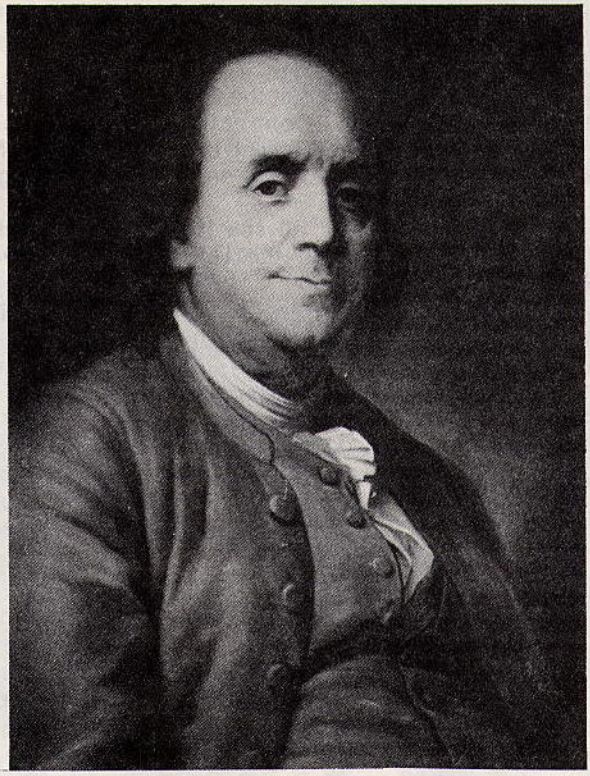
Welcome Aboard

USS BENJAMIN FRANKLIN
(SSBN-640)

VITAL STATISTICS

Keel Laid	25 May 1963
Launched	5 December 1964
Commissioned	22 October 1965
Poseidon Conversion	12 May 1972
Trident Conversion	25 September 1981
Length	425 feet
Beam	33 feet
Displacement submerged	8200 + tons
Displacement surfaced	7000 + tons
Speed submerged	Over 20 knots
Diving depth	Over 400 feet
Builders	General Dymanics/Electric Boat



BENJAMIN FRANKLIN (1706-1790)

A businessman who made a fortune at the age of 42, the author of a distinguished autobiography, a scientist who discovered positive and negative electricity, the inventor of bifocals, a diplomat who won vital aid from France for the struggling colonies during the American Revolution - Benjamin Franklin was the Renaissance Man of 18th Century America. Like the ballistic missile submarine which proudly bears his name, he implemented America's policies in his day. He was the only American to sign the four documents which established the United States as an independent nation - The Declaration of Independence, the alliance with France, the peace treaty with England, and the Constitution. He often worked seven days a week in his trade, as does his namesake.

USS BENJAMIN FRANKLIN (SSBN-640)
Ship's History

BENJAMIN FRANKLIN is the first of the SSBN 640 class of fleet ballistic missile submarines and the sixth ship of the line to bear the name of the famous American inventor, author and statesman.

The keel was laid on 25 May 1963 at the Electric Boat Division, General Dynamics Corporation, Groton, Connecticut. On 5 December 1964 BENJAMIN FRANKLIN was launched, having been christened by Mrs. Francis L. MOSELEY and Mrs. Leon V. CHAPLIN, great, great, great, great, great-grandaughters of Benjamin Franklin.

After successful completion of all sea trials the ship was placed in commission on 22 October 1965 at the U.S. Naval Underwater Sound Laboratory New London, Connecticut.

Shakedown cruise commenced on 26 October 1965. On 6 December 1965 the Gold Crew successfully launched a Polaris A-3 missile in close coordination with an orbital pass of the GEMINI 7 astronauts, BORMAN and LOVELL. The Blue Crew successfully launched a Polaris A-3 missile on 20 December 1965.

Upon completion of shakedown cruise on 25 January 1966, BENJAMIN FRANKLIN moored at Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia. On 5 March 1966 BENJAMIN FRANKLIN was again ready for sea and enroute to Charleston, South Carolina for tactical loadout and ultimate deployment to the Pacific Fleet.

Following the tactical loadout, BENJAMIN FRANKLIN transited the Panama Canal, chopped to CINCPACFLT on 4 April 1966 and arrived at Pearl Harbor on 20 April 1966.

After a brief refresher training period in Pearl Harbor, the Blue Crew deployed with the ship on 6 May 1966 on its first Polaris deterrent patrol which was successfully completed on 11 July 1966 when BENJAMIN FRANKLIN arrived in Apra Harbor, Guam.

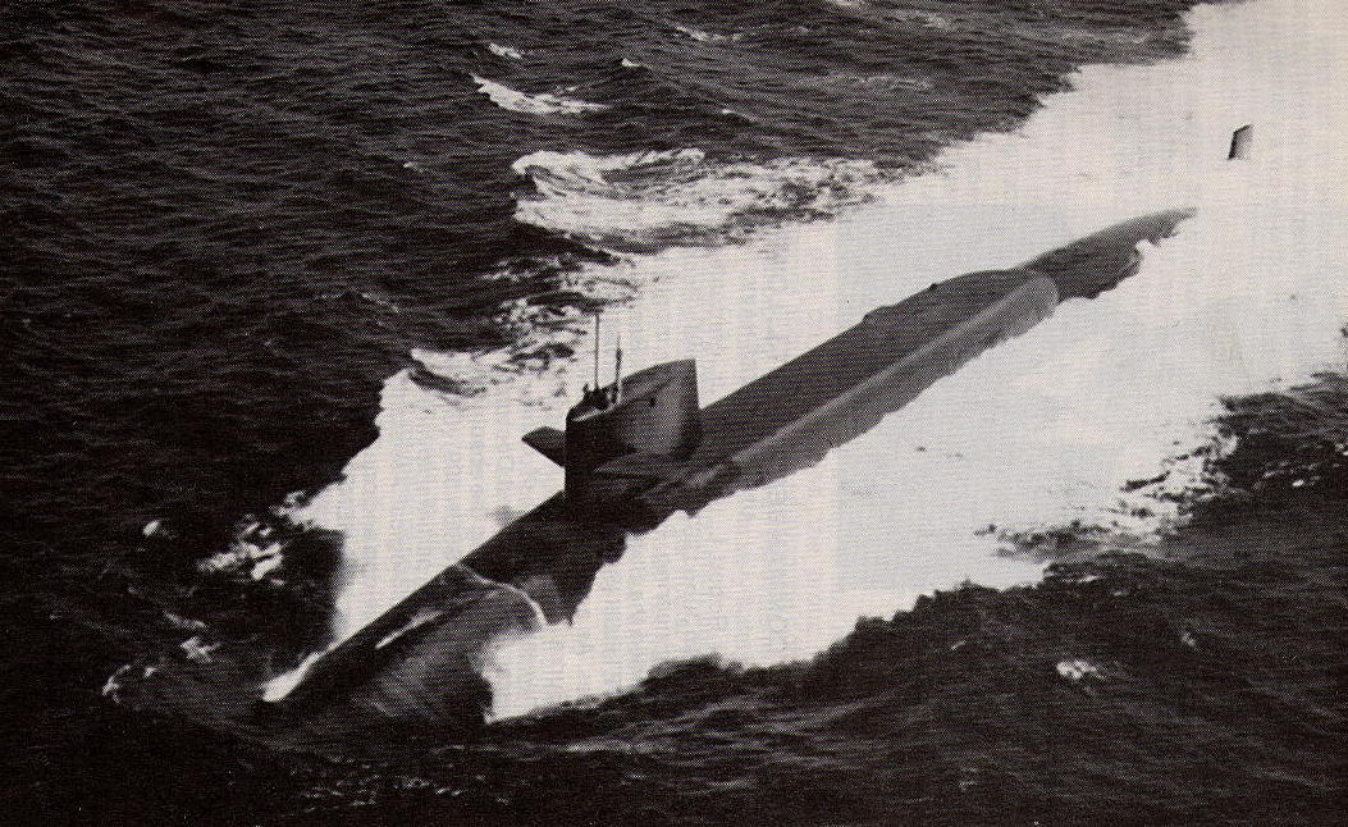
On 27 February 1969, both crews were awarded the Meritorious Unit Commendation, in recognition of the achievement of both crews in sustaining an exceptionally high state of readiness from the period of commissioning to September 1968.

On 28 August 1970 the Blue Crew departed Apra Harbor, Guam, M.I. for the BENJAMIN FRANKLIN'S nineteenth Polaris patrol and transit to New London, Connecticut. This was the final patrol prior to entry into the shipyard at Electric Boat Company, General Dynamics Corporation, Groton, Connecticut for Poseidon Conversion. The conversion was completed in May 1972 and the FRANKLIN once again took her place in the deterrent force.

Upon completion of her 29th Poseidon deterrent patrol, FRANKLIN was awarded Submarine Squadron SIXTEEN's Battle Efficiency "E".

FRANKLIN completed 16 Poseidon deterrent patrols before entering Portsmouth Naval Shipyard for her second overhaul during which the TRIDENT I Weapons System was installed. Shipyard overhaul was completed in September 1981, and BENJAMIN FRANKLIN once again patrols the seas.

On 18 December 1983 BENJAMIN FRANKLIN completed her 51st patrol, the 2,200th Strategic Deterrent Patrol made by a Fleet Ballistic Missile Submarine.



COMMANDER ROBERT L. LOWELL, JR.

UNITED STATES NAVY

Commander Robert L. LOWELL, Jr. graduated from the United States Naval Academy in June 1967 where he earned a Bachelor of Science Degree in Mechanical Engineering. Following a four month tour in USS CUBERA (SS 347), he attended the Submarine Officers Basic Course before proceding to USS TRUMPETFISH (SS 425) where he served as Communicator and qualified in submarines. As a selectee for the Junior Line Officer Advanced Education Program (Burke Scholarship Program) he next attended Case Western Reserve University (Division of Fluid, Thermal, and Aerospace Sciences), earning Master of Science and Doctor of Philosophy Degrees in the field of fluid mechanics. Following the ensuing Nuclear Power Training, he served in USS PATRICK HENRY (SSBN 599) (GOLD) completing three Polaris strategic deterrent patrols and a partial shipyard overhaul as Main Propulsion Assistant and Chemistry/ Radiological Assistant; USS DANIEL BOONE (SSBN 629) (GOLD) for two Poseidon and one Trident patrol and partial shipyard overhaul as Engineer Officer; USS HENRY L. STIMSON (SSBN 655) (BLUE) and USS JAMES MONROE (SSBN 622) for three Trident and four Poseidon patrols, respectively, as Executive Officer. He relieved as Commanding Officer, USS BENJAMIN FRANKLIN (SSBN 640) (BLUE) in October 1984. In April 1985 he relieved as Commanding Officer of FRANKLIN GOLD as well, combining crews for a September 1985 shipyard overhaul in Newport News, VA.

Commander LOWELL wears the Navy Commendation Medal, Navy Achievement Medal with one Gold Star, Meritorious Unit Commendation, three awards of Battle Efficiency "E", National Defense Medal, and Sea Service Ribbon with Silver Star.

Son of CDR (Ret, USN) and Mrs. R. L. Lowell, Commander LOWELL is married to the former Judy M. Peterson of West Lafayette, Indiana. Commander and Mrs. LOWELL have four children - Robert, Bradley, Jon, and Katie.

THE CREW

With all its awesome complexity and high degree of automation, FRANKLIN is only as good as the men who breathe life into her. On patrol, the ship is literally a world unto itself. There is no calling for outside help to come fix something or ask how it is supposed to work. The submarine must be - and is - self-sufficient.

The operation of the submarine and its nuclear power plant, the operation and upkeep of the Trident missile system, indeed, the entire effectiveness of the system as a deterrent to war, is up to the 140 enlisted men and officers. And effectiveness is directly related to the amount and quality of training a crew receives.

Training of an FBM (Fleet Ballistic Missile) submariner falls into two broad categories. One is training required before assignment and the other is the practical training received while on patrol and ashore between patrols.

Every sailor goes through nine weeks of time-honored boot camp right after joining the Navy, which gives him an introduction to the Navy and the Navy way of life. All potential submariners also spend eight weeks in submarine school learning the rudiments of submarine life, including such things as escape techniques in case of emergency.

Even after assignment to a submarine a man is still not a full-fledged submariner. Before he pins on his dolphins, the proud insignia of the submarine service, he spends about 36 weeks earning the right to wear them. He spends hours tracing out piping, wiring, and all the systems which are vital not just to the operation of the submarine but to its very safety.

Almost all FBM sailors attend a basic school and many additionally attend more advanced schools where they specialize in particular fields. Basic, or class "A" technical school is in one of the technical ratings. All of these schools include basic electricity and electronics as well as fundamentals in the particular field. Submarine School at Naval Submarine Base New London, Groton, Connecticut follows class "A" training.

The next step sends a man to advanced Trident specialty training, nuclear power training, or aboard a nuclear powered or conventional attack submarine for submarine qualifications. The goal of all the schools is to have the technician fully ready to handle his assigned responsibilities the day he sets foot in the FBM submarine. Stress is put on teaching total system operation and how each unit fits into and contributes to the whole. When he has completed his training, a man becomes a member of an FBM submarine crew.

After a man has mastered his own particular specialty, he then starts on the road to becoming a supervisor and must learn the operations of the entire system much as a systems engineer does. At this point the circle becomes complete and he is responsible for instructing new men who are following the same path he took.

FBM submariners are operating and maintaining systems using the most advanced technology of the day. Their training is necessarily equally advanced. The highly capable Trident submariners and their awesome submarine combine to give our nation its mightiest deterrent to nuclear war.

Life for a FRANKLIN submariner, if not unique, is certainly different from that of others. While others measure time in hours and days, an FBM sailor counts his in months. Months on patrol, months at home, months in training. Each FBM submarine is assigned two full crews. Called "Blue" and "Gold", each has its own Commanding Officer and full complement of officers and men. While one crew has the ship on patrol, the other is back in the home port, undergoing refresher training, taking leave, breaking in new crew members, and in general getting ready to go back to sea.

On patrol the ship settles into the routine which will be followed for the entire cruise. For the missilemen and nuclear power technicians, the sonarmen and radiomen, this means shifts of six hours on watch and six hours for rest, recreation, and training. Ship's routine is up to the Captain; in some cases watches are stood on a four on, eight off basis. The yeomen, hospital corpsmen, cooks and others may work normal ten to twelve hour days or split their work to cover periods required.

All the crew knows about the voyage is that they will be gone for 60 or more days and that they will be submerged the entire time. Where they are going, what route they will take to get there, just when they will return, only the Commanding Officer knows. But the whole crew is aware that the only reason for being on patrol is to be ready to launch their awesome cargo of 16 Trident missiles, if and when the President so orders.

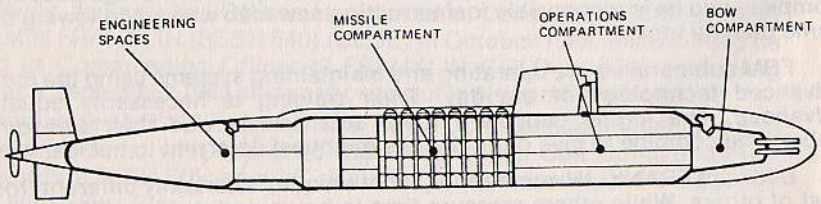
Naturally, all is not work on board the submarine during the patrol. Like all submarines, although FRANKLIN is bigger and roomier than non-FBM types, bunks for the crew are scattered throughout the ship, as well as in the comparatively spacious crew's quarters. Only the Captain and the Executive Officer have their own staterooms. The other officers triple up in well-designed but compact staterooms. The ship is decorated throughout in light pastel colors to provide a pleasing atmosphere for the long haul.

The crew's dining hall is large by submarine standards. It serves the additional purpose of movie theatre, recreation hall, study area, and country store cracker barrel. Off hours are more than filled with recreational facilities including a first-run movie every night, music from a great variety of tapes, and a well stocked library.

In addition, all FBM sailors have the opportunity to take college level courses for self-improvement and college credit while on patrol.

Family men, of course, spend as much time as they can with their wives and children. One of the advantages of FBM life is that the men know exactly what their schedule will be for the next year or so and can plan ahead with reasonable certainty.

The men of BENJAMIN FRANKLIN take time out from their unique and busy way of life to wish you "WELCOME ABOARD".



THE DEPARTMENTS

WEAPONS DEPARTMENT

The Weapons Department aboard USS BENJAMIN FRANKLIN is divided into six distinct divisions: Missile, Missile Fire Control, Launcher, Torpedo, Torpedo Fire Control and Deck. The personnel in each of these divisions are responsible for insuring that the Weapons Systems are maintained in a condition of maximum readiness at all times.

SSBN-640's Weapons Systems consist of the Missile Fire Control System which prepares deployment of the sixteen Trident Missiles; the Launcher System which houses, supports and launches the missiles; the Torpedo Fire Control System which provides torpedo fire control solutions and input parameter settings to the torpedoes and the 4 Torpedo Tubes which support and launch the various torpedoes carried aboard.

The Missile Technicians are responsible for maintaining the Trident Missiles and making it ready for launch. This requires a detailed knowledge of the construction and function of the many and varied subsystem equipment and components. These men are also responsible for the operation and maintenance of the launch tubes, launch control subsystems and the eject subsystems. They stand Missile Compartment Roving Security and Launch Operations Stations watches.

The Missile Fire Control Technicians who stand their watches in the Missile Control Center are responsible for maintenance and operation of the Fire Control System. This system consists of the central control computers, missile test and readiness equipment, numerous timing devices and switching and relay equipment. All of these provide the interface between fire control and the missile for directing and monitoring the entire launch sequence.

The Torpedo Division is manned by Torpedomen who stand their watches in the Torpedo Room. These personnel are required to have a detailed knowledge of the torpedo tubes and the various torpedoes carried on board BENJAMIN FRANKLIN.

The Torpedo Fire Control Technicians operate and maintain the Torpedo Fire Control System and support equipment associated with the ship's approach and attack capabilities. The electronic complexity of these equipments require the highest degree of training and skill.

Sonar Division, with its long range listening equipment, serves as the eyes and ears of the submarine while submerged. Using the piezoelectric principle, sound pressure waves are converted to electronic signals, thereby allowing trained technicians to differeniate between the familiar whistle of a friendly dolphin or the churning screws of a 1000 foot super-tanker.

The only non-technical division in the Weapons Department is the Deck Division which is composed of non-rated personnel who are responsible for maintaining the topside portion of the ship. They are charged with the maintenance of the material integrity of the ships structure as well as painting and preservation of the ships exterior.

NAVIGATION AND OPERATIONS DEPARTMENT

The Operations and Navigation Department, although having distinct and different purposes, are under the direct supervision of one officer. This department is composed of the Quartmaster, Navigation Electronics and Radio divisions.

Navigation Electronics Technicians are responsible for insuring that the ship's position, attitudes (pitch, roll and heading), and velocities are known to an accuracy necessary to meet the stringent requirements of the Trident Weapons system. This is done by using the ship's inertial navigation system (SINS). By using this highly accurate and completely independent navigation system, missile firing parameters are maintained 24 hours per day for the entire deterrent patrol. Navigation Electronics Technicians also operate and maintain the radar and electronic countermeasure equipment.

In addition to the unique mode of navigation required for the Weapons System, the Navigation Department is also charged with the responsibility of safely navigating the ship through coastal and restricted waters when proceeding to and from advanced refit sites. This form of navigation is performed via conventional means such as radar and piloting using the ship's two periscopes, and is accomplished by the Quartermasters.

Radiomen are charged with responsibility of remaining in constant communications throughout the deterrent patrol. Should a launch message ever be sent, the ship must be ready to respond at all times. In addition to this primary purpose, the Communication Center also processes family-grams (a 40 word personal message to each crew member from friends or family) and wire news service, thus keeping the crew's morale high and keeping them informed of the latest news back home.

To carry out all of these functions, the Navigation and Operations Department employ the services of ten electronic technicians, six radiomen and four quartermasters.

ENGINEERING DEPARTMENT

The propulsion plant of a nuclear powered ship is based upon use of a nuclear reactor to provide heat. The heat comes from the fissioning of nuclear fuel contained within the reactor. Since the fissioning process also produces radiation, shields are placed around the reactor so that the crew is protected.

The nuclear propulsion plant on this ship uses a pressurized water reactor design which has two basic systems: the primary system and the secondary system. The primary system circulates ordinary water and consists of the reactor, piping loops, pumps and steam generators. The heat produced in the reactor is transferred to the water under high pressure so it does not boil. This water is pumped through the steam generators and back into the reactor for reheating.

In the steam generators, the heat from the water in the primary system is transferred to the secondary system to create steam. The secondary system is isolated from the primary system so that the water in the two systems does not intermix.

In the secondary system, the steam flows from the steam generators to drive the turbine generators, which supply the ship with electricity, and to the main propulsion turbines, which drive the propeller. After passing through the turbines, the steam is condensened into water which is fed back into the steam generators by the feed pumps. Thus, both the primary and secondary systems are closed systems where water is recirculated and reused.

There is no step in the generation of this power which requires the presence of air or oxygen. This allows the ship to operate completely independent from the earth's atmosphere for extended periods of time.

Since **BENJAMIN FRANKLIN** spends much of its operational time submerged, it becomes necessary to manufacture all the air and water necessary to sustain the crew during these periods. For this purpose, various equipment is provided to produce oxygen, to remove carbon monoxide, carbon dioxide, and hydrogen from the atmosphere and to distill water.

Much of the ship's equipment, including steering and diving, masts, and most hull sea water valves, are operated by high pressure hydraulics. Accumulators are used to store high pressure oil and pumps maintain the oil level in the accumulators.

Many ship's systems also use air at various pressures. High pressure air is stored in air banks located in the Main Ballast Tanks external to the pressure hull. Air compressors take a suction on the ship's atmosphere and discharge this air at high pressure into the air banks.

With the large amount of electronic equipment on board and the steam piping in the engineering spaces, the problem of air conditioning becomes very critical for both habitability and equipment reliability. Chilled water is provided to spot coolers in ventilation lines and also directly to some equipment to maintain desired temperatures throughout the ship. This water is cooled in either of the two types of air conditioning onboard. Regrigeration is also provided for stowage of food.

SUPPLY DEPARTMENT

The FBM Supply Department handles logistics and support functions common to all ships. However, FBM Supply personnel must accomplish these functions despite limited space and approximately one-third the number of men assigned to a Supply Department, aboard a surface ship such as a destroyer. This Department consists of the Food Service and Stores Divisions.

Mess Management Specialists of the Food Services Division order, receive, inspect and stow provisions, plan menus, prepare and serve meals and baked goods, make monthly and quarterly reports, and supervise the cleanliness and sanitation of the pantry galley, wardroom, and crew's dinette. The MS must uphold the reputation of the Submarine Force for outstanding meals as there is little else to brighten the routine day of a long patrol.

The Stores Division's position is one of ever-increasing responsibility and complexity. Special weapons, navigation, and power plant systems require close supervision of the related allowance lists and spare parts. In general, the storekeepers requisition, receive and issue 25,000 different types of spare parts required for maintenance of shipboard equipment. They are also responsible for filing, conducting inventories, managing operating funds and preparing and submitting reports. The two storekeepers are assisted by one man from each division designated the Divisions Repair Parts Petty Officers. The storekeepers workload would be excessive without these men.

The Supply Department has a large job to do with a small complement of men, and it is to their credit that the ship operates as efficiently as it does.

MEDICAL DEPARTMENT

The Medical Department is responsible for maintaining the crew in optimum physical and mental readiness for their work. This involves performing routine physical examinations, conducting daily sanitation inspections, supervising the quality of drinking water, food and air, monitoring the dosage of radiation by each man, ensuring that it is below the limits prescribed by the Commander, Naval Medical Command.

In keeping with the ship's primary mission as a deterrent force, the Medical Department is prepared at all times to cope with any medical emergency. The Department is supplied as well as many small hospitals. All necessary medications and supplies are available to manage anything from a simple headache to major surgery. The Medical Department is manned by a senior Hospital Corpsman who is specially trained to work in a submarine environment independent of a Medical Officer.

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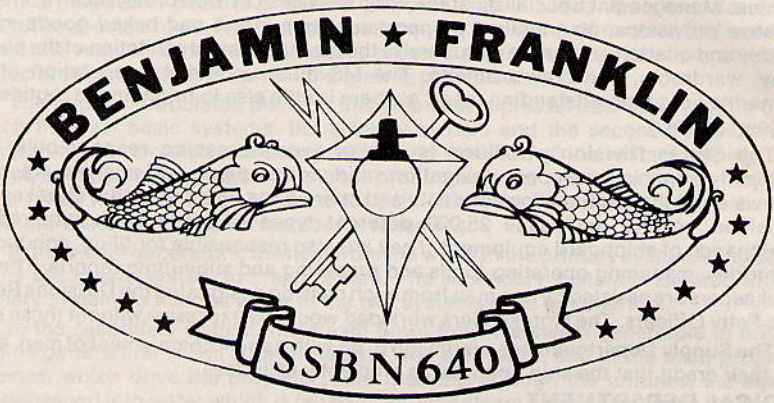
Whether you are a visitor onboard or a new crew member, as you read about the men of **BENJAMIN FRANKLIN,** we hope that you will be impressed with our men and our equipment. But, even more so, we hope that the complexity and great importance of our mission will impress upon you as it does us, the fact that if we ever have to fire our missiles, we have failed in our job.

We salute you and wish you a hearty
WELCOME ABOARD ....



The insignia of the **USS BENJAMIN FRANKLIN** symbolizes her role as a major deterrent weapons system while recalling a significant event in the life of her namesake. The Kite, Key, and Lightening represent Franklin's fascination with phenomenon of electricity, and the powerful deterrent force of Trident, which is the key to security.