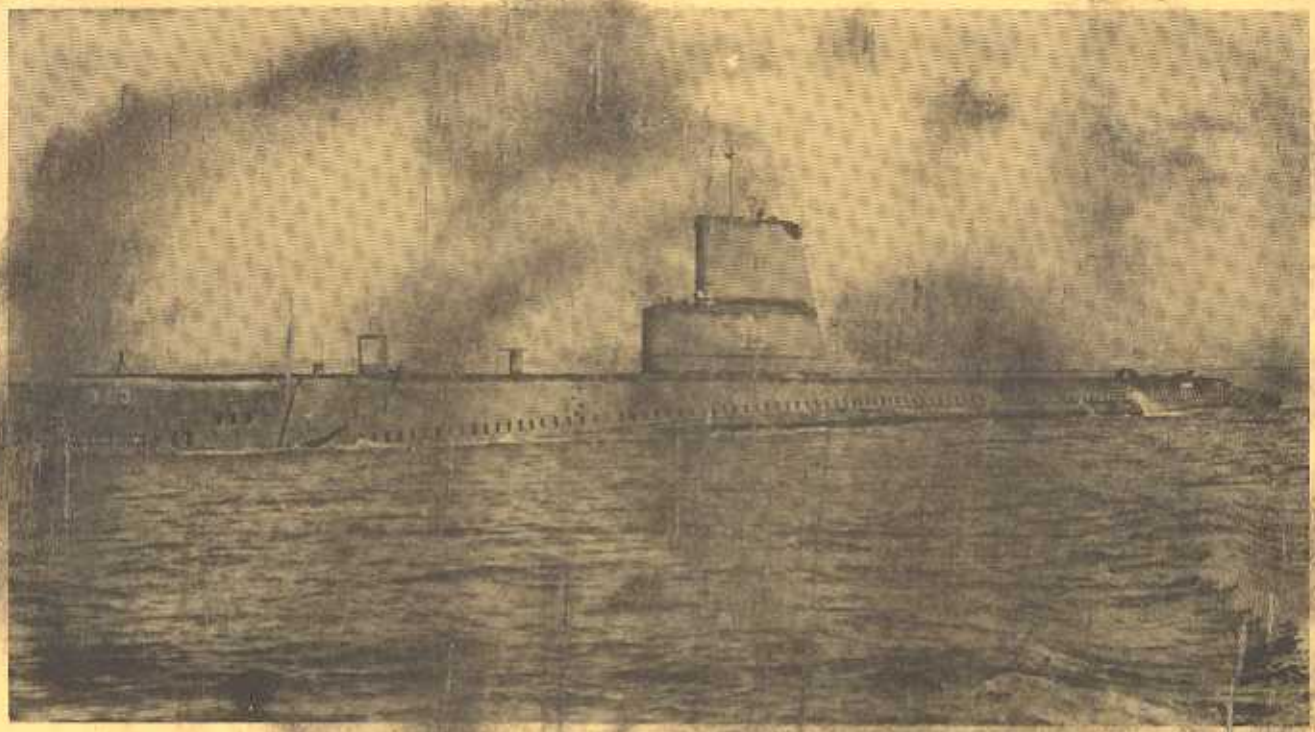


GUEST CRUISE

U.S.S. Caiman (SS-323)

GENERAL INFORMATION BOOKLET

Officer Guide_____

Name_____ Tour Group_____

USS CAIMAN (SS-323)

Welcome aboard the CAIMAN

On behalf of the officers and crew I take pleasure in extending to you the hospitality of the Navy's Submarine Service. It is our desire to make your short cruise aboard as pleasant as possible. We hope that you will make the "Boat" your home during your stay.

Please ask questions! We are anxious to help you become more familiar with submarines and submarine operations. Quite frankly, it is our desire to impress you with the increasing importance of submarines to our national defense.

This pamphlet is for your convenience in getting orientated. On the following page is a schedule of the day's activities. All times except the "getting underway" time are approximate and may be adjusted somewhat.

Sincerely yours,

F. B. BUCHANAN
Lieutenant Commander, U.S. Navy
Commanding Officer

U.S.S. CAIMAN (SS-323) HISTORY

The USS CAIMAN was built as a fleet type submarine by the Electric Boat Co., Groton, Connecticut, and was placed in commission on July 17, 1944. On November 13, 1944, she departed on her first war patrol, Due to the lack of Japanese shipping at this stage of the war, CAIMAN's first patrol passed with only a few minor attacks. Although CAIMAN made four patrols during the closing months of World War II, her infrequent contacts with enemy shipping plainly showed the losses that the Japanese merchant and naval fleets had suffered from U.S. submarine activities.

During CAIMAN's fourth patrol the war ended, and like her sister-ships, she immediately began peace-time operations. The brief peaceful years between World War II and the Korean Conflict found the CAIMAN operating out of Pearl Harbor and making two cruises to Arctic waters. She made several cruises to the Pacific Northwest during which she trained Naval Reservists and operated with units of the Canadian Navy.

In April, 1951 the CAIMAN entered the Mare Island Naval Shipyard at Vallejo, California for conversion from a standard fleet type to a modern, streamlined "guppy" submarine. "Guppy" means a submarine has greater underwater propulsion power than the fleet type submarines. This was accomplished during the CAIMAN's conversion by installing high capacity electric storage batteries and streamlining her hull and conning tower. At the same time, she was equipped with "snorkel" a breathing device which permits submarines to take in and exhaust air while operating submerged, thus permitting her to operate in the ocean's depths for extended periods.

Following her conversion the CAIMAN departed in February, 1952 for the Western Pacific to support United Nation's Forces engaged in the Korean Conflict. This six-month tour earned the CAIMAN a commendation and a "Well Done" from the Commander in Chief, U.S. Pacific Fleet.

Returning to Pearl Harbor in August, the 307-foot submarine conducted routing training and services in Hawiian waters until April, 1953, when she entered the Pearl Harbor Naval Shipyard for a routine three-month overhaul. She operated from Pearl Harbor for the next 19 months before departing in June, 1954 for her second cruise to the Orient since the outbreak of the Korean War. In December, 1954 she returned to Pearl Harbor.

In August, 1955 and again in September, 1957 she was selected as the outstanding ship of her Submarine Squadron for the fiscal years 1955 and 1957 and subsequently awarded the Navy "E" for Excellence.

On January 21, 1956 the CAIMAN departed from Pearl Harbor for a cruise to the South Pacific before reporting to San Diego, where she was based as a unit of Submarine Division 33.

On 29 December, 1958 the CAIMAN departed San Diego enroute to the Western Pacific. Since her return from WESTPAC on 24 July 1959, CAIMAN has participated in local operations in the San Diego area.

ENGINE ROOMS (CONT'D)

1. Forward Engine Room:

a. Two vapor compression distilling units capable of producing 1,000 gallons of water per day per unit.

b. Two air conditioning plants capable of producing 22 tons of refrigeration. This large amount of air conditioning is to remove the large amount of heat generated by the electronic equipment and to remove the moisture from the air to eliminate condensation.

c. On three engine boats, the trim pump, refrigeration plant ICMG sets and the hydraulic plant are located in this compartment.

2. After Engine Room:

a. Two high pressure air compressors which charge the ship's reserve air banks to 3,000 psi. This air is used for all purposes on board a submarine.

MANEUVERING ROOM

The upper section of this compartment houses the main propulsion control stand and cubicle. The propulsion control equipment controls the operation of the two double-armature main motors when supplied with power from: (1) combinations of the main generators or (2) by either or both of the main storage batteries. The equipment also provides connections between the main generators and the storage batteries for charging purposes. This equipment makes provisions for the following demands:

1. To start, stop, reverse, and regulate the speed of the motors for both surface and submerged operation.

2. For the series and parallel connection of the motor armatures.

3. For uniform speed control of the motors throughout the entire range of propeller speed.

4. For operation of the motors from one or both storage batteries and from any combination of the propulsion generators.

5. To charge one or both storage batteries with generators, individually or in combinations. Generators not being used for battery charging may be used for propulsion power.

6. To drive the starboard motors from the port generators and the port motors from the starboard generators.

7. For operation ahead on one propeller shaft and astern on the other at any speed within the designed operating range.

CONNING TOWER (CONT'D)

launched promptly and set correctly to obtain best results.

The forward part of the conning tower contains the normal steering station, with wheel, engine order telegraphs and gyro repeaters. Along the port side is the torpedo firing panel and a sonar repeater. Aft of this is the Torpedo Data Computer which is used to solve fire control problems and to transmit firing data to the torpedo rooms. Along the starboard side is a sonar repeater, then the "Gertrude" or underwater telephone. Next along the starboard side is the radar and in the after corner is the Dead Reckoning Tracer. The Dead Reckoning Tracer has a light known as a bug which follows the ship's movements in course and speed. This is utilized in plotting battle problems or it may be used as a navigation table.

AFTER BATTERY COMPARTMENT

This compartment houses the remaining cells of the storage battery installation below the platform deck. The forward end of the after battery compartment that is below the platform deck also contains the refrigerated storerooms for perishable food.

Above the platform deck, the after battery compartment contains the crew's galley, mess hall and the sleeping quarters for the crew.

ENGINE ROOMS

The ship has two engine rooms; each being a separate water-tight compartment. The machinery for submarine diesel-electric propulsion is located in these compartments. Some of our submarines have three engines with most of the auxiliary machinery located in the space created by the removal of one engine. The after engine room in each case will have 2 engines. All engines are capable of producing 1600 horse-power each at 720 R.P.M. Each of these diesel engines is directly connected to a main generator having an individual full power output of about 1100 KW.

This diesel-electric combination supplies electrical power to the control cubicle in the maneuvering room. Through the control cubicle this electrical power can be used either for ship propulsion, or main storage battery charging. This diesel-electric system is very flexible and the four engines can be used separately or in combination, to charge batteries, for propulsion, or both.

Auxiliary machinery generally located in these two engine rooms is as follows:

CONTROL ROOM

The Control Room is the control center for diving and surfacing operations. In the control room, forward side, is an emergency steering station. In the forward port corner are the hydraulic controls for operating vent and flood valves and the snorkel system. Above this is the "Christmas Tree", a panel of red and green lights, which indicate opening and closing of various hatches and major valves. Along the port side is the diving station with hydroplane control wheels and depth guages. Aft of this is the "Trim Manifold" through which water may be shifted to or from any of the ships variable ballast tanks to insure a correct trim.

Along the starboard side of the compartment are distribution panels for electrical power. These panels provide a means to electrically isolate compartments and major equipment in the forward half of the ship. Also along the starboard side is a large high pressure air manifold. This air manifold permits distribution of high pressure air to any of the ship's ballast tanks and provides a means to distribute reduced pressure air throughout the ship. The main gyro compass is located under the table in the center of the control room. The radio room is located at the after end of the control room.

Below the control room is the pump room. The pump room on four engine boats contains the trim pump, refrigeration plant, battery water cooling pump, and the main hydraulic plant. However three engine boats have this auxiliary equipment in the forward engine room.

CONNING TOWER

The conning tower is a cylindrical tank like compartment located above the main pressure hull. There are two access hatches to this compartment, one leading to the bridge and the other to the control room. The conning tower is the nerve center of the submarine. On the surface the OOD stands watch on the bridge and passes engine and rudder orders to the helmsman in the conning tower. The conning tower is the navigation center whether surfaced or submerged. Submerged the OOD, now called the "Conning Officer", stands watch in the conning tower. In addition to ordering course and speed, he passes depth orders to the Diving Officer in the control room. The Conning Officer keeps abreast of the current tactical situation by observing the surface situation through a periscope, by observing sonar repeaters and by receiving reports from the sonar operators.

When the ship goes to battle stations the conning tower becomes the attack center. This is the Captain's battle station as well as, a major portion of the fire control party. The Commanding Officer, generally controls the ship during approach and attack. The fire control party assists him in obtaining accurate data on the targets course, speed and tactics. The fire control party members receive reports for and relay orders from the Captain. They also insure that torpedoes are

COMPARTMENT INFORMATION

FORWARD TORPEDO ROOM

This forwardmost compartment houses the submarines striking arm, our torpedoes and torpedo tubes. Six tubes are installed forward, and the torpedoes are either stowed inside the tubes themselves or in the compartment outboard of the crew's bunks.

The ladder in the center of the room leads to the escape trunk, a compartment permitting emergency escape from a submarine on the bottom, unable to surface. The arrangement of double hatches isolates a space where members of the crew can equalize pressure with outside sea pressure and escape to the surface.

Above and below the compartment, outside the pressure hull, are the domes housing our sonar hydrophones. Much of the internal sonar equipment is located in the after port corner. There is a signal ejector for sending flares and signals to the surface as communication or in an emergency.

FORWARD BATTERY COMPARTMENT

The upper section of this compartment, which is above a platform deck, contains the officers quarters. chief petty officers quarters and the ship's office. The officers quarters include a wardroom, a stateroom for the commanding officer, staterooms for other officers, an officers shower and a pantry.

The space below the platform deck of this compartment houses one half of the ships battery capacity..

Of special interest in the forward battery of some submarines is the conversion of the wardroom into a sonar plotting center when the ship is at "Battle Staions". Others have sonar plotting facilities located below the Control Room.

PERSONAL SAFETY PRECAUTIONS

1. Heads: Submarine heads are somewhat complicated. Promulgated herewith is a set of instructions for the use of the officer's head:

a. Open flushing water valves and allow water to enter the bowl, then close both flushing valves.

b. b. Open the bowl plug-cock valve to drain the bowl, then close it.

c. Again open the flushing valves and allow a small amount of water to enter the bowl, then close both flushing valves.

CAUTION: If in doubt, request assistance from anyone in the vicinity. Everyone will be anxious to assist.

2. Smoking: Smoking is permitted at all times in all compartments except in battery tanks.

3. Hazards beyond the call of duty: Many years of careful design and research have made possible the most advanced equipment available in the minimum space. There are protrusions however and some narrow passages that require careful avoidance. Your guide will point these out. Be especially alert for open hatches and low overheads. Please do not twist any dials or pull any levers.

4. It is desired to have all guests make a visit to the bridge. Your guide will make arrangements with the officer of the deck for your tour.

5. Sea-Sick Pills: Dramamine pills will be dispensed upon request by our "Doc" (Hospital Corpsman) or by your section guides. Take one pill immediately and another four hours later if you are susceptible to sea sickness. The pills may tend to make you feel sleepy.

6. Fountain Pens are particulary susceptible to pressure changes while snorkeling. To avoid stained shirts it is suggested that pens be removed from pockets during the snorkeling period.

7. Please do not hesitate to ask your guide for any assistance you may require. We hope that your cruise will be both comfortable and enjoyable.

ARRANGEMENTS AND SCHEDULE OF EVENTS

ARRANGEMENTS

You have been divided into four (4) tour groups. We hope that by now you have met your guide. He will remain with you during your cruise aboard to assist you in every way possible. Ask him questions.

Feel free to leave you group at any time. For those interested, a variety of submarine material is available for your perusal in either the wardroom or crews dinette.

Meals will be served at 1130 in the wardroom and in the dinette of the After Battery Compartment.

SCHEDULE OF EVENTS

0815 Guests arrive. Welcome aboard by the Commanding Officer.

0830 Underway. Guests may remain topside.

Mast demonstration while leaving harbor.

0945 Diving exercises. On each dive, groups will take different stations in order to observe all the major events that occur while the ship is submerged. On each dive we will snorkel and fire water slugs from the torpedo tubes. Guests please feel free to take a turn on the helm, bow planes, or periscope watch.

DIVING STATIONS

	1st Dive	2nd Dive	3rd Dive	4th Dive
Group I	Fwd Torp Rm	Conning Tower	Control Rm	Man Room
Group II	Conning Tower	Control Room	Man Room	Fwd Torp Rm
Group III	Control Room	Man Room	Fwd Torp Rm	Conning Tower
Group IV	Man Room	Fwd Trop Rm	Conning Tower	Control Room

1130 Lunch

1400 Depart area

Movie in Forward Torpedo Room

1515 Moor alongside U.S.S. SPERRY (AS-12) or Broadway Pier as announced.

MANEUVERING ROOM (CONT'D)

The drain pump is also located in the maneuvering room by means of which, and in conjunction with the drain line systems, the bilges of all other compartments may be pumped.

AFTER TORPEDO ROOM

The after Torpedo Room contains much the same type of equipment found in the torpedo room forward. Four torpedo tubes permit the submarine to fire at a target astern of her. Torpedo and bunk stowage is similar to that found forward.

A messenger buoy, located above the compartment, stands ready for release from here should the submarine be unable to surface, and desire to mark her position for surface craft. A similar buoy is located in the forward room.

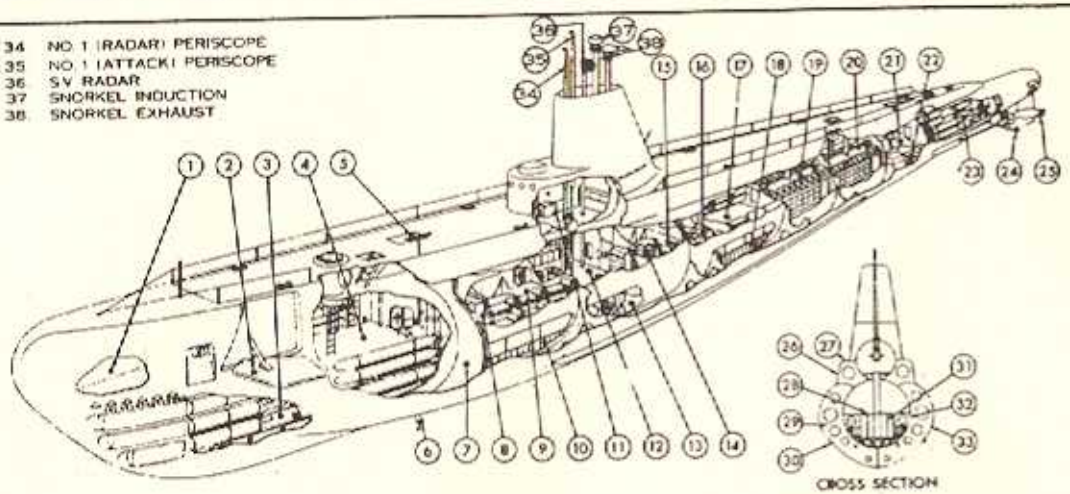
The compartment may also be used for emergency escape; however, the procedure is somewhat more difficult because the entire room must be pressurized instead of just an escape trunk. The original main ballast tank located below this space, main ballast tank number seven, has been converted to a storeroom.

SONAR ROOM

The Sonar Room, which is a sound insulated space, contains various equipments for active and passive underwater detection of ships. Minimum noise level is necessary to allow the sonar men every opportunity to detect and analize all contacts.

The sonar room can be located in one of three spaces depending on the type of submarine. Compartments involved are the Forward Torpedo Room, After Battery, and the Pump Room.

STANDARD SUBMARINE COMPARTMENTATION



CROSS SECTION

1 BOW BUOYANCY TANK
2 BOW PLANE
3 SIX TORPEDO TUBES
4 FORWARD TORPEDO ROOM
5 JT SOUND HEAD
6 PITOMETER LOG
7 MAIN BALLAST TANK NO. 1
8 PANTRY
9 OFFICERS' QUARTERS
10 FORWARD BATTERY
11 CONNING TOWER
12 CONTROL ROOM
13 PUMP ROOM
14 RADIO ROOM
15 GALLEY
16 CREW'S MESS
17 CREW'S QUARTERS
18 AFTER BATTERY
19 FORWARD ENGINE ROOM (NO. 1 AND NO. 2 MAIN ENGINES)
20 AFTER ENGINE ROOM (NO. 3 AND NO. 4 MAIN ENGINES)
21 MANEUVERING ROOM
22 MOTOR ROOM (4 MAIN MOTORS)
23 AFTER TORPEDO ROOM (FOUR TORPEDO TUBES)
24 RUDDER
25 STERN PLANE
26 SUPERSTRUCTURE
27 MAIN DECK
28 PLATFORM DECK
29 BALLAST TANKS
30 BILGE KEELS
31 BATTERIES
32 INNER HULL
33 OUTER HULL

SUBMARINE QUALIFICATION

Enlisted. The enlisted submarine qualification program starts at submarine school in New London, Connecticut. There, the men receive eight weeks of specialized training in all submarine topics. It is interesting to note that two years ago this school was training about 2000 men a year. With the increase in the submarine building program this number is now at 4000 men a year and rising.

After the school a man reports to his submarine for further training. The qualification program on board takes about six months. During this time the man sketches every major system on board. He must pass examinations given by senior petty officers and officers. Regardless of his rating he must learn how to operate all machinery on board. On successful completion he is awarded the coveted "dolphins".

In most cases the man's training is just beginning. About 50% of the men coming aboard now will go to nuclear submarines. For many ratings (enginemen, electricians, electronic technicians, etc.) this involves a six month school in New London, another six months at the land based nuclear reactor at Arco, Idaho, and finally a qualification process aboard a nuclear submarine. In reality, a submariner's training is never complete.

Officer. Officer qualification involves much the same procedure as the enlisted mans. His school in New London is six months. On reporting to his submarine he writes a detailed, comprehensive notebook. The big difference between enlisted and officer qualification is the additional officer requirement in tactics and shiphandling. The Officer must fire a torpedo and know how to operate all fire control equipment. His examination for qualification is conducted by the Division Commander and two commanding officers. It involves an inport examination and a sea phase. Again, the newly qualified submarine officer is just beginning his training. If selected for nuclear school he goes through the same process as the enlisted man - six months in New London and 6 more months in Arco.

Before commanding a submarine, officers must "qualify for command". This involves a thesis on a subject related to submarines and an examination by the Squadron and Division Commanders. It is different from the initial qualification in that the command aspect is emphasized as much as the knowledge of submarining itself.

SUBMARINE BUILDING PROGRAM

In the nuclear powered submarine we have, at last, a true submersible capable of high speed and almost unlimited endurance while remaining completely submerged. This capacity enables submarines to cross under the polar icecap - and to become one of the prime deterrent forces in our weapons arsenal. The Fleet Ballastic Missile Program will give our country a nuclear striking power that is mobile, physically removed from our country, instantly ready to strike and almost impossible to destroy. In addition development work is in progress on many other aspects of improved submarine design including quieter propulsion plants more advanced weapons and better sonar equipment.

The submarine is rapidly acquiring a most important role in our nations defense structure not only as an anti-submarine warfare weapon but, with the Polaris missile, a deterrent force with awesome potentiality.

Listed below are the nuclear submarines now in commission, under construction or authorized by Congress:

SSN IN COMMISSION

NAUTILUS (SSN 571)
SEA WOLF (SSN 575)
SKATE (SSN 578)
SWORDFISH (SSN 579)
SARGO (SSN 583)
SEA DRAGON (SSN 584)
SKIPJACK (SSN 585)
TRITON (SSN 586)
HALIBUT (SSN 587)
GEORGE WASHINGTON (SSBN 598)

SSN UNDER CONSTRUCTION OR AUTHORIZED

SCAMP (SSN 588)
SCORPION (SSN 589)
SCULPIN (SSN 590)
SHARK (SSN 591)
SNOOK (SSN 592)
THRESHER (SSN 593)
PERMIT (SSN 594)
PLUNGER (SSN 595)
BARB (SSN 596)
TULLIBEE (SSN 597)
PATRICK HENRY (SSBN 599)
THEODORE ROOSEVELT (SSBN 600)
ROBERT E. LEE (SSBN 601)
ABRAHAM LINCOLN (SSBN 602)
POLLACK (SSN 603)
HADDO (SSN 604)
JACK (SSN 605)
TINOSA (SSN 606)
DACE (SSN 607)
ETHAN ALLEN (SSBN 608)

SAM HOUSTON (SSBN 609)
THOMAS A. EDISON (SSBN 610)
JOHN MARSHALL (SSBN 611)

This list does not include the 6 SSBN which are currently being considered by the congress.

OFFICER's

CPO's

Leading PO's