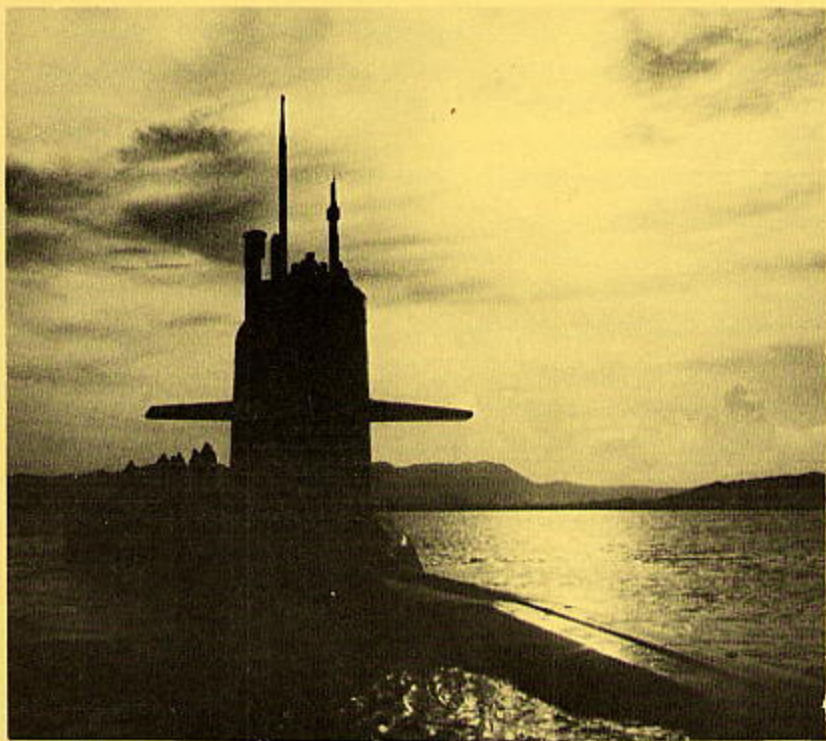


**WELCOME ABOARD**



**USS PATRICK HENRY  
(SSBN 599)**

**USS PATRICK HENRY (SSBN 599)**

**Built by**

**GENERAL DYNAMICS**

*Electric Boat Division*

Keel Laid—27 May 1958

Launched—22 September 1959

Commissioned—9 April 1960

First Patrol—30 December 1960

Conversion completed—July 1966

Second Overhaul completed—January 1972

Sponsor—Mrs. Leslie C. Arends

## Ship's History

USS Patrick Henry (SSBN 599) was the second Fleet Ballistic Missile Submarine to be constructed. The ship is 380 feet long with a beam of 32 feet and a surface displacement of 5400 tons. Fast, silent, and virtually immune to surprise attacks, the Patrick Henry combines the almost unlimited endurance of nuclear power with the deterrent might of 16 Polaris missiles. Manned by alternate crews—while one is at sea the other is ashore training—she is on duty almost constantly with address unknown—an underwater mobile missile launching platform hidden and virtually indestructible.

Patrick Henry began her waterborne career on 22 September 1959, when she was launched at General Dynamics Corporation's Electric Boat Division at Groton, Connecticut. Six months later on 7 March 1960, Patrick Henry set out on her first series of sea trials to test operation of the nuclear power plant and handling characteristics of the ship. These trials were completed in a successful manner and at the time marked the shortest construction time from keel-laying to initial sea trials, she was commissioned on 9 April 1960. On 30 December 1960 she submerged to start her first patrol.

Between December 1960 and December 1964 Patrick Henry conducted seventeen deterrent patrols, while remaining continuously deployed overseas, operating out of Holy Loch, Scotland. At the conclusion of the seventeenth patrol she returned to her home port at Electric Boat Division in Groton, Connecticut, for a complete overhaul. During the eighteen months modifications were made to enable Patrick Henry to handle the A-3 Polaris missile. Refueling of the nuclear reactor and other extensive maintenance and repair operations were performed. Upon completion of sea trials Patrick Henry resumed her station on patrol in late 1966. In November 1970 Patrick Henry entered Puget Sound Naval Shipyard for her second overhaul. In early 1973 Patrick Henry was transferred to the Pacific Fleet to assume patrol duties out of Guam. The ship has completed forty-nine patrols, the most patrols of any fleet ballistic missile submarine. Patrick Henry is scheduled to commence her third overhaul on 1 July 1976 at Mare Island Naval Shipyard, Vallejo, California.

## THE POLARIS MISSILE WEAPON SYSTEM STORY

With almost unlimited cruising range and with endurance limited only by the crew, the FBM nuclear submarine is capable of extended submerged operation in the international waters of the world which comprise about 70 percent of the earth's surface. Free of the need to surface or extend a snorkel above the surface for continuous operation, FBM submarines will remain hidden by an oceanic curtain, their locations unknown to any potential enemy. The FBM submarines will at all times be under U.S. control. The Polaris missiles, powered by solid propellant, will be ready for launch within minutes of receiving the command without the need for long countdown. Mobile, hidden, ready for instant action (or carefully considered delayed action), the FBM system will provide the United States a powerful deterrent to those who might start a global war.

Polaris, named for North Star, is a two stage ballistic missile about 38 feet long, about four and one-half feet in diameter and weight about 35,000 pounds. It is powered by solid fuel rocket motors and guided by a self-contained inertial guidance system independent of external commands or control. Propellant is basically a polyurethane compound with light metal additives for higher specific impulse. Each motor exerts thrust through four nozzles in the motor base. Thrust vector (direction control) is exercised by devices on both the first and second stages. Range of the missile is 2500 nautical miles (2700 statute miles).

The inertial guidance system used in Polaris is a refinement of earlier inertial systems and is the smallest in use in U.S. ballistic missiles. Using extremely precise gyroscopes, accelerometers and its own electronic computer, the guidance system puts the missile on correct course at the time of launch. Should the missile be moved off course by high winds or other effects, the guidance system automatically computes a new correct course and puts the missile on it. The guidance system also maintains the stability of the missiles in pitch, yaw and roll planes. At the precise instant required, the guidance system shuts off the rocket motors and

triggers separation of the reentry body from the missile. The reentry body then follows a ballistic trajectory to the target.

USS Patrick Henry is driven by steam turbines powered by a water-cooled nuclear reactor and carries 16 Polaris missiles stowed in eight pairs of vertical launching tubes in the space immediately behind the sail. USS Patrick Henry has 300 tons of air conditioning equipment and is also equipped with air scrubbers and precipitators to remove irritants from the air and maintain the proper balance of oxygen, nitrogen and other atmospheric elements. An electrolytic oxygen generator on board permits the submarine to manufacture its own oxygen from sea water.

Several methods complement each other in the FBM submarine to provide a high order of accuracy in determining ship's position. The heart of the system is the Ship's Inertial Navigation System (SINS), a complex system of gyroscopes and accelerometers which relates movement of the ship in all directions, ship speed through the water and over the ground, and true north to give a continuous report of ship position.

Polaris missiles are launched by an ejection system which forces the missile from its launching tube and propels it up through the water to a point above the surface. At that point the rocket motor ignites and sends the missile on its way. The system takes advantage of the reliability and instantaneous ignition characteristics of solid propellant fuel used in Polaris. The result is increased safety for submarine and crew. Vital parts of each missile are accessible for inspection and maintenance even when loaded in the launching tubes and while the submarine is underway at sea.

**LIBERTY OR DEATH**



**USS PATRICK HENRY**



## DEPARTMENT OF THE NAVY

COMMANDING OFFICER  
USS PATRICK HENRY (SSN 599)  
FPO SEATTLE 98799

### USS PATRICK HENRY SSN599

Launched on September 22, 1959 at Electric Boat Division of General Dynamics in Groton, Connecticut, and commissioned on April 9, 1960, the USS PATRICK HENRY became the Eleventh ship to enter service in the Navy's nuclear-powered under-seas fleet. PATRICK HENRY, a George Washington-class attack vessel, was originally constructed as the second Fleet Ballistic Missile Submarine. With a surfaced displacement of 5400 tons and a capability of operating at speeds in excess of twenty knots and at depths greater than 400 feet, PATRICK HENRY is a special submarine in all respects. From a tactical point of view, PATRICK HENRY's capabilities are virtually unlimited. Powered by a pressurized-water nuclear reactor and able to regenerate her own atmosphere, PATRICK HENRY can deploy for extended periods underwater, the duration of her operations being limited only by the space available for food stores and crew limitation. On December 30, 1960 PATRICK HENRY submerged to start out on her first patrol with the deterrent might of 16 Polaris missiles--an underway mobile missile launching platform hidden and virtually indestructible. Between December 1960 and September 1981 until conversion to a Fast Attack Submarine, PATRICK HENRY completed fifty-nine deterrent patrols in defense of her country. PATRICK HENRY operated from Holy Loch, Scotland, Rota, Spain and Guam as a ballistic missile submarine and in May 1982 arrived at her new homeport of Bangor, Washington as a fast attack submarine.

--At time of conversion to fast attack submarine, PATRICK HENRY held the record of more strategic deterrent patrols of any ballistic missile submarine--



DEPARTMENT OF THE NAVY

COMMANDING OFFICER  
USS PATRICK HENRY (SSN 599)  
FPO SEATTLE 98799

UNITED STATES SHIP USS PATRICK HENRY (SSN599)

Keel Laid ----- 27 May 1958  
Launched ----- 22 September 1959  
First Sea Trial ----- 7 March 1960  
Commissioned ----- 9 April 1960  
Length ----- 380 feet  
Beam ----- 32 feet  
Maximum Depth ----- In excess of 400 feet  
Maximum Speed ----- In excess of 20 knots  
Displacement (surfaced) ----- 5400 tons  
Ship Complement ----- 135 officers and men  
Number of Torpedo Tubes ----- 6  
First Patrol ----- 30 December 1960  
Last Patrol ----- 1 August 1981  
Conversion to Fast Attack Submarine ----- September 1981  
Sponsor ----- Mrs. Leslie C. Arends

SHIPS OF THE 598 CLASS - USS GEORGE WASHINGTON (SSN598) (Ex SSBN598)  
USS PATRICK HENRY (SSN599) (Ex SSBN599)  
USS THEODORE ROOSEVELT (SSBN600)  
USS ROBERT E LEE (SSN601) (Ex SSBN601)  
USS ABRAHAM LINCOLN (SSBN602)

-- More decorations for valor have been  
awarded, per man, to the submarine  
service than any other Navy branch.--





## DEPARTMENT OF THE NAVY

COMMANDING OFFICER  
USS PATRICK HENRY (SSN 5991)  
FPO SEATTLE 98799

### THE SILENT SERVICE

We of the Silent Service believe it is important for you to become better acquainted with submarines, for it was the submarine that dominated the scenes of the last two World Wars. Only by the narrowest margin did the Allies in each of these wars defeat the German U-boats which ranged the Atlantic. In the Pacific, American submarines carried the war to the Japanese Home Islands within days after Pearl Harbor, and remained there to the end. Although submarines never comprised more than 2% of the Navy's personnel in World War II, they accounted for about 55% of all Japanese shipping sunk, both merchant and naval. These crippling losses inflicted upon the Imperial Navy and Merchant Marine produced a campaign of attrition assuring defeat. In any future war, our continued mastery of the seas and the survival of our interests both at home and abroad will be contested most strongly by the Soviet Submarine Force. Our prime mission in PATRICK HENRY is to train and be ready to help insure that we do not lose control of the seas.

### THE NUCLEAR SUBMARINE

A most commonplace miracle - today - made possible by the controlled power of the atom. The nuclear ship has revolutionized naval strategy. The atomic powered ship can sail and fight almost indefinitely without dependence on land bases.

When the nuclear sailor steps from his sealed environment after a 60 to 90 day patrol, he is likely to breathe less pure air than that inside the vessel he has just left. Even living next to a nuclear reactor for long periods, crewmen are exposed to more radiation ashore than on a nuclear submarine.

The crew's comforts include movies, libraries and fresh-water showers. The men of the submarine service still claim they get the best food in the Navy.

-- Per cubic inch, there is more science packed into a submarine than into any other warship. Submariners say, "There is room for everything aboard a submarine except a mistake." --



## DEPARTMENT OF THE NAVY

COMMANDING OFFICER  
USS PATRICK HENRY (SSN 599)  
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### SUBMARINE FORCE HISTORY

The United States Submarine Force was founded in 1900 when the Navy accepted the HOLLAND, which the inventor had built privately. From 1900 to 1914 progress was steady. These boats carried only a handful of men and were not designed for cruising. Infact they were so small that they were referred to as "boats" rather than ships. They carried "boat" flags and were never skippered by anyone higher than a LTJG. Today, the latest submarines of several thousand tons displacement are still referred to affectionally as "boats".

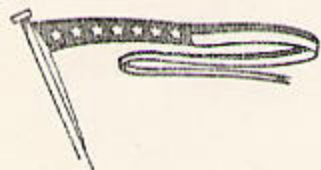
World War I saw the submarine emerge as a major factor in conflict. The Germans found themselves in possession of the war's most effective weapon, a weapon able to inflict economic strangulation. England had to import food to live. Had the rate of sinkings attained by subs in the spring of 1917 been continued, England, in a matter of weeks, would have found its situation desperate.

When America entered the war, her latest subs were the "L" boats, a far cry from the HOLLAND. Twenty subs of the E, K, L and O types reached the war zone. One "L" boat found herself attacked by 2 German subs and had the unique experience of watching one fire a torpedo at her, and sink her mate!

In World War II, U.S. submarines reached a new level of importance and effectiveness. When the attack on Pearl Harbor ocured, the sub force was well established and ready. What the "silent service" accomplished is a long story but it can be summarized in one sentence. Japan's ability to wage maritime war depended not only on her Navy but on her Merchant Marine, and U.S. submarines alone sank 55% of the total Japanese tonnage sunk in the war.

Nuclear power was the long awaited propulsion source for the submarine. It was to turn the submersible surface ship into a true submarine, capable of almost indefinite submerged operation. After World War II had been won, the Navy was able to "turn to" in earnest to develop a nuclear power plant. Naturally the first use was in the submarine - the historic NAUTILUS.

-- In World War II the Germans lost 782 submarines,  
the Japanese 130 and the United states only 52.  
Twenty-three of the Japanese subs lost were victims  
of the American submarine service. --



*Commanding Officer  
United States Ship Patrick Henry  
(SSN 599)*

WELCOME ABOARD

On behalf of the officers and crew, I take pleasure in extending to you the hospitality of the Submarine Force of the United States Navy. It is our desire to make your stay with us as pleasant as possible. All members of the ship's crew are ready to assist you in any way possible -- you have only to ask.

The pride we feel in this ship is not ours alone. It belongs to those in government and service who conceived her, to those who supplied her equipment, and to those thousands who have faithfully supported her. It also belongs in full and equal measure to those who wait at home with patience and courage.

We are especially proud of the men who have served in PATRICK HENRY. Their labor, dedication, and endurance on long patrols can never really be appreciated. Without them and their irresistible spirit, PATRICK HENRY is a hull--with them, she is a ship. As your hosts, all of us in PATRICK HENRY hope your visit will be informative, interesting, and pleasant.

COMMANDING OFFICER  
USS PATRICK HENRY (SSN599)

"GIVE ME LIBERTY OR GIVE ME DEATH"

--PATRICK HENRY (1736-1799) - Distinguished Statesman  
and Orator at the time of the Revolutionary War--