

WELCOME ABOARD



***UNITED STATES SHIP
GREENLING
(SSN 614)***

USS GREENLING (SSN 614)
NAMED AFTER USS GREENLING (SS 213)

Keel Laid - Electric Boat Division, Groton	August 15, 1961
Launched - Electric Boat Division, Groton	April 4, 1964
Lengthening - Quincy, Massachusetts	July 1967
Commissioning - Groton, Connecticut	November 3, 1967
Ship's Sponsor - Mrs. Henry C. Bruton	



SHIP'S CHARACTERISTICS

Length	292 feet
Beam	32 feet
Submerged Displacement	4300 tons
Speed	Greater than 20 knots
Diving Depth	Deeper than 400 feet
Crew Complement	12 Officers and 120 Enlisted
Armament	Four 24" Torpedo Tubes

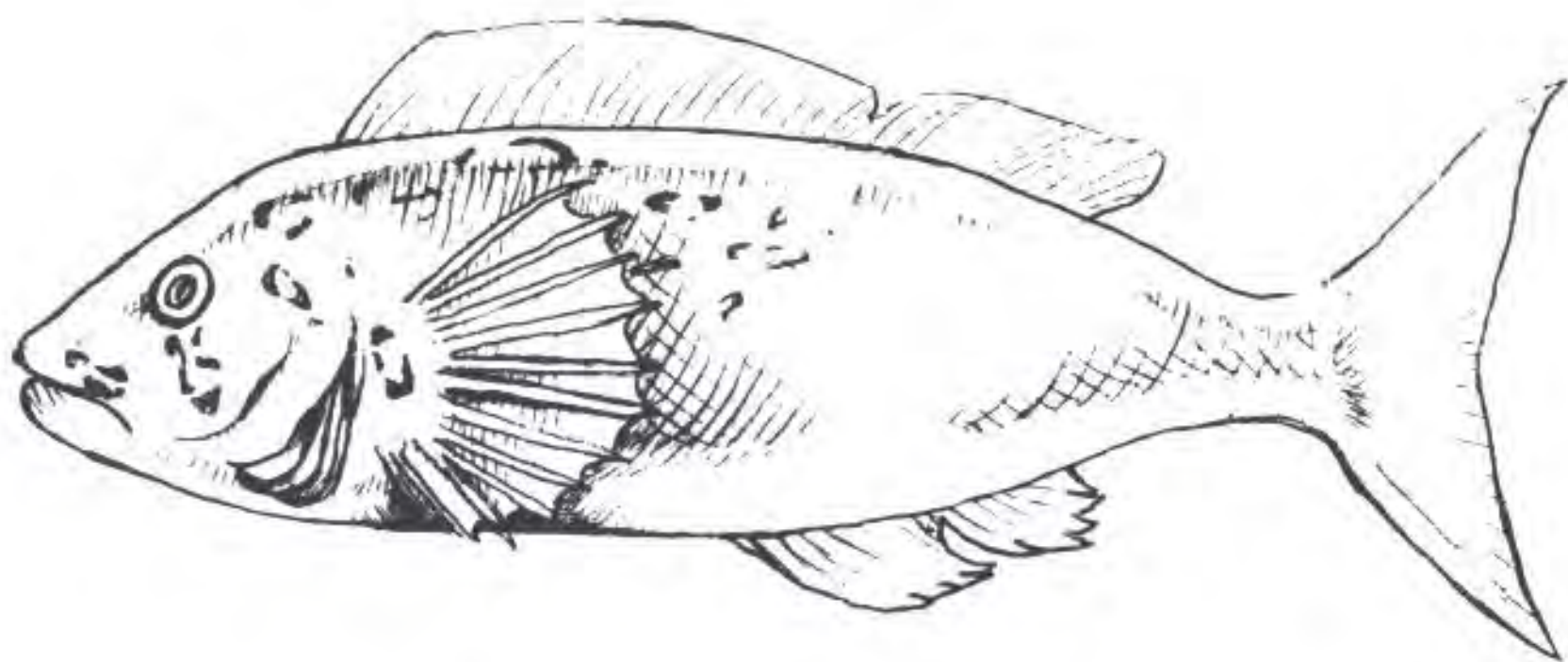
Welcome Aboard GREENLING,

Speaking for the officers and the crew, I take pleasure in extending to you the hospitality of the Navy's Submarine Service. It is our desire to make your visit as pleasant as possible. We hope that you will find your visit very enjoyable and informative.

Respectfully,

S. C. HALL

*Commander, United States Navy
Commanding Officer*



THE FISH GREENLING

Greenling is not only a fish, but a family of fishes known scientifically as *Hexagrammos Stelleri*. Common names of the species include the masked greenling, the painted greenling, kelp greenling, ling cod (no relation to cod), Atka mackerel and Japanese species aburaco and kujime. Greenlings are small colorful fishes that inhabit the rocky shores of the North Pacific Ocean. Most kinds mature to a size of about one foot and are brilliantly colored and can skillfully match the color of their surroundings. The greenling is an elongated, fine scaled fish with a large mouth provided with small, but deadly, sharp teeth. Its cone shaped head, symmetrical body, and well developed fins enable this predatory species to swim rapidly in pursuit of its prey. One of its most remarkable features is five lateral lines on each side, three along the back, one between the pectoral and pelvic fin, and one along the lower side. These structures are sensitive organs for perception of vibrations in the water and serve as a sonic device to warn a greenling of the approach of enemies or prey. The name GREENLING was no doubt derived from the pale, blue-greenish coloration of its flesh. It is found from Kamachatka and Unalaska to San Francisco and is abundant in Puget Sound and Northward.

A HISTORY OF USS GREENLING (SS 213)

USS GREENLING (SSN 614) is the second ship of the fleet to bear the name, in commemoration of the submarine GREENLING (SS 213). The first GREENLING was built by the Electric Boat Company of Groton, Connecticut and was commissioned on January 21, 1942, Lieutenant Commander Henry Chester Bruton, Commanding. SS 213 was a GATO class fleet-type submarine of the latest all-welded design, displacing 1500 tons at a length of 307 feet and a beam of 27 feet and was equipped with ten torpedo tubes. With its 6400 horsepower diesel all electric drive, it could cruise the ocean at 20 knots on the surface.

After shakedown training out of New London, SS 213 departed March 7, 1942 for combat operations in the Pacific. GREENLING distinguished herself during World War II by sinking more than 59,000 tons of Japanese shipping. Through twelve war patrols, her skippers earned two Navy Crosses, one Silver Star and one Legion of Merit. Although official Navy records credit GREENLING with only fifteen definite kills, her logs relate to the sinking of twenty-two Japanese vessels totaling 102,500 tons and damage to an aircraft carrier and two tankers. The SS 213 was decommissioned on October 16, 1946 in New London with ten battle stars and the Presidential Unit Citation.

The wife of the SS 213 commissioning commanding officer, Mrs. Henry C. Bruton is the sponsor of USS GREENLING (SSN 614).



A CUTAWAY VIEW OF USS GREENLING (SSN 614)



USS GREENLING (SSN 614) is the eleventh of the thirteen nuclear powered attack submarines of the "594" or "PERMIT" class, designed as an anti-submarine hunter killer. By combining the endurance and environmental independence of nuclear power with the capability for deep submergence, high speed and sophisticated weapons systems, GREENLING is still one of the most effective ASW weapons of the U.S. Navy.

The ship's pressure hull is shown by the darker line surrounding the interior compartments including the sonar sphere, the bow compartment, operations compartment, reactor compartment, auxiliary machinery space, and the engine room. The main ballast tanks (MBTs) are outside of the pressure hull but flush with the exterior of the ship. When the ship submerges, air is vented from the top of the MBTs and they fill with water, providing extra weight to submerge the ship. The spaces inside the pressure hull remain at atmospheric pressure for your comfort.

The personnel who man GREENLING and keep the ship in its topnotch condition are highly skilled and trained individuals. Each prospective submariner is carefully screened and must have excellent physical conditioning, intelligence and common sense. Cramped living quarters and the long periods of time spent at sea also mandate a need to be emotionally stable and able to get along with others.

For crew members to qualify on their first watch station usually takes several months. To "qualify in submarines" on the entire ship and be awarded the dolphin breast insignia takes almost one full year. To "qualify in submarines," a crew member must know each of the ship's piping, electrical, weapons and damage control systems. Crew members must also be ready to do their own specific jobs plus also ready and able to take on other vitally important evolutions that affect each member's safety.

A VERY BRIEF HISTORY OF USS GREENLING (SSN 614)

The keel for the GREENLING (SSN 614) was laid on August 15, 1961 by General Dynamics, Electric Boat Division, Groton, Connecticut. The ship was launched on April 4, 1964, in Groton and later towed to the Electric Boat Quincy Division (Massachusetts) for lengthening and SUBSAFE modifications. GREENLING was commissioned at the Submarine Base, New London, Groton, Connecticut on November 3, 1967. After commissioning, the ship was homeported in New London as a unit of Submarine Squadron (SUBRON) TEN and participated in a variety of fleet exercises and independent operations. In February 1971, GREENLING arrived at Ingalls Nuclear Shipbuilding Division for its first overhaul, which involved modification to the ship's combat systems.

Between the first and second overhauls, GREENLING conducted three highly successful deployments with the U.S. Sixth Fleet in the Mediterranean Sea and participated in several major NATO exercises. GREENLING entered Charleston Naval Shipyard in February 1977 for a reactor refueling and major modernization. Upon completing the second overhaul in December 1978, GREENLING completed three major deployments: UNITAS XX with the navies of Argentina, Uruguay and Brazil in the waters off the eastern coast of South America in late 1979, and two Mediterranean deployments with the U.S. Sixth Fleet in 1980 and 1981.

In 1984, following two more highly successful Mediterranean deployments in 1982 and 1983, GREENLING entered its third overhaul at Portsmouth Naval Shipyard for extensive modernization of the ship's fire control, sonar and propulsion systems. Upon

completion of overhaul in October 1987, GREENLING continued operations in New London, Connecticut as a unit of SUBRON TEN.

In 1988, GREENLING answered an intense operating schedule following overhaul by winning the CINCLANTFLT Arleigh Burke Fleet Trophy for most improved battle readiness and the Sixth Fleet Hook'em Award for Anti-Submarine Warfare Excellence in the Mediterranean. GREENLING's continued success in 1989 resulted in the ship winning the COMSUBRON TEN Battle Efficiency "E" and ending the year with a highly successful Atlantic deployment.

In 1990, GREENLING again participated in joint exercises with the navies of South America as part of UNITAS XXXI, successfully circumnavigating South America. In 1991, before transferring to COMSUBRON TWO, GREENLING earned the final COMSUBRON TEN Engineering "E."

GREENLING has been awarded the Navy Unit Commendation with two gold stars and the Meritorious Unit Commendation with three gold stars.



A DESCRIPTION OF A TYPICAL NAVAL NUCLEAR PROPULSION PLANT

In Naval nuclear propulsion plants, fissioning of uranium atoms in the reactor core produces heat. Since the fission process also produces radiation, shielding is placed around the reactor to protect the crew. During a typical submerged patrol, a typical crew member receives less exposure to radiation than he would if he remained ashore and worked in an office building.

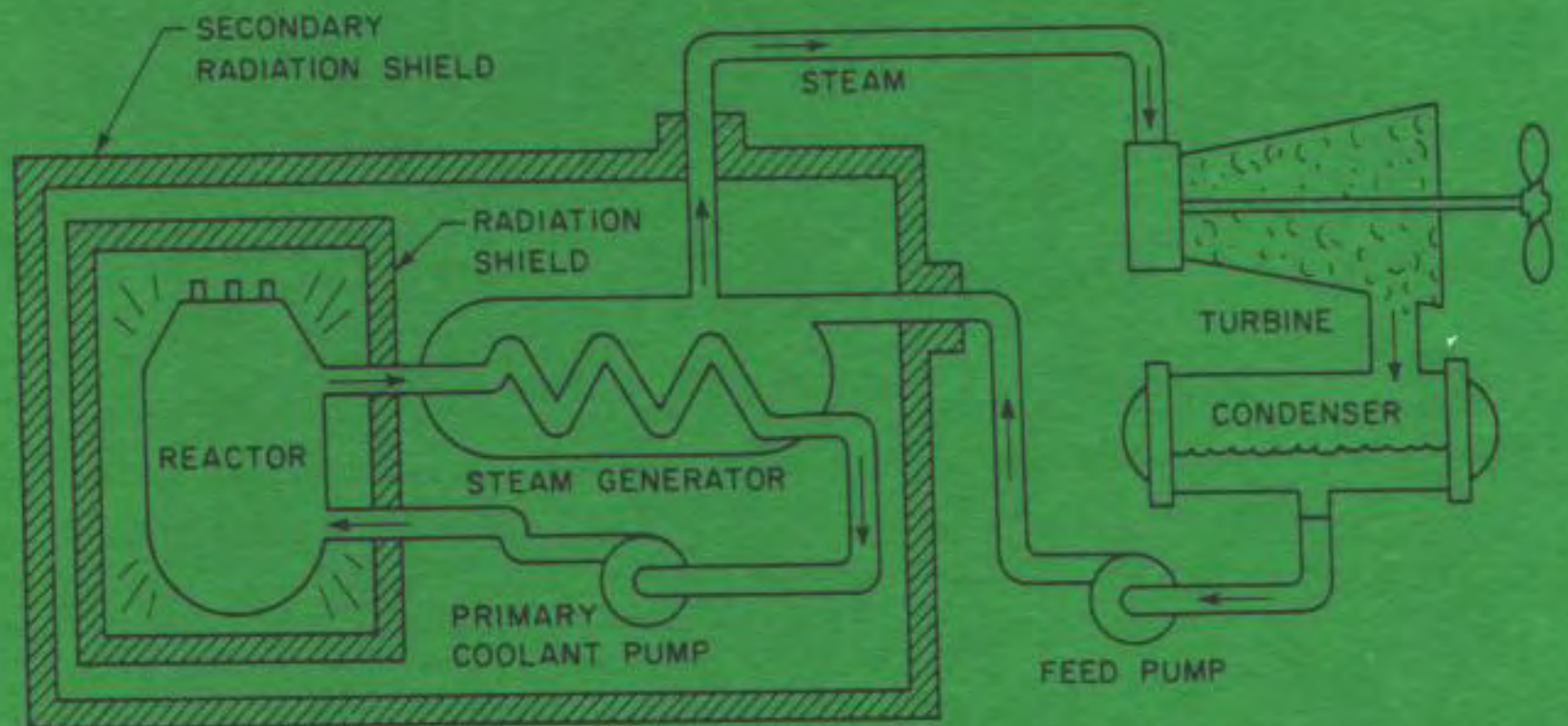
U.S. Naval nuclear propulsion plants use a pressurized water reactor design which has two basic systems: the primary system and the secondary system. The primary system circulates ordinary water in an all-welded, closed loop consisting of the reactor vessel, piping, pumps and steam generators. The heat produced in the reactor core is transferred to the steam generators where it gives up energy. The primary water is then pumped back to the reactor to be heated again.

Inside the steam generators, the heat from the primary system is transferred across a water-tight boundary to the water in the secondary system, also a closed loop. The secondary system from the primary system prevents water in the two systems from intermixing, keeping radioactivity out of the secondary water.

In the secondary system, steam flows from the steam generators to drive the main propulsion turbines, which turn the ship's propeller and the turbine generators, which supply the ship with electricity. After passing through the turbines, the steam is condensed back into water and feed pumps return it to the steam generators for reuse. Thus, the primary and secondary systems are separate, closed

systems in which constantly circulating water transforms energy produced by the nuclear reaction into useful work.

There is no step in this process that requires the presence of air or oxygen. This combined with the ship's capability to produce oxygen and purified water from sea water enables the ship to operate completely independent of the earth's atmosphere for extended periods of time. In fact, the length of a submerged submarine patrol is limited primarily by the amount of food the ship can carry for the crew





Welcome Aboard



USS GREENLING
SSN 614





DEPARTMENT OF THE NAVY
USS GREENLING (SSN-674)
FPD NEW YORK, 09501

Welcome Aboard GREENLING,

On behalf of the officers and crew, I take pleasure in extending to you the hospitality of the Navy's Submarine Service. It is our desire to make your short cruise or visit as pleasant as possible. We hope that you will make yourself at home during your stay.

Sincerely yours,

W. R. WITCRAFT
Commander
United States Navy
Commanding Officer

Built By

GENERAL DYNAMICS CORPORATION
Electric Boat Division — Quincy Division

Keel Laid — Electric Boat Division — August 1961

Launched — Electric Boat Division — April 1964

Lengthening and Subsafe Modification —
Quincy Division — July 1967

Commissioning — Electric Boat Division — November 1967

Sponsored by — Mrs. Henry C. Bruton

Length — 292 feet

Beam — 32 feet

Displacement Submerged — 4300 tons

Speed — Greater than 20 knots

Diving Depth — Deeper than 400 feet



COMMANDER WILLIAM R. WITCRAFT UNITED STATES NAVY

Commander William R. WITCRAFT, USN, was born in DeSoto, Wisconsin in 1941. His family moved to Iowa when he was eight years old. He graduated from Bettendorf High School in Bettendorf, Iowa in 1959 and entered the United States Naval Academy that same year.

Upon graduation from the Naval Academy in 1963, he continued his academic and practical training by attending in succession, Nuclear Power School at Mare Island, California, Nuclear Prototype at Idaho Falls, and Submarine School at New London, CT prior to reporting to his first ship, USS ANDREW JACKSON (SSBN 619) (GOLD), in February 1965. On JACKSON he was assigned variously as Supply Officer, Main Propulsion Assistant, Damage Control Assistant, Electrical Officer, and Reactor Control Assistant. His next assignment was to serve as Weapons Officer on USS NATHANAEL GREENE (SSBN 636) (GOLD) from 1967 to 1970 followed by a tour as Navigator and Operations Officer onboard USS ABRAHAM LINCOLN (SSBN 602) (BLUE) from 1970 to 1972. After shore duty on COMSUBLANT Staff in Norfolk, Virginia, he returned to sea duty onboard USS ARCHERFISH (SSN 678) where he served as Navigator and Operations Officer from 1974 to 1976. In February 1976 Commander WITCRAFT reported onboard USS NATHANAEL GREENE (SSBN 636) (BLUE) where he served as Executive Officer until June 1978. He assumed command of USS GREENLING in January 1979.

Commander WITCRAFT is entitled to wear the Navy Commendation Medal with Gold Star, the Navy Achievement Medal with Gold Star, the Meritorious Unit Commendation Ribbon, the Navy Unit Commendation Ribbon, the Battle Efficiency "E" Ribbon, the Navy Expeditionary Medal, the National Defense Service Medal, and the Submarine Deterrent Patrol Insignia.

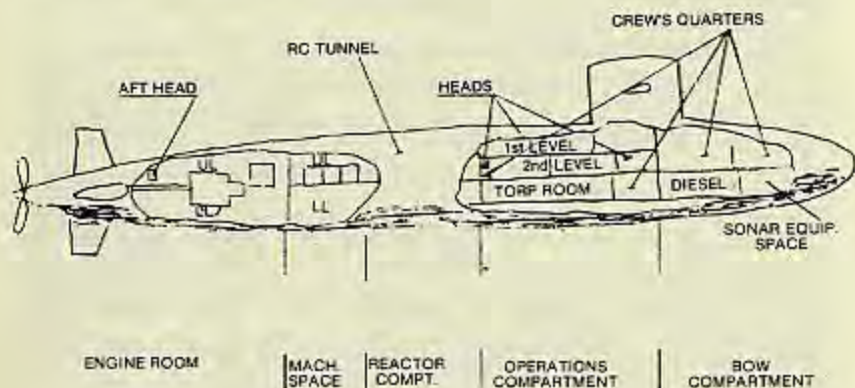
Commander WITCRAFT is married to the former Jill Rogers of Mystic, CT. They reside in Waterford, CT with their son Nicholas.

USS GREENLING (SSN 614)

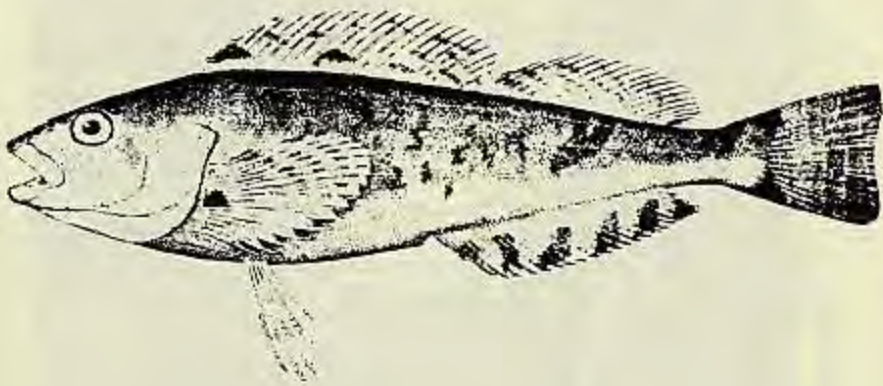
GREENLING (SSN 614) is a nuclear powered attack submarine of the "594" or "PERMIT" class, designed as an anti-submarine hunter killer. By combining the endurance and environmental independence of nuclear power with her capability for deep submergence, her high speed, and her sophisticated weapons systems, GREENLING is one of the most effective ASW weapons that the U.S. Navy has.

The men who man GREENLING and keep her in top-notch condition and readiness are highly skilled, and probably have to know more than any of their predecessors. These men are screened carefully, and must have excellent physical characteristics, as well as high intelligence and common sense. The cramped living quarters and the amount of time spent at sea also dictate a need for the man to be emotionally stable and able to get along with others.

For a man to qualify on the entire ship and be permitted to wear Dolphins takes a full year, and most watch stations take several months. He must know each of the ship's systems, and be ready to not only do his own specific job, but also ready and able to take on other vitally important evolutions that affect each crew member's safety.



The heads are located as shown in the cut-away diagram of the ship. They are maintained by the crew who consider the ship their home. Before using the head for the first time, please consult a member of the ship's force for proper flushing procedure.



THE FISH GREENLING

A Greenling is a fish known scientifically as *Hexagrammos decagrammus*. It is an elongated, fine scaled fish with a large mouth provided with small but deadly, sharp teeth. Its coneshaped head, symmetrical body, and well developed fins enable this predatory species to swim rapidly in pursuit of its prey. One of its most remarkable features is five lateral lines on each side, three along the back, one short between pectoral and pelvic fin, and one along the lower side. These structures are sensitive organs for perception of vibrations in the water and serve as a sonic device to warn a Greenling of the approach of enemies or prey. The name Greenling was no doubt derived from the pale, blue-greenish coloration of its flesh. It is found from Kamchatka and Unalaska to San Francisco and is abundant in Puget Sound and northward.

SHIP'S HISTORY



USS GREENLING (SSN 614) is the second ship to bear the name. She is named in commemoration of the submarine GREENLING (SS 213). GREENLING distinguished herself in the Pacific Theatre of operations by sinking more than 59,000 tons of Japanese shipping. During twelve war patrols her skippers earned two Navy Crosses, one Silver Star, and one Legion of Merit. The ship was awarded the Presidential Unit Citation. Although official Navy records credit GREENLING with only fifteen definite kills, her logs relate the sinking of twenty-two Japanese vessels, a total of 102,500 tons, as well as damage to an aircraft carrier and two tankers.

The keel for the second GREENLING (SSN 614) was laid in August 1961 by General Dynamics, Electric Boat Division, Groton. She was launched in April 1964. Commissioning occurred in November 1967 at Electric Boat, Quincy Division.

The ship was homeported at New London, Connecticut as a unit of Submarine Squadron TEN after commissioning. She participated in various fleet exercises and independent operations until the post shakedown availability in May 1969. GREENLING resumed operations with the Submarine Force, U.S. Atlantic Fleet participating in a wide variety of operations. February 1971 saw GREENLING arrive at Ingalls Nuclear Shipbuilding Division for her first overhaul. This overhaul involved both modification to the ship's combat systems and extensive repairs.

During the span between commissioning and first overhaul GREENLING was awarded the Navy Unit Commendation. She was also awarded the Battle Efficiency Pennant and "E" as the outstanding submarine of Submarine Division ONE HUNDRED TWO for Fiscal Year 1968 and 1969. Her commanding officers have been awarded the Legion of Merit and the Meritorious Service Medal both with Gold Stars in lieu of second awards.

Following her first overhaul, GREENLING conducted three highly successful deployments with the U.S. SIXTH FLEET in the Mediterranean Sea and participated in several major NATO exercises. In addition to the Navy Unit Commendation, GREENLING flies the Meritorious Unit Commendation with three gold stars.

GREENLING entered Charleston Naval Shipyard in February 1977 for her first reactor refueling and a major modernization. During this 21 month overhaul, she received an advanced reactor design, the most advanced sonar system (AN/BQQ-5), and complete updating of her electronics systems.



USS GREENLING (SSN 614)