

WELCOME ABOARD

USS ROBERT E. LEE (SSBN601)

CDR J. D. MURRAY Jr., USN, Commanding Officer, and CDR R. M. HOOVER, USN, Prospective Commanding Officer of the GOLD Crew, wish to welcome you aboard the Fleet Ballistic Missile Submarine ROBERT E. LEE and hope you will have an interesting and enjoyable tour of the ship. The officers and men of ROBERT E. LEE are pleased to have you aboard to see the final result of the many months of effort put forth by the skilled craftsmen of Mare Island during the ship's overhaul.

It is significant to note that the extent of work accomplished on the ship comprised a conversion rather than a normal overhaul. The nuclear reactor was refueled, many ship's systems were re-engineered to provide greater safety of operation and reliability, and the weapons system was modified to give the ship the capability of firing the A-3 Polaris missile. The extent of this work was almost as great as building a new submarine. LEE was virtually stripped bare inside the hull and rebuilt. The result was a soundly engineered, efficiently operating, and well appointed ship. Particularly noticeable on your tour of LEE will be the smart yet functional interior design. Skillful use of formica, vinyl tile, and paint have made the ship a handsome and pleasant place in which to live and work.

History. ROBERT E. LEE is one of five first generation nuclear-powered fleet ballistic missile submarines. The ship is the first U.S. Navy ship to bear the name of the famous confederate general and the first nuclear submarine to have been built in the South. Mrs. Hanson E. Ely, Jr., granddaughter of General Robert E. Lee, was the sponsor of the ship at the December 18, 1959 launching at Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia. Another descendent of General Lee, Vice Admiral Fitzhugh Lee, USN, was the principal speaker when the ship was commissioned on September 16, 1960. Commissioning commanding officers were Cdr. R.F. Woodall, USN (Blue Crew) and Cdr. J. Williams Jr., USN (Gold Crew). After conducting sixteen Polaris deterrent patrols, ROBERT E. LEE was overhauled in 1965 and 1966 by the San Francisco Bay Naval Shipyard.

The Ship is longer than a football field, taller than a five-story building, and more than three times as heavy as the fleet-type submarines which played a significant role in the Pacific in World War II. She carries a crew of 124 enlisted men and 13 officers. The air conditioning and atmosphere control equipment maintain the air within the ship at optimum temperature, relative humidity and composition for the comfort of the crew on prolonged submerged operations. The capacity of the sea water distilling units is more than adequate to provide makeup water for the propulsion plant, the requirements of the galley and scullery, and a shower a day for every man on board.

The Missile. ROBERT E. LEE was built to carry sixteen of the 1200-mile A-1 Polaris missiles. The launcher and fire control system have since been modified to shoot the more sophisticated 2500-mile A-3 Polaris missile. The A-3 missile is 31 feet long and 54 inches in diameter and carries a nuclear warhead. It is a two-stage, solid propellant ballistic missile which employs an inertial guidance system to steer the missile to the target. The missiles can be fired from the surface or submerged. The destruction power of the sixteen A-3 missiles carried by ROBERT E. LEE is greater than all the bombs dropped during World War II. It is this tremendous potential for destruction which makes the Polaris Weapons System the credible deterrent to aggression that it is.

The Nuclear Reactor. The heart of the propulsion system of ROBERT E. LEE is its nuclear reactor. The reactor is of the pressurized water design in which the energy released by nuclear fission heats the highly purified water in the primary coolant system. The primary coolant then transfers its heat to the secondary water which forms the steam which is used in the propulsion turbines and the ship's turbo-generators. Nuclear propulsion enables ROBERT E. LEE to steam indefinitely at high speeds, completely submerged.

Navigation. Two positions must be known accurately for a successful missile launching - the position of the target and the position of the launcher. Since the launcher is in the ship which is constantly in motion, determining the position of the ship continuously and accurately is a formidable task. Several methods are used to complement each other in ROBERT E. LEE to provide a high order of accuracy in determining the ship's position. The heart of the system is the Inertial Navigation Systems (SINS), a complex arrangement of gyroscopes and accelerometers, which senses ship motions in all directions and keeps track of true north. Ship's position is continuously available from SINS.

Polaris Operations. Two crews of ROBERT E. LEE conduct alternate patrols from Holy Loch in Scotland. Between Polaris patrols there is a period alongside a submarine tender for upkeep, repair and maintenance. While one crew is on the ship on patrol or in Holy Loch, the other crew is on leave or making preparations in New London, Connecticut (our homeport) for the next patrol. Other Polaris submarines conduct similar patrols from bases at Rota, Spain, Apra Harbor, Guam and from Charleston, South Carolina.