



Commander Submarine Force, U.S. Pacific Fleet

USS S-5 (SS 110)

September 1, 1920 - No Men Lost

USS S-5 (SS-110) was lost when it foundered off Delaware Capes 40 miles offshore. All the crew escaped through a hole cut in hull in the tiller room.

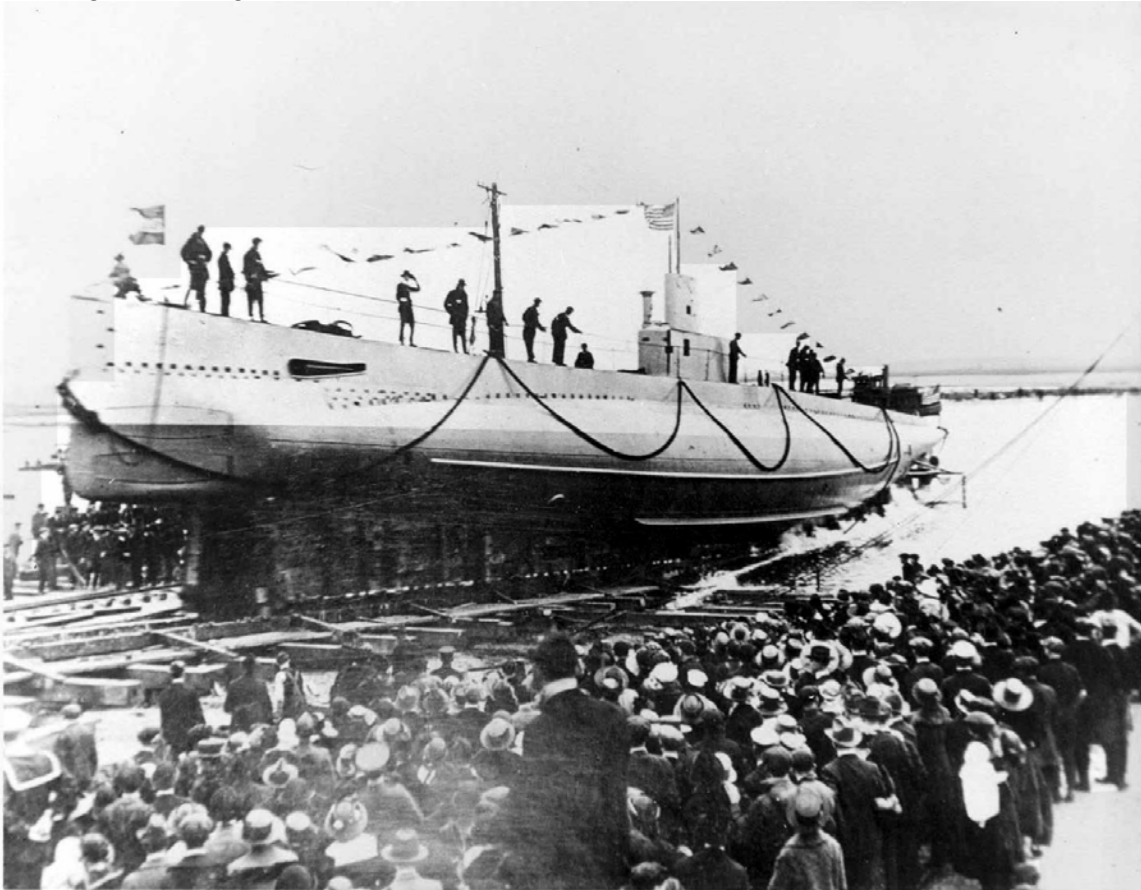
Submarine USS S-5 (SS-110) was authorized to be built by the United States Congressional Act of 4 March 1917 which stated in part: "...of the vessels authorized in the 'Act...' approved August twenty-ninth, nineteen hundred and sixteen, the construction of the following vessels shall be begun as soon as practical at a cost exclusive of armor and armament not to exceed the following amounts:...eighteen coast submarines to have a surface displacement, of about eight hundred tons each, \$1,300,000 each,...."

The keel of USS S-5 (SS-110) was laid down on 4 December 1917 by the Portsmouth Navy Yard at Kittery, Maine. The submarine was christened by Mrs. Glenn S. Burrell and launched on 10 November 1919. The S-boat was commissioned on 6 March 1920 with Lieutenant Commander Charles M. Cooke, Junior, in command.

When commissioned, the S-3 Class coastal and harbor defense submarine was 231' in length overall; had an extreme beam of 21'10"; had a normal surface displacement of 876 tons, and, when in that condition, had a mean draft of 13'1". Submerged displacement was 1,092 tons. The submarine was of riveted construction. The designed compliment was four officers and thirty-four enlisted men. The boat could operate safely to depths of 200 feet. The submarine was armed with four 21-inch torpedo tubes installed in the bow. Twelve torpedoes were carried. One 4-inch/50 caliber deck gun was installed. The full load of diesel oil carried was 36,950 gallons, which fueled two 1,000 designed brake horsepower four-cycle NELSECO type diesel engines built by the New London Ship and Engine Company at Groton, Connecticut...which could drive the boat, via a diesel direct drive propulsion system, at 15 knots on the surface in relatively calm seas. Power for submerged propulsion was provided by a main storage battery, divided into two sixty-cell batteries, manufactured by the Electric Storage Battery Company (EXIDE) at Philadelphia, Pennsylvania...which powered two 600 designed brake horsepower main propulsion motors manufactured by the Westinghouse Electric Company at Pittsburgh, Pennsylvania...which turned propeller shafts...which turned

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propellers...which could drive the submarine at 11 knots for a short period of time when operating beneath the surface of the sea. Slower submerged speeds resulted in greater endurance before the batteries needed to be recharged by the engines and generators.



Following builder's trials, outfitting, and crew training, USS S-5 departed the Boston Navy Yard on 30 August 1920 to undergo full-power trials 55 miles off the Delaware Capes. On 1 September 1920, at 1300, she commenced a "crash dive" for a submerged test run. Water unexpectedly entered the submarine through the main air induction system, pouring into the torpedo room, control room, engine room, and the motor room.

Normal procedure was to leave the main air induction valve open until the engines had a chance to come to a full stop, this operation being so timed as to occur just prior to complete submergence. In the case of USS S-5, however, the man responsible for operating this valve was momentarily distracted. Noticing his mistake, he grabbed the valve lever and jerked hard, causing the valve to jam open.

After considerable difficulty, the system valves in the other compartments were closed, but all efforts to secure the torpedo room valve met with failure. The abandoned torpedo room flooded, making the boat bow heavy. An

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additional 80 tons of water in the motor room bilges caused her to settle on the bottom.

It was now impossible to eject water from the torpedo room. An attempt was then made to pump out the motor room, but a gasket blew out and there were no means for repair. Lying 194 feet on the bottom, the crew had little hope of being found, much less of being rescued.

Their situation now called for some original thinking. They reasoned that sufficient buoyancy in the after section could tilt the submarine on her nose and extend the stern above the surface. The tilt would cause the water in the motor room to drain forward and increase buoyancy further. However, there was great risk involved because this would allow salt water to enter the battery room, which would generate deadly chlorine gas. They hoped to have enough time, after the water had entered, to close the watertight door before the gas could reach a dangerous level.

After making preparations, air was applied to the after ballast and fuel tanks, blowing them dry. The stern began to rise and then shot to the surface. Men, floor plates, bilge water, and other loose objects fell through the length of the submarine. One man nearly drowned in the battery room, but was fished out and the compartment door was sealed against the gas.

By tapping on the hull, it was determined that the stern extended about 17 feet above the surface of the water. With inadequate tools, they took turns trying to cut a hole in the thick hull. After 36 Hours, they had only succeeded in making a hole three inches in diameter.

Through the hole, crew members saw ships pass without stopping. Finally, the wooden steam-powered liberty ship "SS Alanthus" passed nearby. A seaman on watch spotted what he thought was a buoy through his binoculars, but the Captain of SS Alanthus knew that a buoy should not be that far out to sea, and turned his vessel around to investigate. Approaching in a lifeboat, the Captain asked:

"What ship?"

"S-5."

"What nationality?"

"American."

"Where bound?"

"Hell by compass."

SS Alanthus sent out SOS signals and tried without success to enlarge the hole in the submarine's stern for an escape passage for the entrapped crew.

Responding to the SOS signals, the steamship "SS General Goethals" arrived at sundown and pried a huge steel plate from USS S-5's hull. Within an hour, all

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the submariners were out of their boat, some fifty-one hours after the ill-fated dive.

The next morning, dozens of Navy ships came to the scene of the sinking. Battleship USS Ohio (BB-12) secured a towline to the stern of USS S-5, pulled her free of the bottom, and proceeded to tow her to more shallow water. After the S-boat had been under tow for about a mile, she slipped her lines. The loosened submarine bobbed, capsized, and then plunged to the bottom in deep water.

No attempts were made to salvage USS S-5, and she was struck from the Navy List in 1921.

Amazingly, this fourth submarine loss in the United States Navy resulted in no loss of life.

In 1989, 1990, and 1991, the relocated hull of USS S-5 (SS-110) was investigated by divers.

A portion of the hull plating of USS S-5, that was removed by SS General Goethals to permit the S-boat's crew to escape from the sunken submarine, is on exhibit in the Navy Memorial Museum in the Washington Navy Yard in Washington, D. C.