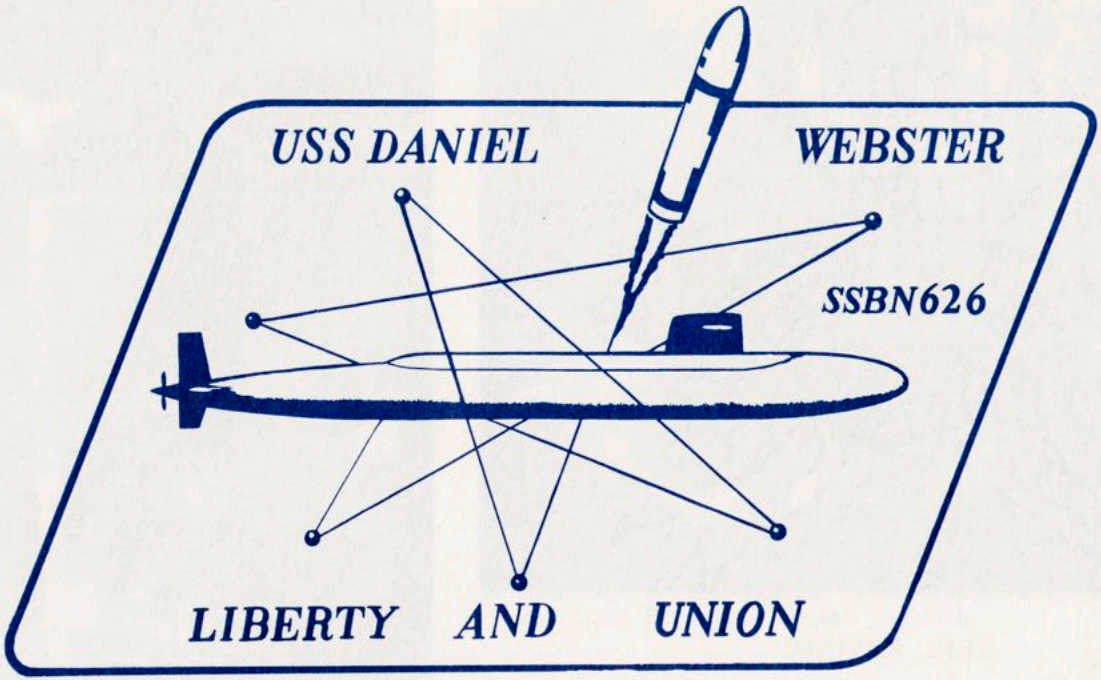
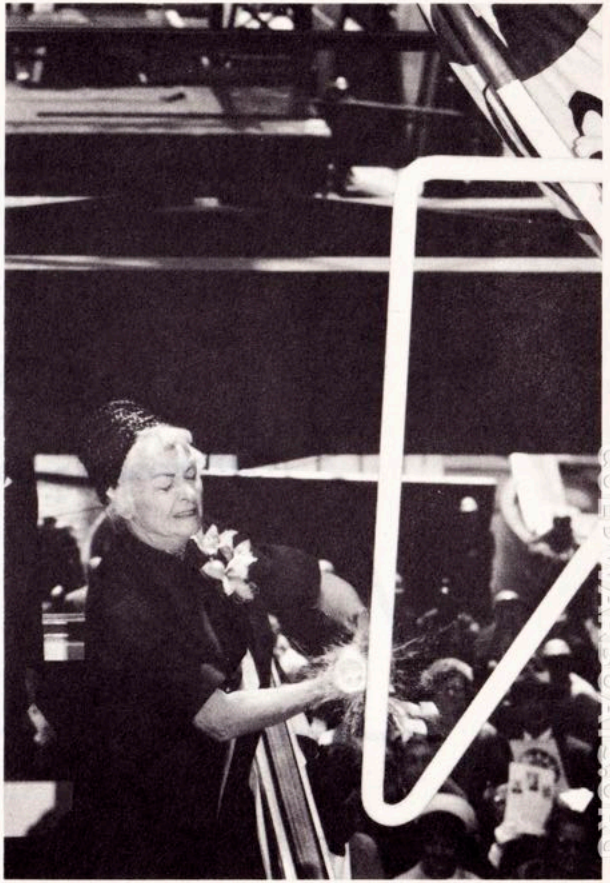


KEEL LAYING



CHRISTENING

WELCOME ABOARD THE FIRST SUBMARINE TO CARRY THE A-3 POLARIS MISSILE

COMMANDER LEO C. WRIGHT, USN
COMMANDING OFFICER, BLUE CREW

COMMANDER LEO C. WRIGHT

Commander Wright was graduated from the United States Naval Academy in June 1958. Following commissioning he served in the destroyer USS BIGELOW (DD 942) for three years. After attending Submarine School and Nuclear Power Training, Commander Wright reported to the commissioning crew of the USS THOMAS JEFFERSON (SSBN 618) where he completed shakedown training and three deterrent patrols. He then served as the commissioning Engineer Officer of USS GUARDFISH (SSN 612) and as Executive Officer and Navigator of USS SNOOK (SSN 592). Immediately prior to reporting to DANIEL WEBSTER he served on the staff of Commander Submarine Force, U. S. Atlantic Fleet as the Commander Submarine Force Representative to the Enlisted Personnel Distribution Office, U. S. Atlantic Fleet.

Commander Wright is married to the former Barbara Kauffman of Southampton, Pennsylvania. They have two daughters, Patricia Lynne and Elisabeth.

Mrs. W. Osborn Goodrich, Jr.

Sponsor

USS DANIEL WEBSTER was launched on 27 April 1963 at the Electric Boat Division of General Dynamics, Groton, Conn. The sponsor was Mrs. W. Osborn Goodrich, Jr. of Farmington, Connecticut. Mrs. Goodrich is a great-great granddaughter of Daniel Webster.

DANIEL WEBSTER

Daniel Webster – Statesman, orator, Representative to Congress, Senator, and Secretary of State under two presidents – was born in the area of Salisbury, New Hampshire in the year 1782. He studied at Exeter and Dartmouth, receiving a degree in law from the latter in 1801. His first periods in congress were as Representative from the Portsmouth, New Hampshire, area in 1812 and 1814 during which time he became famous for his eloquently voiced opposition to the policies of the Madison administration. After moving to Boston and representing this area in Congress, he was, in 1827, elected Senator from the State of Massachusetts. He had by now delivered his famous Plymouth, Free Trade, and Bunker Hill addresses. In 1830 he delivered what is known as his greatest speech, his "Reply to Hayne", in which, it is said, he defined the powers and functions of the Federal Government in a manner second only to the Constitution itself. Webster had long been a staunch supporter of the Union, and had fought fiercely and incessantly to preserve it. During this impassioned speech in defense of the Union of States, he uttered the immortal cry – "Liberty and Union, now and forever, one and inseparable." It was from this that the ship's motto was derived. In 1840 he was appointed Under-Secretary of State in the administration of W.H. Harrison. In 1842, as Secretary of State under Tyler, he negotiated the Webster-Ashburton Treaty which, by defining the border between Maine and Canada, settled a long standing border dispute. He resigned this position shortly after and was again elected Senator from Massachusetts in 1845, in which office he served until 1850 at which time he was appointed Secretary of State under Millard Fillmore. He remained in this office until his death in 1852.

USS DANIEL WEBSTER (SSBN 626)

The USS DANIEL WEBSTER is the ninth of the Layfayette class of Fleet Ballistic Missile submarines and is first named for the famous American Statesman of the nineteenth century, who's cry "Liberty and Union" was adopted as the ship' s motto. Keel laying ceremonies were conducted at the Electric Boat Company Division of General Dynamics, Groton, Connecticut on December 28, 1961, and she was christened on April 27, 1963. DANIEL WEBSTER was commissioned on April 9, 1964, becoming a unit of submarine forces, U. S. Atlantic Fleet. She is approximately 425 feet long, 33 feet in width, displaces about 8000 tons, and carries 16 Polaris A3 missiles stowed in eight pairs of vertical launching tubes. DANIEL WEBSTER has two crews, designated the Gold and Blue, with about 124 enlisted men and 14 officers each. These crews alternate, one crew aboard for the deterrent patrol while the other undergoes extensive training at the off-crew site.

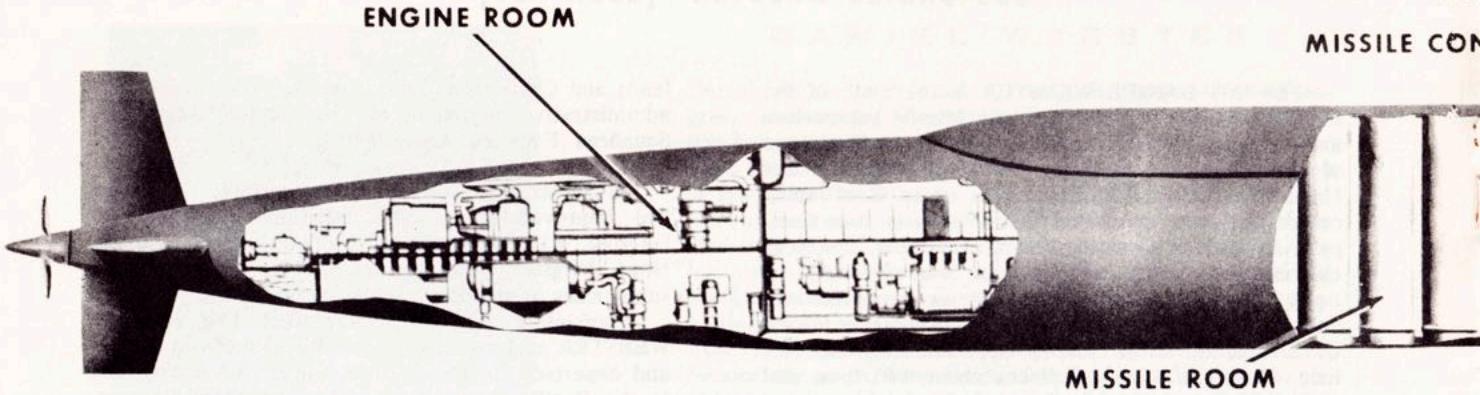
After participating in the first firing of a tactical Polaris A3 missile, DANIEL WEBSTER then departed her homeport of Charleston, South Carolina, on September 28, 1964 for her first deterrent patrol, becoming the first ship to deploy with Polaris A3 missiles. DANIEL WEBSTER conducted deterrent patrols two through seventeen from Rota, Spain; Holy Loch, Scotland; and Charleston, South Carolina, while under the administrative command of Commanders Submarine Squadron Fourteen and Eighteen.

In September, 1968, after successfully test firing two improved A3 missiles off Cape Kennedy, the DANIEL WEBSTER entered the shipyard at Newport News, Virginia, becoming the first of the A3 Polaris submarines to undergo a major overhaul and refueling.

Completing overhaul in November, 1969, DANIEL WEBSTER underwent a successful shakedown cruise, and departed, via the Panama Canal, for deployment to the Pacific Ocean, under the administrative command of Submarine Squadron Fifteen. While transiting the Panama Canal, DANIEL WEBSTER, along with the USS GUARDFISH (SSN-612), participated in the historic first meeting of two nuclear submarines in the canal.

While in the Pacific, DANIEL WEBSTER has completed patrols seventeen through thirty, and a successful follow-on operational test firing of five Polaris A3 missiles. While serving in the Pacific, the ship has earned two Meritorious Unit Commendations for outstanding professional performance during the periods March to October, 1970 and December, 1970 to December, 1971.

In the fall of 1974 DANIEL WEBSTER completed its thirty-fifth Polaris strategic nuclear deterrent patrol in the Pacific before entering the shipyard at Electric Boat Company, Groton, Connecticut, for Polaris to Poseidon weapons system conversion.



NAVIGATION SYSTEM

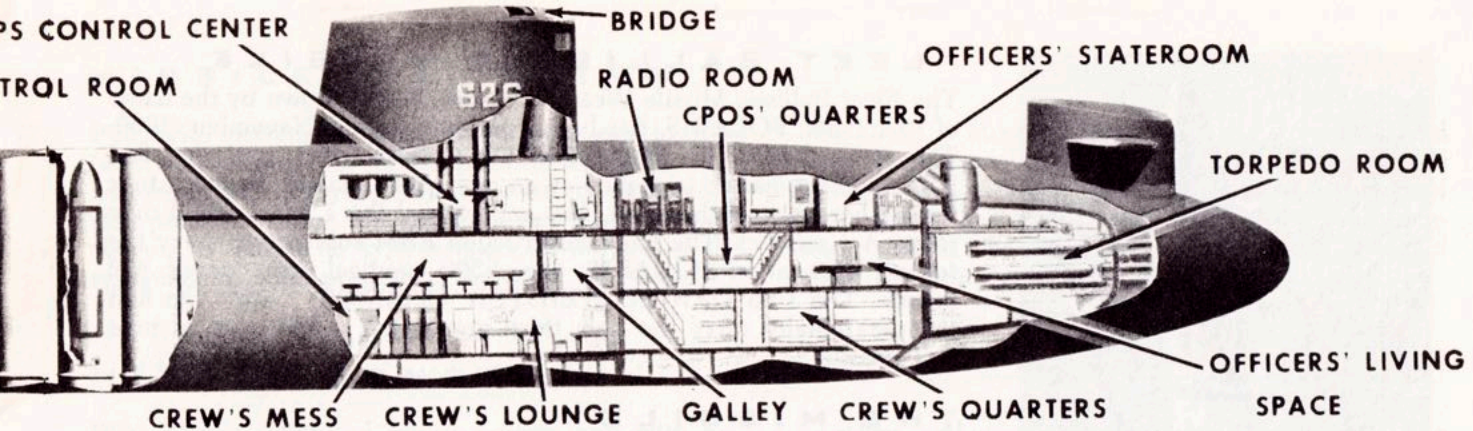
Two positions must be known for success in missile launching – target and launcher. This places great importance on navigation since the position of the launcher is the position of the ship and is continuously changing. Several navigational methods complement each other in the FBM submarine to provide a very high order of accuracy in determining ship's position.

At the heart of the system is the Ship's Inertial Navigation System (SINS) which integrates ship motion, speed, and headings to give a continuous report of ship's position.

The ship has three SINS, each checking on the others. Similar systems guided NAUTILUS and SKATE on their historic voyages beneath the polar ice in 1958, TRITON on her 84 day underwater cruise around the world, and more recently, SEADRAGON and SKATE in their rendezvous at the North Pole in the summer of 1962.

FIRE CONTROL

The fire control system feeds a wealth of coordinated information to the missile guidance system. Ship location, local vertical, true north heading, target location and trajectory to be flown are continuously supplied until the very instant of firing.



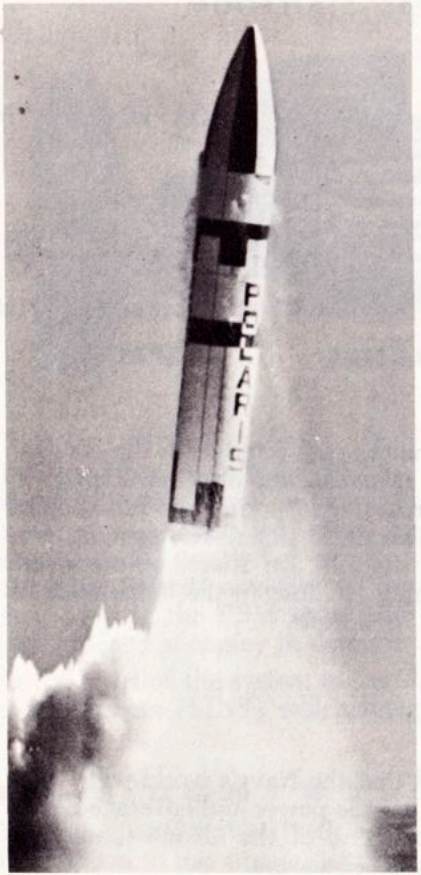
TRAINING

The average pre-commissioning training period of Fleet Ballistic Missile personnel is about 18 months. Of this period, about nine months are devoted to formal study at the U. S. Naval Guided Missile School, Dam Neck, Virginia. After a thorough grounding in transistors, electronic circuitry, Boolean logic, and digital computer theory, WEBSTER personnel receive intensive training in the maintenance of advanced systems.

Personnel not intimately connected with the Navigation or Weapons Departments also participate in rigorous training programs to permit the full support of the tactical systems at all times. The training programs continue at sea and, on shore, off-crews are provided with training facilities in the home ports of the various SSBN Squadrons.

COMMUNICATIONS

Radio communications with submerged submarines have been possible for a number of years. The systems used have been devised with special care to protect the locations of the submarines and leave the advantage of concealment unimpaired. Recent tests have again demonstrated that the Navy's world-wide communication system has the power and coverage necessary to exercise command of the always-submerged Fleet Ballistic Missile submarine.



FLEET BALLISTIC MISSILE

The Fleet Ballistic Missile Weapon System, better known by the name of its missile, POLARIS, has been operational since November, 1960. The USS GEORGE WASHINGTON (SSBN-598) was the first POLARIS submarine to deploy on an operational patrol. The next four to join her were of the same class and carried the 1,200 nautical mile range A-1 missiles. The later construction FBM submarines carry the second generation POLARIS, the 1,500 nautical mile range A-2 missile. The USS DANIEL WEBSTER (SSBN626) was the first to operationally carry the new third generation, 2,500 nautical mile A-3 missile.

THE MISSILE

POLARIS, named for the North Star, is a two-stage ballistic missile powered by solid rocket motors.

The 2,500 nautical mile range operational missile is designated the POLARIS A-3. It is about 32 feet long, about four and one-half feet in diameter, and weighs about 35,000 pounds. Each motor exerts thrust through four nozzles in the motor base.

MISSILE GUIDANCE

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. The guidance system puts the missile on correct course at the time of launch and automatically computes a new correct course should the missile deviate from its path. At the precise instant required, the guidance system shuts off the rocket motors and triggers separation of the re-entry body from the missile. The re-entry body then follows a ballistic trajectory to the target.

MISSILE LAUNCHING

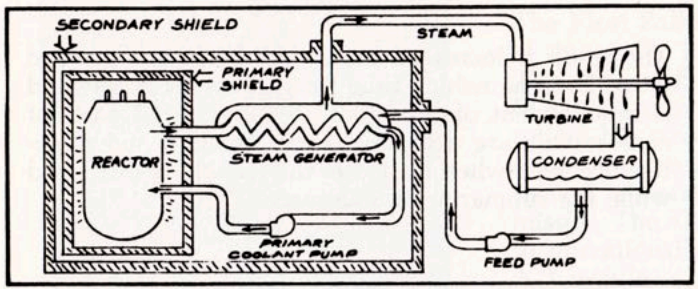
POLARIS missiles are launched by a gas-ejection system, which forces the missile from its launching tube and propels it up through the water to the surface. At that point the rocket motor ignites and sends the missile on its way. The system takes advantage of the reliability of solid propellant fuel used in POLARIS. The result is increased safety for the submarine and crew. Each launching tube has its own air supply and is independent of the other 15 tubes. 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.

MISSLE CONCEPT

With almost unlimited cruising range and with endurance limited only by the crew, the Fleet Ballistic Missile Submarine is capable of extended submerged operations 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 nuclear submarines remain hidden by the ocean, their locations unknown to any potential enemy. The POLARIS missile, powered by solid propellant, is ready to launch within minutes of receiving the command without the need for a long countdown. Mobile, hidden, ready for instant action (or carefully considered delayed action), the Fleet Ballistic Missile system provides the United States with a powerful deterent to those who might start a global war.

VITAL STATISTICS

Keel Laid	28 December 1961
Launched	27 April 1963
Length	425 Feet
Width	33 Feet
Commissioned	9 April 1964
Built by	General Dynamics/Electric Boat
Displacement surfaced	about 7000 tons
Displacement submerged	about 8200 tons
Speed submerged	over 20 knots
Diving depth	over 400 feet



THE POWER PLANT

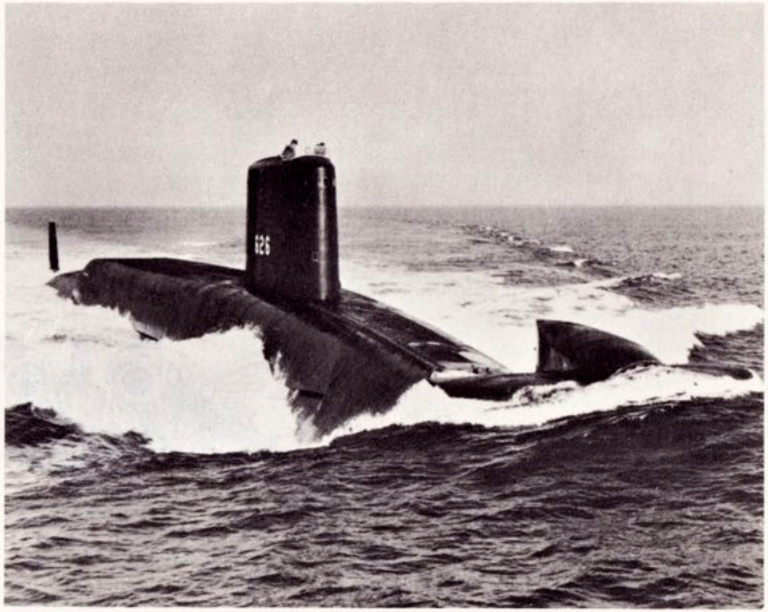
The DANIEL WEBSTER is powered by a nuclear power plant which consists of a nuclear reactor with its associated circulating water and steam cycles and auxiliary machinery.

The primary system is a circulating water cycle and consists of the reactor, identical port and starboard loops of piping, primary coolant pumps and the tubes of the steam generators. Heat is produced in the reactor by nuclear fission and is transferred to the circulating primary coolant water which is pressurized to prevent boiling. This water is then pumped through the steam generator tubes where it transfers its heat to the shell or the secondary side of the steam generators where it boils water to form steam. It is then pumped back to the reactor by the primary coolant pumps where it is heated for the next cycle.

The secondary system is the steam producing cycle and is made up of the shell side of the steam generators, turbines, condensers, and steam generator feed pumps. It is completely isolated from the primary system since the primary water goes through the tubes of the steam generator while the water which is boiling to make steam is on the shell side of the steam generator. Steam rises from the steam generators, then flows to the engineroom where it drives the ship's service turbo-generators which supply the ship with electricity and the main propulsion turbines which drive the propeller. After passing through the turbines, the steam is condensed and the water is fed back to the steam generators by the feed pumps. There is no step in the generation of this power which requires the presence of air or oxygen. This fact alone allows the ship to operate completely divorced from the earth's atmosphere for extended periods of time.

During the operation of the nuclear power plant high levels of radiation exist around the reactor and personnel are not permitted entrance into the reactor compartment until a few minutes after the reactor is shut down. Heavy shielding is used to protect the crew so that the average crew member receives less radiation than he would receive from natural sources ashore.

LAUNCHING



SEA TRIALS