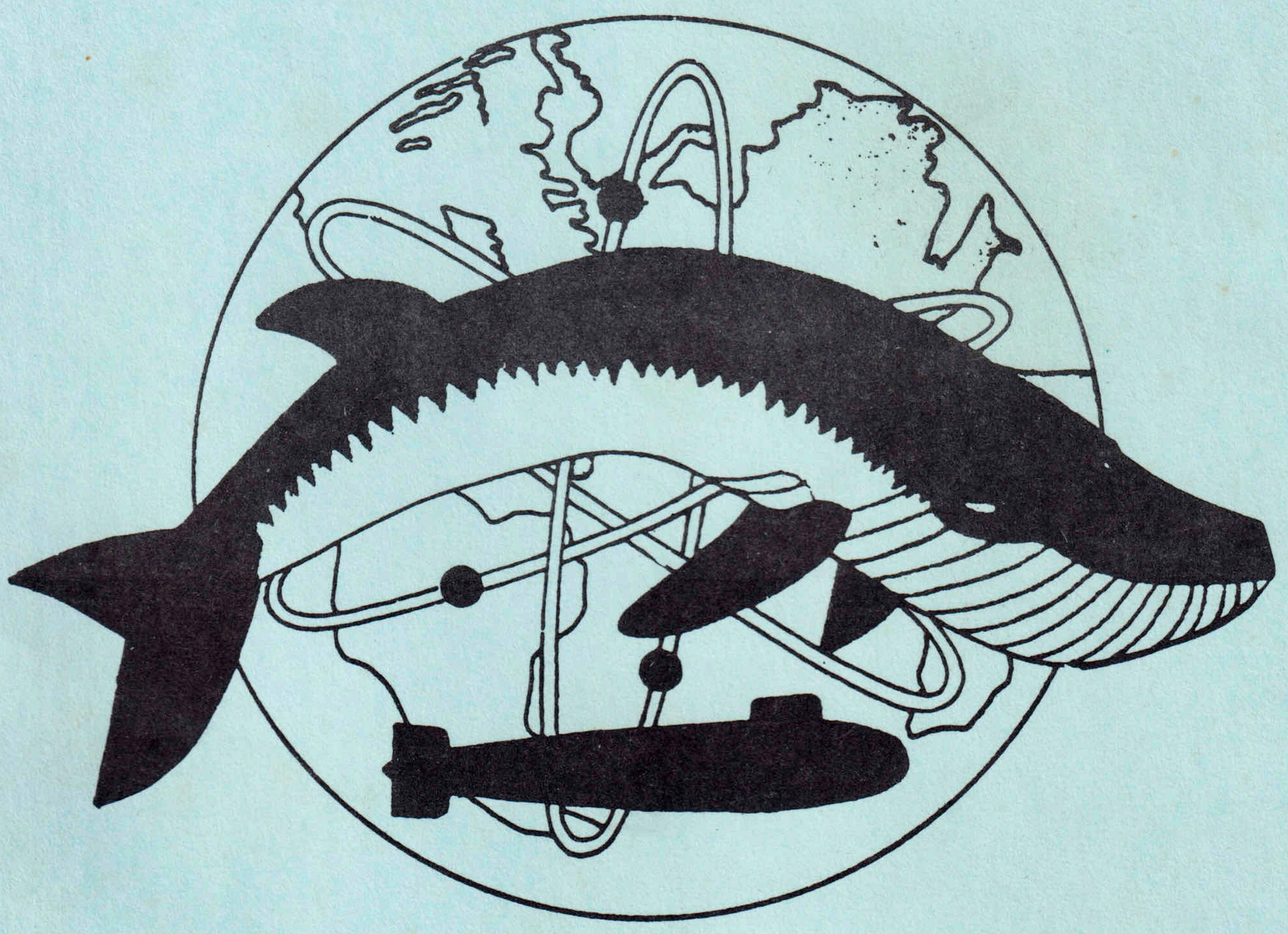
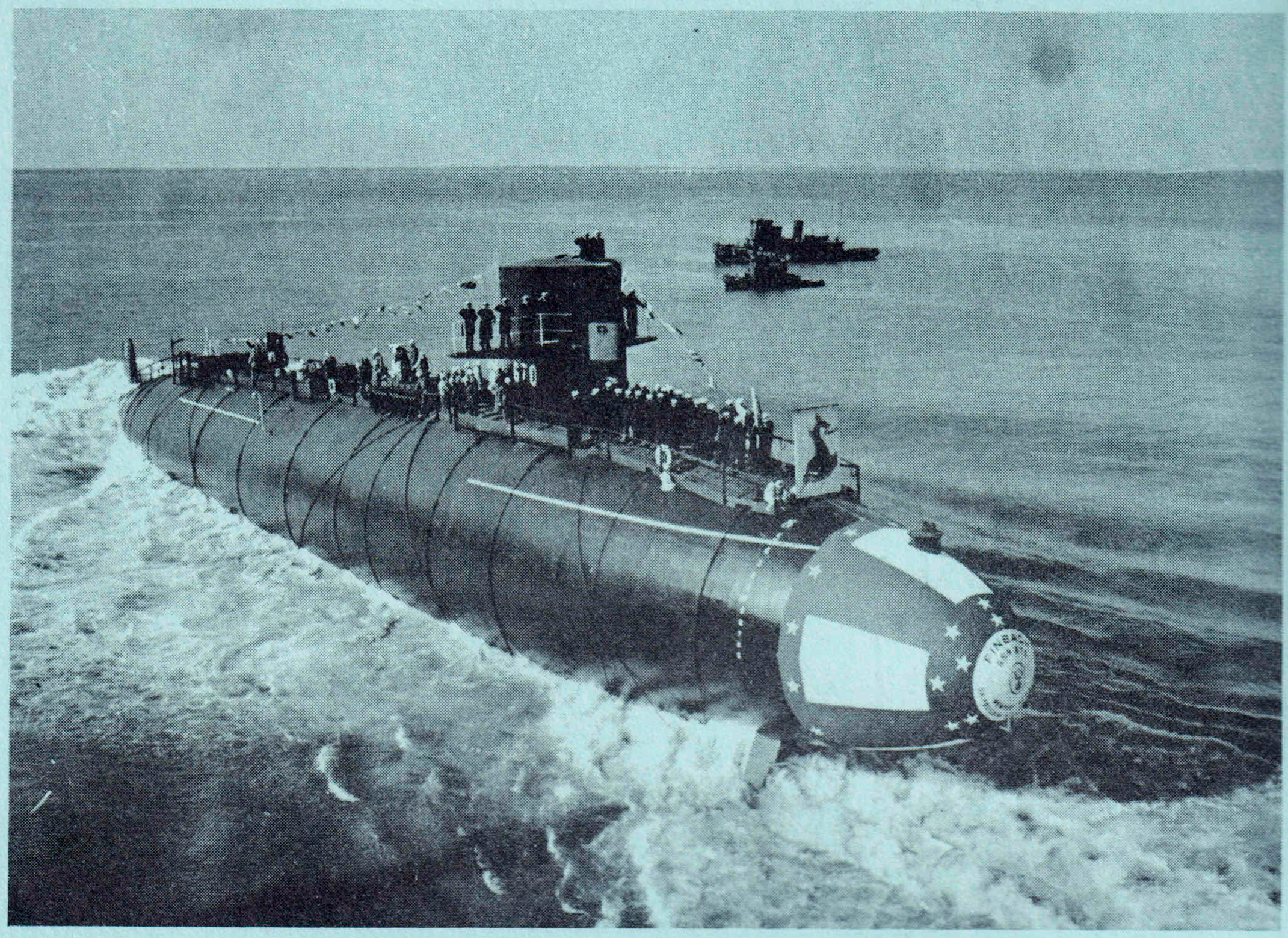
Welcome Aboard



UNITED STATES SHIP FINBACK

NUCLEAR ATTACK SUBMARINE 670



Keel laid: 26 June 1967

Launched: 7 December 1968

Sea Trails: 26 October 1969

Commissioned: 4 February 1970

Length: 292 feet

Maximum Depth: In excess of 400 feet

Maximum Speed: In excess of 20 knots

Displacement: 4,140 tons

Ship's Complement: 130 officers and men

Number of Torpedo Tubes: 4

Welcome Aboard

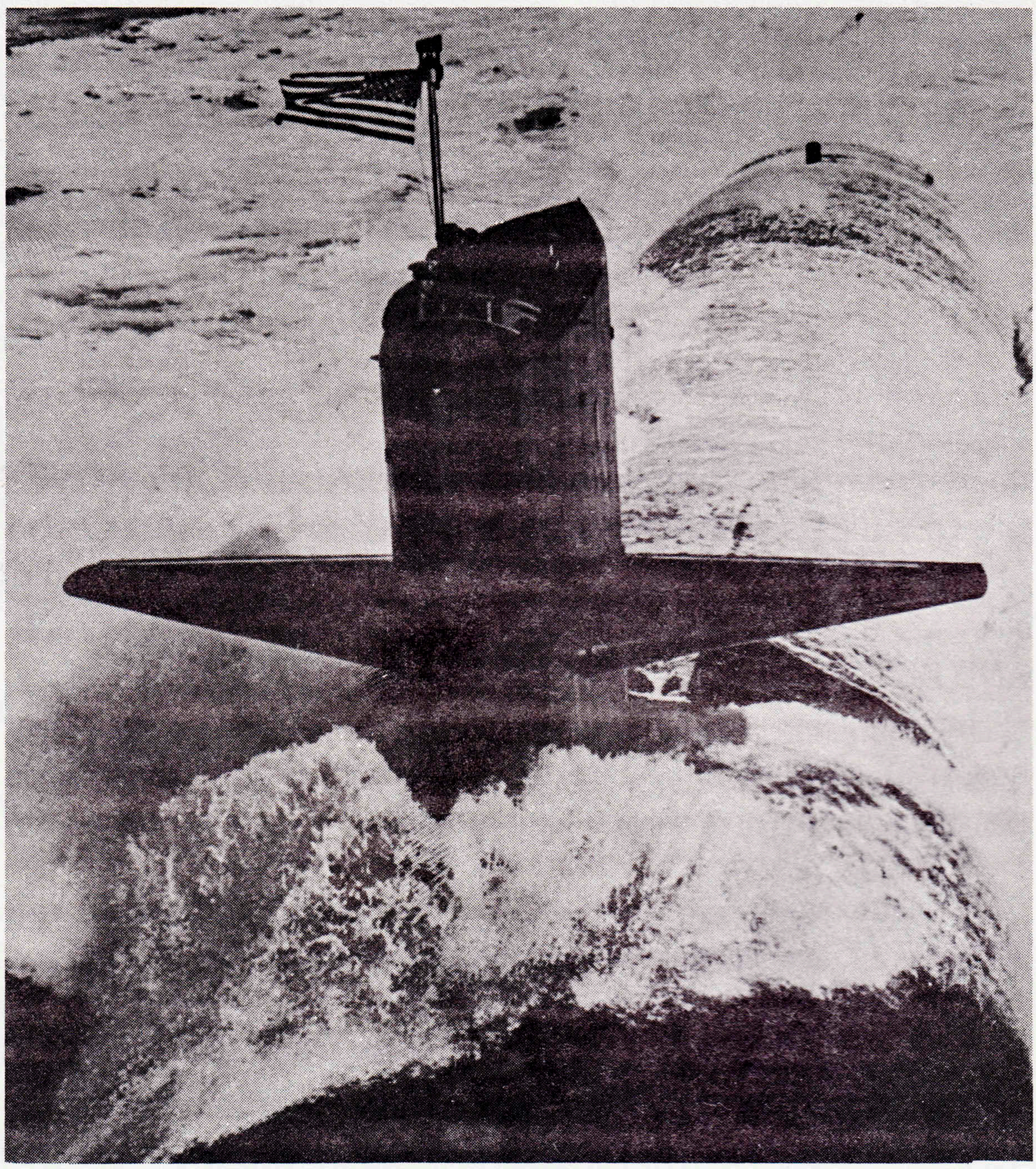
The USS FINBACK is the Navy's eighty-seventh nuclear powered submarine and the forty-fifth member of its attack submarine fleet. The ship is 292 feet long and has a submerged displacement of approximately 4800 tons.

FINBACK first entered the water on December 7, 1968 when she was launched by the NEWPORT NEWS SHIP–BUILDING AND DRYDOCK COMPANY, being the first warship launched on that date since the end of World War II. Eleven months later she began the series of sea trials designed to test her readiness to join the fleet. The initial sea trial tested the operation of the nuclear propulsion plant and, in the tradition of the nuclear navy, was conducted under the supervision of ADMIRAL H.G. RICKOVER, the DEPUTY COMMANDER FOR NUCLEAR PROPULSION of the NAVAL SHIPS SYSTEMS COMMAND, and the head of NAVAL REACTORS DIVISION of the ENERGY RESEACH AND DEVELOPMENT ADMINISTRATION.

Immediately after the successful completion of this first sea trial, further trials were undertaken to test the ship's complex sonar and weapons systems.

Her readiness proven by the series of sea trials, FINBACK was commissioned on Febraury 4, 1970 and joined the United States Atlantic Fleet. She brought with her the unlimited endurance of nuclear power, the most advanced submarine detection system and the foremost in underwater launched weapons. In addition she was the first submarine to be configured as a "mothership" for the Navy's newly developed DEEP SUBMERGENCE RESCUE VEHICLE.

From her commissioning until the completion of post shakedown availability in November 1970, FINBACK was in the shakedown phase of the ship's life. During shakedown training, FINBACK successfully launched her full complement of torpedoes and missles, plus undergoing an extensive series of inspections and examinations to ready her for the role she enjoys at the present as a front line operational nuclear fast attack submarine.



THE NUCLEAR POWERED ATTACK SUBMARINE
FINBACK

HERITAGE

The USS FINBACK (SSN. 670) is the second United States submarine to bear the name. She carries forth the proud heritage and record of FINBACK (SS 230).

The USS FINBACK (SS 230) was commissioned on 31 January 1942 after construction at PORTSMOUTH NAVAL SHIPYARD LCDR JESSE L. HULL, USN, commanding. Her record of sinking 59,383 tons of enemy shipping attests to her prowess and a man of war. Her action in the Pacific theatre displayed every facet of submarine combat. These actions included separated reconnaissance type missions of Yega Bay, Kiska Island and Oroluk Atol, a special operation placing agents on Atka Island, acting as a navigational guide for land-based liberator bombers en route to bomb Wake Island, rescuing five downed pilots in a two span whil e working lifeguard duty for carrier aircraft pounding Iwo Jima, joint operations with other U.S. submarines in "wolf-pack" type missions, lifeguard duty of Bonin Island and acting as a training vessel in Hawaiian waters.

For her action FINBACK received 12 battle stars and nine submarine combat insignia in her 11 war patrols.

She spent the remainder of her illustrious career in training operations out of the submarine base, New London, Conn., before she was decommissioned there on 21 April 1950. On 1 September 1958 her proud name was stricken from the register.

DESCRIPTION OF A FINBACK

The FINBACK is the name given to the widely distributed species of whales belonging to the genus BALAENOPTERA. The bodies of these whales are slender and elongated, ranging in length from 60 to 80 feet. A 70-foot Finback may weight 130,000 pounds. These whales may be more than 20 feet at birth and they have a life expectancy of about 20 years.

The Finbck has a well developed dorsel fin placed two-thirds of the distance from the head to the flukes, and a characteristic series of longitudinal folds in the throat region. It is from the dorsal fin that the Finback gets its name. Finbacks are the fastest swimming of the whales, reaching a speed of 30 miles an hour.

A DAY IN THE LIFE OF A SUBMARINER

George Lee is a fictitious name for a typical FINBACK submariner. He is, we will imagine, a second class Quartermaster. As such, he works in the Quartermaster Division in the Navigation Department. (In the Navy, quartermasters are specialists in navigation.)

On a day that he has the 0600 to 1200 watch (6 AM to 12 AM), George is awakened at 0500 by a messenger; this gives him 45 minutes to dress, shave and enjoy a large breakfast. In keeping with a tradition, he reports to his watch station in the attack center, where the Officer of the Deck also stands his watch, 15 minutes before his watch begins, in order to be briefed on the activities of the previous watchstander on *his* time: a custom most appreciated by the departing quartermaster. During this six-hour watch, Quartermaster Lee plots the ship's position on the chart, assists the Officer of the Deck by recording and tracking sonar contacts, and maintains the ship's log.

After his relief has taken the watch, George cleans up for the noon meal. Today's meal is followed in the Crew's Mess by a "School of the Boat" lecture given by the Auxiliary Division Chief Petty Officer on the ship's ventilation system. Since he is already qualified on the FINBACK, George passes the lecture up in order to spend some time preparing for his first class Quartermaster examination. At 1500 (3 PM), he has an appointment to examine a newly-reported seaman on his knowledge of the ship's periscopes and antennas, for the seaman's submarine qualification. George Lee's immediate supervisor, a Chief Quartermaster, had told him to make some changes to several navigation charts and publications and to prepare an order for some new training materials—which took the rest of the afternoon.

The ship's daily drill—which today was unannounced—interrupted the task for about thirty minutes. Drills are conducted to test the crew's reaction to casualty and combat situations of various sorts: fire, loss of power, toxic gas, depth charge, and so on. Every drill is an "all hands" effort—even those catching up on lost sleep are summoned by the ship's alarms. Fire hoses are unreeled, medical bags opened, gas masks worn, equipment operated, nothing that can possibly be done to enhance the realism is neglected.

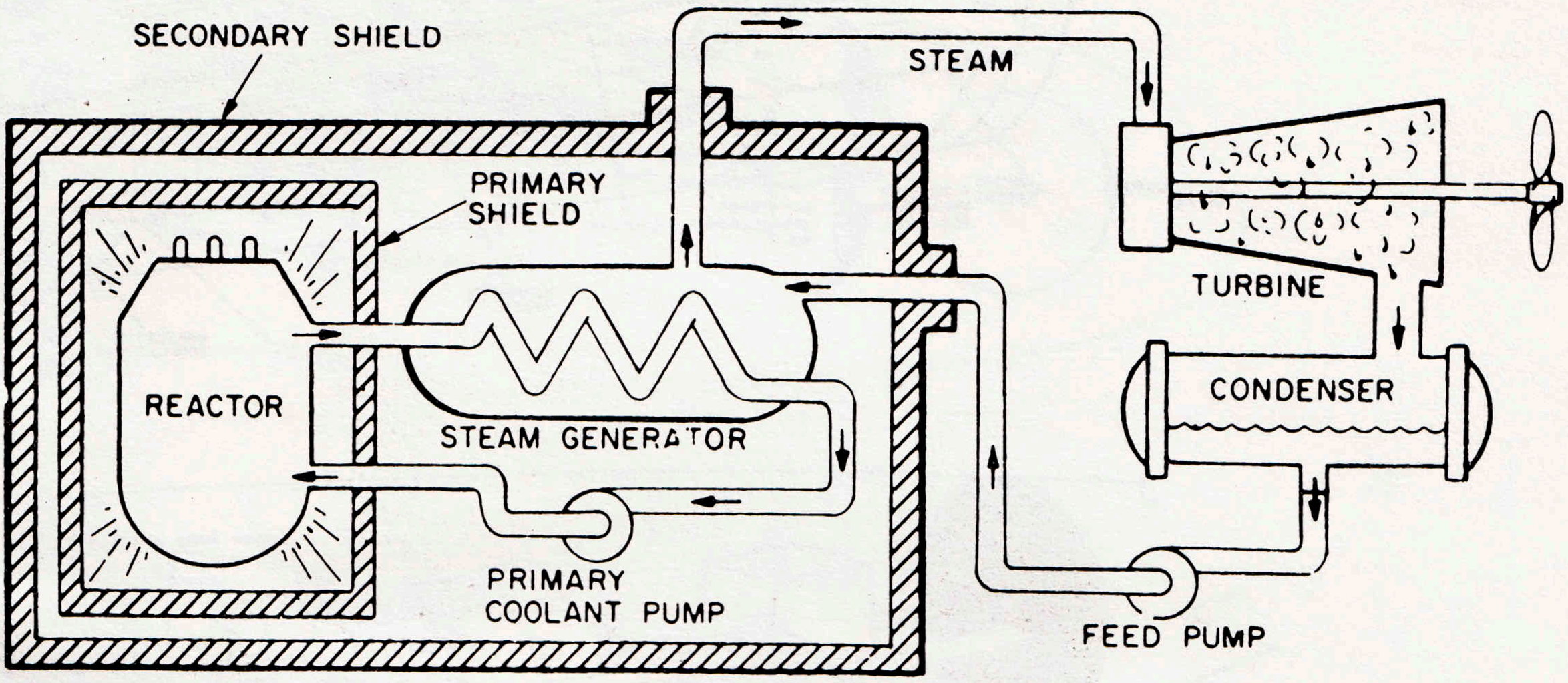
The movie after the evening meal was one he had seen before so George read some more of a Western he'd gotten in the ship's library. Then he can doze for a couple of hours before standing his next watch—the mid watch, from midnight until six in the morning.

The schedule of our mythical George Lee is not at all imaginary or exceptional—it is typical of what a submariner does during a usual workday at sea. It is perhaps a fair answer to the oft posed question: What on earth do you do out there for sixty days?

HOW NUCLEAR POWER OPERATES A SUBMARINE

The power plant of a nuclear submarine is based upon a nuclear reactor which provides heat for the generation of steam. This, in turn, drives the main propulsion turbines and the ship's turbo-generators for elecric power.

The primary system is a circulation water cycle and consists of the reactor, loops of piping, primary coolant pumps and steam generators. Heat produced in the reactor by nuclear fission is transferred to the circulating primary coolant water which is pressurized to prevent boiling. This water is then pumped through the steam generator and back into the reactor by the primary coolant pumps for reheating in the next cycle.

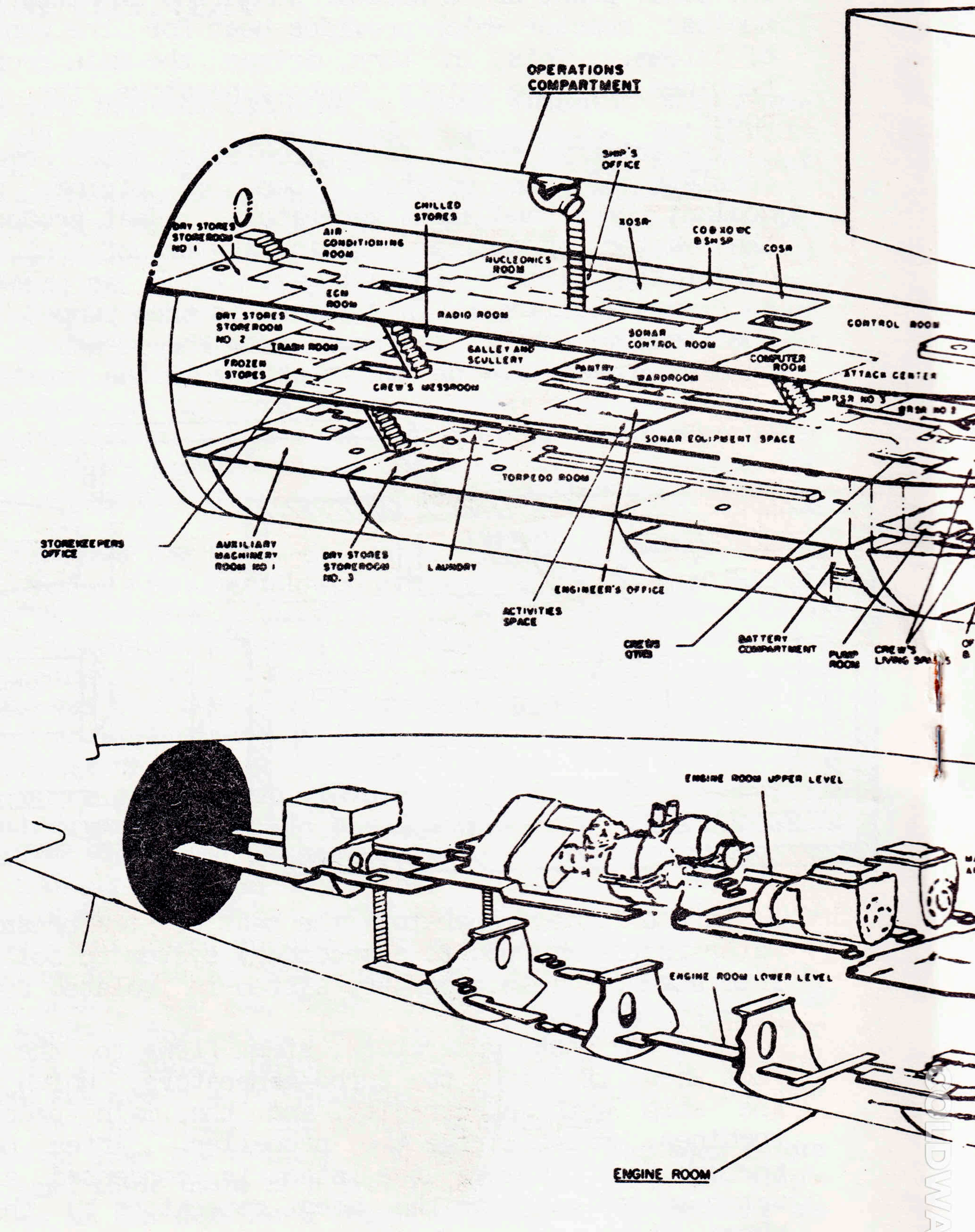


In the steam generator, the heat of the pressurized water is transferred to a secondary system to boil water into steam. This secondary system is isolated from the primary system.

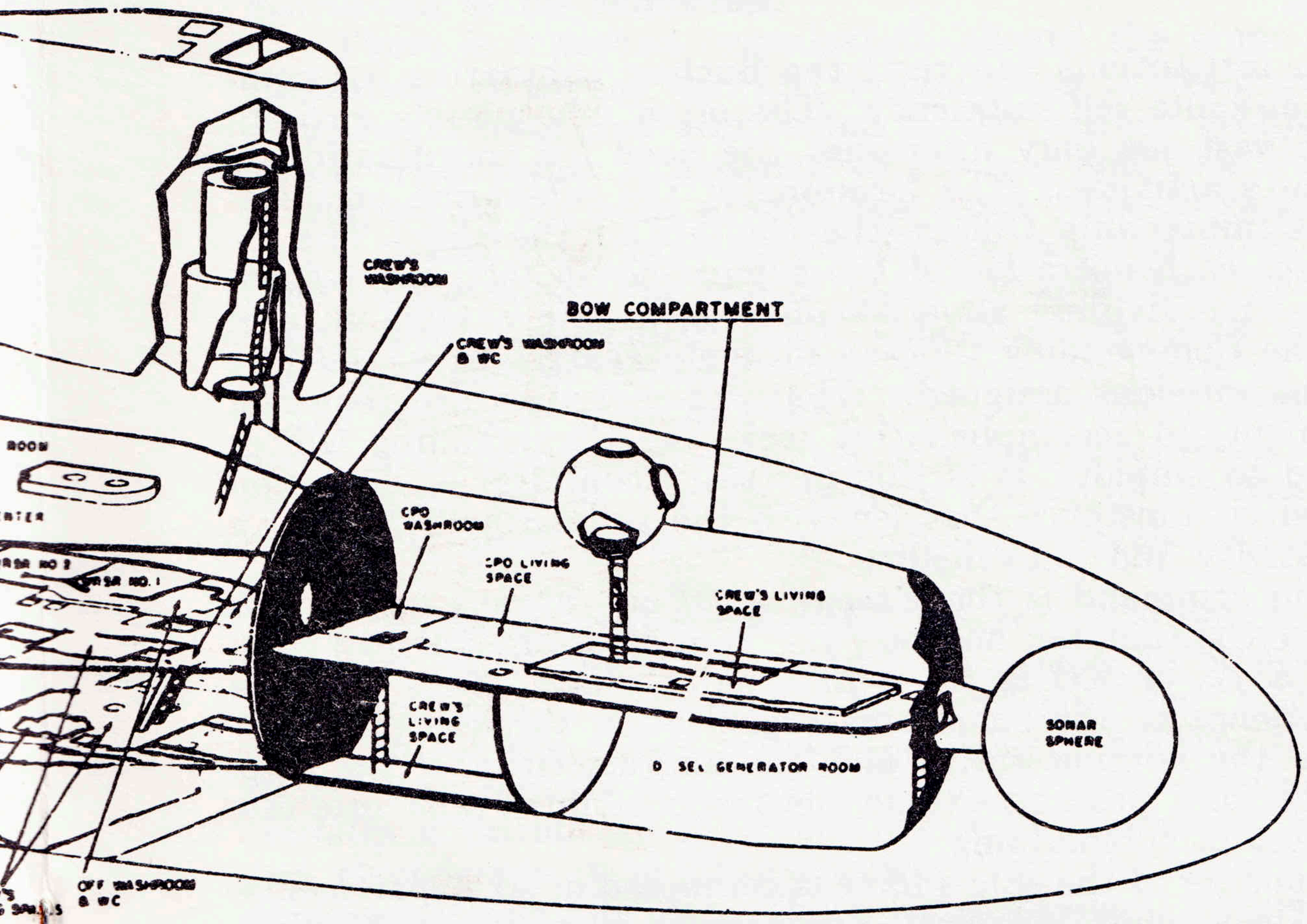
From the steam generators, steam flows to the engine room where it drives the turbo-generators, which supply the ship with electricity, and the main propulsion turbines, which drive the propeller. After passing through the turbines, the steam is condensed and the water is fed back to the steam generators by the feed pumps.

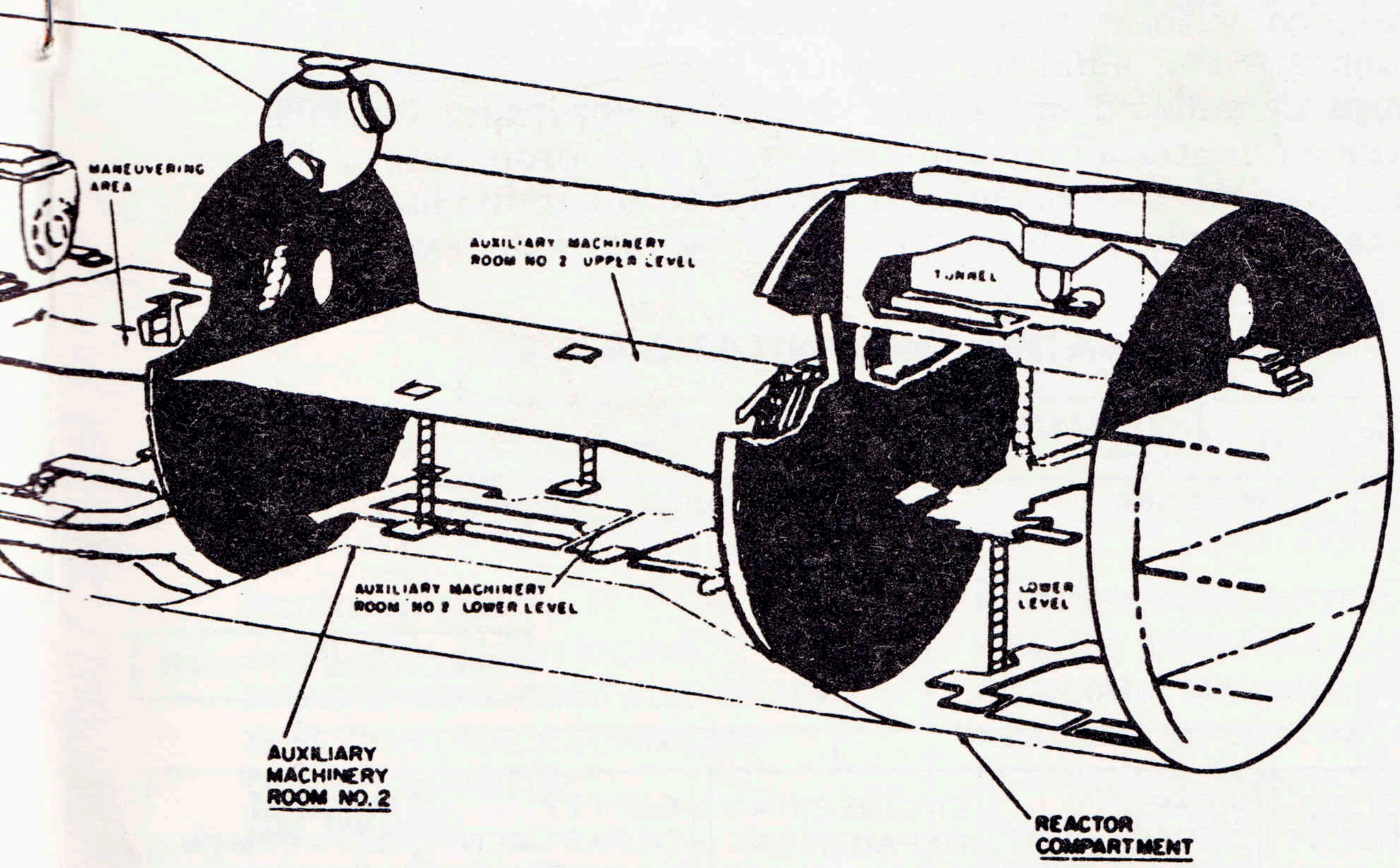
There is no step in the generation of this power which requires the presence of air or oxygen. This fact alone allows the ship to operate completely independent from the earth's atmosphere for extended periods of time.

During this operation of the nuclear power plant, high levels of radiation exists around the reactor and personnel are not permitted to enter the reactor compartment. Heavy shielding protects the crew so that the crew member receives less radiation on on submerged patrol than he would receive from natural sources ashore.



SHIP'S ARRANGEMENT





HOW A SUBMARINE IS ORGANIZED

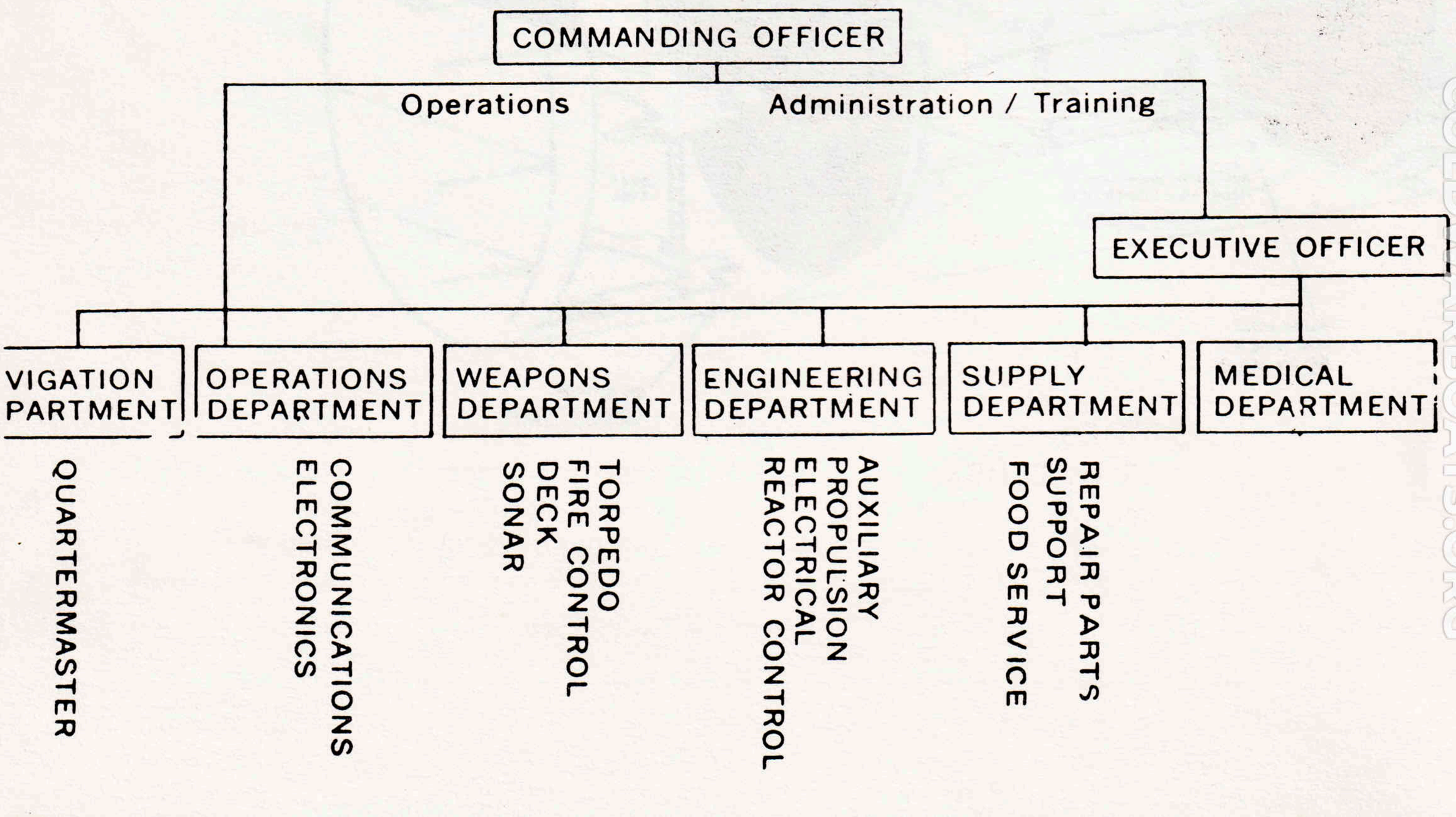
Few modern institutions can rival the nuclear submarine for complexity and absolute self-sufficiency. The often inhospitable environment of the vast sea only intensifies the need for coordination of each crewman's activities. The keystone of the submarine organization is the Commanding Officer—the Captain of the ship. The responsibility for each operation of the submarine—in fact, the responsibility of each individual aboard—converge at the command level and create the Commanding Officer's ultimate charge: to successfully carry out the missions assigned. Whatever measures are required, in his judgment, to accomplish this task, the Commanding Officer is empowered to employ. It is this necessary conferral of discretion in an isolated circumstance that lends to the submarine command a sense of creativity and individuality.

Second in command is the Executive Officer—always next senior in rank to the Captain and not very far from attaining his own command. The *Exec*, or XO as he is informally called, offers his wide ranging experience to the submarine organization through direct coordination of the administrative and training activities of the ship. His knowledge and position extend his responsibilities and interests to every aspect of submarining.

The remainder of the ship's force is composed of six departments: Navigation, Operations, Weapons, Engineering, Supply and Medical. The first four are ordinarily led by the more senior officers of the ship who rank just below the Executive Officer. The more junior officers are assigned within these departments to act as division officers. Divisions are the smallest organizational units aboard, and consist of groups of enlisted specialists organized according to skills.

Every piece of material on the ship from the propeller to the paint job is assigned to a division and finally to an individual technician for its care. Each of these men soon becomes an expert not

ADMINISTRATIVE ORGANIZATION



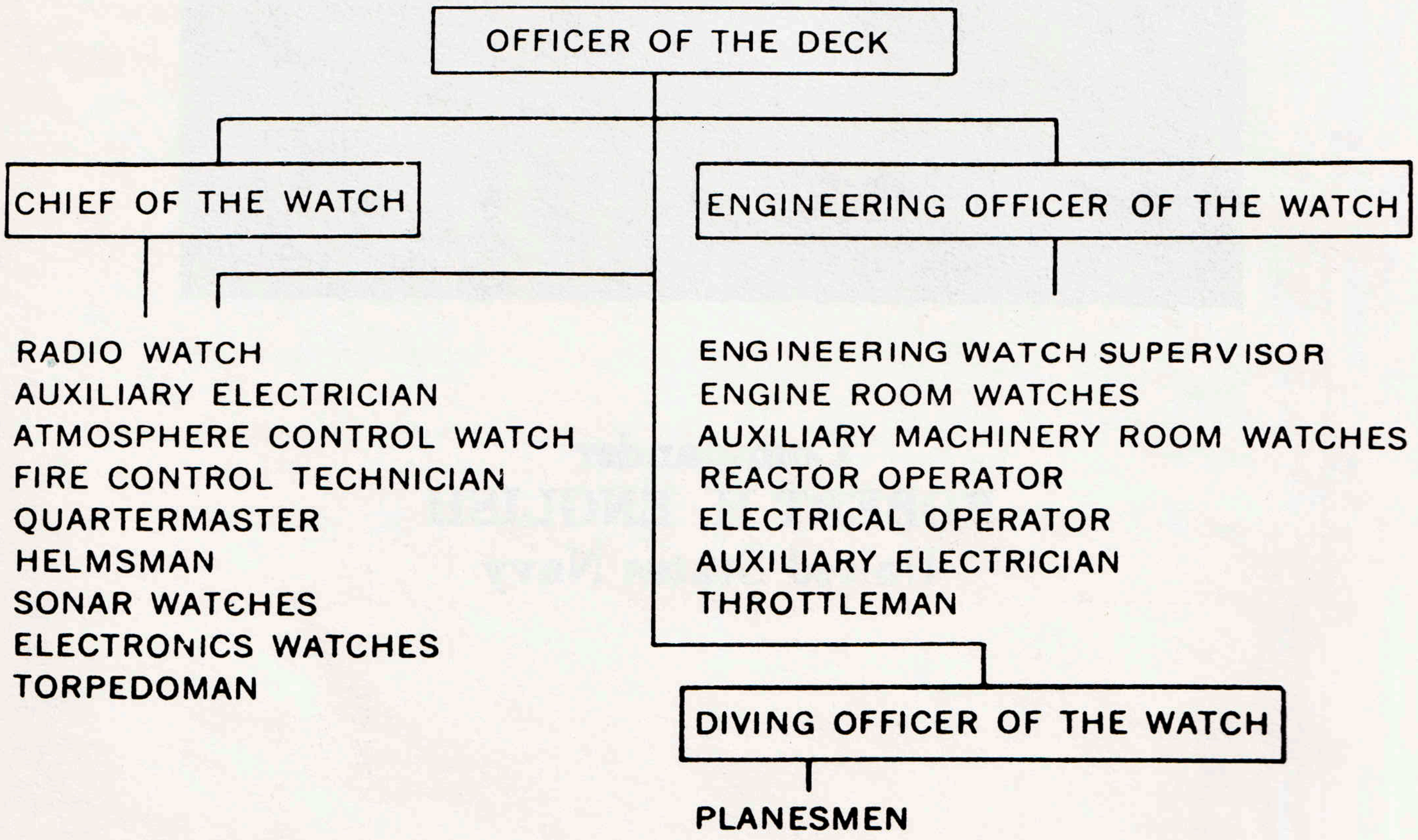
only in the technical functions to which his special training has been directed, but also in the demands of administration, leadership and instruction of his shipmates.

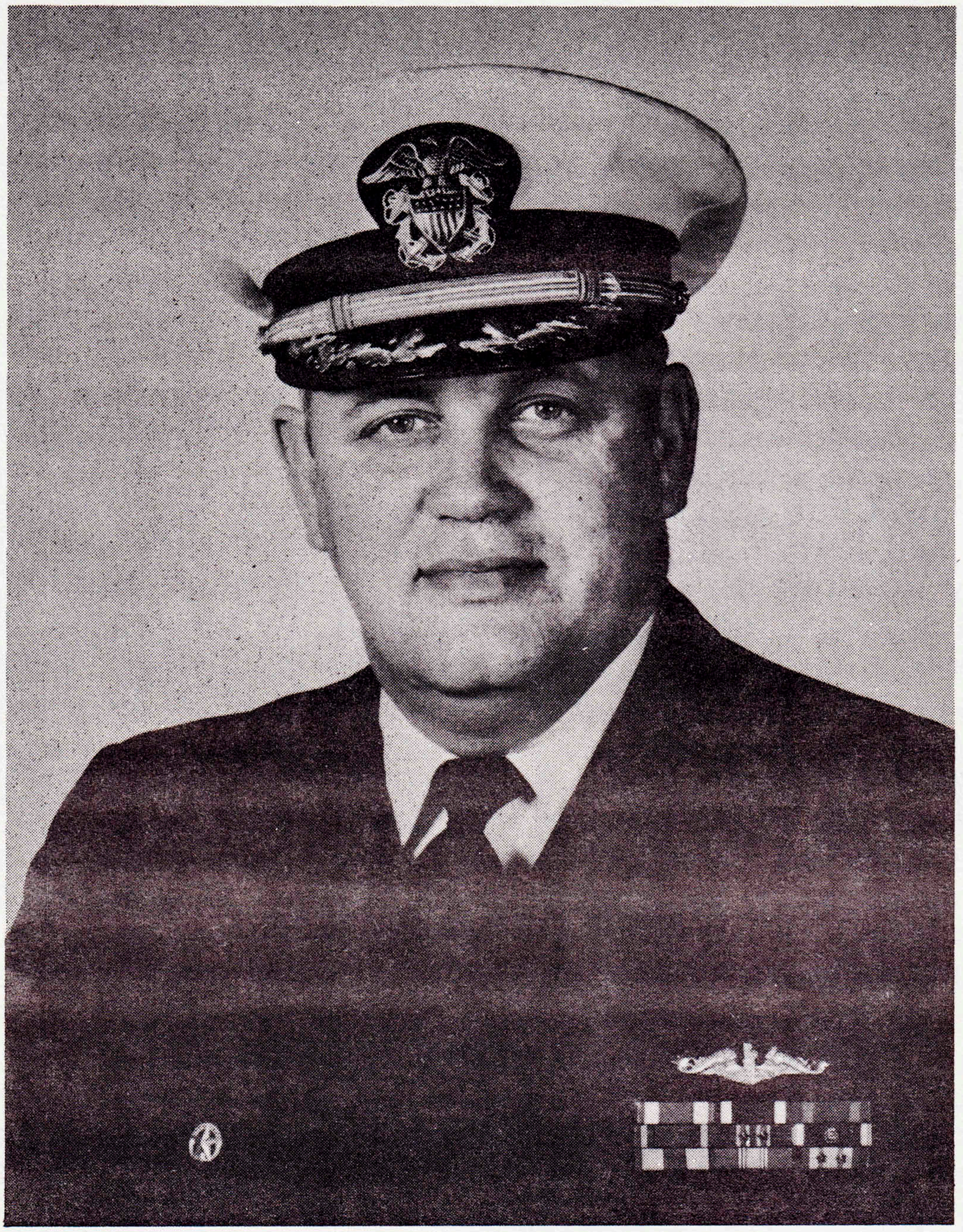
There is a second organization aboard the ship: the watch organization. Whereas the first organization is designed to maintain equipment, train and administer to the various groups of men, the watch organization is designed to conduct and coordinate the actual *operations* of the ship around the clock. This organization is ordinarily divided into three similar groups called sections. At any given time on the submarine one of these sections "has the watch". Each watch section is headed by the Officer of the Deck who carries out the Commanding Officer's orders during the hours of his watch. It is the Officer of the Deck who orders the ship's course, speed and depth, and conducts all combined shipboard evolutions. He is assisted by a second officer, the Engineering Officer of the Watch, who controls the reactor plant and all engineering evolutions in the propulsion plant.

Each watch section consists, for example, of helmsmen, who steer the ship; throttlemen, to control the steam turbine engines; sonar operators, who silently probe the ship's environs; reactor operators, who control the ship's remarkable energy source; torpedomen, to service and launch FINBACK's weapons; radio operators, who continually maintain an invisible link with command centers ashore; and electricians, who supply power from the reactor for virtually every service on the ship. These watchstanders, among others, stand alertly by their equipment and stations throughout the duration of each watch.

The tempo of the watch is the heartbeat of the ship—and, since one third of a submariner's time is spent standing his watch, it is also the principal determinant of his day to day routine.

WATCH ORGANIZATION





Commander
ROBERT H. ENGLISH
United States Navy

Commander ENGLISH is from Danville, Virginia and graduated from the United States Naval Academy in June 1967. Following graduation he attended Nuclear Power Training and Naval Submarine School.

Commander ENGLISH served in USS DANIEL WEBSTER (SSBN-626) (BLUE) from March 1969 until August 1971 and qualified in submarines. Following this tour he earned a Master's Degree in Management at the Naval Postgraduate School in Monterey, California. His next shipboard assignment was as Engineer Officer in USS PUFFER (SSN-652) from March 1973 until August 1975.

Commander ENGLISH then was assigned as SSN Material Officer on the staff of Commander Submarine Force, U.S. Pacific Fleet. He served as Executive Officer in USS GLENARD P. LIPSCOMB (SSN-685) from May 1977 until November 1980 and then as the Director of Officers Advanced Training at Naval Submarine School.

Commander ENGLISH resides with his wife, Judy, and their daughters Katherine and Rebecca in Virginia Beach, Virginia.

NOTES

"SIGN ON, YOUNG MAN, AND SAIL
WITH ME. THE STATURE OF OUR
HOMELAND IS NO MORE THAN
THE MEASURE OF OURSELVES.
OUR JOB IS TO KEEP HER FREE.
OUR WILL IS TO KEEP THE TORCH
OF FREEDOM BURNING FOR ALL.
TO THIS SOLEMN PURPOSE WE
CALL ON THE YOUNG, THE BRAVE,
THE STRONG, AND THE FREE.
HEED MY CALL. COME TO THE
SEA. COME SAIL WITH ME."

JOHN PAUL JONES