



**WELCOME ABOARD**



Welcome Aboard,

The Officers and crew take great pride in extending to you the hospitality of the Submarine Force of the United States Navy. All members of the ship's crew will assist you in any way possible.

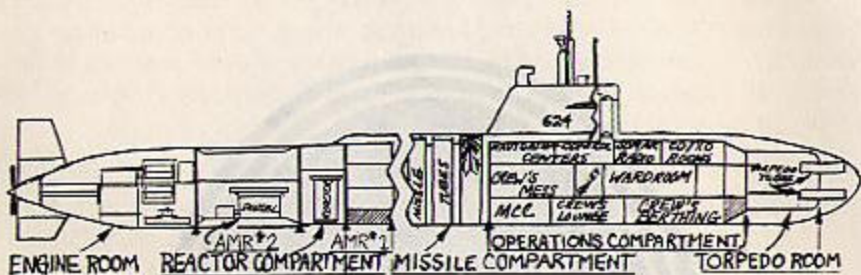
As a warship, THE WOODROW WILSON is tightly packed with electronic, electrical and mechanical equipment that enable her to carry out her primary mission, to preserve peace, but if necessary, to carry the fight to any enemy. The pamphlet has been prepared as a memento of your visit.

As your hosts, all of us on the WOODROW WILSON sincerely desire to make your visit informative, interesting and pleasant.



U.S.S. WOODROW WILSON (SSBN 624) is the first ship of the United States Navy to bear the name of the twenty-eighth president of the United States. Woodrow Wilson was a brilliant constitutional theorist, lawyer, teacher, university president, governor of New Jersey, and is considered foremost among our intellectual presidents. He was a man whose vision and dynamic leadership culminated in the attainment of significant domestic advances, and the capable execution of our national commitment in the first World War.





USS WOODROW WILSON is a product of the massive retaliation strategy. She along with her Polaris submarine sisterships, was designed as a reliable and relatively invulnerable strategic force to counter any would be aggressor. Her potent missile cargo contains the savage destructive force of all the bombs dropped by all nations during the Second World War. There is scarcely a point on the surface of the earth beyond the reach of her sixteen missiles. The "Polaris, Guardian of the Peace" philosophy prompted her authorization; original funding and assignment of SSBN-624 to Mare Island Naval Shipyard at Vallejo, California, occurred on 9 February 1961, and her keel was laid on 13 September of that year. She was launched on 22 February 1963 with Miss Eleanor Axson Sayre, the granddaughter of former President Woodrow Wilson, as sponsor. WOODROW WILSON made her maiden voyage on 20 October 1963.

After completing Builder's Trials and Preliminary Acceptance Trials, the commissioning of USS WOODROW WILSON took place on 27 December 1963 at the Building Yard with Commander (Later RADM) C. N. Mitchell, USN, becoming the Blue Crew Commanding Officer and Commander (Later RADM) W. N. Dietzen, USN, the Gold Crew Commanding Officer. The Honorable Earl Warren, Chief Justice of the Supreme Court of the United States, was the principal speaker.

On 9 February 1964 WOODROW WILSON departed Vallejo for passage through the Panama Canal to join the Atlantic Fleet. Following demonstration and shakedown operations off the Florida Coast and subsequent post-shakedown availability at Charleston Naval Shipyard, WOODROW WILSON departed on her first patrol in July 1964. Upon completion of this patrol she put into Rota, Spain, to join Submarine Squadron SIXTEEN. Twelve Polaris patrols were successfully completed out of Rota.

In May 1967 WOODROW WILSON was transferred to Submarine Squadron FOURTEEN at Holy Loch, Scotland. After completing her seventeenth patrol, she commenced a thirteen month overhaul availability at Newport News Shipbuilding and Drydock Company at Newport News, Virginia in May 1968.

In March 1970 WOODROW WILSON completed her first patrol in the Pacific, the eighteenth since being commissioned. Operating out of Guam as part of Submarine Squadron FIFTEEN, WOODROW WILSON continued to carry out her deterrent role and completed 13 additional patrols.

In July 1973, USS WOODROW WILSON transitted the Panama Canal and joined the Atlantic Submarine Force for overhaul and Poseidon conversion at Newport News, Virginia. At the completion of overhaul she was distinguished by the Board of Inspection and Survey as having the highest quality material condition of any ship to undergo an INSURV Inspection in recent years.

The highlights of the overhaul period included reactor core refueling plus the installation of poseidon (C-3) missiles, BQR-15 sonar array, BQR-20 processor, WLR-9 active sonar interceptor and modification to carry the MK-48 torpedo. Following a successful Demonstration and Shakedown Operation (DASO), WOODROW WILSON reported for duty alongside USS HUNLEY (AS 31) with Submarine Squadron EIGHTEEN in Charleston, S.C.

In 1978, WOODROW WILSON joined Submarine Squadron SIXTEEN in Rota, Spain. Early the following year, Squadron SIXTEEN moved across the Atlantic to the newly established submarine base at Kings Bay, Georgia.

In September 1981, WOODROW WILSON completed her Silver Anniversary (50th) deterrent patrol under the command of CDR (later CAPT) Alan R. More, with the blue crew embarked.

March 1982 marked the sixth change in submarine squadrons, as WOODROW WILSON rejoined Submarine Squadron EIGHTEEN at the Naval Weapons Station, Charleston, S.C. WOODROW WILSON successfully conducted an extended refit period (ERP) in March 1983. The ERP's are designed to extend the overhaul cycle of SSBN's to twelve years, vice five years.

Recent port calls for WOODROW WILSON have included Agadir, Morocco, Lisbon, Portugal, and Plymouth, England.



## **NAVIGATION SYSTEM**

Two positions must be known for a successful missile launching --- the targets and the launchers. 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 the ship's position. At the heart of the system is the Ship's Inertial Navigation System (SINS) which integrates ship motion, speeds, and headings to give a continuous report of ship's position.

The ship has two SINS, each checking on the other. 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.

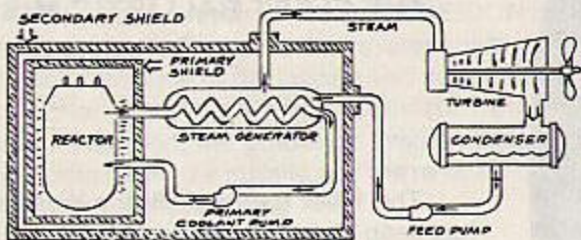
## **FIRE CONTROL**

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

## **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 worldwide communication system has the power and coverage necessary to exercise command of the always-submerged Fleet Ballistic missile submarines.

## THE POWER PLANT



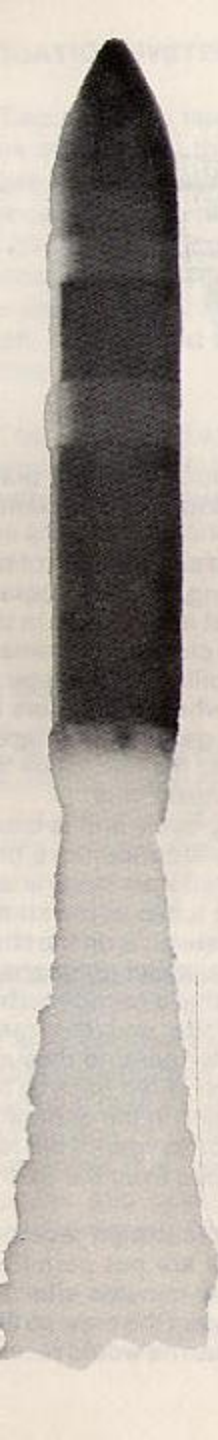
THE WOODROW WILSON is powered by a nuclear power plant which consists of a nuclear reactor with its associated circulating water and steam cycles and auxiliary machinery.

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 engine room 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 generator 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 shutdown. 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.





## THE FLEET BALLISTIC MISSILE

The Fleet Ballistic Missile Weapon System, has been operational since November, 1960. The USS GEORGE WASHINGTON (SSBN 598) was the first FBM 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 Polaris A-1 missile. The later construction submarines carried the 1,500 nautical mile A-2 and the 2,500 nautical mile A-3 missile. 31 Polaris submarines have since been converted to carry the POSEIDON C-3 missile.

### THE MISSILE

POSEIDON, in greek mythology the God of the Sea, is a two-stage Ballistic Missile powered by solid fuel rocket motors.

The 3,000 nautical mile range operational missile is designated the POSEIDON C-3. It is about 34 feet long, about six feet in diameter, and weights about 64,000 pounds. Each motor exerts thrust through a single nozzle in the motor's base. Subsequent missile models have reflected design changes in improved propellants and flight ranges.



## MISSILE GUIDANCE

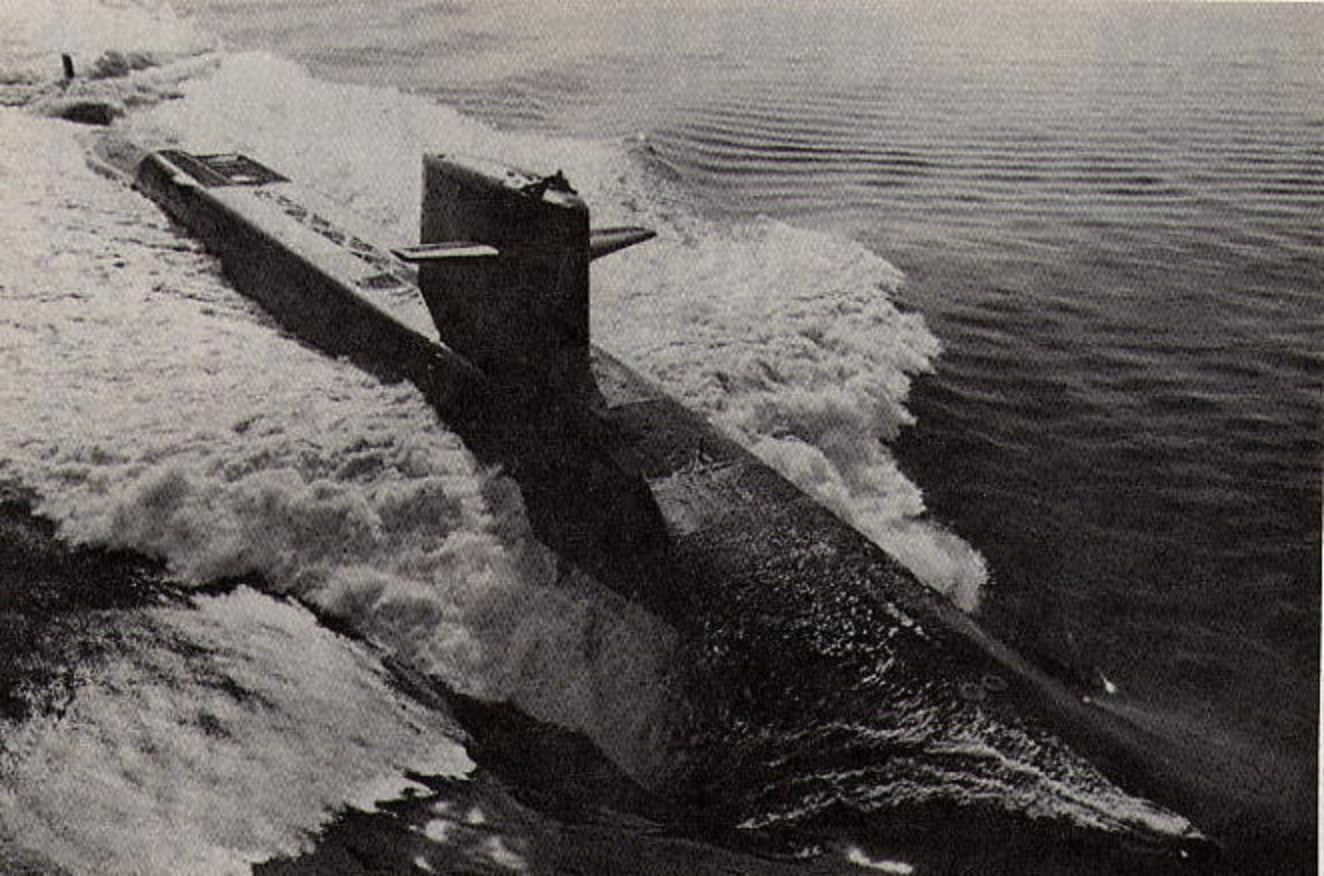
The inertial guidance system used in POSEIDON is a refinement of earlier inertial systems. The guidance system puts the missile on the correct course at the time of the launch and automatically computes a course correction should the missile deviate from its path. At the precise instant required, the guidance system triggers separation of the re-entry bodies from the missile and the re-entry bodies then follow a ballistic trajectory to the target.

## MISSILE LAUNCHING

POSEIDON missiles are launched by gas generator ejection system which impulses the missile from its launch tube and propels it 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 fuel propellants used in the POSEIDON missile. The result is increased safety for the submarine and its crew. Each launch tube has its own gas generator and is independent of the other 15 tubes. Vital parts of each missile are accessible for inspection and maintenance even when loaded in the launch tubes and while the submarine is under way.

## MISSILE 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 comprises about 70 percent of the earth's surface. Free of the need to surface or extend a snorkel above the surface to continually operate, FBM nuclear submarines remain hidden by the ocean and their locations unknown to any potential enemy. The POSEIDON missile, powered by solid fuel propellants, 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 actions), the Fleet Ballistic Missile system provides the United States with a powerful deterrent to those who might start a global war.





## CHARACTERISTICS

Length .....	425 feet
Beam .....	33 feet
Height .....	54 feet 10 inches
Displacement	
Surfaced .....	7300 tons
Submerged .....	8000 tons
Armament .....	16 Poseidon C3 missiles 4 bow-mounted torpedo tubes
Propulsion .....	Long-Life Water-Cooled Nuclear Reactor
Speed .....	Excess of 20 knots
Test Depth .....	Excess of 400 feet
Complement .....	14 officers 135 enlisted
Keel laid .....	September 13, 1961
Launched .....	February 22, 1963
Maiden voyage .....	October 20, 1963
Commissioned .....	December 27, 1963
Building Shipyard .....	Mare Island Naval Shipyard Vallejo, California
Overhaul Shipyard .....	Newport News Shipbuilding and Drydock Company, Newport News, Virginia