field Logistics Support Squadron 40 "Rawhides" C-2A Grayhounds on the Ground, Akrotiri, Cyprus, painted by Supply Corps officer Commander Monica Allen Perin, USNR (ret.), 2006.

other indispensable services. Navy logisticians face challenges, including supply disruptions during and after the COVID-19 pandemic, sustained conflict in the Persian Gulf, the looming prospect of contested logistical chains, and persistent delays in building new ships for the Military Sealift Command, but NAVSUP personnel strive to excel in their critical fields. NAVSUP continues to award contracts for millions of dollars of weapons, food, fuel, and services vital to the fleet's success, and is experimenting with ever better supply management systems. These hardworking professionals are the foundation on which any naval action rests.

CONCLUSION

Whether as pursers, paymasters, or as the Supply Corps, the Navy's logisticians have always been there to feed, pay, clothe, and supply the fleet. Closely integrated with business and industry, the men and women of the Supply Corps place their fellow sailors and the Navy's mission above all and give the service its unrivaled ability to operate at sustained scale around the world. This capability only comes with constant effort and long experience. As Chief of the Pay Corps Rear Admiral Samuel McGowan explained in 1916, constant practice is essential. "Whether it be Army or Navy and whether in 1820 or 1916, the fact remains the same—the only plans worthwhile are those made well in advance and put to practical test in everyday use. In other words, to live logistics rather than merely dreaming it."

U.S. Navy 9215

Sailors aboard the aircraft carrier USS *Harry S. Truman* (CVN-75) load Meals Ready-to-Eat for delivery to survivors of Hurricane Katrina onto an HH-60H Seahawk helicopter on *Truman*'s flight deck on 5 September 2005.

U.S. Navy 4830970

The Military Sealift Command's dry cargo and ammunition ship USNS *Medgar Evers* (T-AKE-13) refuels and resupplies the guided-missile destroyer USS *Ross* (DDG-71) in the Mediterranean Sea on 18 October 2018.

HOMEWARD BOUND

11 JUDGE ADVOCATE GENERAL'S CORPS

JOHN E. FAHEY AND M. ASHLEY VANCE

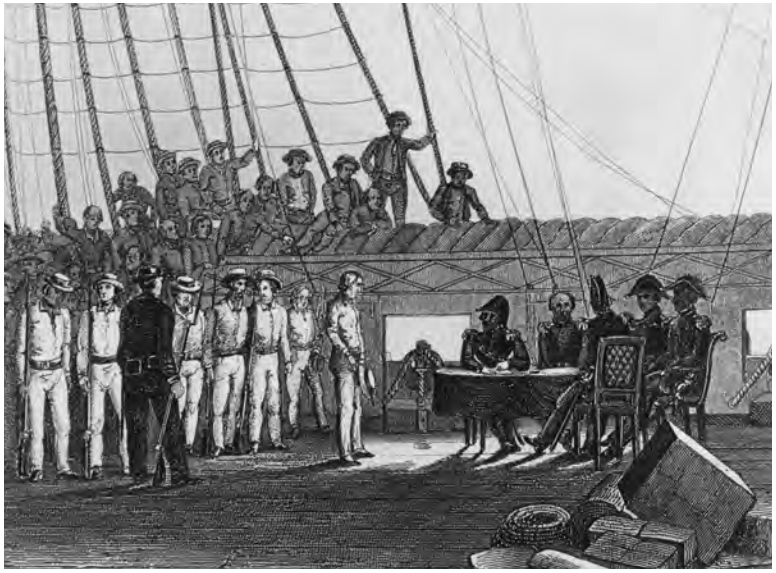
Ogden Hoffman graduated from Columbia University in 1812 with plans to pass the bar and become a lawyer. When the United States declared war on the United Kingdom on 18 June, he joined the Navy instead. He served as a midshipman with Captain Stephen Decatur in the War of 1812 and the Second Barbary War. Hoffman resigned his commission in 1816, however, prompting now-Commodore Decatur to lament that his capable subordinate had "exchanged an honorable profession for that of a lawyer."

The Judge Advocate General's (JAG) Corps is one of the newer communities within the Navy, having only been formally established in 1967. Yet, naval law and discipline are as old as the seas. As Commodore Decatur illustrated, so is the potential tension between naval commanders and lawyers. Naval law is shaped by the unique shipboard environment. A 1947 board explained how "Discipline is a function of command . . . [and] the court-martial . . . developed historically as an extension of the authority of the commander. . . . Whatever their historical origin, most of those features of military and naval justice which differ radically from the civilian judicial system bear a direct relationship to the exercise of command."

Naval law and discipline may have grown out of the authority of a ship's commander, but they have evolved throughout the U.S. Navy's history. Line officers initially served as judge advocates, effectively prosecutors, during courts-martial, but the function of the Office of the Judge Advocate General and later the Judge Advocate General's Corps has expanded far beyond this early disciplinary role within the Navy. JAG officers now advise commanders on the law of the sea, rules of engagement, contract law, discipline, policy, and any number of issues including courts-martial and criminal investigations. In 2013, Judge Advocate General Vice Admiral Nanette M. DeRenzi described the JAG's wide-ranging duties as encompassing "everything from international law to environmental law, admiralty, litigation, [and] claims." The history of the JAG Corps is therefore a study of the changing nature of naval law and discipline, and the ever-expanding responsibilities of the Judge Advocate General.

LAW IN THE AGE OF SAIL

Naval officers have encountered legal questions from the earliest days of the U.S. Navy. In 1775, John Paul Jones recommended that officers in the new Continental Navy, "should be familiar with the principles of international law, and the general practice of [the Royal Navy's] admiralty jurisprudence" because, particularly while at sea, expertise in those skills could "be necessary to protect his flag from insult or his crew from imposition or injury in foreign ports." The same year, John Adams wrote the first regulations for the "Navy of the United Colonies of North America," relying heavily on earlier British naval statutes and regulations. These regulations were a far cry from their present-day equivalents. For example, any sailor "heard to swear, curse or blaspheme" was to "wear a wooden collar or some other shameful badge of distinction." Serious offenses, including cowardice, sedition, striking a superior officer, quarrelling, sleeping on watch, and theft, were to be tried by a court-martial consisting of at least six officers.



NHHC NH 71124

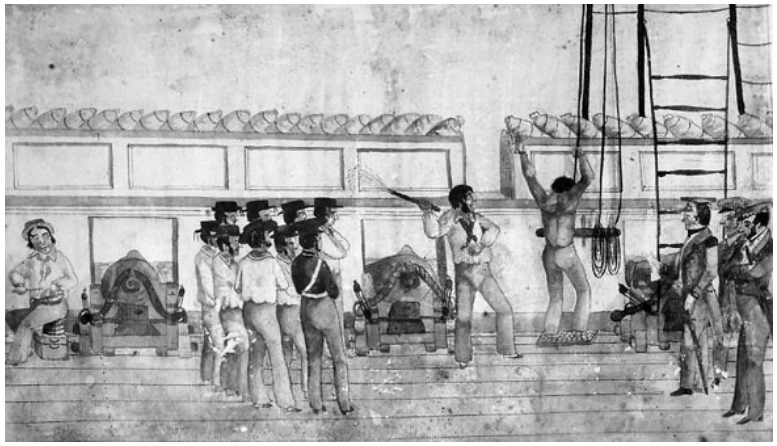
An engraving of a court-martial scene aboard a nineteenth-century sailing warship.

Legal affairs in the Continental Navy were firmly controlled by line officers rather than specialized law officers, which did not yet exist. This system functioned because the small and short-lived Continental Navy's legal problems were, in the words of one historian, "few in number and, by today's standards, simple in nature." When the Revolutionary War ended, the Continental Navy disbanded. Congress reestablished the Navy in 1794. In 1800, two years after the formation of the Department of the Navy, Congress passed what was commonly referred to as the "Articles for the Government of the Navy." Although revised several times, these remained the basis of Navy law for more than 150 years. Sailors also called the act's 44 articles the "Rocks and Shoals," referring to their potential dangers. In addition to requiring commanding officers to "show in themselves a good example of virtue, honor, patriotism, and subordination," the act provided for formal disciplinary procedures.

Commanding officers abided by the articles' provisions but had a great deal of discretion when enforcing discipline, often using "captain's masts" to punish sailors for a variety of relatively minor offenses, often with corporeal punishment. Although flogging was limited to 12 lashes without a court-martial, many captains sentenced crewmen to 12 lashes per regulation broken. Thus, a sailor who stole grog and ended up too drunk to

carry out his tasks could be punished for drunkenness, theft, and neglect of duty, and given 36 lashes, all without convening a court-martial. As one scholar noted, "a high threshold of tolerance existed for casual, day-to-day brutality and interpersonal violence" on age of sail ships. Less frequently, captains and Navy leadership could convene courts of inquiry, which investigated crimes and mistakes but lacked the authority to punish.

Captains, squadron commanders, the Secretary of the Navy, or the President could convene a court-martial for cases involving officers and serious crimes by enlisted men. General courts-martial, made up of five to thirteen line officers assisted by a judge advocate, could call witnesses and dispense punishment up to the death penalty, depending on the crime. Officers could be court-martialed for a wide variety of offences including "scandalous conduct, tending to the destruction of good morals," mutiny, using "provoking or reproachful words, gestures, or menaces," fraud, improper navigation, and failure to keep accurate muster and pay rolls. The "Articles" explained how to run a court-martial, but only in a few pages. The "judge advocate or person officiating as such" was responsible for administering oaths and keeping records. Courts-martial verdicts had to be reviewed, usually by the Secretary of the Navy and the President. Presidents typically confirmed the judgments of courts-martial and courts of inquiry, although personal or political factors could prompt a President to overturn a verdict. In 1833, President Andrew Jackson dismissed Lieutenant Robert B. Randolph from the service despite Randolph's exoneration by a court of inquiry. Randolph later tracked down Jackson and punched him, the first time that a U.S. President was attacked while in office.



NHHC NH 1905

Painting by Gunner William H. Myers of a sailor being flogged aboard *Cyane,* c. 1842–43.

Before the American Civil War, U.S. Navy regulations were simple enough not to require full-time legal officers. Punishments could be extremely inconsistent depending on the ship and officers involved, and naval reform came slowly. Still, public pressure forced some changes. Congress abolished flogging in the Navy in 1850 after a widespread social movement condemned the practice. Abolition of flogging required newly created summary courts-martial to take up disciplinary slack. Still, legal issues remained firmly in the hands of line officers, with only occasional interference from the Secretary of the Navy, Congress, and ad hoc legal counsel, rather than in those of trained lawyers.

CREATING THE JUDGE ADVOCATE GENERAL

The Navy's expansion during the Civil War necessitated greatly expanded legal expertise. The Navy needed trained staff to manage contracts for the construction of new ships and production of supplies and ordnance. It needed personnel who understood leases and indemnity for the procurement of merchant ships. And, it needed experts who could oversee the invocation of eminent domain to expand navy yards, along with countless other complex legal duties. In 1864, Secretary of the Navy Gideon Welles employed Army investigator Colonel Henry S. Olcott to review the Navy's existing practices. In Welles' annual report that year, he explained that the whole procurement system "has become tainted with demoralization and fraud." Olcott worked with Assistant U.S. Attorney Nathaniel Wilson, hired by Welles as a special counsel, to prosecute contract fraud.

In February 1865, Secretary Welles asked Congress for a full-time, permanent Navy lawyer. The following month, Congress authorized a naval officer with the title "Solicitor and Naval Judge-Advocate General." Welles selected William Eaton Chandler, although he only prosecuted corrupt naval contractors for a few months before President Andrew Johnson appointed him Assistant Secretary of the Treasury. John A. Bolles then served as Solicitor and Naval Judge-Advocate General from 1865 to 1870, until Congress abolished the position and Bolles transferred to the newly formed Justice Department as "Naval Solicitor." That post too was eliminated in 1878 upon Bolles' death. With no permanent lawyer, the Navy was compelled once again to rely on its line officers for legal services, with the Secretary of the Navy responsible for reviewing courts-martial. Books published at the time, such as Rear Admiral Andrew A. Harwood's *Law and Practice of United States Courts-Martial* (1867), two law manuals published in 1870, and U.S. Marine Corps Captain McLane Tilton's *Order of Procedure in Naval General Courts Martial* (1874), illustrated the shift back toward disciplinary law.

Faced with the daunting task of personally reviewing courts-martial records, and a Congress unlikely to assign any new civilian legal aid to the Navy, Secretary of the Navy Richard W. Thompson took matters into his own hands. Two weeks after Congress abolished the Naval Solicitor position, he created a post that did not require congressional approval. Secretary Thompson selected Colonel William B. Remey, USMC, as the first uniformed officer to fill the role of "acting Judge Advocate

Colonel William B. Remey, USMC, the first uniformed officer to serve as acting Judge Advocate General of the Navy.

NHHC NH 47130

General." Remey served in that position from 1880 to 1892. Thompson explained that the Judge Advocate General would advise the Secretary on any "questions of the law or regulations," examine and recommend actions on all courts-martial, and review certain boards. Although Remey did not have any formal law training, he had worked in a variety of legal positions during his military career, including as Judge Advocate General of the Marine Corps. As acting Judge Advocate of the Navy, he largely focused on disciplinary affairs while Secretary Thompson worked on contracts and other law. Remey successfully lobbied for the creation of a permanent Judge Advocate for the Navy, and on 8 June 1880, Congress authorized the President to appoint an officer to "perform the duties of solicitor and judge-advocate-general, and so forth." This officer was directed to manage the records for all courts-martial, courts of inquiry, retirement and promotion boards, and other relevant duties.

THE EARLY JUDGE ADVOCATE GENERAL

Colonel Remey served as Judge Advocate General as the Navy modernized and launched its first oceangoing steel warships in the 1880s. As a result, his small office had to review ever-increasing amounts of contracts, insurance, and technical plans, as well as the disciplinary records of the rapidly growing number of sailors. To keep pace, Colonel Remey's team expanded from two clerks in 1881 to seven clerks, a copyist, a general purpose assistant, and two line officers a decade later. They reviewed an incredible array of questions, ranging from courts-martial for murder to miscellaneous inquiries such as the letter a midshipman wrote to the Judge Advocate General of the Navy to ask if he was entitled to his choice of bunk. Colonel Remey retired in 1892 due to overwork and ill health and was replaced by Captain Samuel C. Lemly, his assistant and the first Navy officer to serve as Judge Advocate General.

Captain Lemly did not possess a law degree, but had served as Colonel Remey's assistant, and proven himself effective in this role. The 1893 *Navy Regulations* standardized the Judge Advocate General's responsibilities to reviewing courts-martial, overseeing procurement and contracting, handling claims against the Navy, and coordinating with the Department of Justice, among other duties. Captain Lemly also started submitting formal reports of his office's work. According to his *Report of the Judge-Advocate-General of the Navy* for 1893, his office received more than 5,000 letters, dispatched more than 9,000, prepared the charges for 99 courts-martial, and reviewed the records of 121 general courts-martial and 725 summary courts-martial in just one year. The most common charges included desertion, "scandalous conduct tending to destruction of good moral," and drunkenness, although the office also dealt with cases including "suffering a vessel of the Navy to be stranded," profane language, and "falsehood." In addition to trial work, Lemly successfully proposed legislation on fraudulent enlistments and managed contracts for new vessels, naturalization of sailors, and assorted real estate and right-of-way issues at naval facilities around the world. This was a considerable workload for the approximately eight staff members in the JAG office in the 1890s. In an effort to improve the quality of the courts-martial they reviewed, Lemly and his assistant, First Lieutenant Charles H. Lauchheimer, USMC, created an expanded procedural guide

for courts-martial in 1896. Lemly also repeatedly petitioned Congress for additional staff and money for a law library. As he explained in 1899, "the number, variety, and difficulty of the purely legal questions referred to this office for examination annually increase with the development and growing activities of the Navy." The JAG office had a law library by 1911, although the JAG at the time called it inadequate.

As part of the Navy's expansion and professionalization, Secretary of the Navy John D. Long proposed the creation of a Judge Advocate General's Corps and that naval officers in the JAG's office should be certified lawyers. Long's suggestion did not gain traction, as senior officers feared that a JAG Corps would take officers away from the line community. The Navy also increasingly sought to distinguish between commercial and military law. In 1907, Secretary of the Navy Victor H. Metcalf established a solicitor office within the Office of the Judge Advocate General to focus on commercial law. Within two years, Congress appropriated separate funds for the solicitor office and removed language that referenced the solicitor as an assistant to the Judge Advocate. This separation was short-lived, however, and the office shuttered and was reabsorbed into the JAG by 1924. Although temporary, the separation of the solicitor from the Judge Advocate staff highlighted the increasing legal workload of the JAG office.

Judge Advocate General Captain Robert Lee Russell continued the trend toward professionalization, preferring trained officers over civilian solicitors. He expected JAG officers, in addition to their regular duties, to take law courses at a local university. As a result, the office was increasingly staffed with lawyers who had been admitted to the bar in the District of Columbia. Russell's initiative became the Law Postgraduate Program. Bar-certified officers were called "Law PGs," and made up the majority of uniformed Navy lawyers until World War II. After completing studies at the U.S. Naval Academy, officers interested in legal duties served in the Office of the Judge Advocate General at the Washington Navy Yard during the day and attended law school at night. Upon graduation, they usually served as line officers at sea and worked in the JAG office while on shore. Although Law PGs could provide much improved legal services, there were flaws with the system. As Colonel James Snedeker, USMC, later observed, when Law PGs returned from sea duty, "considerable brushing up on the law was often necessary . . . since their legal education had no continuity. They were definitely part-time lawyers." These men had their work cut out for them, as changing Navy regulations affected how the Law PGs did their work. For example, the 1913 *Navy Regulations* expanded the rights of accused sailors and required a formal defense counsel when requested. During World War I, the Navy's enlisted strength briefly quadrupled and the number of courts-martial doubled, further stretching the JAG office and available Law PGs.

In the two decades following the end of World War I, the number of formally trained legal officers gradually expanded, along with the office's legislative and other duties. The JAG office had around 70 personnel, usually including 20 or more officers. In addition, Navy lawyers across different commands increasingly had to grapple with new challenges and technologies introduced in the twentieth century. For example, Lieutenant

Daniel W. Tomlinson was tried by general court-martial in 1922 for "failing to maintain altitude in accordance with Navy regulations" when his biplane's engine malfunctioned and he was forced to land on Olive Avenue in Coronado, California. Fortunately, his counsel was "sharp as a whip when he was sober. We had no trouble convincing the court that even Jesus Christ couldn't make it; the motor quit."

Judge Advocates General continued to expand the size and role of their office beyond contract review and discipline. Rear Admiral Julian L. Latimer wrote in 1923 that he thought the JAG's responsibility was to provide legal advice to help the Department of the Navy accomplish its goals; draft relevant legislation in support of those goals; "protect and advance the interest of the personnel of the Navy;" ensure "even-handed justice;" and protect the government's interest when the Navy dealt with "the business world in a spirit of fairness and equality." Impressed by the JAG office, Secretary of the Navy Claude A. Swanson ordered all proposed non-appropriations legislation be sent to the Judge Advocate to be cleared before submission to Congress. The JAG office earned additional credibility in 1938 when Captain Walter B. Woodson became the first Law PG to be appointed rear admiral and Judge Advocate of the Navy.

WORLD WAR II TO THE *UNIFORM CODE OF MILITARY JUSTICE*

World War II changed the course of the JAG office. The massive naval buildup that began in the late 1930s and accelerated once the United States entered the war required more lawyers. Just as Navy leaders had done during World War I, they once again responded to war mobilization by distinguishing civilian and military legal matters. Soon after his appointment as Undersecretary of the Navy, James V. Forrestal created the Procurement Legal Division in his office to handle commercial law such as contract review for the Navy's thousands of new ships, planes, supplies, materiel, and facility construction. Distinct from the Judge Advocate General, the procurement division was staffed primarily by civilian lawyers and worked with interagency groups such as the Office of Production Management and, later, the War Production Board (WPB). Donald M. Nelson, head of the board, later praised the Navy's ability to work with the WPB by saying, "As far as the Navy was concerned, this delegation of authority and division of responsibility worked out extremely well. The Navy . . . is a smart organization; it knows how to fit itself and its requirements into the framework of civilian control needed to conduct a war economy." In the summer of 1944, the procurement division became the Office of the General Counsel, reporting directly to the Secretary of the Navy. While the JAG worked closely with the General Counsel, the separation meant that the Office of the Judge Advocate General could focus on military matters like courts-martial and military law.

NHHC NH 76361-KN

A poster published by the War Production Board during World War II.

As the Navy recruited millions of sailors during World War II, more than 12,000 lawyers served in the Naval Reserve, although few of them served in actual legal functions. More sailors meant more courts-martial and attendant review requirements. As one wartime Law PG put it, "at the peak of our naval strength, there were around 20,000 cases per month. To review these, there were 24 officers available. The workload was unbelievable." While most of these cases involved simple offenses like theft, desertion, or disobedience, and were appropriately adjudicated, some high-profile failures led to unfavorable publicity for the Navy's law system. For example, on 17 July 1944, a massive explosion decimated the U.S. naval magazine at Port Chicago, California, killing more than 300 men, mostly African-American ordnance loaders and longshoremen. The disaster was likely caused by unsafe loading practices, inadequate training, and poor working conditions. Fifty sailors refused to resume loading operations without additional training and safety measures, and were court-martialed, found guilty, and sentenced to prison en masse. Future Supreme Court Justice Thurgood Marshall, lead attorney for the NAACP, appealed the convictions to the Navy Judge Advocate General, who eventually confirmed the sentences. Political pressure from First Lady Eleanor Roosevelt and others prompted now–Secretary of the Navy Forrestal to release the convicted sailors in early 1946. The convictions were formally overturned in 2024.

After the war, two boards investigated the Navy's wartime legal services and came to different conclusions. Matthew McGuire, U.S. District Judge for the District of Columbia, concluded in 1945 that the Navy's justice system was "not only

antiquated, but outmoded." He argued that the Navy needed a JAG Corps with officers committed solely to legal duties. Conversely, attorney Arthur Ballantine reviewed wartime judicial issues and recommended more moderate changes to the structure of courts-martial. His board advised against having a corps of officers focused exclusively on legal duties. Instead, "Law Specialists" would focus on law assignments but remain under the command of Law PGs. Ballantine's board recommended that the Navy draw Law Specialists from the Law PG program, Navy reservists, and civilian lawyers. Accordingly, around 300 uniformed officers became Law Specialists in 1947, the first time the Navy had full-time uniformed lawyers primarily assigned to legal affairs. To further improve law services, the Navy introduced formal law training for enlisted personnel to improve legal clerks' typing and service as court reporters. Secretary Forrestal also implemented legal familiarization training for line officers in 1946 to help them perform disciplinary hearings more efficiently. Beyond these changes, Congress preempted major Navy judicial reform by introducing the *Uniform Code of Military Justice* (UCMJ) in 1950.

NHHC NH 106756

U.S. Navy Judge Advocate General Rear Admiral George L. Russell swears in Chief Yeoman Wilma J. Marchal, Yeoman Second Class Edna E. Young, Hospital Corpsman First Class Ruth Flora, Aviation Storekeeper First Class Kay L. Langen, Storekeeper Second Class Frances T. Devaney, and Teleman Doris R. Robertson as sailors of the regular Navy while Secretary of the Navy John L. Sullivan and Captain Joy B. Hancock look on during a ceremony on 7 July 1948.

Congress passed the UCMJ after creating a unified Department of Defense and investigating faulty military justice during World War II. The law required every service's Judge Advocate General to be a licensed attorney. It created a great deal more legal work by requiring pre-trial investigations before a general court-martial and gave the accused the right to legal representation throughout the investigation and trial process. The UCMJ also added additional legal oversight and review, a civilian-led Court of Military Appeals, and a joint-service guidebook for courts-martial. This new system replaced the Navy's "Articles for the Government of the Navy," which had shaped Navy law relatively unchanged since the age of sail. Many Naval officers were unhappy with the UCMJ and saw it as an impediment to military discipline. One Pacific War veteran and former destroyer skipper, Captain John V. Noel, put it succinctly, if dismissively. Many "line officers resented the Uniform Code of Military Justice . . . its implementation and its concern for the rights of the individual put a great strain on the line officers who had to

administer men and to run a ship. The lawyers believed—and I'm sure sincerely—that it was very important to go through the legal rigmarole before you punish somebody who was obviously a bum."

CREATION OF THE JAG CORPS

The Navy's existing Judge Advocate General lacked the institutional structure to meet UCMJ regulations. Accordingly, the Court of Military Appeals, introduced in 1951, was unimpressed by Navy lawyers. One judge bluntly declared that "Insofar as I am concerned, the Navy lags badly behind the Army and Air Force." The Navy's Law Specialists lacked a distinct corps, which slowed their career advancement, restricted their potential jobs, and barred them from leadership positions. Even legal offices were commanded by line officer Law PGs rather than Law Specialists. Future Judge Advocate General William C. Mott observed in 1955 that the challenges within the Navy's legal service hurt its recruitment and retention of qualified lawyers, noting that the Navy could not compete with the Army and Air Force. "Whatever else lawyers may be called, they are not stupid. Given a free choice, they will pick an organization where they will be most likely to succeed." Where the Navy lacked a distinct organization to oversee the JAG, the Army's own Judge Advocate General Corps dated to 1775.

In the 1950s, Law Specialists pushed for a professional branch for law officers, reasoning that a Judge Advocate General's Corps could provide them with better career options. As Law Specialist Captain Robert A. Fitch asserted in 1956, "the law group will never achieve proper recognition and career opportunities so long as its internal affairs are administered by an outside competitive agency—the line. We will always get the leavings which are begrudgingly given only under protest and pressure." Many line officers, including Judge Advocate General Rear Admiral Ira H. Nunn, opposed this change. In 1956, Nunn mailed letters to the homes of all Navy lawyers denouncing the idea of a JAG Corps. He argued that Navy lawyers could maintain the respect of line officers only if they were evaluated by and served as line officers. Nunn sent the "Scarlett Letter" shortly before the American Bar Association's mid-winter meeting, at which several Law Specialists openly opposed him. The association disagreed with Nunn's assessment and endorsed the creation of a Navy JAG Corps. Soon after the Bar Association's announcement, Rear Admiral Chester C. Ward, an outspoken advocate of a JAG Corps, successfully lobbied for the position of Judge Advocate General. During his tenure as JAG, Rear Admiral Ward repeatedly requested the creation of a formal corps that was staffed by full-time officer-lawyers. Ward's repeated calls for a JAG Corps convinced Secretary of the Navy Thomas S. Gates Jr. On 13 May 1959, Gates directed that, with congressional approval, the Judge Advocate General's Corps would join the other Navy staff corps such as the Medical and Chaplain Corps. Ward drew up the legislation shortly before he retired the following year.

Legislation creating the JAG Corps spent the next few years bogged down in congressional committee, but Navy lawyers continued to execute their mission. Judge Advocate General Rear Admiral Wilfred A. Hearn dedicated the first Law Center for the Navy on 3 November 1966. Hearn explained that the new

office, located in Norfolk, Virginia, was created to cope with the "legal explosion" experienced by military and civilian communities. "By this I have reference to the increasing demands for counsel brought about by legislation, judicial decisions, and a generally increased awareness on the part of the citizenry of the availability of legal services." The center offered legal assistance that supplemented the gaps in legal services within individual commands. The Norfolk Law Center was soon joined by 30 additional centers around the world and helped ensure sufficient lawyer coverage of courts-martial as well as providing other legal services.

Congress finally created the JAG Corps in 1967. Legislation passed both houses of Congress by unanimous consent and President Lyndon B. Johnson signed the bill on 8 December 1967. Johnson wrote at the time that the bill would give Navy lawyers "a new professional status and organization" that was equal to the recognition already afforded to other trained professionals like doctors and chaplains. After decades of internal struggles to keep up with the expanding caseload and external debates over the need for such an organization, the Navy's new JAG Corps could finally compete with the Army and Air Force in recruiting and retaining qualified lawyers. The corps provided its lawyers formerly unavailable career opportunities and legitimized their service to sailors and the public alike.

THE JAG CORPS

The JAG Corps was established during a contentious time as the Vietnam War presented tremendous challenges to Navy personnel aboard ship and ashore. Wartime legal duty presented significant danger. The Staff Legal Office of Commander, U.S. Naval Support Activity Da Nang, provided legal counsel and services across much of Vietnam. Lieutenant Commander James E. Toms wrote about his experiences there in 1967–68. "It seemed incongruous . . . to see a young judge advocate preparing for a field trip by packing his briefcase, donning his flak jacket and steel helmet, strapping on a cartridge belt . . . and draping an M-16 over his shoulder." Toms reflected that the image of the lawyer in a combat zone "might have been amusing but for the sound of distant gunfire." On one occasion in 1968, a lawyer's trip to investigate the alleged rape of a Vietnamese woman by a Seabee was delayed when Viet Cong soldiers overran the

NHHC NH 74344

Aerial view of Naval Support Activity, Da Nang, Vietnam, March 1969.

area during the Tet Offensive. Toms recalled, "it was some time before it could be determined that the witnesses were alive and available; thereafter the investigation was continued to its proper conclusion."

While JAG lawyers faced these and other complicated legal issues, enlisted personnel continued to serve in support positions. In 1970, Judge Advocate General Rear Admiral Joseph B. McDevitt proposed a "legal mate" enlisted rating. Two years later, Secretary of the Navy John H. Chafee established the legalman rating and the JAG Corps selected 275 petty officers to convert to the new rating. The Rating Review Board explained that the new position gave the judge advocates trained personnel who could provide a range of services that did not require a law degree. Some of their duties included processing claims, notarizing powers of attorney, answering legal questions that did not require an attorney, expediting family law paperwork such as marriages and wills, and overseeing investigation packages.

The JAG Corps continued to expand its legal responsibilities through the 1970s. In 1973, Chief of Naval Operations Admiral Elmo R. Zumwalt Jr. established the Naval Legal Service within the corps to centralize all military legal support to the Department of the Navy, while the General Counsel continued to focus on civil issues outside of the JAG Corps. Three years later, the service expanded to the Naval Legal Service Offices (NLSO) and delegated responsibilities such as trial services and staff support to different subordinate offices. As each of the NLSOs grew, the distinctions between them became more defined.

In the aftermath of the Vietnam War and with reports of service personnel committing war atrocities, the Department of Defense created the Law of War Program for service compliance with domestic and international laws dealing with armed conflict. In 1980, Secretary of the Navy Edward Hidalgo tasked JAG officers to review all policies, directives, and other materials to ensure the Navy conformed to the directive and all associated laws and regulations. This expansion into the laws of war and operational affairs did not thrill many line officers. One JAG officer recalled that in the 1970s and early 1980s, "lawyers were looked at as naysayers . . . [because] the lawyers were protecting their 6's more than anything else. If they didn't have the answer, 'no' was the safe answer." Although legal nuance sometimes annoyed operational commanders, the JAG's expansion into ever more aspects of Navy life brought expertise to difficult questions. For example, JAG Corps officers investigated collisions between U.S. and Soviet ships throughout the Cold War, and lawyers such as Commander William C. Lynch and other legal experts helped hammer out the details of the Incidents at Sea Agreement of 1972. Lynch even hosted members of a Soviet delegation to the United States for negotiations.

In the decade following the end of the Cold War, the JAG Corps continued its tradition of adaptation and expansion, responding to budget cuts, a Department of Defense commission to realign and close bases, personnel reductions, and increasing caseloads, all of which impacted how the JAG served the Navy's military and civilian communities. The JAG Corps challenged the proposed closure of the Naval Justice School, which trained officers, and coped with personnel reductions

by reassigning lawyers to different offices and sharing legal duties. In 1993, President Bill Clinton announced the "Don't Ask, Don't Tell" policy that was later attached to the National Defense Authorization Act of 1994. The policy, which addressed homosexuality in the military, triggered a dramatic caseload increase for the Navy's lawyers and legal support teams. Sailors and veterans challenged the constitutionality of the policy, which meant that the JAG Corps managed more personal claim investigations, Freedom of Information Act (FOIA) requests for public records, courts-martial, appeals, and civil lawsuits, and even litigated cases under review by the Supreme Court for the first time. For example, in 1995, the Appellate Defense Division reviewed more than 2,300 appeals, a 17 percent increase from the previous year. The decade drew to a close with the JAG Corps short on personnel, but with more responsibilities than ever.

THE JAG IN THE TWENTY-FIRST CENTURY

The Global War on Terrorism presented unprecedented challenges for military lawyers of all branches. "Terrorism" is a legally contested category of conflict, and the United States fought against a variety of non-traditional combatants in Afghanistan, Iraq, and around the world. Because of that ambiguity, JAG officers played a more active role than in some earlier conflicts and the Navy assigned many to operational law. As one explained, Navy lawyers should be helping commanders execute missions, "not simply providing him with a litany of rules; that just doesn't hack it." Lawyers frequently deployed aboard ship and ashore to support combat operations. In the first decade of the conflict, a report showed that 387 Navy judge advocates had served in Iraq or Afghanistan in operational law assignments. The report added that, "the operational environment has become increasingly complex and legally intensive, and shows no signs of abating." Some JAG officers served overseas and provided legal support for counterinsurgency missions and detainee operations at locations such as Guantanamo Bay, while others dealt with the conflict's complexities in the United States. For example, Judge Advocate Lieutenant Commander Charles Swift successfully argued for detainee rights before the Supreme Court in *Hamdan v. Rumsfeld* in 2006.

The JAG Corps continues to grow and adapt to changing landscapes. In 2010, the JAG introduced the Legalman Paralegal Education Program, which gave legalmen full paralegal training through in-person and distance-learning programs at Roger Williams University. Two years later, the Navy reorganized the eight Naval Legal Service Offices into the Naval Legal Service Command to streamline the JAG Corps' legal operations. Major reforms to the UCMJ in 2016 and 2023 resulted in a new court-martial system, more appellate access for the accused, and more defense counsel resources. The Judge Advocate General staff now specializes in a wide variety of law including sexual assault prosecution, providing legal counsel for victims; international and maritime law; environmental law; civil cases, claims, and torts; wills; family law; immigration and naturalization; intelligence issues; criminal law; and appeals. JAG personnel also sit as judges on courts-martial and litigate appeals to the Navy-Marine Corps Court of Criminal Appeals, U.S. Court of Appeals for the Armed Forces, and Supreme Court.

Today, the Navy has two legal teams. The Office of the General Counsel, staffed with civilian attorneys, manages the Navy's non-military legal issues, including contracts and litigation, legislation, employment and labor regulations, and intellectual property law. The Judge Advocate General's Corps, composed of officer lawyers who are supported by enlisted and civilian personnel, addresses the Navy's military laws, including the UCMJ and Fleet operations. The JAG Corps is organized into three main sections. The Office of the Judge Advocate General of the Navy provides personnel support, resources, and oversight. The Naval Legal Service Command houses the Regional Legal Service Offices, Defense Service Offices, and the Victim Legal Counsel Program. Combined, they provide most legal services to the Fleet, sailors, and their families across the globe. Finally, the Office of the Special Trial Counsel, created in 2023, prosecutes crimes that involve personal violence, including sexual assault.

U.S. Navy 9097150

Lieutenant Nicholas Curta, the assistant judge advocate assigned to USS *Gerald R. Ford* (CVN-78), the world's largest aircraft carrier, poses for a photo on the bridge after receiving the 2024 Commander, Naval Air Force Atlantic Shiphandler of the Year award, 4 June 2025.

At time of writing, the Judge Advocate General himself harkens back to the JAG's foundation. In July 2025, the Senate confirmed Major General David J. Bligh, USMC, as Judge Advocate General of the Navy. General Bligh is the first Marine Corps officer to serve in the role since Colonel William B. Remey, the Navy's first uniformed Judge Advocate General, was appointed in 1878. Unlike Colonel Remey, General Bligh has a law degree from the University of Georgia and a career dedicated to legal matters. As a marine officer, though, he has also served as a platoon leader and company commander, among other leadership roles. His experience as a soldier and a lawyer will no doubt help the Navy JAG Corps continue to grow and adapt.

CONCLUSION

Judge Advocates have been part of the U.S. Navy since 1775. Although the Navy's initial Judge Advocates were part-time and assigned to courts-martial on a case-by-case basis, most early officers had direct experience with the Navy's legal system. In the two and a half centuries that followed, the role of Navy lawyers has expanded into contract law, legislative issues, legal services, and even operational problems. Vice Admiral Harry B. Harris Jr., at the time commander of the U.S. Sixth Fleet, testified in 2011 that "I consult with [judge advocates] on any and every significant issue that I face. . . . Every operational commander I know wants all the judge advocates he or she can get."

Today's JAG Corps officers, enlisted sailors, and civilian personnel assist commanders, officers, sailors, and Navy families and civilians with an endless variety of legal services. Committed to both the rule of law and the good functioning of the Navy, the corps fills a vital role in ensuring that the fleet and its personnel live up to the laws and regulations of the United States. In the words of Judge Advocate General Rear Admiral John E. Gordon, at their best, JAGs go even further and serve as "the conscience of all the military department leadership, both civilian and military."

12 THE U.S. NAVY RESERVE

JON S. MIDDAUGH

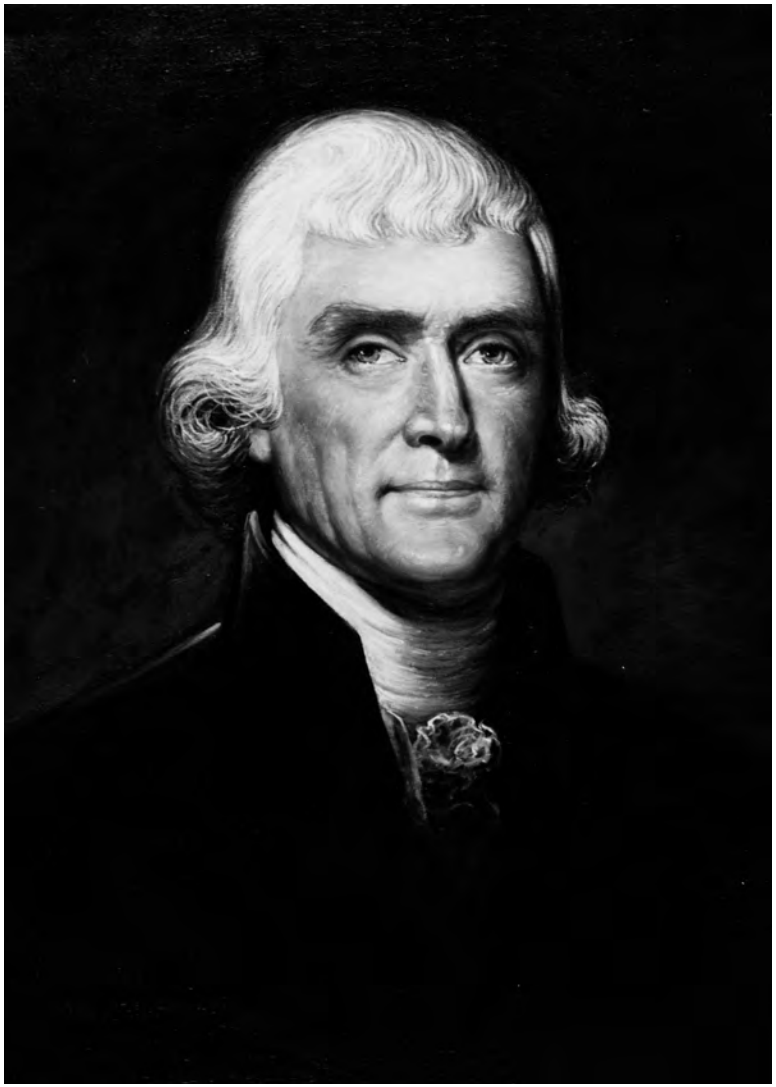
Our nation's navy has long depended on reservists who answer the call to service in times of need, as well as upon full-time sailors dedicated to a career at sea. From the American Revolution to the twenty-first century's wars in Afghanistan and Iraq, citizen sailors have steadfastly demonstrated remarkable skill and courage at sea, in the air, and on land. Their story, the history of what today is the Navy Reserve, is one that helps illuminate how the Navy has fought the nation's wars and promoted its prosperity. At the same time, the history is also that of an organization adjusting to the changes brought by the country's evolving place in the world and by the dynamism of its citizens.

In the seventeenth and eighteenth centuries, American colonists demonstrated a dislike of high taxes and a distrust of large standing militaries. Settlers along North America's budding Atlantic seaboard were willing to participate directly in their own defense ashore. To counter maritime threats, colonial merchantmen often relied on a few mounted cannons to fend off pirates or on the Royal Navy for geopolitical security until the 1770s. Together, these tendencies of an independent outlook helped shape the new nation's military, which would continue to depend to varying extents on citizen soldiers and citizen sailors.

After independence was declared, the United States Navy functioned effectively without an official reserve for more than a century. During the American Revolution, the small Continental Navy was supported by state militias and by large numbers of American privateers. Crewed by civilian mariners, the privateer vessels captured hundreds of enemy merchant ships, disrupting Great Britain's commerce and its resupply of forces in North America. Privateers and newly constructed frigates for the new U.S. Navy again were sufficient for the United States to hold its own in the Quasi-War with France in 1798.

OPERATING WITHOUT A FEDERAL NAVAL RESERVE

In the 60 years following the end of the Quasi-War, the country's relative isolation from foreign threats and the republican ideal of a small military resulted in a compact navy that expanded by drawing upon skilled merchantmen when occasional wars broke out. After President Thomas Jefferson made an unsuccessful bid to create a naval reserve in 1805, the Navy again turned to privateers and filled much of its own ranks from idled civilian merchantmen to expand from 4,000 to 15,000 for the War of 1812.



NHHC NH 86741 KN

President Thomas Jefferson. Hoping to save money that might otherwise have to be spent on maintaining a large regular Navy, Jefferson proposed a bill in 1805 that would have enrolled men between 18 and 45 who worked in nautical trades into a reserve. Congress did not endorse the idea.

Against a weaker adversary during the Mexican-American War from 1846 to 1848, the Navy blockaded Mexican ports and supported a bold amphibious operation at Vera Cruz, all without manpower difficulties.

The necessity of fielding large armies during the Civil War introduced new obstacles for the Navy to expand quickly without the benefit of a reserve. The Militia Act of 1862 made no allowance for a citizen's occupation, and thus many men engaged in maritime trades were forced to don a soldier's uniform. Congress in 1864 finally allowed would-be sailors to transfer from the Army, and it also improved incentives for new enlistments into the Navy. These changes, along with energetic leadership from Secretary of the Navy Gideon Welles, ultimately enabled the U.S. Navy to man some 671 vessels of all types, the largest navy in the world at the time, and to avoid relying upon privateers.

Despite this success, the dramatic changes appearing in the American economy and naval technologies in the post–Civil War decades indicated that the Navy would need to update its manning approach for a large war. The American merchant marine—long a latent source of manpower—had largely been supplanted by foreign merchant ships during the Civil War. Warships, meanwhile, were becoming more complex due to coal-fueled steam power, long-range rifled guns, and other advances. By the 1890s, sailors increasingly required specialized training, and a pool of reservists at least familiar with these new technologies was needed to respond rapidly in a military crisis. Observing that steam power also diminished the relative isolation once afforded by the oceans on both coasts, advocates for a reserve stressed the importance of readiness.

In the last two decades of the century, American proponents for a reserve also began to point to the establishment of naval reserves in more than a dozen European countries. Writing in journals such as the U.S. Naval Institute's *Proceedings*, these advocates helped spur a number of congressional bills proposing a federal reserve, but none passed. Beginning with Massachusetts in 1888, however, some 15 states soon created their own naval militias. When the Spanish-American War began in 1898, federal legislation for efficiently incorporating state naval militia men into the Navy was lacking. Nevertheless, state governors and the Navy coordinated informally so that 4,000 state officers and sailors served in the Navy.

CREATION OF THE NAVAL RESERVE FORCE

Rising tensions in Europe along with the increasing sophistication of naval technology each provided impetus for finally establishing a naval reserve. In 1912 Congress authorized a Medical Reserve Corps, and the following year a Dental Reserve Corps was established. Then, in early 1914 came the Naval Militia Act, which provided for Navy supervision of state naval militias and authorized the President to call the latter into federal service for wartime or national emergencies. Although President Woodrow Wilson strove to maintain America's neutrality after war broke out in Europe that July, the clear danger presented by the conflict spurred Congress to create a federal naval reserve force on 3 March 1915. This date became the Navy Reserve's official birthdate.

Provisions in the 1915 act resulted in a severely undersized reserve at first. Only enlisted men who had served or were currently serving in the regular Navy were permitted to join the new organization, but few did. In 1916, Secretary of the Navy Josephus Daniels and Assistant Secretary of the Navy Franklin Roosevelt successfully lobbied for new legislation that allowed individuals without any prior naval training to enlist in what would be known as the Naval Reserve Force. In addition, the act created a Reserve Flying Corps and authorized a cohort of naval reserve officers that could be drawn from civilians with seafaring experience. These major adjustments, enacted in the year after the organization's birth, marked the first of several periodic efforts to enable the new reserve to have a sufficient number of adequately trained sailors and officers available in time for war.

FROM HERE TO "OVER THERE!"

On 6 April 1917, not long after Germany resumed submarine attacks on American merchant vessels, Congress overwhelmingly approved the President's request for a declaration of war. With a great outpouring of patriotism across the country, thousands of men volunteered to join the Naval Reserve Force or the expanding regular Navy. Meanwhile, those serving in the state naval militias were federalized into the National Naval Volunteers. To prepare the reservists for service in the modern Navy, a series of training establishments were created including the Pelham Bay Naval Training Station in New York. Harvard agreed to host a Naval Reserve radio school, and several oth-

er colleges set aside areas on their campuses to teach vital new skills to thousands of enthusiastic sailors and officers.

With the United States now formally at war, the size of nearly all aspects of the Navy—personnel, numbers of ships, and the infrastructure and supply system to support them—grew exponentially. To assist with administering this burgeoning organization, Secretary Daniels resorted to a talented but until then untapped resource. Noting that the act authorizing a Naval Reserve Force had not specified that recruits be male, Secretary Daniels authorized the Navy to recruit women into the reserve. Officially designated as yeomen (F), more than 11,000 women provided invaluable clerical skills during the war and were colloquially known as "yeomanettes" or "yeowomen."

NHHC NH 52943

Yeomen (F) helped process the enormous quantities of paperwork generated by the Navy's great expansion during World War I. The largest number of yeomen (F) worked in and around Washington, DC. Here, they work alongside civilian personnel in an office in the Main Navy or Munitions buildings, c. 1919.

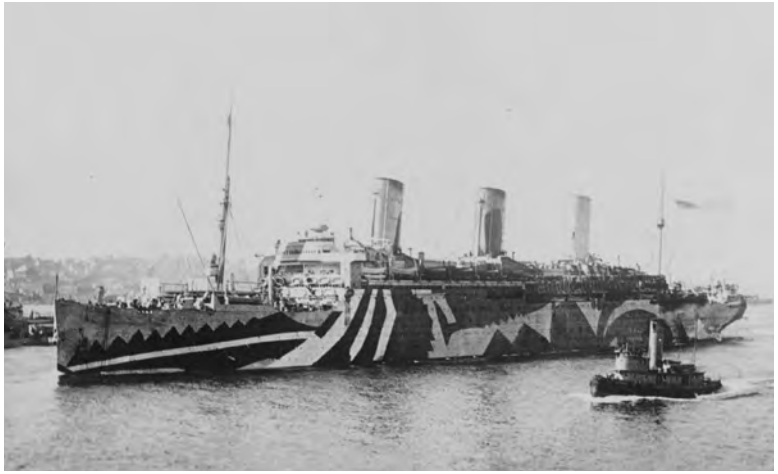
Escorting merchant cargo destined for friendly ports in Europe was initially the Navy's most pressing mission. In April 1917 alone, German U-boats sank 875,000 tons of shipping and destroyed 458 ships. Great Britain's leaders worried that if such losses continued, the country would be unable to remain in the war. Soon after the United States entered the conflict, 40,000 naval reservists and militiamen received orders and prepared to serve as armed guards on merchant ships or in various patrol and convoy-escort craft. A wide variety of vessels, including private yachts, began patrolling off the eastern seaboard of the United States, off of France, and in the Mediterranean. As the crews' experience increased, and especially as a convoy system using destroyers often manned by a large complement of reservists was implemented in late spring 1917, equipment increasingly reached its destination. In June, 696,725 tons of shipping were lost, and in September the losses fell to 353,600 tons. The Allies now held the upper hand at sea, but the war's ultimate outcome remained to be determined in western France.

A second vital operation for the Navy was transporting the American Expeditionary Force (AEF) across the Atlantic. In the spring of 1918, the timely arrival of ships carrying American "doughboys" and marines enabled the allied forces in France to withstand a major offensive that Germany hoped would win the war. Then, as the influx of American ground forces continued unabated, the U.S., British, and French armies launched their own broad offensive that summer and finally overwhelmed an exhausted Germany in November. Following the war, Secretary

Daniels observed that the transport of some two million American service members was "not only the most important but the most successful operation of the war. The Germans never believed it could be done."

It was in the skies of Europe where the reservists' skills perhaps shone most brightly. Nearly all of the 16,000 men who comprised naval aviation units were reservists. One of them, Lieutenant (j.g.) David S. Ingalls, became the Navy's only ace during the war, shooting down a balloon and four German aircraft, and received the Distinguished Flying Cross.

Reservists also helped execute two of the more remarkable tasks that the Navy undertook. After much debate about the merits of using mines to deter German vessels from leaving their home waters, the Allies in 1918 finally determined to install an enormous "mine barrage" in the North Sea. Reservists helped produce and transport to Europe many of the American mines employed in the gigantic seaborne minefield, the American portion of which began to be laid off Norway on 8 June. Also that summer, the Navy began supporting the AEF's last major ground campaigns by hurling 1,400-pound shells from 14-inch naval guns that were mounted atop railway cars. Manned by crews of which 90 percent were reservists, the five railway batteries lobbed nearly 800 projectiles over distances of 20 miles or more and inflicted heavy damage on railway junctions and logistical centers behind the German front lines.



NHHC NH 105389

Upon entering World War I, the United States captured the German passenger liner SS *Vaterland* in Hoboken, New Jersey. Renamed *Leviathan* (SP-1326) and crewed mostly by reservists, it transported the largest number of American service members to and from France during World War I.

The newly established naval reserve had a significant presence and performed quite well in its first major test, a true trial by fire. In April 1917, the Navy had nearly 80,000 officers and men, only some 11,500 of whom were reservists, but by war's end the nearly 490,000 enlisted billets included 271,571 reserve sailors. Reservists also comprised more than 20,000 of the Navy's 31,000 officers. Although the majority of the Naval Reserve Force entered the war with little or no naval experience, most served enthusiastically and effectively. They also fought courageously, with six earning the Medal of Honor for their heroism. One creative reservist, Lieutenant Commander Andrew J. Stone, received the Navy Cross for inventing the Y-gun to fire depth charges. Shortly after the war ended, Secretary Daniels wrote, "the creation of the United States Naval Reserve force was one of wisest provisions ever made for the Navy."

NHHC NH 81838

Nineteen-year-old Lieutenant (j.g.) David S. Ingalls became the Navy's first-ever ace, shooting down a balloon and at least four German aircraft in 1918. Later serving as President Herbert Hoover's Assistant Secretary of the Navy, Ingalls was a highly effective advocate for naval aviation.

As the Navy and Army shrank rapidly after the November 1918 armistice, select naval reservists stayed on during the demobilization period that stretched into 1919. Most of those still on orders manned the transports that brought back the American ground forces from Europe. Reserve medical personnel also helped care for thousands of sailors and marines who fell ill during the waves of the Spanish Influenza epidemic, which killed some 50 million people worldwide in 1918–19.

FIRST POSTWAR REORGANIZATION

In the immediate postwar period, the United States faced an economic recession, and its citizenry shared hopes that the tremendous slaughter wrought by the recent fighting in Europe might dissuade nations from going to war again. In turn, the national government prioritized fiscal economy and pursued arms reduction treaties. Funding for the Navy, Naval Reserve Force, and overall military was drastically reduced. After the Navy was compelled to disenroll some 225,000 officer and enlisted reservists in 1921, the Naval Reserve Force barely remained afloat.

Following additional years of minimal funding and various unsuccessful proposals in Congress, a legislative lifeline finally arrived in 1925. A bill passed that February brought more funding for pay and training, additional facilities and ships, a streamlined organizational structure, and a new name—the Naval Reserve. In a separate piece of legislation passed just days later, Congress authorized the establishment of Naval Reserve Officer Training Corps (NROTC) programs at Harvard and five other universities beginning in the fall of 1926. Although

enrollees initially received no scholarships or pay, they received uniforms, and many customs and approaches from the Naval Academy were adopted. Students also had the opportunity to learn from quality cadre such as Commander Chester Nimitz, who helped stand up the initial program at the University of California, Berkeley. As the NROTC later expanded, the Navy and Marine Corps greatly increased their capacity for generating junior leaders and extended their services' connections to more of the country as clouds of war gathered once again.

WAR ON THE HORIZON

The story of the Naval Reserve in World War II can be divided into two parts. One major part has been described elsewhere by numerous authors, for it essentially is the story of the U.S. Navy in the war. More than 83 percent of the sailors and officers in the Navy, after all, were reservists. Along with noting a few instances of their contributions, it is appropriate here to highlight a second and less familiar aspect of the story: how the Naval Reserve brought in and trained tens of thousands of Americans to help secure victory in the largest war in human history.

One week after Germany invaded Poland on 1 September 1939, President Franklin Roosevelt proclaimed a national emergency to strengthen "the National Defense within the limits of peacetime authorizations." This "limited" national emergency authorized the Naval Reserve and other reserve elements to call up volunteers for service. Following Germany's rapid defeat of France in June 1940, however, the country began transitioning to an involuntary approach for preparedness. In August, Congress passed the Selective Service Act, the first peacetime draft in United States history, which authorized conscription for men aged 21 to 36. In the fall, Secretary of the Navy Frank Knox began notifying Naval Reserve units that involuntary call-ups were imminent. From that time through April 1941, reservists were steadily ordered to active duty. With the president's declaration of an unlimited national emergency in May, Secretary Knox received authority to extend enlisted reservists' service beyond the end of their enlistments. The Naval Reserve, like the entire country, moved closer to a war footing.

Training programs rapidly expanded while additional ones were introduced in response to the colossal requirements of potentially fighting a global war. The six original NROTC college campuses were supplemented between 1939 and 1941 by 21 more. In 1940, a new program known as V-7 enabled thousands of applicants with two years of college and completion of a 30-day trial at sea to earn reserve commissions following an additional three months of intense training. Subsequent modifications to this program for "90-day wonders" opened it to more individuals, and a similar offering was devised to bring in engineers. Meanwhile, three additional flight training facilities increased the number of new reserve aviators by 1,600 per month.

The large percentage of reservists in the Navy's enlisted force likewise resulted from the evolution of manpower-related legislation during the war. Passage of the aforementioned conscription legislation in 1940 had steered many American men to enlist voluntarily into the Navy rather than risking being drafted into the Army. The War Manpower Commission ended volunteer enlistments on 1 February 1943, however, and directed that all draftees, which now included men from ages

18 to 37, be assigned to services only after taking physicals to indicate their suitability for various jobs. Draftees directed into the naval manpower pool could then decide between joining the Naval Reserve for the duration of the war or entering the regular Navy for six years. From that point on, the great majority of conscripted sailors chose to become members of the Naval Reserve.

"THIS IS NO DRILL!"

Japan's surprise attack at Pearl Harbor showed that even after years of naval expansion, the United States still was not fully prepared for war. Following this blow, Japanese forces maintained the initiative for another six months as they captured Singapore, the Dutch East Indies, and the Philippines, and inflicted painful defeats on U.S. and Allied naval forces throughout the western and central Pacific. Nevertheless, the strengthening of the Naval Reserve and many other aspects of national defense in the preceding years enabled the United States to recover from these setbacks more quickly.

Aviation was once again an area in which reservists particularly stood out. During the Battle of the Coral Sea the May 1942, for example, Lieutenant (j.g.) William Edward Hall was credited with downing four Japanese aircraft. A month later in the Battle of Midway, some 90 percent of aviators were reservists.

NHHC NH 97446

About 80 minutes before Japanese aircraft appeared in the skies on 7 December 1941, the commanding officer of the destroyer USS *Ward* (DD-139), Lieutenant Commander William W. Outerbridge, observed a submarine's tower in the approach to Pearl Harbor. In a matter of minutes, *Ward* closed within range of a Japanese midget submarine, and its crew of reservists began firing 4-inch/50-caliber rounds from the gun pictured above and launching depth charges that sank the intruder.

NHHC NH 52362

The five Sullivan brothers enlisted together in early 1942 in the Naval Reserve and were part of USS *Juneau*'s (CL-52) crew from its commissioning that February until it was torpedoed and sunk by a Japanese submarine on 13 November 1942. All five brothers were lost. Their surviving sister subsequently also joined the Naval Reserve.

Representative of these was Lieutenant (j.g.) Alex Vraciu, who throughout the war demonstrated exemplary flying and heroism en route to 19 confirmed enemy kills, including six within eight minutes during the famous "Marianas Turkey Shoot" in June 1944.

When the Navy reached its peak strength in the summer of 1945, more than two and a half million of the approximately three million enlisted sailors serving were reservists. Eighty-six percent of officers on active duty also had come from the Naval Reserve. Although the highest-ranking individuals in the service remained regular Navy officers and graduates of the Naval Academy, reservists were well represented in nearly all ratings and officer billets. Citizen sailors proved essential to the Navy and nation in World War II.

NHHC 80-G-236841

Lieutenant (j.g.) Alex Vraciu demonstrated exemplary flying and heroism en route to 19 confirmed enemy kills, including six in eight minutes in the famous "Marianas Turkey Shoot" during the Battle of the Philippine Sea in June 1944.

Because of its broad appeal to many Americans, the wartime Naval Reserve included an extraordinary number of individuals who would assume prominence outside of the military. For instance, the wartime reserve proved to be a seedbed for five future presidents of the United States. Famous actors who also were wartime reservists include Douglas Fairbanks, Jr., Henry Fonda, and Jack Lemmon. As these and many other highly accomplished individuals demonstrated, the Naval Reserve was an organization in which Americans could both serve their country when necessary and pursue their own civilian paths to success when danger had passed.

The Naval Reserve also took noteworthy, albeit far from complete, steps toward helping the Navy to integrate women into the service. As it had for the yeomanettes during World War I, administrative work again constituted the major focus of the new Women Accepted for Voluntary Emergency Service (WAVES), established on 30 July 1942. Women also served in medical, storekeeping, and other roles that freed men to serve aboard the more than 6,700 ships in a greatly expanded service. Limited initially to the continental United States, the WAVES received permission to serve in American territories beginning in September 1944. By the end of the war, nearly 100,000 women volunteered to serve as reservists, far more than the 1,000 officers and 10,000 enlisted that the Navy initially projected would be needed. Their service was widely commended by the Navy's top leadership. Fleet Admiral Ernest J. King observed

NHHC 81-156-L

The employment of nearly 100,000 WAVES during World War II brought much needed talent to shore establishments in the states and American territories, and permitted more men to fight overseas. WAVES who sought to become parachute riggers first completed boot camp and then attended Parachute School at Naval Air Station Lakehurst, New Jersey.

that "The Navy has learned to appreciate the women…for their discipline, their skill, and their contribution to high morale," and added, "our greatest tribute to these women is to request for more WAVES."

POSTWAR DEMOBILIZATION

The exuberant return home of American service members after World War II rapidly shrank the wartime Navy, with 15,000 sailors per day receiving discharges in December 1945. President Harry Truman and Congress both wanted to cut the heavy deficit spending that had financed the war years, and the reserves appeared as an economical option for defense. Congressional appropriations for the Naval Reserve therefore remained healthy in the fiscal years 1947 and 1948, while the active duty Navy saw continued and drastic cuts. Great numbers of aircraft, surface ships, and submarines no longer necessary for combat became available for reservists' training. Meanwhile, construction and modernization of nearly 300 reserve training centers throughout the country commenced. By late 1949, more than 167,000 generally experienced reserve officers and sailors were participating regularly in a paid status, while another 800,000 in an inactive volunteer reserve force could be called to duty for an emergency.

CRISIS IN KOREA

After North Korea's invasion of South Korea caught the United States off guard in late June 1950, President Harry S. Truman quickly authorized reserve mobilizations. In addition to rushing in active and allied forces already deployed in the

region, the United States began placing into service scores of recently "mothballed" World War II–vintage combatant ships. More ships at sea necessitated increasing the supply of sailors to man them. At first relying upon a voluntary recall of reservists, the Navy on 19 July received permission to begin involuntary recalls. By late August, some 53,000 reservists were on active duty. As the Navy steadily drew additional ships from the mothball fleet in the months that followed, the call-ups continued. At the one-year mark of the conflict, June 1951, some 182,000 naval reservists were serving on active duty.

The emergency nature of the initial mobilization—with U.S. and South Korean forces being pushed steadily backward to a crowded Pusan perimeter—reflected the operational imperative of quickly bolstering manpower to avoid a disastrous defeat. A strong sense of urgency resulted in many of the recalled reservists who first entered the fight having hardly trained in five years. Soon it became apparent that many sailors had partially "lost their hand" and would require at least a modest amount of post-mobilization training to get "reoriented." However, the great majority of those in the early call-ups at least were stouthearted veterans of World War II who had experienced combat. As one senior aviation commander observed, "Almost without exception, Reserves proved to be conscientious and properly motivated, but lacking in technical skill and knowledge which only continuous naval duty can give." After the United Nations forces seized the initiative with the amphibious landing at Inchon in mid-September, reservists began to receive more refresher training prior to deploying.

Naval reserve air squadrons helped the UN forces to dominate the skies over Korea. Following a half-year of refresher training that had commenced in August 1950, Attack Squadron 702 joined two other reserve squadrons aboard USS *Boxer* (CV-21) in March 1951. This all-reserve air group was one of several that featured prominently in Task Force 77's intensive close air support and interdiction operations, and it enabled active duty pilots to leave the theater for a respite from combat. Half of the pilots flying off the deck of USS *Princeton* (CV-37) and 90 percent of the aviators launching from USS *Bon Homme Richard* (CV-31) were reservists. By war's end in July 1953, 40 Naval Reserve air squadrons had mobilized for the successful defense of South Korea or to prevent a separate conflict from igniting somewhere else, such as around Taiwan or in Europe.

NHHC 88-191-BI

Two A-1 Skyraiders from Attack Squadron 702, a reserve squadron from Texas embarked in USS *Boxer* (CV-21), conduct interdiction operations over Hamhung, North Korea. Colored pencil drawing by Herbert Hahn, 1951.

Large numbers of reservists served alongside regular Navy sailors in many other ratings besides aviation billets. More than half of the corpsmen who accompanied Marine Corps units at Inchon, the Chosin Reservoir, and other battlefields were reservists. Aboard hospital ships at sea and in hospitals ashore, reserve doctors and nurses likewise provided critical medical care. Tending to sailors' and marines' spiritual needs, some 400 chaplains from the Naval Reserve served during Korea, including 119 who were called up involuntarily. Mobilized Seabees built logistical infrastructure and maintained airfields close to the battle lines.

MORE ORGANIZATIONAL CHANGES

In light of the wartime experience, the Dwight D. Eisenhower administration modified both the reserve structure of the armed forces and the processes used for mobilization. In 1953, the Naval Reserve created the full-time Training and Administration of Reserves organization to administer naval reserve units. Meanwhile, the Reserve Forces Acts of 1955 and 1958 redefined the basic categories of reservists who would comprise what was now called the Ready Reserve, which could be mobilized by emergency declarations from either the President or Congress. Selected Reserve (SELRES) individuals who were paid for drilling regularly with units could during larger crises be augmented by Individual Ready Reserve members, a non-drilling pool of at least minimally experienced manpower that had completed basic training and had some active duty time. Backing up these two manpower pools of SELRES were a Standby Reserve and a Retired Reserve, emergency options that could be involuntarily mobilized only by Congress.

BERLIN CRISIS

In the summer of 1961, Soviet Premier Nikita Khrushchev threatened to limit Western land access to West Berlin. Soon thereafter, East German authorities began constructing a wall between the Soviet-occupied portion of the city and that garrisoned by the United States and its allies to prevent Germans from fleeing East Berlin. Seeking to demonstrate American resolve, President John F. Kennedy received congressional support on 1 August to involuntarily mobilize up to 250,000 members of the Ready Reserve for up to 12 months. Some 8,000 naval reservists mobilized, about half of whom filled surface billets. Forty of the 100 SELRES ships then in service, including 13 destroyers and 27 destroyer escorts, were activated primarily to counter the Soviet threat to allied shipping. Eighteen Naval Reserve aviation squadrons available for carrier-based antisubmarine warfare and shore-based patrols, meanwhile, comprised most of the other mobilized reservists.

VIETNAM ERA

With the draft continuing to provide a steady source of manpower during the Vietnam War, President Lyndon B. Johnson resisted mobilizing reservists involuntarily until the last year of his presidency. In early 1968, the Navy called up six reserve aviation squadrons with just 30 hours' notice as a response to North Korea's 23 January seizure of USS *Pueblo* (AGER-2) and its crew. However, the squadrons ultimately remained stateside on active duty for nine months. In addition to this mobilization, the Naval Reserve also commenced its only involuntary call-up for Vietnam. In April, approximately 1,000 Seabees deployed with

reserve Naval Mobile Construction Battalions (NMCBs) 12 and 22 to Vietnam. In addition to the activation of these two units, tens of thousands of naval reservists also served in Vietnam and elsewhere in the world during the long conflict. Some were graduates of NROTC programs, including aviator Lieutenant (j.g.) Everett Alvarez Jr., who became a prisoner of war for more than eight years after his A-4 Skyhawk was hit by antiaircraft fire at the beginning of the war. Others were volunteer officers serving in chaplain, medical, and intelligence billets. In many cases, enlisted reservists also served in Vietnam or off its coasts as individuals whose contracts required an initial two years on active duty prior to entering a traditional drilling status as reservists.

U.S. Navy 5210982

An ordained priest who had completed six years of missionary work in Taiwan prior to his commissioning in the Naval Reserve, Chaplain Lieutenant Vincent R. Capodanno regularly accompanied Marines in combat while he was deployed to Vietnam. On 4 September 1967, he was mortally wounded while aiding Marines heavily engaged by the enemy in Quang Tin Province. Capodanno was awarded the Medal of Honor posthumously.

THE END OF THE DRAFT AND THE 1980s RENAISSANCE

The end of the draft in 1973 and transition to an all-volunteer "Total Force" structure produced many changes for the Naval Reserve. Draft avoidance during the Vietnam War had been both a strong motivation for many to join the Naval Reserve and a contributor to the rather poor reputation of the organization (and of the other services' reserve components), which therefore revamped its recruiting approach. Concurrently, the Navy and Naval Reserve saw most of their World War II vessels decommissioned, a situation that necessitated new approaches to training. However, the severe economic crises that periodically hit the country in the 1970s created political support for strengthening reserve forces that once again were seen as more economical than large active duty structures.

The 1980s enabled the Naval Reserve, along with the rest of the services and components, to ride a wave of support generated by President Ronald Reagan's determination to confront Soviet ambitions with a revamped American military. Secretary of the Navy John Lehman, a reserve aviator who conspicuously flew A-6 Intruders during his annual training periods, directed a larger share of the Navy's budget to the reserves. Over the course of the 1980s, the strength of the Navy's Selected Reserve rose from 90,000 to 151,000. Better training with newer ships and aircraft increased readiness.

DESERT SHIELD AND DESERT STORM

Iraq's invasion of Kuwait in early August 1990 prompted President George H. W. Bush to order a swift and broad military response that included the first involuntary mobilization of

reserve forces since the Vietnam era. During Operation Desert Shield, an initial defensive phase to forestall additional Iraqi aggression and to convince Saddam Hussein to withdraw his forces from Kuwait, the President opted to rely mostly upon active forces, volunteer reservists, and involuntary mobilizations of 90 days that he could extend for an additional 90 days before having to seek congressional approval. During this early period, Mobile Inshore Undersea Warfare Units 103 and 105 mobilized and deployed to secure ports as vast amounts of military hardware flowed steadily into Saudi Arabia and Bahrain.

With Saddam showing no sign of wavering, Congress expanded the President's mobilization authorities, and the numbers of both active and reserve forces grew significantly. Three reserve NMCBs deployed to construct hospital facilities and to prepare defensive perimeters for the steadily increasing ground forces. In mid-December, the Naval Reserve activated two helicopter combat special support squadrons to provide search-and-rescue capabilities. The week after Christmas, four transport squadrons in the United States were activated and quickly deployed to bases in Europe from which their C-9 aircraft flew passengers and cargo into theater. About 1,800 individual reservists served as augmentees on 60 ships in theater. Intelligence specialists, chaplains, and weapons handlers also added to the joint effort. Nearly 11,000 reservists, approximately half of those called up, came from the medical community. Many backfilled at stateside bases from which active Navy doctors and nurses had deployed, but several also served in two combat zone fleet hospitals, on hospital ships, and as corpsmen with Marine ground elements.

U.S. Navy 330-CFD-DN-SC-84-01372

Serving concurrently as the 65th Secretary of the Navy and as a reserve aviator, John Lehman confidently steered the Navy and Naval Reserve. Seen here in the cockpit of an Attack Squadron 115 A-6 Intruder at Naval Air Facility, Atsugi, Japan, Lehman was a high-profile conduit for President Ronald Reagan's policy of restoring the country's military prowess.

The Total Force combination of regulars and reservists, along with contributions from allies, achieved a decisive victory against Iraq during Operation Desert Storm from mid-January through the end of February 1991. "The system worked," observed Rear Admiral James E. Taylor, director of Naval Reserve. The reservists "were ready, they were well-trained, they did their job and they were highly motivated."

POST–DESERT STORM

Continuing the historic trend of major postwar drawdowns, the post–Cold War "peace dividend" translated into the Naval Reserve's authorized strength shrinking by nearly 30 percent, from 133,000 to 96,000 sailors, concurrent with dramatic budget reductions accompanying the evaporation of the long-stand-

ing Soviet threat. Nevertheless, the military's responses to multiple regional crises, combined with cuts to the active duty force, resulted in more reliance upon reserve components for operational support. Many of the staffs at combatant commands were augmented by reservists serving on back-to-back orders, enabling the latter to remain multiple years at the same command. Navy reservists also volunteered for operations in Haiti, the Balkans, and the Middle East, although no reserve units were involuntarily called up. Just months before the decade came to a close, the increasing use of reservists in an operational—rather than primarily strategic—role was indirectly acknowledged by legislation that elevated the chiefs of the reserve components to the three-star rank.

Department of Defense 330-CFD-DN-ST-91-11226

About half of the 20,000 naval reservists mobilized for Operations Desert Shield and Desert Storm were called to provide care at medical facilities in the United States, Europe, and in theater. Here two corpsmen treat a Marine Corps gunnery sergeant exposed to the smoke generated by burning Kuwaiti oil fields.

POST-9/11 DEPLOYMENTS

Al-Qaeda's terrorist strikes against the United States on 11 September 2001 initiated years of continuous employment of naval and other reservists for operations that collectively comprised the Global War on Terrorism. Three days after the shocking attack, President George W. Bush declared a partial mobilization of up to 50,000 reserves for up to 24 months. Initially the Naval Reserve's mobilization cap was just 3,000 sailors, but in December, as the campaign to remove the Taliban in Afghanistan continued to unfold, Secretary of Defense Donald Rumsfeld raised the Navy's figure to 14,400 and also increased the allocations for the other services. As 2002 approached, about 250 naval reserve clerks, logisticians, intelligence specialists, and security personnel were serving in Bahrain and in support of Fifth Fleet. In addition to these sailors engaged in the offensive fight in Afghanistan, some 5,000 naval reservists had joined tens of thousands of reservists from the other services and National Guard to secure military bases and critical infrastructure throughout the United States and overseas.

Most reservists who served in the two decades following 9/11 did so as individual augmentees (IAs), but select units mobilized for Operation Iraqi Freedom (OIF). Strike Fighter Squadron 201 from Fort Worth, Texas, mobilized and served from January through May 2003 aboard USS *Theodore Roosev*elt (CVN-71), dropping 220,000 pounds of ordnance in Iraq. Reserve Seabees from NMCB 74 deployed several times to build or maintain camps and airfields in Kuwait and Iraq. Navy Reserve Helicopter Combat Support Special Squadrons 4 and 5 deployed for search and rescue operations from Kuwait. An

increased reliance on special warfare operations in theater led to frequent deployments for reserve SEAL teams. As OIF continued through August 2010, elements of units tasked with air logistics, mobile inshore undersea warfare, cargo handling, construction, intelligence, detention, and other missions also deployed.

In Afghanistan, the Navy's reservists helped their Army and Marine Corps counterparts by taking novel assignments to help rebuild the war-torn country's society and economy. Working within units known as provincial reconstruction teams (PRTs), reservists with civilian backgrounds in law enforcement, healthcare, agriculture, government administration, and related specialties partnered with Afghan nationals to develop their country's fledgling institutions. Reserve IAs excelled in this civil affairs role as the PRT campaign continued for several years, a reflection of the Navy's assumption of missions traditionally handled by the overstretched Army and Marine Corps.

U.S. Navy 030529-N-7457M-024

Reservists often must balance the competing demands of military service, civilian employment, and family responsibility. Here Commander William Fitzpatrick, Strike Fighter Squadron 201, joyfully greets his family upon his return from Operation Iraqi Freedom. During their 2003 deployment, the squadron's F/A-18 pilots led Carrier Air Wing 8 in several performance metrics including sortie rates and destruction of targets attacked.

The widespread and lengthy employment of reservists in the new millennium resulted in better integration between the regular and reserve components. In 2005, Chief of Naval Operations Admiral Vern E. Clark successfully pushed for the Naval Reserve to be renamed Navy Reserve. The renamed organization's chief, Vice Admiral Tom Cotton, told his sailors, "You're all in the Navy. You're not in the Reserve anymore." The closer relationship enabled reservists to support an ongoing series of operations outside of the larger fights in Iraq and Afghanistan. For example, during Operation Odyssey Dawn, the 2011 campaign that removed Libya's dictator Muammar Qadhafi, 60 reservists quickly deployed to bases and ships in the Mediterranean so that Sixth Fleet could tackle the emergent situation.

INTO THE NEXT CENTURY OF SERVICE

Each of America's wars from World War I onward demanded different contributions from the Navy's reserve. When first tested in 1917, the large pool of mainly inexperienced reservists effectively performed essential convoy escort duties and a variety of tasks ashore. A generation later, the global scale of World War II operations required almost three million reservists to engage in nearly all the missions of an enormously expanded Navy. In turn, this vast reservoir of combat veterans served as

an abundant, capable, and readily available source of manpower for the Korea crisis. Providing extensive manpower for all three of these major wars, naval reservists took on a particularly large share of the aviation missions.

After the Korean War, with the large regular Navy maintaining a sufficient number of sailors to meet most of its needs in conflicts against opponents with smaller navies, the Naval Reserve stepped in primarily to complete more limited and specialized assignments. Seabee units, for example, deployed for Vietnam, Desert Shield and Desert Storm, and post-9/11 operations. In a reflection of the increasingly joint character of the American military, Navy Reserve medical, aviation, expeditionary and intelligence assets also were tapped regularly to support the large ground campaigns since 1990.

As it proceeds into its second century of service, the Navy Reserve, along with the Navy and the rest of the U.S. military, has shifted back to preparing for potential fights against opponents with potent navies. Today the complexity of ships, airplanes, and weapons systems all necessitate recruiting and retaining highly competent individuals to man or operate them. The sense of security from foreign threats that the Atlantic and Pacific Oceans once provided to the United States has now mostly disappeared, but the Navy's versatile reserve stands ready as always.

U.S. Army 937147

During her deployment with Naval Mobile Construction Battalion 15, Construction Utilitiesman Second Class Nancy Iyoha works on a project at Camp Phoenix, Kabul, Afghanistan, in May 2013. The reserve NMCB headquartered in Missouri drew in its assigned sailors from several nearby states for the deployment.

U.S. Coast Guard 200330-G-GM914-409

Reserve medical professionals quickly offer essential capabilities and capacity when the Navy must respond to combat or humanitarian scenarios. As part of U.S. Northern Command's deployment of military assets to protect the home front in the early weeks of the COVID-19 pandemic, Navy Reserve doctors and nurses embarked on USNS *Mercy* (T-AH-19) reached New York Harbor on 30 March 2020. The ship's provision of some 1,000 hospital beds for treating urgent care patients not infected with the virus relieved pressure from local hospitals.

REMEMBERED

FURTHER READING

For more historical information, including the *Dictionary of American Naval Fighting Ships* (DANFS), visit www.history.navy.mil.

Baer, George W. *One Hundred Years of Sea Power: The U.S. Navy, 1890–1990.* Stanford University Press, 1994.

Bradford, James C. (ed.). *America, Sea Power, and the World.* Wiley Blackwell, 2016.

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Winkler, David F. *Ready Then, Ready Now, Ready Always: More Than a Century of Service by Citizen Sailors.* Navy Reserve Centennial Book Committee, 2014.

PHOTO ESSAY IMAGES

IN TRAINING (PAGES xiv–xv)

1. U.S. Naval Training Station, Norfolk, Virginia, 1918: A recruit demonstrates the strength of his teeth by lifting a man. (NARA 45510286)

2. A Navy recruit getting his first haircut, 1943. (NARA 593802)

3. U.S. Naval Academy midshipmen (Class of 1980) listen to assignment instructions during Plebe Summer, 1976. (NHHC L39-10.07.01)

4. Navy recruits carrying M-1 rifles pass in review at the Recruit Training Command, Naval Base San Diego, California, 1982. The rifles had been reintroduced in Navy boot camps after a five-year hiatus to develop teamwork and aid in physical conditioning, 1982. (NARA 6353492)

5. Members of a Sea-Air-Land (SEAL) team practice parachuting from aircraft over Roosevelt Roads, Puerto Rico, 1986. (NARA 6421744)

6. A SEAL team member applies camouflage face paint during a field training exercise, 1987. (NARA 6431949)

7. An aviation rescue swimmer candidate dives down to retrieve his fins from the bottom of the pool, an exercise that helps trainees practice their water comfortability and ability to don gear while submerged, NAS Pensacola, Florida, 2024. (U.S. Navy 240820-N-UT560-5701)

UNDERWAY (PAGES 48–49)

1. On board a *Nevada*-class battleship, c. 1919. (NHHC NH 1745)

2. Lookouts on watch on a U.S. submarine off New London, Connecticut, August 1943. (NHHC 80-G-468334)

3. The bridge watch onboard USS *Richard B. Anderson* (DD-786) keeps a sharp eye on the horizon as the destroyer steams at flank speed in the South China Sea off the Republic of Vietnam, October 1966. (NHHC USN 1142187)

4. Plane captains direct their F/A-18C Hornet aircraft into position on the flight deck of USS *Theodore Roosevelt* (CVN-71), 2006. (NARA 6697219)

5. Yeoman Second Class Gerland K. Albert stands watch at a .50-caliber M2 machine gun mount onboard USS *Iwo Jima* (LHD-7), as it transits through the Suez Canal, 2006. (NARA 6697130)

6. Parts for an order are pulled in one of the supply department's S-8 store rooms onboard USS *Abraham Lincoln* (CVN-72), 2006. (NARA 6697426)

7. A sailor assigned to *Los Angeles*–class attack submarine USS *Hampton* (SSN-767) clears ice away from the boat's sail to allow for surface entry during Ice Exercise 2016. (U.S. Navy 160322-N-QA919-278)

8. Cryptologic Technician (Technical) Second Class Kapri Besser monitors shipboard sensors aboard amphibious assault ship USS *Makin Island* (LHD-8) during a Pacific deployment, 2003. (U.S. Navy 230530-N-MD088-2050)

AROUND THE WORLD (PAGES 86–87)

1. Sailors visiting Colombo, Ceylon (Sri Lanka) during the voyage of the Great White Fleet, December 1908. (NHHC UA 493.09)

2. Four sailors pose while on liberty in Hong Kong, 1929. (NHHC NH 96023)

3. Yeoman Third Class Margaret Jean Fusco photographs three friends by King Kamehameha's statue in Honolulu, Territory of Hawaii, spring 1945. (NHHC 80-G-K-5568)

4. Sailors on liberty in Japan pose in front of a bomb-damaged shrine, autumn 1945. (NHHC UA 560.08)

5. Sailors on liberty from guided-missile destroyer USS *Buchanan* (DDG-14) talk with young monks at one of the 300 temples in Bangkok, Thailand, 1966. (NHHC L54-10.09.02)

6. Seaman Jack Robinson of Chanute, Kansas, makes friends with a Vietnamese child as the sailor returns from guard duty to his billet at Camp Tien Sha, Da Nang, Republic of Vietnam, April 1966. (NHHC K-31410)

7. Haiti relief operations, February 2010: Chief Petty Officer Charlotte Reijo, assigned to the Navy's Maritime Civil Affairs Team 207, embarked aboard the amphibious assault ship USS *Bataan* (LHD-5), meets with displaced children in Carrefour, Haiti. (U.S. Marine Corps 100218-M-8605C-005)

8. Musician Third Class Seville Jenkins, assigned to the U.S. Seventh Fleet Band, takes a selfie with children during the 80th Black Ship Festival Parade, Shimoda, Japan, May 2019. (U.S. Navy 190519-N-HH215-1185)

SHORE DUTY (PAGES 122–23)

1. U.S. Navy sailors on guard duty, Hankow, China, c. 1910. (NHHC NH 85611)

2. WAVES at the Naval Training School in Norman, Oklahoma, lower an airplane engine onto a block, July 1943. (NHHC NH 86160)

3. A Navy photo interpretation unit on Esperito Santo, New Hebrides, c. 1945. (NHHC UA 452.08)

4. Seabees of U.S. Naval Mobile Construction Battalion 8 move a section of an aircraft shelter into place at the Marine Air Group 11 area, Da Nang, Republic of Vietnam, July 1969. (NHHC 80-G-K-75857)

5. Servicing an F-5E Tiger II adversary aircraft assigned to the Navy Fighter Weapons School ("Top Gun") at NAS Miramar, California, August 1982. (U.S. Navy DN-SN-84-09584)

6. Lieutenant Commander Seth Hall, commanding officer of the Mid-Atlantic Regional Maintenance Center's Floating Dry-Dock Dynamic (AFDL-6), addresses the crew prior to a docking, Norfolk, Virginia, August 2019. (U.S. Navy 190827-N-KP445-1023)

7. Norfolk Naval Shipyard docking officer Lieutenant Commander Nathalie Behn stands ready to welcome USS *Dwight D. Eisenhower* (CVN-69) in advance of its planned incremental availability, January 2025. (U.S. Navy 250108-N-YO710-8732)

AT EASE (PAGES 154–55)

1. Scrappy, USS *Yorktown* (CV-10) ship's mascot, poses in the cockpit of an F6F Hellcat fighter, accompanied by Aviation Radioman Third Class Robert L. Brown, 1943. (NHHC 80-G-K-1704)

2. A game of basketball underway in the forward elevator of USS *Monterey* (CVL-26) during operations in the Marianas, June–July 1944. Player jumping for ball (*left*) is Lieutenant Gerald Ford, future U.S. President. (NHHC 80-G-417628)

3. Crossing the Line: King Neptune and his queen, c. 1910. (NHHC USN 903076)

4. Sailors gather for photographs at the base of the Statue of Liberty, New York Fleet Week, 4 May 1989. (Department of Defense 330-CFD-DN-SN-90-09497)

5. "Gang around piano for boogie session, May 1944." (NHHC UA 477.43)

6. Crossing the Line on board USS *Wasp* (LHD-1), 25 November 2017. (U.S. Navy 171125-N-BD308-0309)

7. Baseball team of USS *Tennessee* (Armored Cruiser No. 10), the U.S. Pacific Fleet champions, c. 1908–1910. (NHHC NH 94015)

HOMEWARD BOUND (PAGES 190–91)

1. A Navy officer leads his command along a confetti-covered New York street as they march in the city's victory parade for the returning veterans of Operation Desert Shield and Operation Desert Storm, 10 June 1991. (Department of Defense 330-CFD-DF-ST-92-01065)

2. USS *Langley* (CVL-26) flying a homeward-bound pennant, May 1945. (NHHC 80-G-700448)

3. Friends and family members gather on a pier at Naval Station Norfolk as USS *Theodore Roosevelt* (CVN- 71) returns from deployment, 11 March 2006. (Department of Defense 330-CFD-DN-SD-06-16019)

4. Return from deployment: a naval aviator is greeted by his son, 1950s. (NHHC NH 84343)

5. Wives of Navy pilots assigned to Light Attack Squadrons 27 and 97 wait for their arrival from a Western Pacific deployment aboard USS *Coral Sea* (CV-43), 1 April 1982. (U.S. Navy 330-CFD-DN-ST-82-05339)

6. Hospital ship USNS *Mercy* (T-AH-19) returns to San Diego from Operation Unified Assistance, the Indian Ocean earthquake- and tsunami-relief operation, 8 June 2005. (Department of Defense 330-CFD-DN-SD-06-08299)

7. Chief Master at Arms Jennifer Sayler embraces her daughter at Pier 14 on board Naval Station Norfolk, Virginia, during homecoming celebrations for USS *Carl Vinson* (CVN-70), 31 July 2005. (Department of Defense 330-CFD-DN-SD-06-04242)

REMEMBERED (PAGES 226–27)

1. Burial at sea for a casualty of the battle for Iwo Jima on board USS *Hansford* (APA-106) while it was evacuating wounded men to Saipan, Mariana Islands, 25–28 February 1945. (NHHC 80-G-K-3170)

2. A U.S. Navy explosive ordnance disposal officer rings a bell in remembrance of 83 fallen EOD technicians and Navy divers during the Navy Special Operations Memorial dedication ceremony at Joint Amphibious Base Little Creek–Fort Story, Virginia, 7 November 2024. (U.S. Navy 241107-N-TL968-1090)

3. A naval special warfare veteran of the Vietnam War places his hand on The Moving Wall at the Vietnam Veterans Memorial, Washington, DC, 27 April 2024. (U.S. Navy 240427-N-GC965-3132)

4. Members of the color guard stand at attention during a wreath laying memorial service aboard the destroyer USS *Stump* (DD-978). The ceremony was held to honor the 37 sailors who lost their lives when the guided-missile frigate USS *Stark* (FFG-31) was hit by an Iraqi-launched Exocet missile on 17 May 1987, exactly one year prior to this service. (U.S. Navy 30-CFD-DN-SN-88-06478)

5. Underway off southern California, sailors hold ceremonial flags during a burial at sea ceremony aboard USS *Abraham Lincoln* (CVN-72), 23 June 2005. (Department of Defense 330-CFD-DN-SD-06-10074)

6. USS *Carl Vinson* (CVN-70) sailors man the rails in Pearl Harbor, Hawaii, 7 February 2022. (U.S. Navy 220207-N-TY704-1363)

7. Underway off the U.S. West Coast in 2024, sailors assigned to USS *Fitzgerald* (DDG-62) salute during a remembrance ceremony of the seven-year anniversary of the 17 June 2017 collision at sea that took the lives of seven *Fitzgerald* crewmembers. (U.S. Navy 240616-N-YV347-2098)