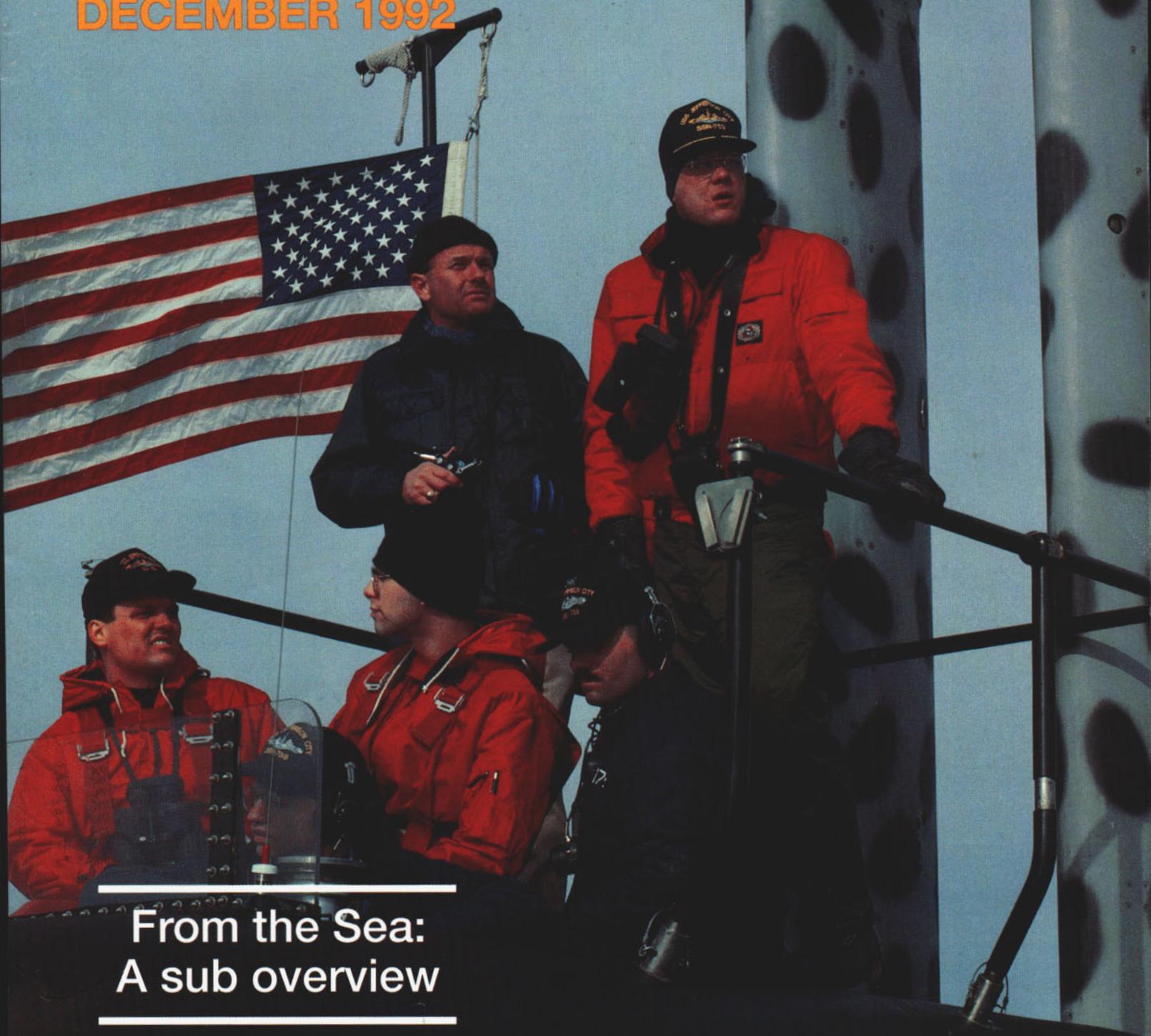


# ALL HANDS

DECEMBER 1992



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From the Sea:  
A sub overview

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# Genesis of submariners' insignia

**T**he insignia of the submarine service is a submarine flanked by two dolphins. Dolphins, traditional attendants to Poseidon, Greek god of the sea and patron deity of sailors, are symbolic of a calm sea and are sometimes called the "sailor's friend."

The origin of the insignia dates back to 1912. On June 13, CAPT Ernest J. King, commander Submarine Division 3, later a World War II fleet admiral and Chief of Naval Operations, suggested to then-Secretary of the Navy (SecNav) George von L. Meyer, via the Bureau of Navigation (now the Bureau of Naval Personnel), that a distinguishing device for qualified submariners be adopted.

He submitted his pen and ink sketch showing a shield mounted on the beam ends of a submarine with dolphins forward and aft of the conning tower. The suggestion was strongly endorsed by commander submarine division, Atlantic.

A Philadelphia firm, previously contracted by the Navy, was also asked to design a suitable badge. The firm submitted two designs which were combined into the single design used today. It consisted of a bow view of a submarine cruising on the surface, with bow planes rigged for diving, flanked by dolphins in a horizontal position with their heads resting on the upper edges of the bow planes.

By March 29, 1924, the Chief of Navigation recommended to SecNav that the design be adopted. Theodore Roosevelt Jr., then acting

SecNav, approved the recommendation.

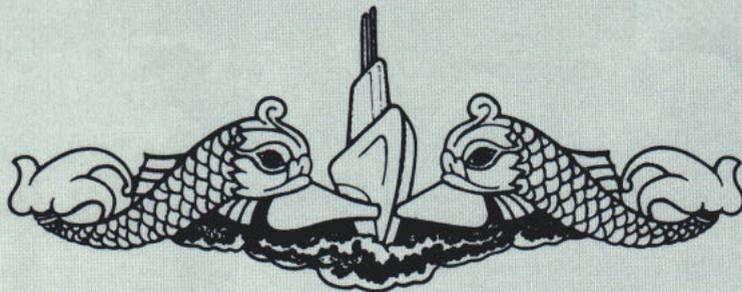
Originally, the insignia was to be worn at all times by officers and enlisted men qualified in submarine duty and attached to submarine units or organizations ashore or afloat, and not to be worn when not attached.

The officers' insignia was a bronze, gold-plated pin, worn centered above the left breast pocket and above ribbons or medals. Enlisted men wore the insignia embroidered on silk, in white on blue for blue clothing, and blue on white for white clothing. This was sewn on the outside of the right sleeve, midway between the wrist and the elbow. The device was 2.75 inches long.

In mid-1947, the embroidered device shifted from the sleeve of the enlisted men's jumper to above the left breast pocket. A change to uniform regulations dated Sept. 21, 1950, authorized the embroidered insignia for officers and a bronze, silver-plated pin-on insignia for enlisted men.

The wearing of embroidered or pin-on devices by officers and enlisted men, on the coat of service dress blue, full dress white, dinner dress blue and dinner dress white jackets and aviation green working uniforms was authorized in the 1981 Uniform Regulations.

The devices are also worn on the khaki shirt, and the long sleeve blue and summer white shirts. The embroidered device's background material also must match the color of the uniform on which it is worn.



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# ALL HANDS

MAGAZINE OF THE U.S. NAVY  
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Photo by JO2 Jonathan Annis

## Life on an SSBN — Page 37

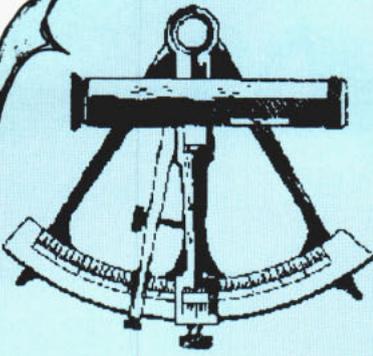
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**Front cover:** On the bridge of USS *Jefferson City* (SSN 759) crew members guide the fast attack submarine back to her homeport in Norfolk. Photo by PH1 Michael Flynn.

**Back cover:** The *Trident* ballistic missile submarine USS *Georgia* (SSBN 729) transits the Strait of Juan de Fuca off Washington State's coast prior to diving for her Pacific patrol. Photo © Yogi, Inc.

Special thanks to retired VADM Yogi Kaufman, who graciously gave *All Hands* access to his submarine photo collection.

# From the charthouse



## Calling all SEA grads

Graduates and friends of the Senior Enlisted Academy (SEA) in Newport, R.I., can now join the newly-formed Senior Enlisted Academy Alumni Association.

Former Master Chief Petty Officer of the Navy Bill Plackett was elected president emeritus of the alumni association, which is a nonprofit organization formed to provide support for the SEA.

For more information about the alumni association call the SEA at (401) 841-4222 or (DSN) 948-4221/4222 or write: Senior Enlisted Academy Alumni Association, NETC Code 39, 1269 Elliot Ave., Newport, R.I. 02841-1525.

## Rape prevention and victim assistance

Military communities are similar to civilian communities in many

respects, including the potential for rape.

Based on the 1990-91 Navy Women's Study Group, which examined the problems of rape and sexual assault, the Bureau of Naval Personnel has created an office responsible for policy and guidance on rape, sexual assault and victim assistance.

A comprehensive rape and sexual assault awareness and prevention program is being developed for all members of the Navy. This program is

designed to make people more aware of the warning signs; provide tips on safety and self-defense; provide resources

explaining the frequent connection between alcohol abuse and sexual misconduct; emphasize personal responsibility and mutual respect for others; and explain victim assistance and support resources.

The Navy is developing a rape/sexual assault victim assistance program that will be implemented at all naval installations. Assistance will maximize sensitivity and quick

response, and minimize "revictimization."

One new resource available for rape awareness training is a Naval Criminal Investigative Service (NCIS) briefing which covers date rape, rape by strangers and response to potential or actual rape situations — available as a 21-minute video tape. It is best used as part of a presentation or discussion lead by a qualified representative from NCIS offices, family service centers and Navy videotape training libraries.

## "... From the Sea"

The complete text of the Navy document, "... From the Sea," is now available electronically through various bulletin boards.

The outline of the new strategic direction for the Navy and Marine Corps team, was signed by the Secretary of the Navy, Chief of Naval Operations (CNO) and Commandant of the Marine Corps in September.

The electronic version of "... From the Sea" contains the complete text of the printed edition, and is available as follows:

- By electronic mail. Send your request via E-mail to Navy News Service at NCTAMSLANT.

NAVY. MIL, and include your Defense Data Network (DDN) or InterNet address.

- By anonymous file transfer protocol (FTP) from NCTAMSLANT. NAVY. MIL in the miscellaneous subdirectory. Anonymous FTP is fast, convenient and is available to many DDN and InterNet users.

- By downloading from the "articles" or "miscellaneous" file areas of the CNO Bulletin Board. Registration is required to gain access. The modem numbers are: (800) 582-2355; (800) 582-6940; (703) 695-6198; or (703) 695-6388.

Questions about E-mail and anonymous FTP may be directed to CDR Tim Taylor by calling (804) 445-1038 or (DSN) 565-1038. Questions about the CNO Bulletin Board may be directed to Henrietta Wright by calling (703) 695-5471 or (DSN) 225-5471.

## Holiday safety

As the Christmas and New Year holidays approach, safety and accident prevention should be a top priority for all sailors.

Everyone works very hard and sometimes tries to pack too much fun into limited time off. Common sense can keep you from becoming a statistic.



Alcohol consumption is a factor in approximately 50 percent of the deaths and serious injuries in motor vehicle mishaps. It is also a major factor in recreational mishaps.

Remember, drinking and driving don't mix. Furthermore, drinking and recreational activities can also be a risky combination. If you see a shipmate who has had too much to drink, take affirmative action. Be a shipmate and help them get back to their ship or station.

Seat belts are a must for you and your passengers. Allow enough time to get to where you're going without speeding, and be sure you've had some rest before beginning your trip.

Motorcycles can present special problems. Inexperienced riders on high-performance motorcycles who don't wear helmets, gloves and other protective gear are flirting with disaster.

Wherever you are, whatever your activity, think about what you're going to do, wear the proper equipment and keep alcohol consumption to a minimum. The



lives of sailors and Marines are very, very precious. Nothing is more distressing than to read of the needless injury or death of a shipmate.

### \$\$\$ for education

More than 400 children of active-duty sailors and Marines are attending college this year, thanks, in part, to two new continuing education financial aid programs offered by the Navy-Marine Corps Relief Society (NMCRS).

Based on an evaluation of financial need, the VADM E.P. Travers Scholarship Program provides grants of \$2,000 per academic year, and the Interest-free Parent Loan Program offers up to \$3,000 per academic year.

Applications for the scholarship and loan programs will be accepted beginning Jan. 1, 1993, and must be postmarked no later than March 15, 1993. Families are encouraged to apply as soon as possible as any additional follow-on documentation must be received by April 15, 1993.

Eligibility requirements for these programs and other relief programs may be obtained by visiting your nearest NMCRS or by writing: NMCRS, Education Programs, 801 N. Randolph St., Arlington,

Va. 22203-1978, or telephone (703) 696-4904 or (DSN) 226-4904.

### Misuse — you lose

Government property and supplies should not be used for personal business. Anything you do that is not official business falls into the personal business category.

Computers and software, typewriters, copiers, facsimile machines, stationery and even plain bond paper are examples of government property that cannot be used for private purposes before, after or during working hours. Something as simple as typing a letter to a family member on your office computer constitutes misuse.

Use common sense — use of government equipment, property and facilities for private business purposes can lead to disciplinary action being taken against you and possible dismissal or discharge.

### CHAMPUS publishes new handbook

A new 156-page Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) handbook has been published.

The handbook is filled with updated information about standard CHAMPUS benefits, procedures

and eligibility requirements, and includes new provisions for some service members and their families who leave active duty.

The active-duty dependents dental plan and CHAMPVA — a program similar to CHAMPUS is operated by the Department of Veterans Affairs for the families of disabled veterans — are also outlined in the handbook.

The cover of the new handbook is green with white lettering. The red, white and blue 1990 handbook and all previous editions are outdated, and should be discarded immediately.

Copies of the new handbook were shipped to military supply centers, the U.S. Public Health Service and the headquarters offices of all CHAMPUS claims processors.

Requests for the handbook should be forwarded through the appropriate supply channels using stock number SN 0510-LP-209-3800. Individuals who want copies of the new handbook should contact their nearest health benefits adviser.





**O**nly a submariner realizes to what great extent an entire ship depends on him as an individual. To a landsman, this is not understandable, and sometimes it is even difficult for other sailors to comprehend.

*A submarine at sea is a different world in herself, and in consideration of the protracted and distant operations of submarines, the Navy must place responsibility and trust in the hands of those who take such ships to sea.*

*In each submarine there are men who, in the hour of emergency or peril at sea, can turn to each other. These men are ultimately responsible to themselves and each other for all aspects of operation of their submarine. They are the crew. They are the ship.*

*This is perhaps the most difficult and demanding assignment in the Navy. There is not an instant during his tour as a submariner that he can*



*escape the grasp of responsibility. His privileges in view of his obligations are almost ludicrously small, nevertheless, it is the spur which has given the Navy some of its greatest mariners — the men of the submarine service.*

*It is a duty which most richly deserves the proud and time-honored title of Submariner.*

*This issue of All Hands brings you a close look at the submarine force. You'll see why submariners (pronounced sub-mar-EE-ners) endure a seemingly endless cycle of training, deployments and patrols where months pass without seeing the light of day. You'll also get to look at the role of support personnel without whom the force could not function, and see how the families handle lengthy separations without even the benefit of mail. All these factors contribute to the pride with which these sailors wear dolphins — the insignia of the submarine service.* □

# ...From the sea

## *Sub force moves toward 21st century*

Story by JO2 Paul Taylor

**I**n the movie "The Hunt For Red October," the skipper of a Soviet submarine matches wits with an American submarine captain. The movie brought a lot of attention to a branch of the U.S. Navy that has prided itself on being the "silent service."

While the Cold War circumstances under which "Red October" took place are now a thing of the past, our submarine crews still patrol the oceans of the world safeguarding American interests.

In days gone by, the submarine force, like the rest of the U.S. military, was geared to meet a global threat from the nuclear-armed Soviet Union. However, as East-West tensions ease and the Defense Department's budget declines, the submarine force has had to change its emphasis.

According to Assistant Chief of Naval Operations for Undersea Warfare VADM Roger Bacon, the mission of the strategic arm of the submarine force — deterrence — remains essentially the same. However, the number of fleet ballistic missile submarines (SSBNs) will be substantially reduced.

"We have 34 SSBNs, we will go down to 18 by the end of the decade," Bacon said in an interview published in the newsletter "Inside the Navy."

Speaking at a ceremony marking the return of USS *Tennessee* (SSBN 734) from her 3,000th strategic deterrent patrol, Chairman of the Joint Chiefs of Staff Army Gen. Colin Powell said that despite the warming of U.S. relations with the East, there are still thousands of nuclear warheads in Russia, Ukraine, Belorussia and Kazakhstan which could end the American way of life in a matter of minutes.

"So, however warm our relations might grow with the new former-Soviet republics, however close our friendships become — we will always, always place our faith in our boomers," Powell said, "and not in anything else."

On the tactical side of the house, however, the crews of attack submarines (SSNs) are seeing a major change in the emphasis of submarine operations. Bacon recently told a congressional subcommittee on defense appropriations that during the Cold War, anti-submarine warfare was the emphasis, however the technological advances made by the submarine force during the last 30 years have enabled them to develop a number of unique mission capabilities.

"Today our submarine force is extremely well-suited to support the key foundations of our [new] national defense policy — deterrence, forward presence and crisis response," he said. "Our plan for the 1990s and beyond is to hone the capabilities of our submarines to continue our superlative support of this strategy."

While deterrence has traditionally been the role of the SSBN, today's SSNs, with their wide range of capabilities from intelligence collection to precision land attack with *Tomahawk* cruise missiles, are a formidable weapon that any would-be aggressor must take into consideration.

"A potential adversary will be uncertain about the number and location of American submarines," said Bacon, "but will be certain that a submarine can deny him use of the seas or conduct precision strikes against him in any region."

Any sailor who has ever deployed aboard a ship can tell you there's nothing new about the idea of forward presence. However, as our forces at overseas locations are withdrawn, the forward presence of naval forces takes on added importance. According to Bacon, effec-

**VADM Bacon is interviewed in front of USS *Grayling* (SSN 646) by CBS News correspondent Jim Stewart moments after the sub broke through the polar ice.**

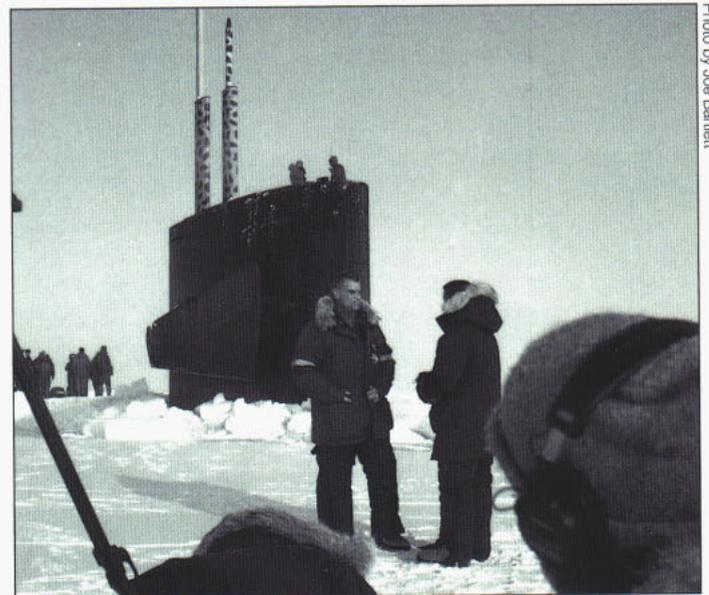


Photo by Joe Bartlett

tiveness is tied to response time — to control a crisis, naval forces must be brought to bear within a matter of days or hours.

"Forward-deployed attack submarines can be at the scene of action in a matter of hours," Bacon told the subcommittee. "They collect intelligence, provide warning and, if necessary, go on the offensive to control the crisis and neutralize opposing forces."

The stealth capacity of today's submarines make them the platform of choice for crisis control where a threat to U.S. forces exists. Virtually impossible to locate and target, submarines can provide a unique array of missions with minimal risk to U.S. forces.

Among these missions are surveillance, regional sea denial, precision strike, battle group support and ground warfare support.

"Combined with its inherent characteristics of stealth, endurance, and agility and its wide range of mission capabilities, today's nuclear-powered submarine is truly one of the most formidable, operationally cost-effective and flexible combatant ships," Bacon added.

What does the future hold technologically for the submarine force?

"We can firmly state that no country threatens U.S. SSBNs in the open ocean, and we do not see indications of a

near-term threat," Bacon told the congressional subcommittee. With this in mind, there are no current plans for a new class of SSBNs.

However, improvements to sonar and weapons systems are planned. Currently the *Trident II* (D-5) missile program continues on schedule and within cost. The introduction of this key element in the strategic modernization program aboard SSBNs will help keep *Trident* an effective deterrent to war well into the 21st century.

As USS *Los Angeles* (SSN 688) nears its 20th year of service, it's time to look beyond that class of submarine and decide what the attack sub of the future will look like. During the Cold War that vision was *Seawolf* (SSN 21). With the reduction of that program and with time running out on the 688s, the wave of the future is now *Centurion*.

*Centurion* is the name of a program, not necessarily a submarine. Though designs have yet to be approved, the Navy is looking for a ship that will have capabilities

between those of the *Los Angeles* and *Seawolf*. Improvements in platform design will be part of the project, however the sonar and weapons systems will consist mainly of existing technology.

In August, the Pentagon's top acquisition review panel gave approval to move ahead on developing designs for the submarine. Under the best of circumstances that would place construction in FY98 with the first ship to be delivered to the fleet between 2003 and 2005.

With reduced world tensions, there will be not only one, but several years in the 1990s where there will be no funding in the budget for new submarines. This hasn't occurred since the 1950s and raises questions about the survival of the industrial base which produces submarines.

Newport News Shipbuilding in Virginia and Electric Boat Co., Groton, Conn., are the only two shipyards in the United States that build submarines. With the keels laid on the last *Trident* and *Los Angeles*-class ships, and since there may be, at the most, three *Seawolves* built, it

is very possible the ability of these yards to produce submarines may deteriorate beyond the point of no return.

Bacon stressed the importance of this and the need to get *Centurion* into production before this loss occurs. "Unless we take positive steps soon, we will lose a national asset —

our ability to produce nuclear-powered submarines in an affordable and timely manner."

An already intensely competitive community, the submarine force will become much more so as it is reduced in size. For submarine officers, this began to materialize in 1990 when the submarine force instituted department head screening boards. But Bacon believes that as long as the inactivations occur slowly, the situation can be managed with little hardship to those currently serving while still attracting new personnel.

The submarine force of today is in a state of flux. As it approaches the 21st century, the force will assume a new shape, but the one thing that remains is the pride of those who serve under the sea. This pride goes all the way up to the top of the chain of command. In his remarks to the house subcommittee Bacon said, "We have the best submarine force in the world, with the finest ships, and the best people." □

*Taylor is a staff writer for All Hands.*

**"We have the best submarine force in the world, with the finest ships and the best people."**

**— VADM Roger Bacon**

# Gray ladies of the sea

## *A proud history of silent service*

Story by J02 Paul Taylor

**T**he U.S. submarine force came of age during World War II. Although in the fleet for more than 40 years, American submarines had not been proven under fire. Even during World War I, American subs scored no kills.

However, in the years between the world wars, technology improved the force. By 1941 the U.S. submarine force was larger, more capable and battle-ready.

Submarines conducted the first offensive U.S. operations in the Pacific. The first wartime kill was scored by USS *Swordfish* (SS 193) when she sank a Japanese freighter just nine days after Pearl Harbor.

The exploits of submariners during World War II were legendary. When Japan surrendered, American submarines had sunk more than 1,100 ships. The "silent service's" gallantry earned 34 presidential citations, 38 Navy Unit Commenda-

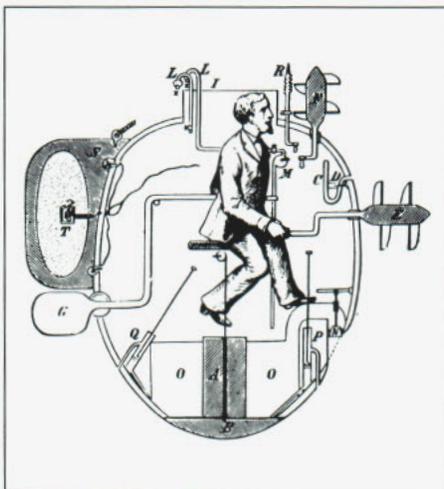
tions and seven Medals of Honor. The cost was high — 52 submarines and 3,500 men never returned from war patrols.

While World War II provided America with her first submarine victories, experiments with submarining had been going on for years. During the American Revolution, David Bushnell designed the one-man submersible *Turtle* in 1775 in Saybrook, Conn.

In the first recorded attempt to use a submarine in war, Army Sgt. Ezra Lee took *Turtle* into New York Harbor where the British fleet was anchored Sept. 7, 1776. The idea was to attach a timed explosive to the hull of a British ship.

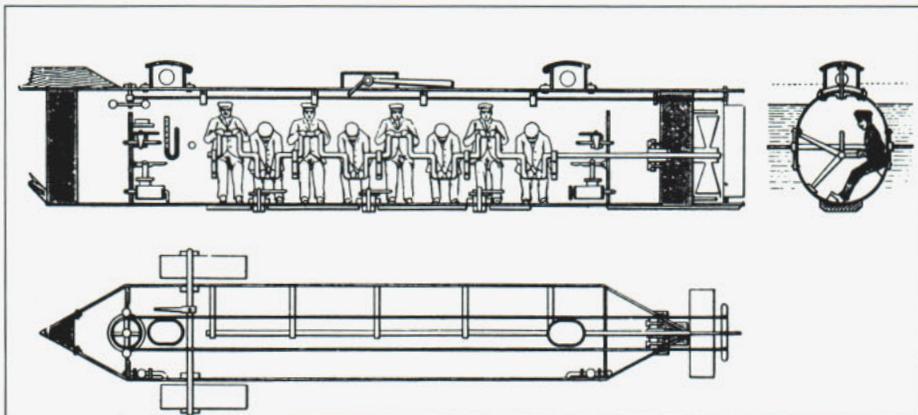
Lee had made four unsuccessful attempts to attach his explosive charge, when he was spotted by a British long boat. Lee released his cargo and made his escape. The charge exploded harmlessly near the ship, but her captain decided to seek safer anchorage farther out to sea.

The kind of courage displayed by Lee is seemingly a prerequisite for submariners. As we all know, what goes up must come down, however what goes down does not necessarily have to come back up. This was repeatedly shown to be the case during the Confederacy's experiments with submarines during the Civil War.

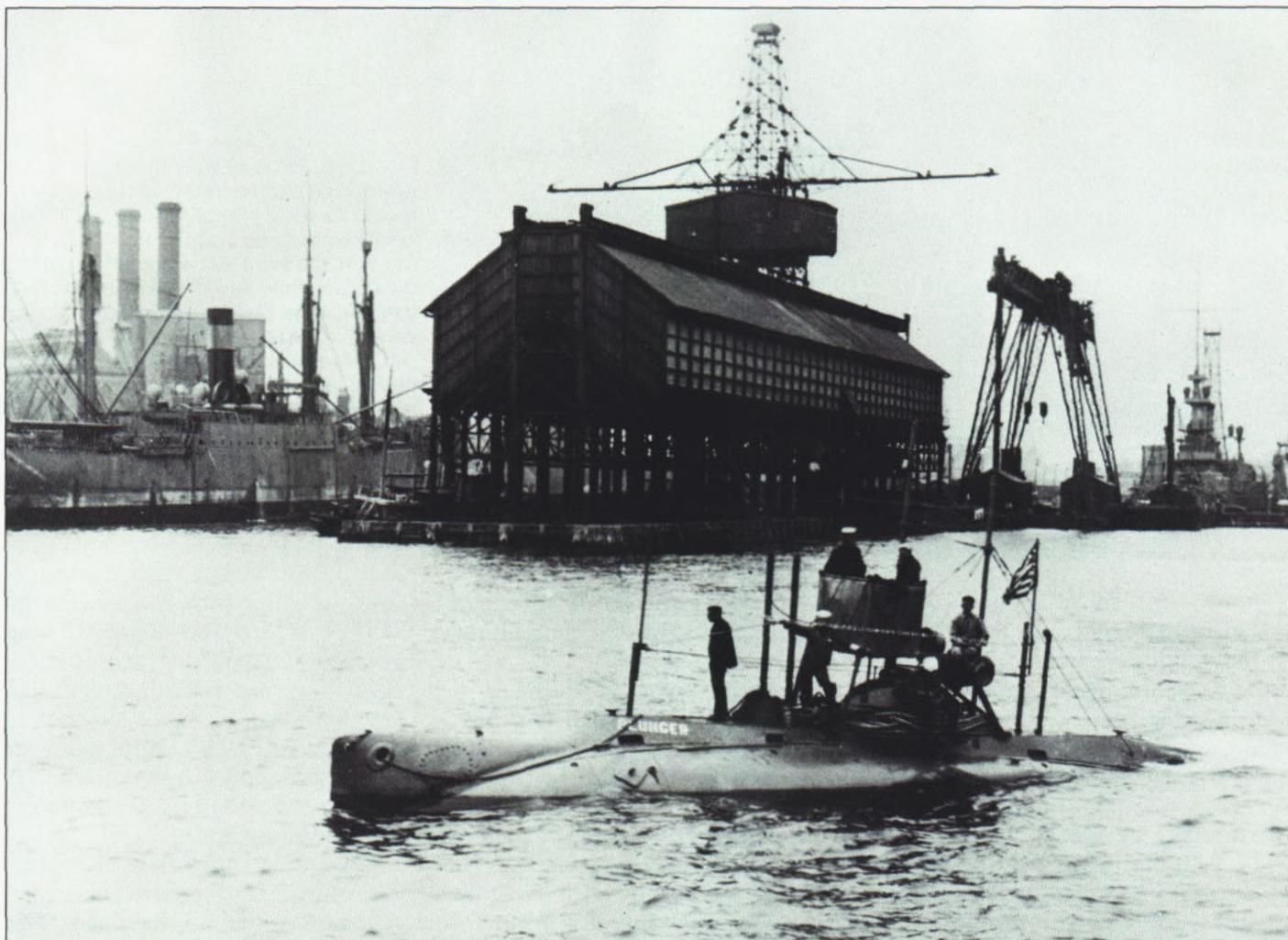


U.S. Navy art

**Left: An artist's conception of Army Sgt. Ezra Lee in *Turtle*. Below: The Confederate submarine CSS *H.L. Hunley* was powered by a propeller cranked by eight men.**



U.S. Navy art



U.S. Navy photo

**Above: *Plunger*, the first Navy contracted submarine, was rejected due to her inability to hold a steady course. Left: Inventor John Holland peers out of Holland's (SS 1) conning tower. The Navy's purchase of Holland marked the birth of its submarine fleet.**

cranked by eight men. Before it was considered ready for battle *CSS H.L. Hunley* had to be salvaged four times.

On Feb. 17, 1864, *Hunley* attacked the steam sloop-of-war *Housatonic* using a "Lee spar torpedo," mounted on the bow of the submarine. *Hunley* rammed *Housatonic* below the waterline. The explosion ripped open the side of *Housatonic* which sank, losing five men. Unfortunately, *Hunley* also sank somewhere near its victim, losing all hands.

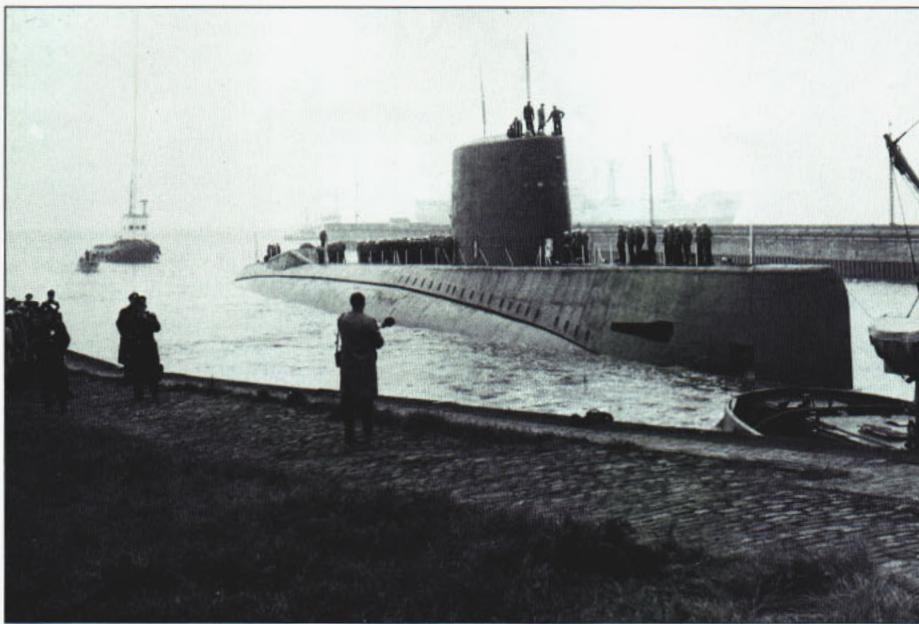
During the latter half of the 19th century, experimental submarines began to take on characteristics found in today's boats. John Holland,

an Irish immigrant who lived in New Jersey, developed a complex and highly successful ballast system and was the first to incorporate the use of horizontal rudders to dive a boat. In 1895 Holland received an order from the U.S. government to build one.

The vessel, named *Plunger*, was refused by the Navy when Holland couldn't keep the boat on a straight course. But before *Plunger's* failure, Holland had designed another submarine, so the Navy agreed to let him build that boat with private funds. On April 11, 1900, the U.S. Navy's submarine force was born when it purchased its first submarine, *Holland* (SS 1).

In the years that followed the acceptance of *Holland*, the U.S. Navy continued to buy improved submarines. They grew in size, from *Holland's* 54 feet to more than 100 feet and incorporated new developments in propulsion and weapons.

Confederate Army Capt. Horace Hunley and two associates built a submarine out of a 40-foot steam boiler. The submarine, named for its inventor, was powered by a propeller



U.S. Navy photo

**Left: USS Triton (SSN 586) arrived in Bremerhaven, Germany, in 1960, giving residents their first glimpse of a nuclear-powered submarine. Triton is the first submarine to circumnavigate the globe while submerged. Below: As seen through the submarine's periscope, a Tomahawk land-attack missile, targeted on an Iraqi position, clears the surface after being fired from USS Pittsburgh (SSN 720) during the Gulf War.**

During the late 1940s and 1950s, the greatest technological advances in the submarine force came about, including hull strengthening and streamlining. Engines were more compact and powerful.

All these advances were crucial in the development of the modern submarine, but pale in comparison to the advent of nuclear propulsion.

With the increased speed and virtually limitless fuel supply of nuclear-powered submarines, the length of patrols was now dictated by crew endurance and the amount of provisions carried.

On Jan. 17, 1955, the first nuclear-powered submarine, USS Nautilus (SSN 571), sent its historic message: "underway on nuclear power." Today, every submarine in the U.S. Navy is nuclear-powered.

In the years that followed that historic voyage, endurance, depth and speed records dropped like flies. Also, submarines began operating beneath the ice of the North Pole.

Perhaps the most important evolutionary step of the submarine came in 1955 when the highest priority was given to develop a ballistic missile that could be launched from under water, and a platform from which it could be fired. In just five years the Polaris missile and submarine program went from an idea to a reality. On July 20, 1960, USS George Washington (SSBN 598)

fired the first missile from a submerged position off the Florida coast.

In the eight years that followed, 40 other ships joined *George Washington*. As these ships came on line, advances were made in the Polaris missile system, increasing its range. In the early 1970s, the Poseidon (C-3) missile began replacing the aging Polaris, again with a significant increase in range and accuracy.

The next step in the evolution of the ballistic missile submarine came with the advent of the Trident missile and submarine program. The first step involved placing Trident (C-4) backfit missiles aboard the older Poseidon boats. As the Trident boats were commissioned, that missile was placed aboard them as well. Later, the Trident II (D-5) missile was developed.

Ironically, the success of ballistic missile submariners is beginning to cost them jobs. With the easing of East/West tensions, all 22 remaining original ballistic missile submarines will be decommissioned by the end of the decade. It's also unlikely that any more Tridents will be built after completion of the six currently under construction.

Today, U.S. Navy submarines, armed with advanced sonar, torpedo and missile technology, are a formidable weapon and deterrent to war. During the Gulf War, *Los Angeles*-

class fast attack submarines launched Tomahawk cruise missiles against Iraqi targets from operating areas in the eastern Mediterranean.

As the submarine force nears its 100th birthday, submariners who served in the World War-II era fleet boats look at today's submarine force with respect. Norb Ayers, who served aboard USS *Diablo* (SS 479), marveled at a Trident submarine he saw on a recent trip to Naval Submarine Base Kings Bay, Ga.

"There's no comparison! It's like a castle!" he said. "They've got it good compared to the old fleet boats, but it takes some pretty good people to man these boats today, and they're doing great." □

Taylor is a staff writer for All Hands



U.S. Navy photo

# A "father's" legacy

## *Rickover guided Navy into nuclear era*

Compiled by JO2(AW) Laurie Beers

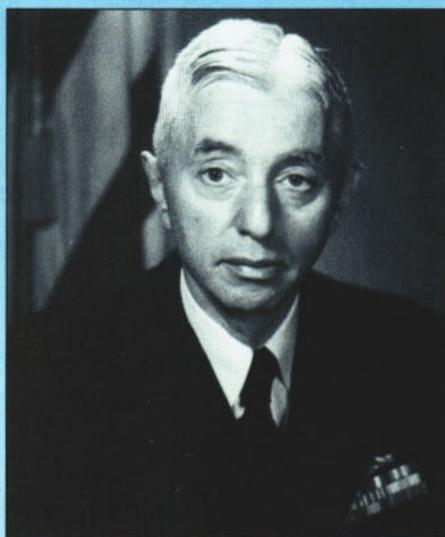
**H**e's been called everything from an incomparable, cranky "old salt" to a brilliant engineer who single-handedly dragged the Navy into the nuclear era. But all will agree, the late ADM Hyman G. Rickover is the father of the nuclear Navy.

In his more than 60 years of naval service, the son of Russian immigrants evolved from a snubbed midshipman at the Naval Academy, to an outspoken officer with a vision of limitless range nuclear-powered submarines and warships. This early vision quickly put him at odds with his superiors. But Rickover won his battle and his dream became reality Jan. 17, 1955, when USS *Nautilus* (SSN 571), the first nuclear-powered submarine, began its maiden voyage down Connecticut's Thames River.

Today, all U.S. submarines and more than 40 percent of the U.S. Navy's major combatants are powered by nuclear reactors.

Commissioned in 1922, Rickover's first taste of submarines came in 1929, when he served on board USS *S-9* (SS 114). After completing several staff assignments and serving as the senior naval officer for district engineers on the "Manhattan Project" — the operation to design the atomic bomb — the admiral became the senior naval officer for the newly-formed Atomic Energy Commission at Oak Ridge, Tenn., in 1947.

During the next 35 years, Rickover spearheaded the Navy's nuclear-power program and was eventually appointed as director, Division of Naval Reactors, U.S. Atomic Energy Research and Devel-



ADM Hyman G. Rickover

opment, and deputy commander for Nuclear Propulsion, Naval Sea Systems Command.

During the years he dominated the design and production of the nuclear fleet, Rickover saw his nuclear-powered submarines, cruisers and aircraft carriers travel 70 million miles and log the equivalent of 30 centuries of operation time without a death or serious accident attributed to nuclear propulsion.

Among the qualities he brought to the field were his extraordinary brilliance as an engineer and organizer, tireless energy and inflexible devotion. To them he added his own techniques — ignoring protocol and defying red tape. Those who came into contact with him became either lifelong enemies or lifelong admirers.

"He expected perfection. Sometimes he got it and sometimes he didn't," said a former commander of the Atlantic Fleet Submarine Force.

"But we were at least challenged to give 110 percent of our effort all the time."

Rickover personally interviewed every officer seeking to enter his nuclear-propulsion program. These interviews were legendary in the Navy, and to survive it was a rite of passage.

Thriving on doing and saying the outrageous, Rickover once gave a candidate 30 seconds to make him mad. The midshipman jumped out of his chair, cleared the papers off the admiral's desk and smashed his model submarine. Legend has it that Rickover accepted him.

According to his former students, these interviews were designed to draw applicants out and make them think about their answers. It also gave the admiral an opportunity to judge their character and their ability to make snap decisions.

Rickover's life was consumed by the Navy, working 14-hour days, rarely socializing and having little time for his family. He was as hard on his co-workers as he was on himself. "I never start to like a man until I tell him off three or four times a day," he once said.

In 1984, the man who pushed the Navy into the nuclear age received the rare honor of becoming the living namesake of a U.S. war vessel, the attack submarine USS *Hyman G. Rickover* (SSN 709).

Rickover died July 8, 1986, leaving behind a legacy of well-trained officers and a wide-ranging, flexible Navy, enabling the United States to meet new and changing threats. □

Beers is a staff writer for All Hands.

# Sub humor

*A light-hearted look at a serious business*

Thanks to Jeff Bacon and *The Best of Broadside*

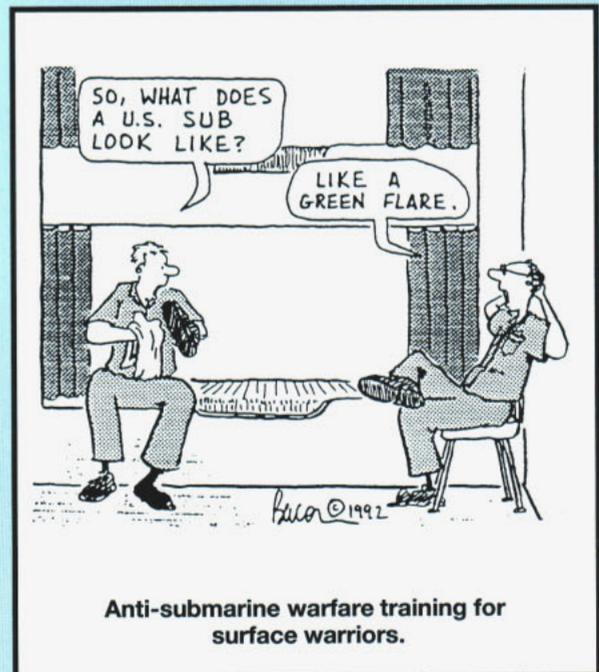
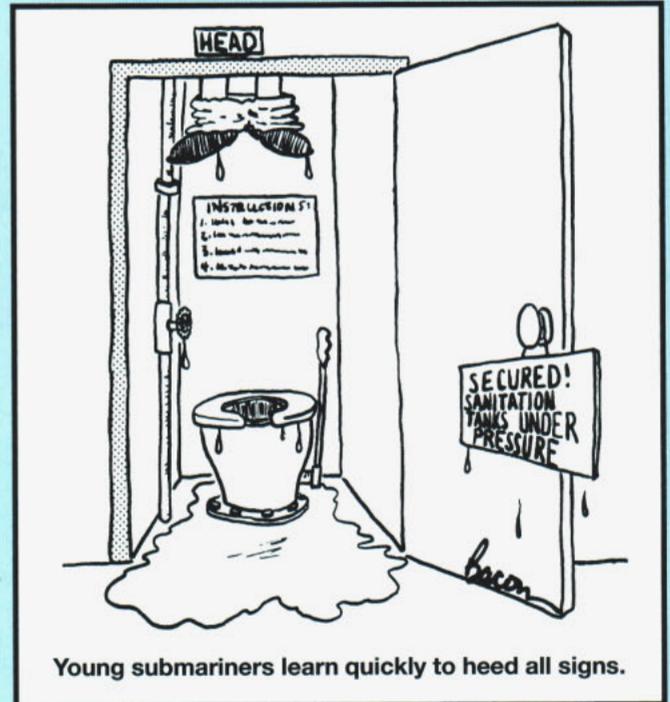
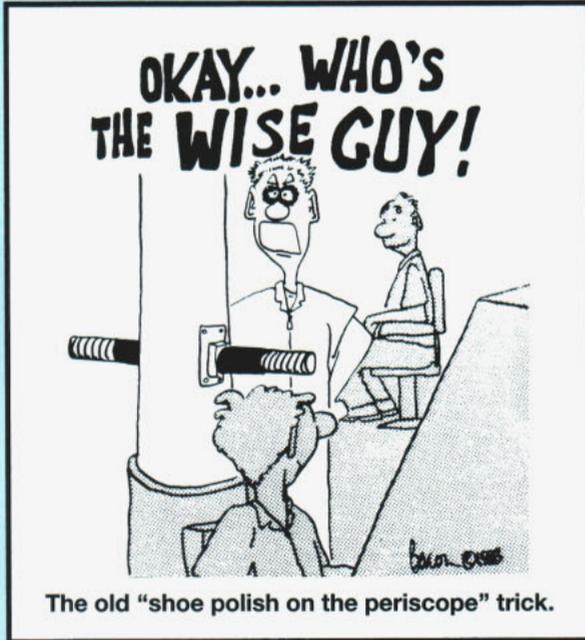




Photo by PHC Kathleen Janoski

# Thrust of the *Spear*

*Pride and professionalism  
keep sub tender's crew pointed forward*

Story by JO1 Chris Price

**G**lancing at his scheduling board covered with grease-pencil notations, Master Chief Machinery Repairman (SW) Artemio Cespedes begins a roll call of submarines supported by his tender, USS *L.Y. Spear* (AS 36) in the last month.

"*Flying Fish* [(SSN 63)], *Bergall* [(SSN 67)], *Finback* [(SSN 670)], *James K. Polk* [(SSBN 645)]," recites Cespedes. "The list goes on and on."

*L.Y. Spear* is the flagship of Commander, Submarine Squadron 6, but to the men of the submarine force who return to the tender's care for support and repair, pulling up to *Spear* is like coming home.

The tender is a floating city capable of servicing an entire squadron of nuclear submarines. It is equipped with a variety of repair shops, and staffed with more than 1,000 material and technical experts able to repair and

modify submarines in many ways, except for jobs that require the use of a shipyard facility. Being an afloat unit allows *Spear* to take this repair capability wherever it's needed.

*Spear* also provides logistic support. It stocks and issues food, supplies, repair parts and conventional weapons, such as torpedoes. Everything from electrical power and cable television services, to helping tie the sub tender to the pier, comes from the coordinated efforts of *Spear's* sailors.

Repairing submarines is never simple, said Hull Technician 1st Class (SW) Frank Bedenik, who works in *Spear's* metal shop. No two submarines are exactly

**Above: USS *L.Y. Spear* (AS 36) provides tender services to two U.S. submarines (left of *Spear*) and two Norwegian submarines in Norway.**



Photo by JO1 Steve Orr

**MR3 Timothy Lillis modifies a nylon sleeve in *Spear's* machine shop.**

alike, so the tender has a library of diagrams on each one provided by Commander, Naval Sea Systems Command. These provide a guide for repairs or installations, such as fixtures fabricated in the metal shop.

"You just don't know what might be on the other side of that bulkhead," explained Bedenik. "And I don't send someone over to do work without knowing. If they cut into a live wire they could get electrocuted. I don't take any chances."

The metal shop can produce a variety of items, such as garbage cans, shelves and lockers, but because the components are made for submarines, they look different from similar items used on surface and shore units. Trash cans look like hat boxes; cabinets and shelves are built with gently curved edges. All large pieces must be designed to be dismantled for movement through tight submarine hatches.

"If it's too big, it's not getting down the hatch," Bedenik said. "If it's forced down, it could get a little crinkled in the process."

A work center unique to tenders is the foundry, which uses molten metal and molds to create replacement

parts for submarines or to create cable pieces used in weapons handling.

"We can't afford to make any mistakes with our work," said Chief Molder (SW) Tito Anunciado, the foundry's leading chief petty officer. "If a torpedo breaks off the wire and blows up, it could take us with it. We really sweat our work."

According to Anunciado, *Spear's* molders are also experts at producing sea water valves and intricate parts for pumps, motors, gears and doors. "Anything that can be cast in brass, bronze, steel, aluminum, iron or monel [copper and nickel alloy], we can make," he said. Anything even includes parts that are no longer available through normal supply routes.

On board the tender, training and drills occupy the crew. *Spear's* weapons handlers are provided with realistic training as they load and handle "shapes," — near-perfect replicas of missiles and torpedoes. An actual weapons movement requires handlers from both the tender and the submarine involved. Efficiency in loading weapons is a source of pride for LT William R. Holtz, *Spear's* weapons repair officer. "We can reload a submarine in one day," he remarked. "We've even loaded submarines from other countries."

Another group of *Spear* professionals put frequently to the test are the ship's divers. Waiting to install a cofferdam and temporary seal around a shaft, Boatswain's Mate 2nd Class (DV) Joseph Rehling explained the nature of his work.

"This isn't a routine job," he said. "This is an 'Oh my God' job. The planning for this repair, for example, took more than a week and a half, and the actual physical work has been going on for three days now. If we don't make this repair, the sub can't go to her maximum depth.

"It's going to work. . . . We've done this type of work before," he said confidently. "When you're a Navy diver, you know you can do it."

Rehling's confidence in himself and in the skill of his shipmates is shared by all the members of *Spear's* crew. Cespedes believes this confidence is reflected in the quality of service the tender provides to its customers, which was demonstrated in its deployment to the Persian Gulf during Operation *Desert Storm*.

For five months *Spear* provided services to nearly 50 U.S. and allied ships, ranging from small minesweepers to massive aircraft carriers. Each vessel discovered for itself what the submarine crews of Squadron 6 have always known to be true. When you're low on supplies or need repairs, the skilled men and women of *L.Y. Spear* are only a work request away. □

*Price is the public affairs officer on USS L.Y. Spear (AS 36).*

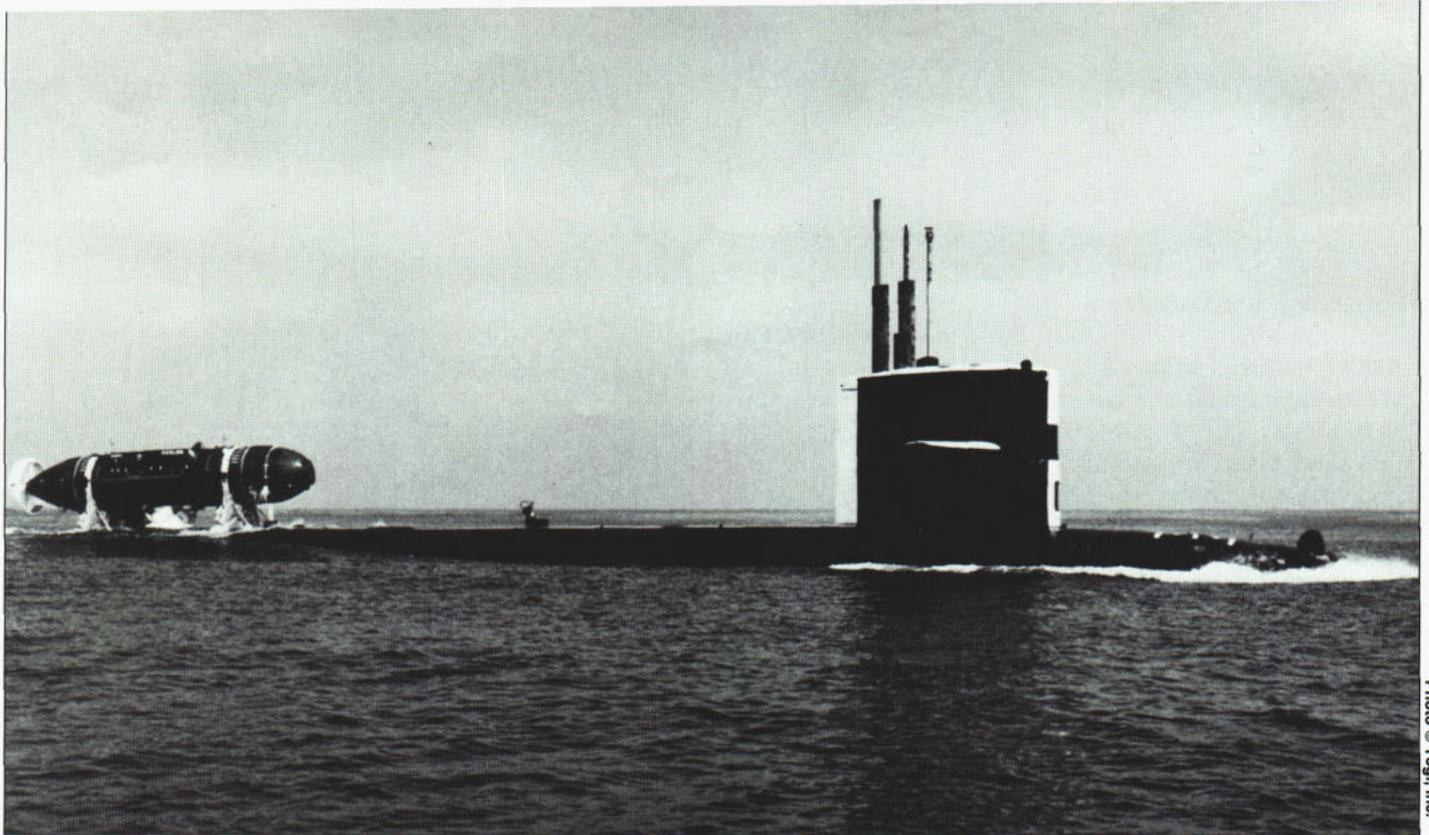


Photo © Vogt, Inc.

# DSRVs

## *The Navy's undersea rescuers*

Story by PH2 August C. Sigur

**T**he cylindrical craft maneuvered through the darkness, hovering 20 feet above the foreign terrain. Inside the cramped cockpit, the co pilot's eyes were fixed on the video monitor which rendered the desolate surroundings in stark black and white. The two operators sat in the small, confined area of the vessel called the control sphere. The remaining two crew members were poised in the mid- and aft-sphere awaiting the moment their skills would be needed.

The ocean bottom resembled the barren, desolate surface of the moon – dark, lifeless and eerie. Down in this tricky environment, time was extremely crucial for the Deep Submergence Rescue Vehicle (DSRV) to locate and to rescue an American fast attack submarine that experienced a flooding casualty and went down hard somewhere in the area.

Conditions were less than adequate for a visual search of the area. Millions of minute floating particles

**USS William H. Bates transports Avalon (DSRV 2) while on a training exercise.**

obscured the vehicle's high resolution search video cameras and hindered the sonar search. The sub's distress pinger (BQN-13) was the only way to achieve long-range detection on the submarine.

The pilot reached across the brightly lit integrated control and display panel (ICAD) and switched to the computer-generated navigation display. The faint noise of the BQN-13 was heard in the pilot's and copilot's headsets coming from the DSRV's directional listening hydrophone.

The crew was close, but close could be anywhere from 100 to several thousand yards. The DSRV crew had to move quickly — time was running out for the disabled submarine's (DisSub) crew.

All coordinates were reverified by *Avalon's* (DSRV 2) copilot who insisted they were in the right search area. Sand whipped up behind the DSRV's large rotating prop, and *Avalon* came about entering the cloud left by her prop. The search camera relayed nothing but a dark cloud on the monitor. As the vehicle moved out of the disturbance, the camera's lens became clearer.

The copilot's eyes fixed on the monitor, and confirmed, "There she is!" He pointed to the screen where the large black contour of the submarine was barely visible through the sand cloud. "We hold the DisSub in sight," the pilot reported on the underwater telephone back to the mother submarine (MoSub). We are attempting to mate." The MoSub, a specially modified *Sturgeon*-class nuclear-attack submarine had carried *Avalon* in a "piggyback" manner to the search area and it would serve as the staging platform for the rescue of the crew members of the disabled submarine.

The damaged steel hulk sat slightly buried in the silt and was listing to port with the screw buried below the sand. The submarine's main sea water system pipe ruptured and all efforts to isolate the problem failed. A large portion of the main compartment quickly flooded and the sub sank within minutes. The crew of the DSRV quickly began the preparations to land on the escape hatch of the sub and begin the rescue.

"Prepare for soft seal," ordered the pilot. The DSRV assumed the proper angle, height and speed to mount onto the hull of the crippled sub. With small, careful adjustments to the vehicle's controls, the pilot carefully moved *Avalon* over the submarine and locked onto the escape hatch. The mating seal was accomplished.

After checking the sensors and assuring a correct position, the copilot began to dewater the mating skirt. This equalizes pressure in the skirt with two ballast tanks inside the DSRV to achieve a "hard seal." The water is then pumped into the tanks, and the computer display for water levels and a skirt camera monitor indicate the mate is complete.

Once the water was completely removed, the rescue vehicle's hatch was opened to access the submarine's hatch. Working swiftly, the DSRV crew removed the heavy steel-hatch fairing plates from the sub and signaled the awaiting crew by striking the steel hatch three times with a hammer.

Within minutes, the opening was complete and the men of the DisSub climbed out of their vessel and into *Avalon*. Only 24 crew members could enter *Avalon* this first trip, but the DSRV would return five more times to evacuate the remaining crew. Once loaded, *Avalon* detached and headed for the MoSub to transfer the weary crew, completing one segment of the rescue.

Although an actual rescue has never been necessary, the need for constant training is extremely crucial. In September 1992, *Avalon* was flown to Spain for exercise *Sorbet Royal '92*. This ambitious operation combined the submarines and sub rescue assets of the Spanish, Dutch, Italian, British and American navies.

It was the first exercise of its size combining submarine rescue capabilities. Operating out of the Spanish

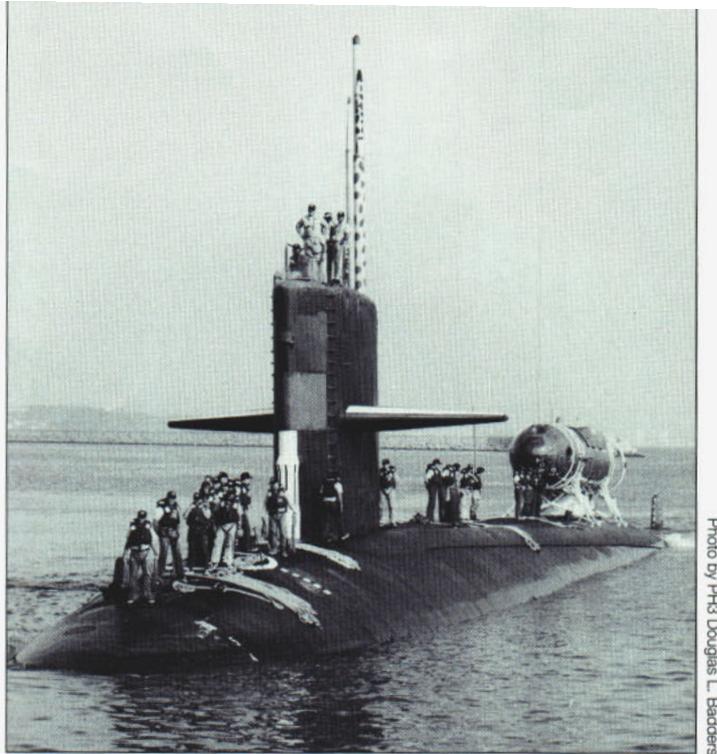


Photo by PH3 Douglas L. Badders

**Crew members from USS *Billfish* (SSN 676) prepare to enter port at Naval Station, Rota, Spain.**

port of Malaga, the crew of *Avalon* and the MoSub USS *Billfish* (SSN 676), completed five dives between three bottomed diesel submarines with 100 percent success. Personnel from participating submarines were transferred between vessels and simulated the crews of distressed submarines.

"We rendezvoused with the Dutch submarine *Zwaardvis* [S 806] at about 400 feet," explained Sonar Technician (SS/DV) 1st Class Todd A. Litke. "Conditions weren't very favorable. Visibility was poor, the sub was listing 3 degrees, with a strong current. When we saw the submarine's lights, we were able to position ourselves over the hatch and accomplish the mate."

Litke likened it to, "flying blind with only sound to assist you." Litke, *Avalon's* copilot during *Sorbet Royal '92* and a veteran of more than 30 DSRV training dives, describes the complexity of locating a 400 foot submarine in miles of open ocean. "When you are trying to locate a submarine underwater, sonar and instrument readings are helpful, but visual sighting is the only true method of confirming her position," Litke added.

The interior of the DSRV resembles a space shuttle with myriad electronic modules and seemingly equal amount of control buttons, lights and sensors. "It's just like what you would expect in the space shuttle," described Chief Interior Communications Electrician (SS) Brian C. Weisbarth about the complexity of the vehicle's control sphere.

Weisbarth, *Avalon's* newest qualified pilot remembered the first time he encountered the control panels. "When I first saw it I was a little intimidated, but I soon familiarized myself and now I'm very comfortable with it."

"Every effort is made to maintain 'attention to detail' in deep submergence. Maintaining \$250 million undersea vessels is complex to say the least," said LT Edwin L. Lancaster, *Mystic's* (DSRV 1) engineer. "These DSRVs are engineered and constructed with the same technology of NASA's *Apollo* space rockets. They must be held to the same strict compliance to ensure safe and effective operation at depths of 5,000 feet."

"The challenge comes when you take a small, but sophisticated crew of men and keep them motivated," explained LCDR Charles W. Baisey, *Avalon's* officer-in-charge. "Our objective is to increase the OpTempo [operations tempo] of the DSRV while keeping the reliability of such a sophisticated vehicle operating in this harsh environment at its peak level."

Submarine rescue is not a recent event. In 1851, William Bauer was the first sailor documented to make a free escape from a submarine after his crude iron craft sank. Bauer became trapped in his stricken vessel for more than five hours before he opened the hatch to escape.

Yet, the most successful submarine rescue occurred May 24, 1939, when USS *Squalus* (SS 192) sank in 234

feet of water. The McCann Submarine Rescue Chamber was dispatched to the site where it completed several dives on the downed submarine, rescuing 33 crewmen from the forward torpedo room of *Squalus*.

Although this daring rescue was a magnificent event, the capability of rescuing a downed submarine was not fully considered until tragedy occurred in 1963. In the early morning hours of April 10, 220 miles east of Boston, the nuclear-powered attack submarine USS *Thresher* (SSN 593) was making deep-diving tests after undergoing ballast tank repair at Electric Boat Co., Groton, Conn.

The submarine rescue ship USS *Skylark* (ASR 20) monitored all of *Thresher's* movements and kept her position in constant verification throughout the voyage. She contacted *Thresher* throughout the dive. But, at 9:17 a.m., *Thresher* notified *Skylark* she was experiencing "minor difficulties," and "was working to correct the problem."

Shortly after that transmission, *Skylark* heard sounds "like air rushing into an air tank" — then silence. *Thresher* was never to surface again; she sank in 8,400 feet of water.

*Thresher's* catastrophe served as the catalyst for launching an ambitious Navy program known as Submarine Rescue System. Within two weeks following *Thresher's* disaster, then-Secretary of the Navy Fred Korth, appointed a committee called the Deep Submergence Systems Review Group (DSSRG). The panel conducted a year-long study of submarine rescue and deep ocean recovery and made several recommendations.

The first of many recommendations was a five-year, \$400 million program to develop an effective submarine rescue and deep submergence system.

In 1970, the Navy took delivery of the first DSRV, named *Mystic*. It was, and remains today, the most complex and sophisticated DSRV in the world. *Mystic*, and later her sister ship *Avalon*, were put through rigorous sea trials until they were accepted by the Navy in 1977. The two DSRVs are currently assigned to Deep Submergence Unit homeported at Naval Air Station North Island in San Diego. When called upon, DSRVs can be transported to the rescue site by land, air or sea.

The DSRV rescue system is a very diverse and valuable asset to the submarines of the U.S. Navy. The DSRV team is ever vigilant in responding to unexpected submarine emergencies and to support key scientific exploration missions of one of the most vast and mysterious segments of the world — the big blue. □



U.S. Navy photo.

Artist's rendition of the Navy's 1939 McCann Submarine Rescue Chamber which rescued the crew of USS *Squalus*. Eight men at a time could be removed from the boat.

*Sigur* is assigned to Deep Submergence Rescue Unit, San Diego.

# Training for new role

Story and photos by PH1(AW) Joseph Dorey

**K**nown as the "Submarine Capitol of the World," Groton, Conn., has been home to Navy submariners since World War I. Virtually every American submariner has trained there at one time or another. This sleepy New England town continues a shipbuilding tradition started in colonial days at the Electric Boat Division of General Dynamics, a manufacturer of submarines since the turn of the century.

Nestled in the cliffs along the Thames River on Submarine Base New London, Conn., lies the Naval Submarine School, which first opened its doors in 1917. Students range from enlisted sailors, fresh out of boot camp, to submarine commanders. Almost 40,000 students are trained annually in more than 300 courses including Basic Enlisted Submarine School (BESS), most sailors' introduction to the submarine community.

"BESS is designed to teach students the basics of submarining," said Master Chief Machinist's Mate (SS) Harry F. Lindenberg, the school's military standards officer. "It gives them that small tool bag to go out and learn to be a submariner. They're not so shaky or afraid to go on a submarine after they leave here," Lindenberg said. "It's submariners teaching young men to be submariners."

The sub school also offers basic and advanced courses for submarine officers as well as training in submarine escape, damage control, piloting

and navigation and some rate-specific courses.

One of the school's newer facilities, Momsen Hall, houses the submarine escape trainer. The indoor-pool trainer, which opened in 1991, replaced the old water tower generations of submariners used to simulate an underwater escape ascent. The tower was in operation from 1929 until 1984 when it was deemed unsafe. Submariners always considered a ride up the tower an initiation into the sub community. However, the trainer had a tendency to hurt people who ascended improperly or too quickly.

"The Navy's new way of thinking was to come up with a trainer pool that was much shallower and wouldn't hurt individuals," said Senior Chief Boatswain's Mate (MDV) Richard Bettwa, an escape trainer instructor. "With the new facility,

we've eliminated practically all the hazards associated with the old tower. The students go through the same procedures that they would during a normal submarine escape. The only thing that they're not getting now is the actual ascent."

The instructors at the pool emphasize safety first. If students feel that they cannot go through the underwater escape procedure they can call a training time-out. They are not penalized and can continue their training.

For Seaman Richard Curtis, a BESS student, the escape trainer was one of the more exciting phases of the school. "It was kind of scary at first because we didn't know what to expect," Curtis said about his introduction to the escape trunk. "But it was interesting because it taught us that when a sub goes down, we can save our own lives."



**Right:** Submarine officer basic course students practice ship contact coordination in the piloting and navigation trainer. **Opposite page:** Basic enlisted submarine school students fight the elements inside a wet trainer at the damage control facility.





Top left: A basic submarine officer student watches for ship contacts on a scope in the submarine piloting and navigation trainer. Top: While in the submarine escape trainer, students wear Steinke hoods to breathe enroute to the surface. Left: A BSY-1 video trainer uses computer-generated images to enhance the realism of fire control training.

Essentially that's what we're doing — we fly. We just fly through a different medium."

Vodola explained that most of his students enjoy the roller coaster effects of the trainer, but what they are learning is dead serious.

"The guys who are holding the sticks which control the planes and surfaces of the boat are brand new — often less than a year in the Navy — and have no time on the 'pond,'" Vodola said. "And they're in charge of operating the submarine.

"That's a scary thought," he continued. "There's a diving officer sitting right behind them to supervise.

In another of the school's buildings, the ship control trainer allows students to experience a submarine's maneuverability. The mock-up simulates all the operations of a real sub, including tilting at 30-degree angles up, down and sideways.

"The trainers we have here are not 100 percent accurate, but they're very realistic," said Fire Control Technician 1st Class (SS) Joel Vodola, lead instructor at the ship control trainer. "This is equivalent to a *Tomcat* trainer for a pilot.



But they still have to know what to do. For those immediate actions which need to be done automatically, these kids have to have them down cold, because 150 lives depend on it."

The attrition rate for BESS students is about 5 percent. Prospective submariners are screened during boot camp for suitability and given psychological exams at the school to identify anyone who might be claustrophobic. Students are also required to have strong academic skills to handle the highly technical environment of a submarine.

"I tell the young sailor who starts Basic Enlisted Submarine School that his job is more demanding in some respects than that of an astronaut," said CAPT John S. Almon, the school's commanding officer. "Certainly a submarine is as complex as a space shuttle."

The demands of being a submariner are most apparent during an

essential phase of sub school — damage-control training. In a wet trainer designed to simulate a submarine engine room, students are given a chance to get their feet wet (along with the rest of them) learning to control flooding.

While instructors carefully observe a class of eight to 10 students from behind a large glass window, up to 1,200 gallons of water per minute are sent rushing into the compartment from various prearranged "leaks." The students must work together as a team, putting their classroom training to the test.

As one instructor put it, "We're teaching damage-control techniques, but we're also teaching the importance of communication and teamwork."

"It was fun, I'd like to do it again," said MM3 Mike Green as he stood soaking wet after exiting the trainer. "That's the first time I've seen something like that. Now I have an idea of what to look for and what to expect. I think I could actually fix a leak now."

The school's newest training system is the \$70 million tactical combat control BSY-1 trainer. The system combines target detection, classification, tracking, weapons control and weapons launch.

"It used to be that you had separate sonar and fire-control systems. They worked together, but they were treated as separate systems," explained Senior Chief Sonar Technician (SS) Guy Eyraud, BSY-1 division director. "With the BSY-1, they put the systems together and created a combat-control system."

With the BSY-1 trainer, submarine crews can simulate realistic combat situations without ever leaving port. "The systems work just like they do on a ship," Eyraud said. "We can do everything except tilt the deck. This training is very effective because you don't get killed here — and you don't hurt the submarine."

"A lot of times you don't have the time at sea to practice. And trying to find a target of opportunity that will do what you want it to do just doesn't happen very often at sea. You can track a merchant ship that's heading straight for New York City. But there isn't much challenge figuring out its speed and course. Plus you can't shoot torpedoes at it," said Eyraud.

As the tension from the Cold War eases, a change in emphasis for the submarine force's mission is also reflected at the sub school. "For the last 25 to 30 years our primary mission has been anti-submarine warfare," Almon said. "Now that our mission has changed to battle group support and strike warfare, the training has changed significantly. We've added additional training, both in the attack centers and in the classroom, to support the new mission."

As for the type of students who come through the school each year, Lindemberger addressed the issue of what it takes to be a submariner.

"Well, I know everybody says that we're the cream of the crop. You know how they like to stereotype us," joked Lindemberger. "But I like to think it takes a little different grit."

"When you become a submariner, you are isolated from the world. You're not only separating yourself from your family, you're separating yourself from something that you can orient to, like the sun and the stars," Lindemberger said.

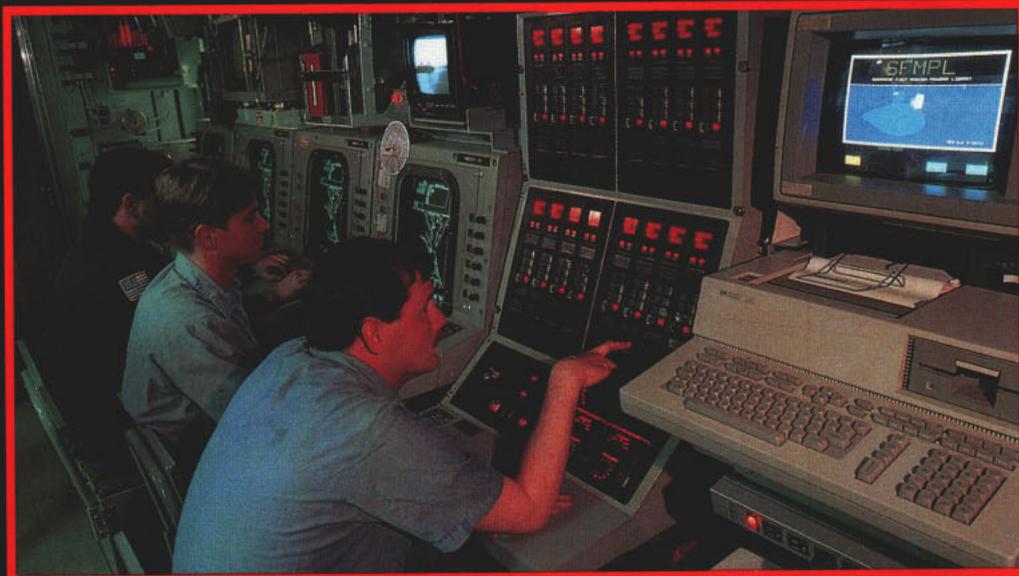
"It takes a person who can accept those things and be able to handle being isolated in what we call the 'people tank' for long periods of time," he added. "So it takes a special grit to be a submariner. For the most part, everybody who goes through here has that grit." □

*Dorey is a photojournalist for All Hands.*

# From under the sea



Top: USS *Salt Lake City* heads out to sea near her homeport of Vallejo, Calif. Right: Fire control technicians on board USS *Albany* monitor the BSY-1 fire control panels. Opposite page: USS *Atlanta* is launched at Newport News, Va., August 1980. Due to environmental hazards, balloons are no longer used for naval ceremonies.









Top: Submarine tender is surrounded by subs in Norfolk during the Christmas season. Left: Crewmen aboard USS *Portsmouth* have little space to call their own. Their racks are one of the few places where they can be alone. Opposite page: USS *Nevada* is tied up with her missile doors open prior to loadout in Bangor, Wash.





Photo © Yegil, Inc.



Photo by PHT Joseph Dorey

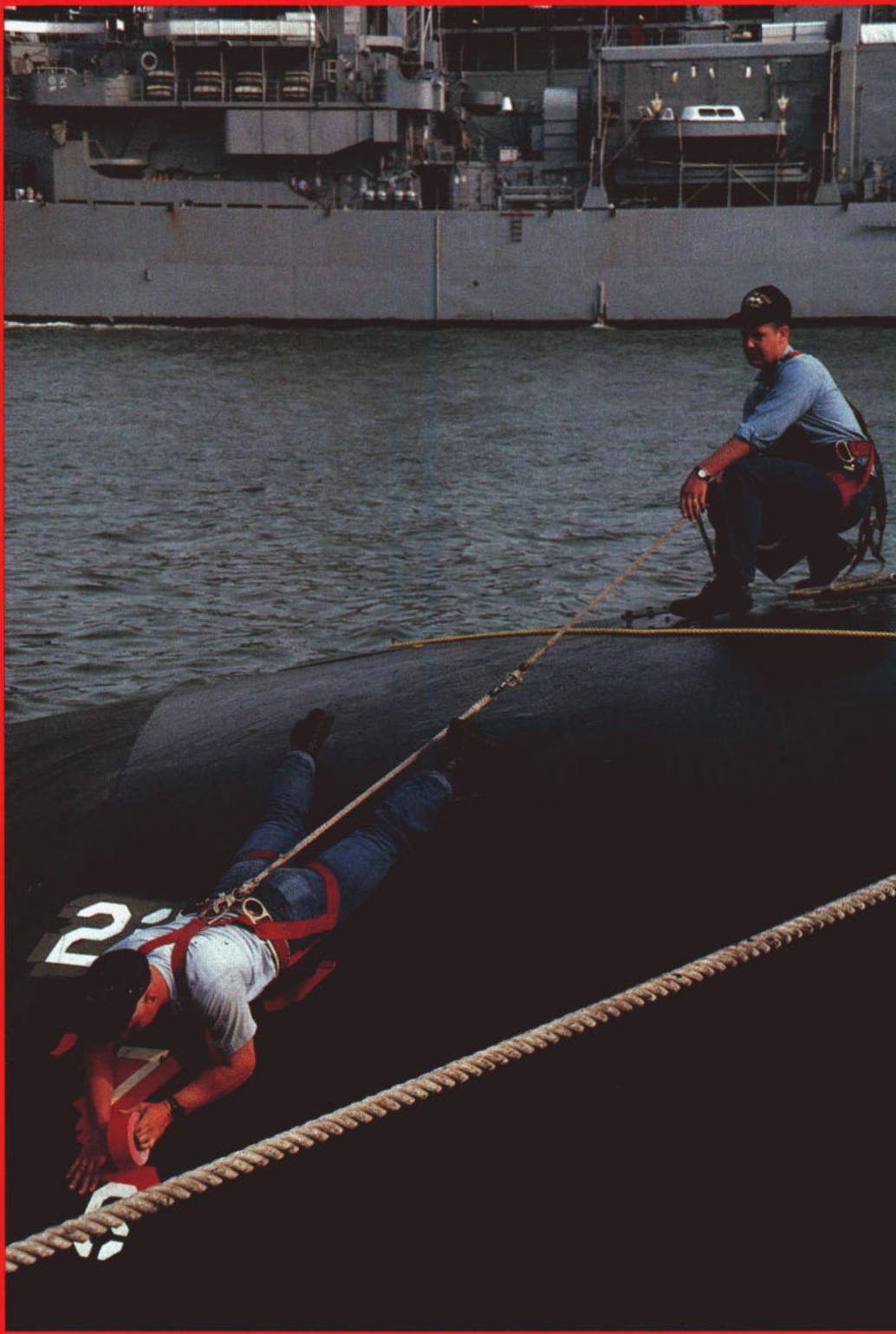


Photo by PHT Michael Flynn

Photo by PHT Joseph Dorey



Clockwise from above: Crewmen on *USS Baton Rouge* must take special precautions while performing maintenance on the side of the boat. One of the newest ballistic-missile submarines, *USS Rhode Island* is shown here while under construction at Electric Boat Division of General Dynamics, Groton, Conn. The sonar room aboard attack submarine *USS Topeka* houses the eyes and ears of the ship. A *USS Groton* sailor waits to close the hatch as *Groton* sails down the Thames River in Groton, Conn.

Photo © Yogh, Inc.



Photo by PHT Joseph Dorey



Top left: View from inside a torpedo tube on USS *Jacksonville*. Top right: Students train inside the control room trainer at Naval Submarine School, Groton, Conn. Above: The crew of USS *Pargo* prepares to tie up to the pier in Groton.



Photo by PH1 Joseph Dorey

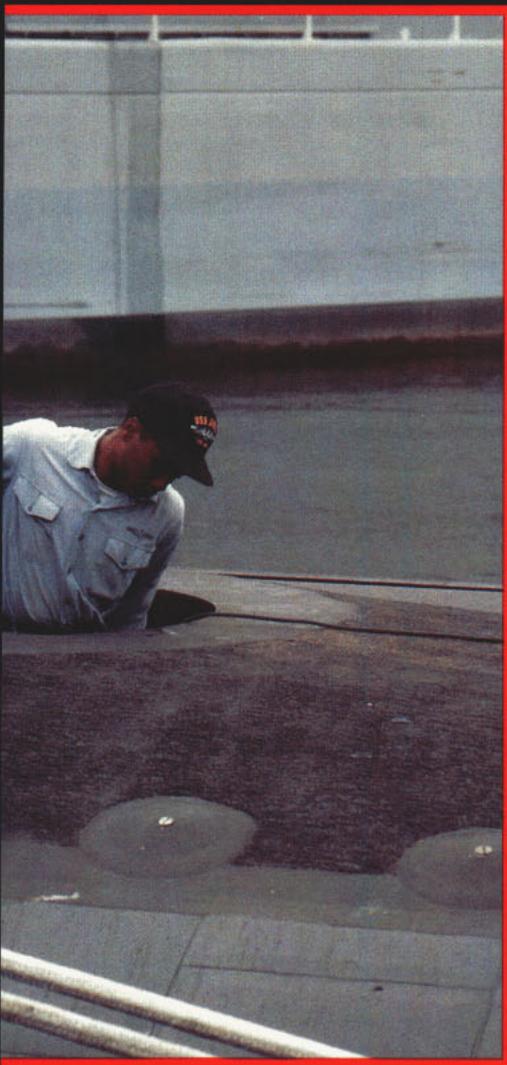
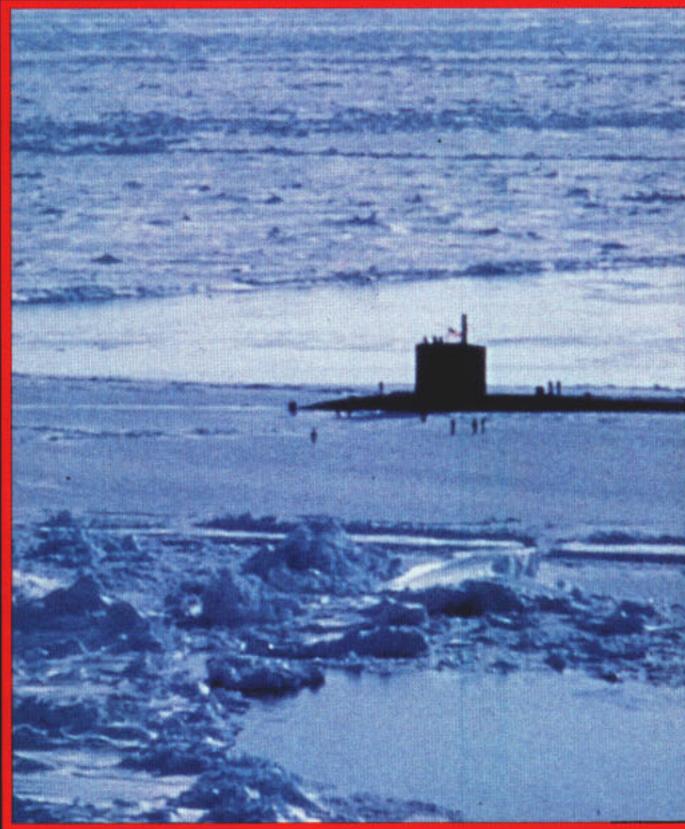


Photo by PH1 Joseph Dorey



Photo by Yogi, Inc.

Top: Even in the clear water of the Caribbean Sea, the full impact of a submerged submarine is hard to capture. Left: A USS *Groton* sailor climbs down the hatch as final underway preparations are made.

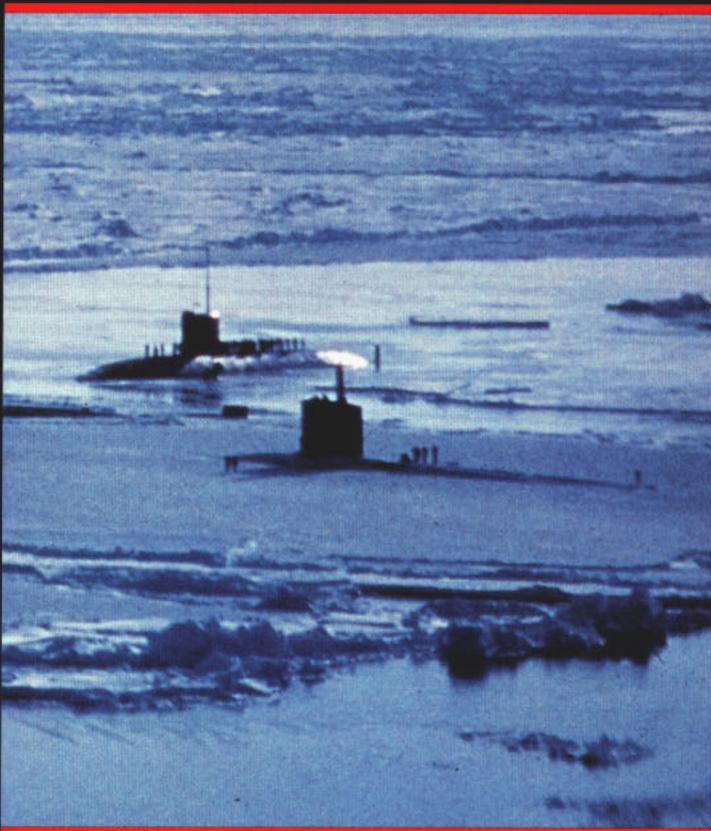


Above: A SEAL team descends to USS *Woodrow Wilson* during a lock-out exercise off the coast of Puerto Rico. Above right: USS *Buffalo* rushes to the ocean's surface during an emergency blow exercise.



Photo - Yogi, Inc.

Left: American attack submarines USS *Billfish* and USS *Sea Devil* rendezvous with the British submarine *Superb* during ITEX '87 at the North Pole. Below: A sailor from USS *Pargo* sets the colors on the sub's fantail after returning from deployment.



U.S. Navy photo



Photo by PHT Joseph Dorey

# On the hunt



Story and photos by PH1(AW) Joseph Dorey

**I**t's been said that anyone who would climb into a 360-foot steel tube, close the hatch and sail off into the depths of the ocean with 130 other souls for 60 days at a time, must be different at best and probably a little crazy. For the crew of an attack submarine, it's the camaraderie and the excitement of tracking enemy subs and surface ships which lures them to the world down under.

All sailors endure the hardships of sea — long hours, sometimes dangerous work and separation from fam-

ily. Submariners must also give up such amenities as fresh air, sunshine and privacy. But they wouldn't have it any other way.

*At 1:30 a.m., several hours after steaming out of her home port of Groton, Conn., the fast attack submarine, USS Groton (SSN 694) prepares to dive. After all final checks are made, the Los Angeles-class submarine unceremoniously slips beneath the dark water of the Atlantic Ocean — let the hunt begin.*

Groton is guided by the virtuosos of the sub fleet — sonar technicians

— the ears and eyes of the "boat." The routine of 18-hour days begins. Most of the crew works in a three-section duty of six-hour watches, with 12 hours left for training, eating and sleeping. Once submerged, it can seem like one long day.

"It really doesn't make a whole lot of difference whether it's day or night. When you're at sea, it just kind of all rolls together," said CDR Larry H. Davis, Groton's commanding officer. "There is no real day."

A submarine is divided into two parts, the engine room and every-



**Crewmen on USS Groton's (SSN 694) bridge guide the submarine out of port.**

mans the conn (periscope stand). A few feet forward sit the ship's drivers, the helmsman/fairwater planesman and stern planesman. It is not unusual to find some of the ship's more junior sailors sitting there since it is one of the first qualifying watch stations. It does not take long to be given responsibility on a submarine.

"The helmsman and planesman control the depth and angle of the ship," Davis said. "The diving officer supervises them, but the guy with the stick in his hand actually has control of the ship."

Becoming submarine qualified and attaining the coveted silver dolphins is the immediate goal of every enlisted man new to a submarine. Staying qualified and increasing their knowledge on new systems is ongoing for the senior submariners.

"Most guys take about a year to qualify in submarines. They must know all the ship's systems," said Master Chief Electronics Technician (SS) Eddie Barrett, chief of the boat. Barrett is the senior enlisted adviser to *Groton's* commanding officer.

"But that's just the start of your qualification process — getting your dolphins," Barrett said. "Beyond that there are lots of quals. The nuclear ratings strive to qualify for engineering watch supervisor. The guys up forward keep working on quals until they're up to chief of the watch and diving officer. So it's a pretty intensive qualification process."

"It's a significant accomplishment in everybody's career to get their dolphins," Davis said. "They've spent most of their non-watch hours working on them. So once they're qualified, it's a big relief. Now they feel like a full contributing member of the crew."

After two years of nuclear power school, ET3 Jeremy Maus, a new

*Groton* crewman, is anxious to get going with his submarine career.

"I'm really looking forward to starting my qualifications in the engine room," Maus said. "If you look at everyone else on the sub, you see dolphins, and I don't have them. I want to get my dolphins so I can say I'm a qualified member of *Groton*."

With room for only 28 people, the enlisted mess deck beomes crowded in a hurry at meal time. The crew does not get "surf and turf" every night, but they do eat well.

"That story about submariners getting steak and lobster all the time is a myth from way back," said Chief Mess Management Specialist (SS) Jack P. Swetland, *Groton's* chief cook. "We'll probably have lobster once during a deployment. We don't get anything different than the surface ships, but we cook smaller portions. We're not cooking for 1,000 or whatever, so the guys are able to put a little bit more into it.

"The meals are a big part of the crew's day," Swetland continued. "Whatever service we can give them, along with a good meal, will put those guys on watch a little bit happier. I think the morale on the whole ship starts with the cooks."

It is easy to lose track of the time of day on a submarine. Many submariners depend on what type of meal is being served to tell them, "If it's eggs, it must be breakfast, and if it's hamburgers, it must be Wednesday's lunch."

"Guys come up for lunch and dinner and may not know what time it is. We've been out for 30 or 40 days and they'll ask the cooks, 'Hey, what time is it?'" Swetland said. "The cooks always know what time it is."

A recent convert to the world down under from the "skimmer" Navy of surface ships, MS1 David M. Bruce was looking for a change. Bruce had been on USS *Blue Ridge* (LCC 19) with a 1,300-man crew. After only a few months aboard

thing else. The nuclear reactor and adjoining engineering spaces take up the entire aft portion of the ship. But most of the action occurs amidships in the control room.

The professional atmosphere of an attack submarine starts in the control room. It is the central nervous system of the ship. An incomprehensible myriad of scopes, gauges and dials monitor almost every system aboard. This is where navigation and warfare decisions are made.

At the center of this 30-by-30-foot room, the officer of the deck (OOD)

**Right: QM3(SS) Daymon Minor checks the sunrise/sunset time chart in the control room. Below: With room to seat only 28 crewmen at a time, Groton's mess deck gets crowded in a hurry.**

Groton, Bruce said he already feels at home.

"I really like the crew here," he said. "We get along real well and you know everybody. Whereas on a surface ship there's some people you see in line that you don't have any idea who they are."

That's not to say there haven't been any adjustments for Bruce. "It took me three days to fall asleep because the rack space on a submarine is a lot smaller than a surface ship," he said. "You can't turn around or sit up in your rack."

Food storage is also smaller Bruce said, remembering the walk-in refrigerators and freezers on *Blue Ridge*. "Here everything tends to get piled up," he said. "Stowage space is at a premium. Every little nook and cranny is filled."

One of the biggest differences Bruce noticed about the submarine community is the close relationship shared not only socially among the crew, but also when there is work to be done. He said it is not unusual to see senior enlisted personnel helping with working parties.

"As far as cleaning, you'll see a lot of first class' and chiefs really getting down and scrubbing decks. And when there's stores to be loaded, everyone chips in."

The ability to stay submerged is a big advantage for submarines. But like the strength of an army, her crew must also travel on its stomach.

"Usually the limiting factor for a submarine staying at sea is food," Davis said. "We make our own oxygen, we make our own water, the nuclear reactor fuel lasts in excess of 10 years, so the only thing that limits us is food. We load the ship out for 90 days. If we had to stretch that longer we could."



*After dinner, a junior crewman heads down to his berthing area for some rest. After removing his "poopie suit," or coveralls, he climbs into a rack a crew mate has just left. They are "hot racking," a practice where two bunks are shared by three people. One person will always be on watch leaving the two bunks full.*

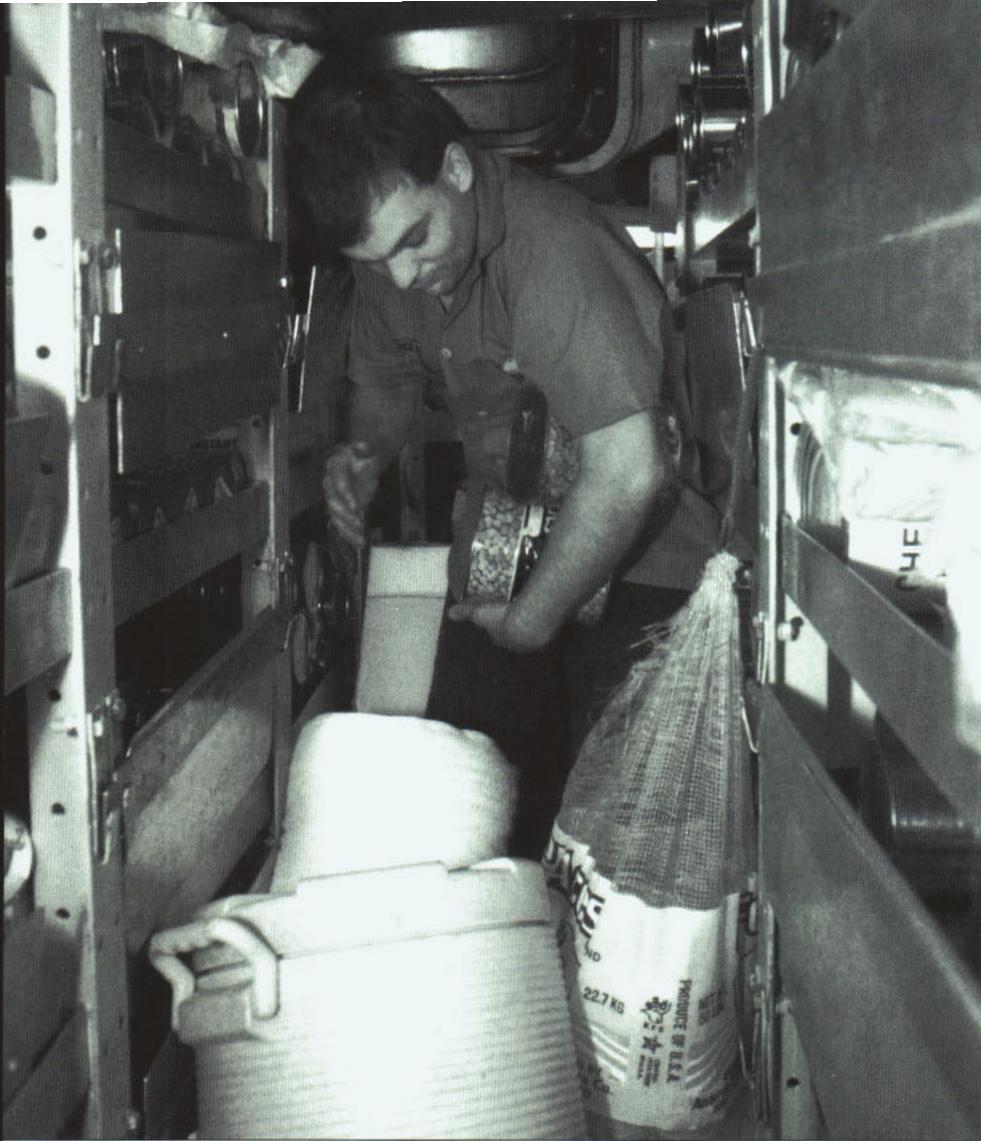
"Everybody winds up hot racking at least once in their career," said Quartermaster 1st Class (SS) Joe Collins. "It's either that or sleeping with a torpedo. Some boats put cots in the torpedo room. It's not bad. It's just a little strange sharing your bunk with somebody."

Trying to stay in shape is never easy on a ship. *Groton* usually carries exercise equipment such as a stationary bike, a stair stepper and a rowing machine.

"You use what room you have," said ET2(SS) John Matuza, *Groton's* command fitness coordinator.

"We have a lot of people who are fitness oriented and we'll find a way to work out," Matuza said. "We've used tool boxes for bench pressing. In between hatches you can lift yourself up and down doing dips. That's the kind of improvisation you can use."

The ship carries plenty of videos, has a small library and playing cards



**Left: MS1 David Bruce has to walk on food in the store room to reach other supplies. The crew will eventually eat their way through the stores allowing Bruce easier access. Above: Crewmen use the deck between torpedoes to get their daily exercise.**

and other games are available at the ship's only area large enough to handle a "crowd" — the enlisted mess deck. "The mess is the social center of the boat," Collins said. "This is where you come to watch movies, talk, play cards or write letters. Training lectures are held here too. This is the only place you can do it, so it's where you spend a lot of your time off."

That is if you have any time off. "As a non-qual you don't get much recreation," Collins added. "They work their tail-ends off just trying to get qualified. Those already qualified have it a little bit easier, but with the amount of work, even they don't have much time."

*The 1MC warns the crew to "stand by for angles and dangles." A slight smirk appears on the faces in the control room. The crew will*

*enjoy this. It reminds them of where they are. As Groton abruptly begins diving and turning at 30-degree angles, no one has to be reminded to hold on.*

"We exercise the ship in large angles for two reasons," Davis said. "One is to check stowage and ensure everything is strapped down and stowed properly. The other reason is practice."

"We never know when we're going to have to change depth abruptly to get out of the way of another ship or a weapon that's incoming."

With the fall of the Soviet Union, the mission of attack submarines has shifted to reflect the New World Order. They are expanding from their customary role as hunters.

"Our primary assignment right now is as a member of USS Amer-

ica's [CV 66] battle group," said Davis. "During deployment with the battle group we can conduct indications and warnings in advance of their movement, and we can conduct strike warfare in conjunction with them."

"We can also do special warfare ops if need be," Davis continued. "We can deliver SEALs or pick them up from the beach, in addition to the traditional roles of submarines, which is anti-surface and anti-submarine warfare."

The crew on a sub is both dependent and independent. They must depend on one another for survival within the harsh undersea world.

The safety of the ship is only as good as the qualifications of the crew. "Every time a crew member signs his signature on a guy's qual



card, he's saying 'I trust you with my life,'" Barrett said.

"The whole purpose of qualifications is so that every man on board knows where to go and what to do in case of a casualty," added Collins. "Let's face it, there is a lot of water out there. The least little crack in the hull and we could be peeled open just as easily as a can."

The independence to be virtually shut off from the outside world is a necessary element to living down under.

"Unlike other communities where mail and phones are readily available, once we go to sea and submerge, everybody's cut off from their families and friends," Davis said. "So you have to feel fairly secure to be able to do that."

Submariners do receive familygrams, which help them stay in touch with what's going on back home. Each family can send up to eight of these 50-word messages during regular deployments.

It is not surprising that submarine crews become extended families. The camaraderie becomes as essen-

tial to the ship's mission as the ability to glide silently through the ocean.

"You'll find most of the crew easy going and laid back," explained Collins. "You'll find a lot of guys on submarines kind of pick on each other a lot, tease each other. But they have a tendency not to let small things bother them either. They're real relaxed."

"I've been on boats that had been underwater for 60 days," he continued. "When you live with 120 guys for that long a period, you have to let the small things go by."

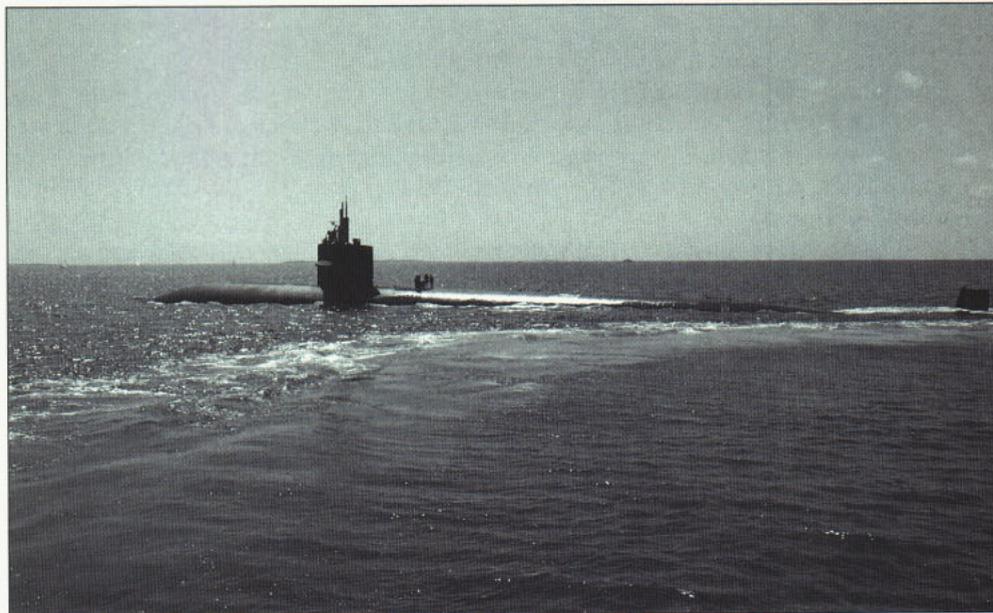
And what if you do need some time to yourself? "Your rack, that's about the only place you can be alone," said Collins. "Or maybe the laundry. It's great to go into the laundry, shut the door and nobody bothers you."

When asked what type of person should go into submarines, Collins remembered back 15 years to when he switched over to subs after three years in the surface Navy.

"When I initially went from surface to submarines, one of the things I had to do was see a submarine-qualified psychologist. At the end of the interview I remember him saying, 'Yeah, you're crazy enough to go on submarines.' So I guess you could say it takes a certain temperament."

*Storm clouds begin to gather on the surface above Groton. At 400 feet down, the crew is oblivious as they go about their day/night routine. Although the Cold War has ended, the role of submarines has not. Groton and many boats like her continue to patrol their 70 percent of the world — the oceans. Ever vigilant, they press on with the hunt. □*

*Dorey is a photojournalist for All Hands*



**Top: CDR Larry Davis, Groton's commanding officer, (standing in back) supervises sub diving in the control room during an "angles and dangles" drill. Right: Groton heads out to sea as she begins her patrol and the hunt.**



# Deep, dark secrets

## *Life on board an SSBN*

Story and photos by JO2 Jonathan Annis

**E**ven with a rounded hull, the fleet ballistic missile submarine USS *Nevada* (SSBN 733) hardly swayed on the surface. Movement ended altogether as she began her descent into the dark, cold depths of the Pacific Ocean — her home for up to 75 days.

As she leveled off just below 200 feet, she might as well have been a space ship. The interior resembled a rocket out of a science fiction movie. Buttons, lights, dials, switches, levers, handles, meters and gauges were crammed into every available space. Everything and everyone was sealed off from the outside world.

"Most people would think we'd go nuts, but I think it's just like being in an office building," said Electronics Technician 2nd Class (SS) Scott Rieger, "except that every once in a while the building moves."

*Ohio*-class submarines can maneuver radically when called for, but wouldn't during this one-day sea trial in Dabob Bay in the Hood Canal off Bangor, Wash. With

***Nevada* crew members ready her to depart Bangor, Wash., to begin deployment.**

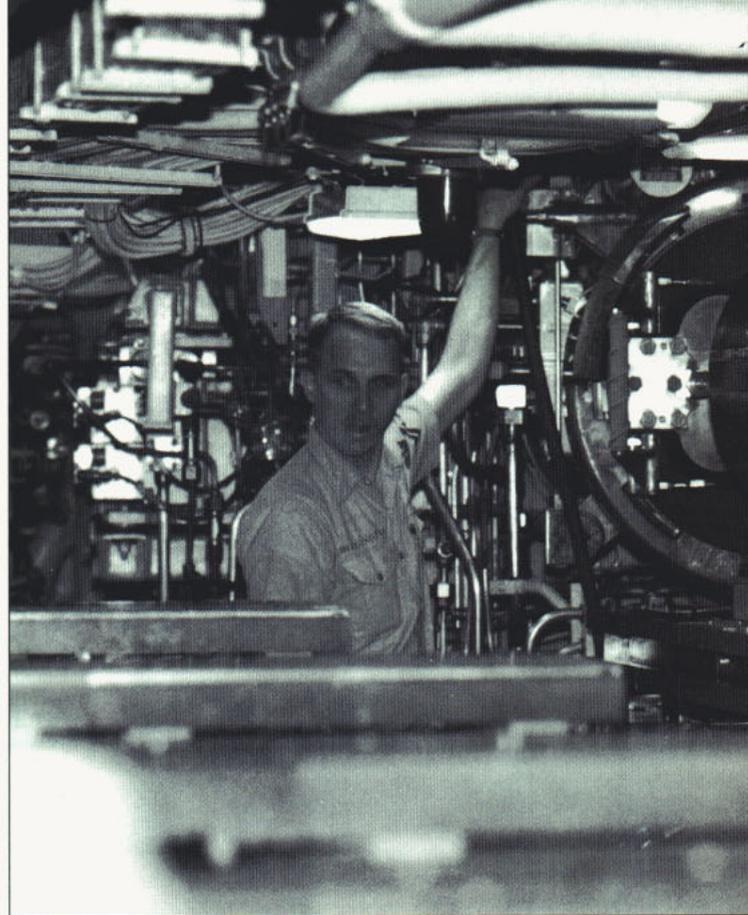
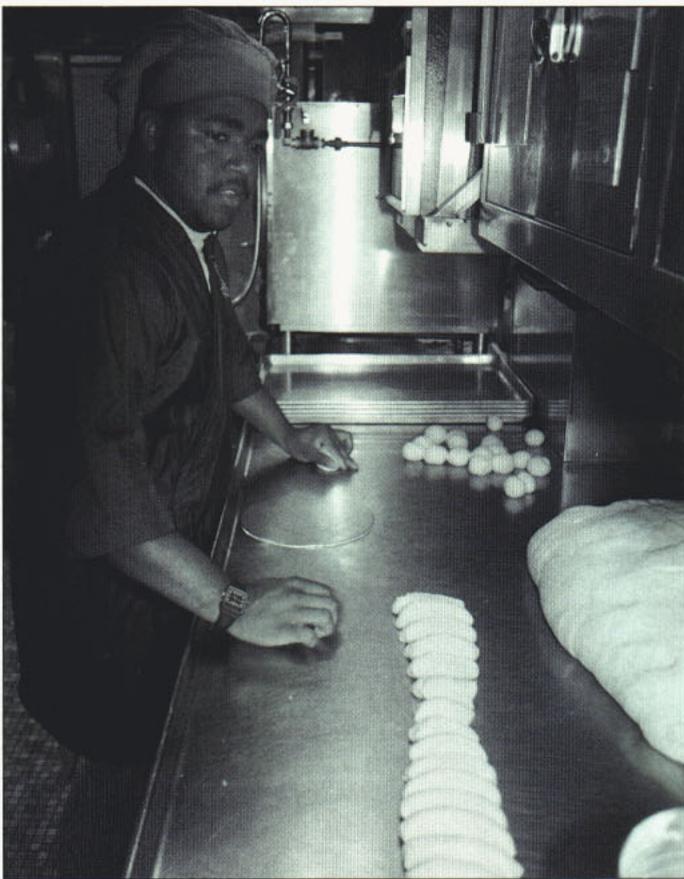
skilled hands controlling the rudder and huge horizontal planes, *Nevada* remained rock-solid steady.

On every Navy ship sailors rely on each other to get the job done. On board a submarine it's more important with hundreds of feet of water above your head as well as under your feet.

The steady hands controlling the sub help Rieger do his job better. He uses inertial and satellite indicators to pinpoint the ship's position almost anywhere in the world. This enables him to accurately plot the possible paths of the 24 ballistic missiles that can be carried on board.

The missile tubes are grim reminders that the crew is on the cutting edge of diplomacy. Each ballistic-missile submarine can carry as much firepower as that used in both world wars. "The Russians are still out there," Rieger said. "Even though they're not as active as they were, they're extremely unstable."

The spaces between the missile tubes become much-appreciated berthing areas. The space is used so that, unlike aboard many other submarines, no one will have



to "hot rack" — share their bunk with someone from a different shift.

"Some people handle submarine duty better than others," Rieger said. "I draw the curtain to my rack and I'm in my own personal world."

Lack of privacy and hot-racking may be necessary evils, but life on board a submarine is improving. Before the break-up of the Soviet Union, port calls were next to nonexistent, however, according to Rieger, that's beginning to change.

"We're trying to get a port call with each run now," Rieger said. Usually stopping in Hawaii, the visits are bright spots in what is otherwise a clockwork, 75-day cruise/180-day cycle.

Even during the Persian Gulf War, SSBN rotation wasn't affected. By the time *Desert Storm* was over, few of *Nevada's* crew knew it had begun — and only then by reading brief receive-only messages carrying wire-service news, their only news link to the outside world.

"There are always so many questions [about world events] and no answers," Rieger said. "You still have a job to do, so you do it, and all the worries are set aside."

Quartermaster 2nd Class (SS) Mark A. Taylor agrees. "For me this is the easiest job and the hardest — easy on the back and hard on the brain. It's best to stay busy. The less you think about what you miss, the better."

Since there's no sun to go by and not enough people to stand four watch sections, days last 18 hours. The average SSBN sailor spends six hours on watch, another six sleeping and an additional six hours working, getting

**Left: MS2(SS) Dwayne Cambric prepares bread for the noon meal. Conscientious meal planning and storage aid him in making *Nevada* "a good feeder." Above: Torpedo tubes are just part of the home furnishings for TM2(SS) Randy "Crudge" Crudginton.**

qualified for various watch stations and equipment or otherwise staying occupied.

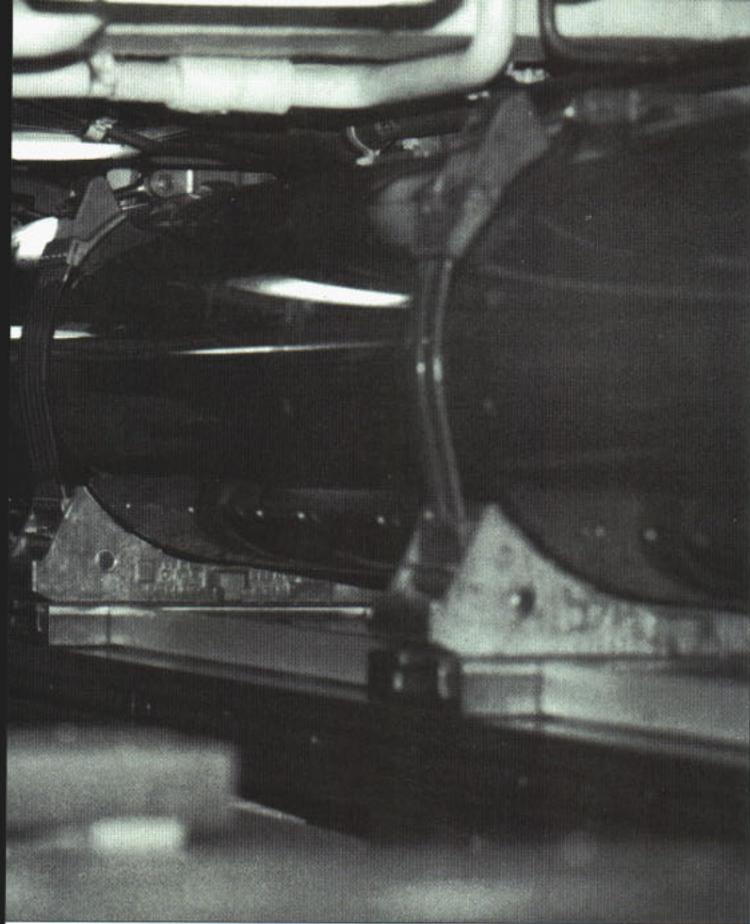
Although there's much work to keep them occupied, quality of life remains a major concern in the lives of crew members, Taylor said. Things like the movies they bring to watch in the combined enlisted mess; the treadmills, exercycle, rowing machine and punching bag; a smoke break in the aft machinery room; or just a good meal in the galley take on added importance.

According to Taylor, "[the cooks] do damn good with what they've got." At the half-way point of a cruise, and on holidays, the submariners are traditionally served a special meal. Menus include shrimp, scallops, prime rib, turkey, ham and all the trimmings, although most fruits and vegetables come from cans.

Separated into frozen, chilled and dry provision storerooms, an SSBN carries 90 days of square meals. "We carry more than a ton of food," said Mess Management Specialist 2nd Class (SS) Dwayne Cambric.

The cooks can become the most respected, or least liked, crew members in a hurry. "About 90 percent of the crew enjoy the food. If a meal isn't popular, you're going to find out about it right away," said Cambric.

Between meals, with personal storage limited, a candy stash can be a sailor's personal treasure chest, said



Torpedoman 2nd Class (SS) Randy Crudginton. "You can't really eat on watch, but everybody brings their own munchies. Since there are zero days off at sea, it's a way of rewarding yourself for a job well done."

Favorite snacks serve almost like currency when underway, Crudginton said. "Some guys like gum, some like crackers and cheese, some like blow-pops, some like flavored tea. When you get to sea and you crave a candy bar, and there's no convenience store for a thousand miles — you can get just about anything for the right candy bar."

Coffee, as always, runs *Nevada*, as evidenced by the coffee machine located in the navigation center. The chief of the boat (COB) is rarely seen without his custom mug and the captain brings aboard his own brand of coffee.

If coffee runs the ship, "family-grams" boost her morale. Each sailor can get a maximum of eight 50-word receive-only messages per patrol from wives or family members. This is usually the only mail they receive. The lack of easy communication sometimes puts a lot of stress in a marriage.

Most submariners agree that marriage is tough. Those marriages that do survive often do so through "cruise boxes."

Wives often pack and date boxes of small items that mean a lot to their husbands. They ask a shipmate to

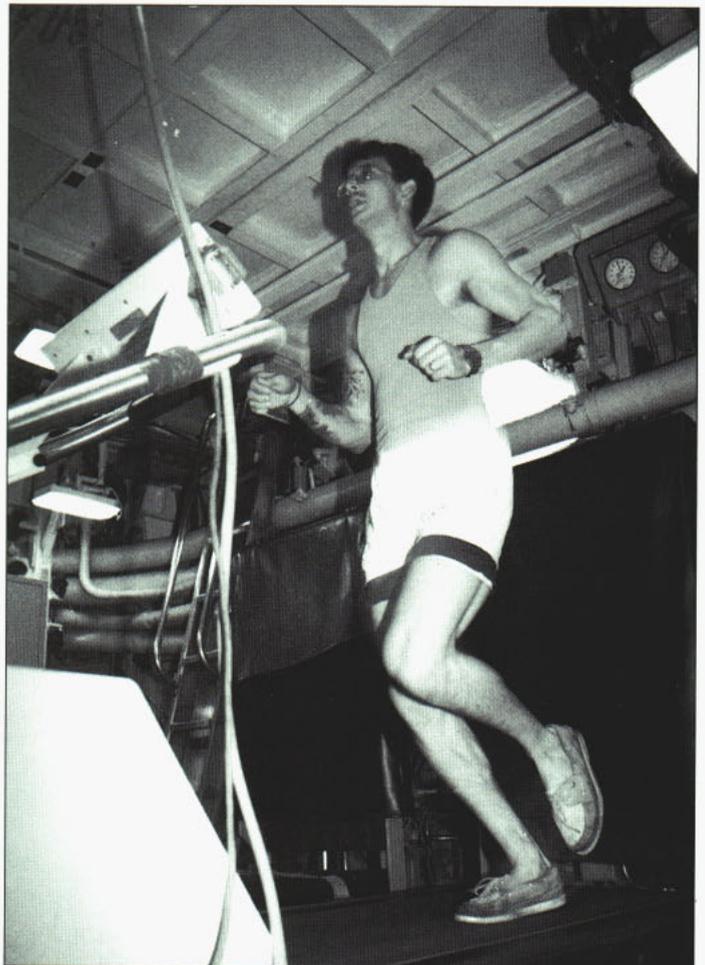
**Even while underway, MT2(SS) Walter F. "Beave" Summer III can jog a few miles on one of *Nevada's* treadmills.**

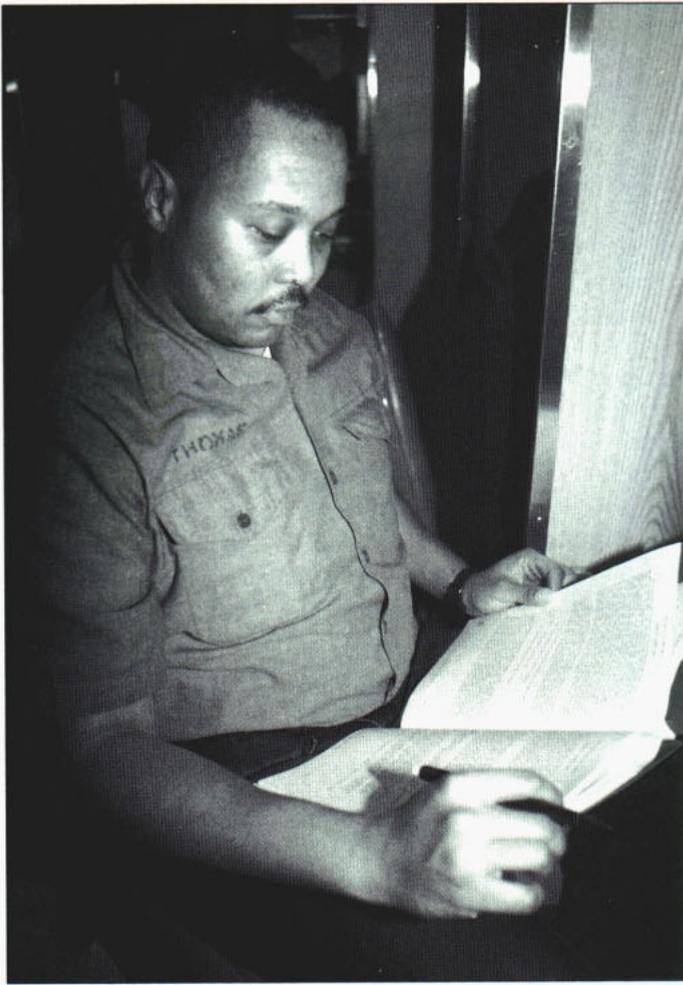
keep it hidden on board for their spouse, and on special days the husband will get a letter, small gift or something memorable. Taylor said these distractions from the routine help make the time fly by.

Unlike many on board, Taylor, with his quartermaster rating, could go to another type of vessel, but chooses not to. "I wouldn't do anything else permanently, but I'd like to do surface for two months and see what it's like." Keeping everyone content with this duty is the domain of the chief of the boat (COB), who advises the captain and has long been considered to fill one of the most important enlisted positions in the Navy.

"Our families are smaller here, according to division," said *Nevada's* COB, Master Chief Machinist Mate (SS) Dewayne Christensen. "You learn to adjust, get along or stay away from each other. We're too educated, too high-tech to fool around. We catch little things long before they become problems.

"I can walk about the ship and see someone and know who they are — their status, their likes and dislikes, their wife's name and even some of their kids — and I'm not the only one," said Christensen.





**ET3 Lance Thomas is so new he doesn't yet have a nickname. Thomas usually spends two hours after each watch studying in the ship's study to be watch qualified.**

Christensen emphasized the amount of cross-training each submariner receives since the submarine is such a small community. Overall, cross-training enables a submariner to be able to walk away from his job and continue to have the submarine run smoothly because someone has been cross-trained to fill the position.

Training is not the only mission for a COB. Another responsibility is recommending disciplinary action, although these recommendations don't happen very often, according to Christensen. When a crewman is in trouble, it's known throughout the ship, and when a sailor goes to mast, 'somebody failed,' he said.

Being part of a tight-knit group is what being a submarine sailor is all about, and it all starts upon reporting aboard. Each sailor, usually a petty officer, arrives with several months or more than a year of training. He is then assigned a sponsor or "sea daddy." The sea daddy is there to answer questions and lead the new sailor through the check-in process.

From there, the NUB, a submarine acronym for "non-usable body," goes through the indoctrination division and begins qualifying for watches. After studying and working for the next several months, the

submariner is questioned about what he's learned and collects signatures — each worth a certain number of points to stay ahead of the "dinq" (delinquent in qualification) list. A training officer reviews his book at the end of each week and the sponsor pushes him along.

During this time, it's important the NUB feel a part of the crew's camaraderie. "The first thing we do is assign them a creative nickname," said Missile Technician 2nd Class (SS) Walter F. "The Beave" Summer III. "It helps to identify with yourself and breaks up the monotony, especially in the weapons department. The rest of the boat follows along."

For example, MT1(SS) Christopher "Ninja-Buddha" Love is a martial arts expert who takes out his frustrations on the punching bag, but presents a calm demeanor.

Standing watch on the missile fire control board can understandably cause a great deal of anxiety if it's all that occupies your mind, said MTC(SS) Dale "Clark Kent" Borel.

"We rehearse this so many times, you really try not to think about the job you're doing," Borel said. "We can be joking one minute and the next it can be totally silent."

As the deployment draws to a close, the crew begins "tube days." When 24 days are left, a sign is shifted from missile tube to missile tube until the submarine surfaces and pulls into port. Crew members will clutch their loved ones and friends, catch up on news and live a normal life — until once again it's time to plot a course for the dark, cold depths of the ocean. □

*Annis is assigned to NIRA Det. 5, San Diego. JO2(SW) Jim Conner contributed to this piece.*

**Chief of the Boat, MMCM(SS) Dewayne Christensen keeps a watchful eye on line-handling operations as Nevada heads for the sea.**



# Chief of the boat

Story by PH1(AW) Joseph Dorey

**H**e roams his domain with a coffee cup in one hand and a clipboard in the other. He is looked upon as the "answer man." Usually the most senior enlisted sailor aboard, his experience is relied upon to run the daily operations of

the ship. To a submarine crew, he is known as "COB." He is the chief of the boat.

"The COB is like a father figure for the majority of the crew. He has the most experience of any enlisted man on the crew and as much or more

experience in the submarine force as the commanding officer," said CDR Larry H. Davis, commanding officer of attack submarine USS *Groton* (SSN 694). "The chief of the boat is the principal assistant to me on anything that has to do with the enlisted crew. He keeps the executive officer and me informed on what's going on with the crew everyday."

As the senior enlisted crewman on a submarine, the COB's role is multifaceted. He is part command master chief, part master-at-arms, part executive assistant and the ultimate "sea daddy."

The COB writes all watch bills and assigns berthing on the sub. He oversees the training and qualification of the crew. He holds inspections and monitors watch standers. "The COB's job is to run the daily routine of the sub," said Master Chief Electronics Technician (SS) Eddie R. Barrett, *Groton's* COB. "He runs the ship and allows the CO to train the officers who are 'fighting' and navigating the ship."

As COB on USS *Grayling* (SSN 646), Senior Chief Machinist's Mate (SS) Robert F. Sandstrom sees part of his role as that of a counselor and teacher.

"A lot of the stuff I do is what some guy's mom probably did for him a year and a half ago," Sandstrom said. "I make them wear the right kind of clothes, make them keep their racks squared away and their gear stowed. I establish the standards and enforce them."

"I'm sure there's a lot of adjectives the crew uses to describe me."

**ETCM(SS) Eddie Barrett, *Groton's* chief of the boat, keeps a careful watch on the depth gauges in the control room during a dive. Barrett normally stands watch as diving officer when the sub goes to battle conditions.**



Photo by PH1(AW) Joseph Dorey

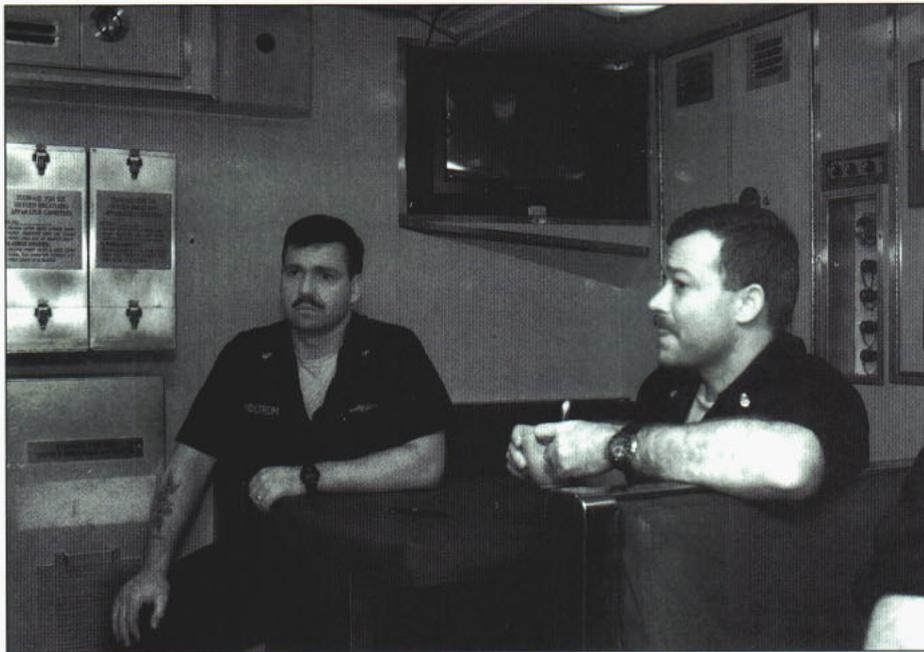


Photo by Joe Bartlett

**Grayling COB MMCS(SS) Robert Sandstrom uses the mess deck to get feedback from crew members with HMC(SS) Charles S. Miller during ICEX 92.**

There's no doubt that they think I'm the biggest horse's rear end that ever walked the face of the earth a lot of times.

"But other times they'll come to me with a problem that they don't know how they're ever going to solve," Sandstrom continued. "And either I've seen it before or I know the right person to send them to."

After duty on six submarines as an auxiliaryman, Sandstrom considers being the COB "challenging every day.

"I find it's much easier to fix a pump than to fix an attitude," he said. "Not only do I have to do the things the command wants, but I have to take care of the people."

*Grayling* crewman, MM1(SS) Steve Avery believes Sandstrom tries hard to meet the needs of the crew. "The COB catches a lot of hell, but that's the position he's in," Avery said. "I wouldn't want the headaches of that job. He's got to deal with the hierarchy plus keep the rest of the crew happy. It takes a strong-willed person to handle that job."

"He's the type of person you can talk to if you need to," said MM2(SS) Donny Donovan about Sandstrom. "This is his boat, and he's got to make sure everyone does their job. I couldn't handle being here as much as he is and dealing with some of the

people he has to — he's a better man than I'll ever be."

A close working relationship usually develops between the COB and the commanding officer according to Sandstrom.

"If the captain wants something done, I tell him what I think," he said. "I believe he listens to me. He may not go the way I recommend, but I believe he takes what I say into consideration. That's a special trust I've gained with him."

Trust is also important in another of the COB's roles. On most submarines, the COB is a qualified diving officer. Unlike a command master chief, he is active in the actual driving of the ship. The diving officer supervises the helmsman and planesman as well as chief of the watch.

For former attack submarine commander, CAPT Charles J. Beers Jr., only one person was going to stand the diving officer watch during battle stations on his sub.

"I trusted the COB more than anybody else to do the best job as diving officer for critical depth keeping and course," Beers said. "That way I could concentrate on shooting torpedoes and not have to watch the diving party. On a submarine, one or two feet can be very critical."

To MMCM(SS) Harry F. Lindenberg, military standards officer at

Naval Submarine School, Groton, Conn., serving as COB was a mixture of highs and lows.

"It was probably the best job I ever hated," said Lindenberg, recalling his time as COB on ballistic missile submarine USS *Ulysses S. Grant* (SSBN 631). "Sometimes it was very, very frustrating because of the high standards I set and trying to get 150 men to meet those standards. But on the other hand, the COB was probably the most rewarding job I ever had. I had direct contact with everyone — not only the enlisted community — but you are leaned upon by the junior officers and department heads as well."

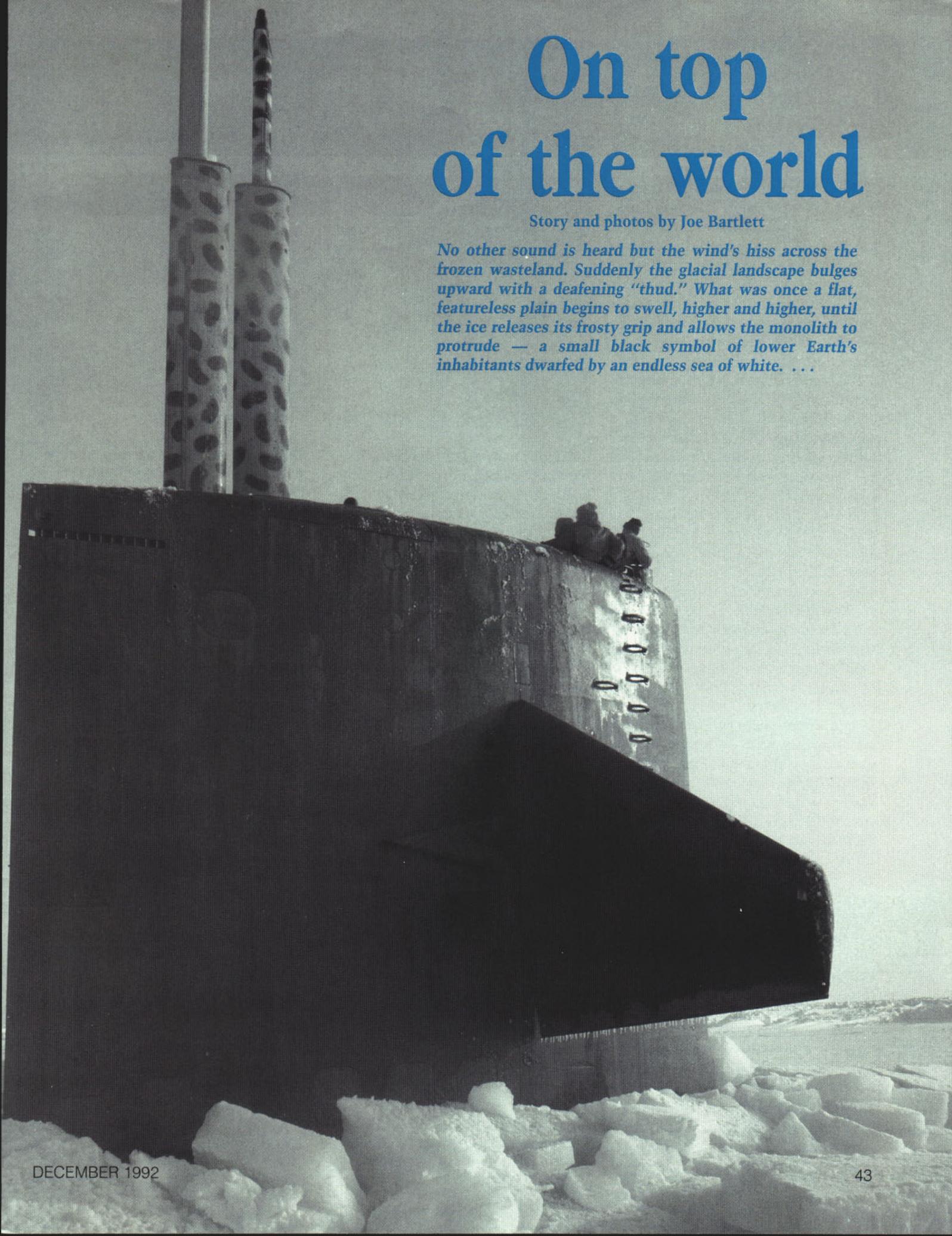
Lindenberg said being a COB allowed him to become more personally involved with his crew. "I would go down to the berthing spaces and talk to the guys in their racks or sit with them in the mess and say, 'I understand you have a problem. Why don't you come see me and we'll talk about it.'

"You're more emotionally involved with your crew because it's so small and you're so isolated from the world when you're submerged," Lindenberg said.

Barrett agrees that a COB is close to his crew and their families, saying he knows all the crew's wives' and childrens' names, and most of the problems they have. "I could tell you the financial situation of almost every crew member on this ship," he said, "and I could probably drive you to most of their homes."

But among the many duties of the COB, molding the crew into a cohesive unit has been the most rewarding Barrett said. "The COB is the best job I ever had because I can see my results on a daily basis." □

*Joe Bartlett contributed to this story. Dorey and Bartlett are assigned to All Hands.*



# On top of the world

Story and photos by Joe Bartlett

*No other sound is heard but the wind's hiss across the frozen wasteland. Suddenly the glacial landscape bulges upward with a deafening "thud." What was once a flat, featureless plain begins to swell, higher and higher, until the ice releases its frosty grip and allows the monolith to protrude — a small black symbol of lower Earth's inhabitants dwarfed by an endless sea of white. . . .*

**A**board USS *Grayling* (SSN 646), lookouts push blocks of ice from the sail to get a better look at their surroundings. *Grayling*, homeported in Charleston, S.C., has spanned the globe to arrive in the world's most hostile environment — the polar ice cap.

The nuclear submarine provides a unique research platform in the world's most complex and most poorly understood region.

"In some respects we're laying the groundwork for the future," said CDR Robert P. Dunn, *Grayling's* commanding officer. "A better understanding of what's happening up here occurs every time we send someone up."

But scientific research is only one aspect of *Ice Exercise '92* (ICEX '92). Submarines get a rare chance to practice beneath a "roof" — making some a little uneasy.

"You get a little worried under the ice because you can't just jump to the surface in an emergency. You have that ice pack above you," said Machinist's Mate 2nd Class (SS) Donny Donovan.

The Arctic poses real challenges to sonar technicians — the eyes and ears of the submarine. Spring warming turns the normally quiet Arctic waters into a melee of sound as melting sheets of ice break off and collide to create ridges of ice mountains atop the pack. To a sonar technician trying to track an adversary, it's like trying to find a silent kernel in a sea of rice krispies.

"If there ever is a wartime situation, we need to have the best capabilities," said Sonar Technician (Submarine) (SS) 2nd Class Mark Freitag. "We need a better understanding of Arctic conditions. There's a lot of unknowns here."

Breaking through the ice is not an easy evolution. You don't just point the bow toward the surface and step on the gas to crash through. Great care must be taken to inflict the



maximum amount of force to the ice without damaging a multimillion dollar taxpayer investment.

The *Sturgeon*-class attack submarine is equipped with a reinforced sail, rotatable fair-water planes and a strengthened rudder. Special sonar helps guide the boat through the craggy underbelly of the pack — a chaotic mountain range turned on its back. A camera mounted on the sail provides a unique "window" for *Grayling's* control-room personnel, and a small outboard motor which rotates 360 degrees helps position the boat during her ascent.

Personnel from the Applied Physics Laboratory Ice Station provide the target — a circled "X" swept off to allow the sun's rays to illuminate the way. The target brightens *Grayling's* control room through the monitor mounted near the periscope. As the diving officer guides his planesmen to keep the boat level and rate of ascent constant, the officer of the deck aims for the target, inching the sub into position with the outboard.

At 140 feet down, *Grayling's* rate of ascent is moved to 30-feet-per-minute. As the boat nears the pack, the diving officer blows ballast to edge the bow up four degrees — saving the boat's screw and rudder from damage during surfacing. Tension mounts as the depth is called

***Grayling* crewmen take a rare breath of fresh air after surfacing through the Arctic ice pack.**

out in one-foot increments. The "X" fills the monitor's screen and becomes a mere slash of bright white. Suddenly, *Grayling* lurches as her sail smashes into the ice. Upward progress abruptly stops, and more air slowly lifts the sail through.

Lookouts scurry up to the sail's lofty perch, welcomed by a horizon of white and wind chills of 100-below zero. While there are no tourist traps at the top of the world, any chance for a submariner to breathe outside air — no matter how cold — is a welcome opportunity.

The Cold War's defrosting hasn't slowed submariners' study of the Arctic as they continue to hone their skills for "warfare in the tunnel."

"We still practice what needs to be done," Dunn said. "Today an enemy can develop in a couple of weeks."

If that enemy develops, the Navy's submarine force is prepared — in warm water, deep water and the vast frontier of the Arctic.

*The monolith descends slowly, disappearing into the cold depths. Blocks of displaced ice fall into their former positions in the endless plain. The wind continues its hiss. All evidence of man is erased.* □

*Bartlett is assigned to All Hands.*

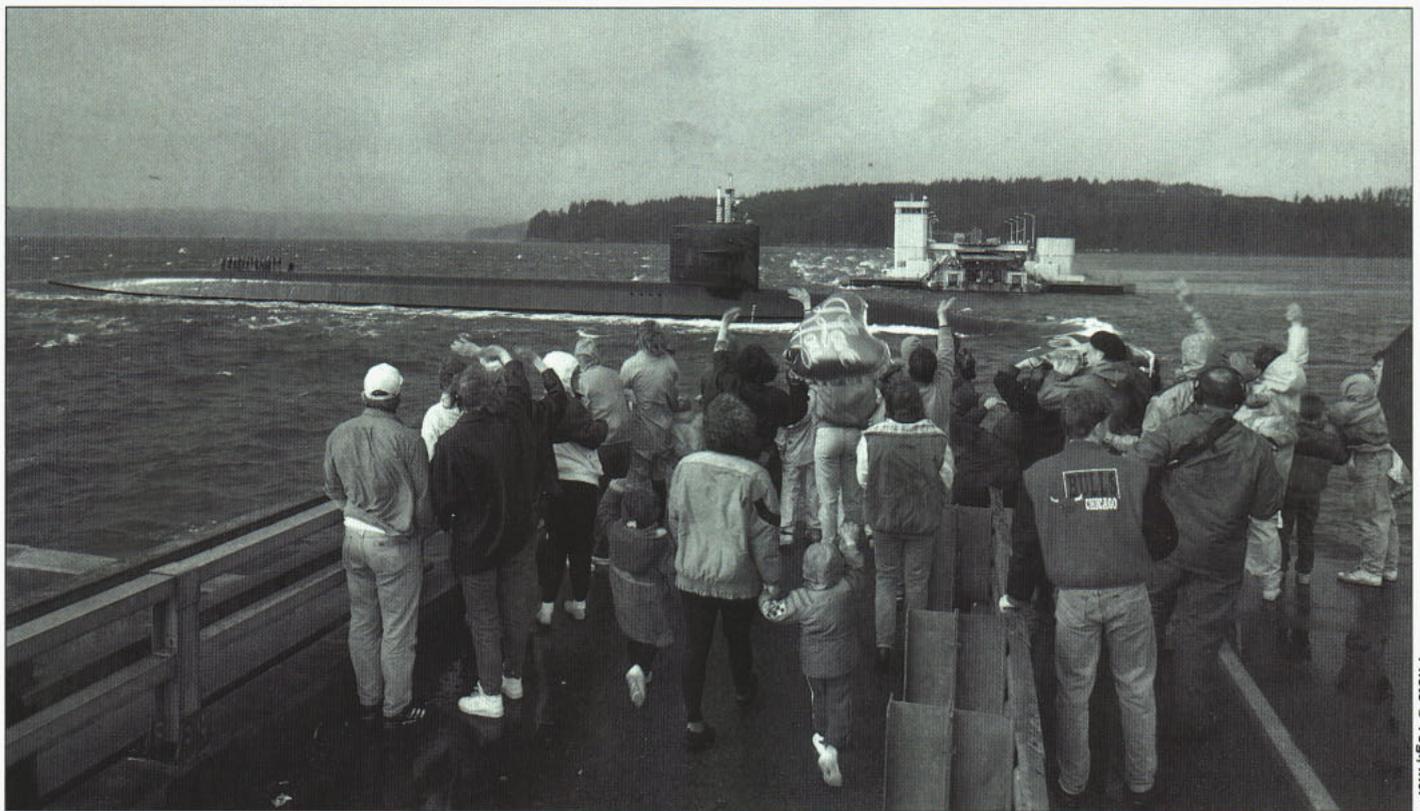


Photo © Vogt, Inc.

# Every time you go away

## *Coping with silent separation*

Story by JO1 Steve Orr

**N**o one — no one — has done more to prevent conflict, no one has made a greater sacrifice for the cause of peace than you, America's proud missile submarine family.

*And if you, our sailors, especially our submariners, are often so alone in your great work, you are never, never alone in your great sacrifice — the sacrifice you share with your families, with your parents, with your wives and with your children [while] waiting silently at the pier for all those long, lonely months. . . . We owe a debt of gratitude to our sailors and to their families. — Gen. Colin L. Powell, Chairman of the Joint Chiefs of Staff at the ceremony for the 3000th SSBN patrol.*

Time underway is a fact of life in the Navy. Whether surface, sub-surface or aviation, Navy families are separated for days, weeks or months, and spouses are left behind to cope. Many do well; others do not.

According to Kathleen O'Beirne, deputy director of the Family Service Center (FSC) at Naval Submarine Base New London, Groton, Conn., submarine deployment problems are magnified because of the very nature of the silent service. O'Beirne should know; she is the wife of a recently retired submarine captain.

Communication between families and a sub's crew is more restrictive than in the surface fleet, O'Beirne said. "Depending on the nature of the sub's mission, the crew may or may not get any mail. Often, there is

only one way communication. You may get to send the family-gram and that's it."

"A good family-gram is an art form," continued O'Beirne. "You have to be able to condense significant material to your husband into a message the whole fleet may see. In that 50-word communication, a wife somehow transmits the message and conveys that she and the family are OK — emotionally, physically and socially."

The importance of a family-gram to a deployed submariner cannot be over emphasized, said Barbara Ross, an FSC deployment specialist at New London. Ross is another subject-matter expert. Her husband, a chief, has been a submariner for 15 years.

**Long, silent separation is a way of life for submariners and their families.**

"My husband says those who receive the family-grams often pour over them, trying to determine what's being said, trying to find meaning between the lines," Ross said. "One chief admitted he received a family-gram that seemed to have one word missing. He wondered for the rest of the cruise whether something was wrong."

The one-way nature of family-grams seems to intensify an already long deployment, O'Beirne said. Within a family, there are always decisions to be made and additional responsibilities to be shouldered, but there's no way to share the burden.

Because the frequency of sub missions can cause emotional distress for those left behind, especially children, some families have discovered their own creative ways of dealing with short-term separation.

"Some of these subs only come in for a weekend at a time," said O'Beirne. "There are spouses here who meet their husband in a motel. They don't even let their kids know that dad is coming home."

"The frequent separation is so emotionally rough on the children that the parents make that decision. I may not agree that it's the right decision, but I can certainly understand why they do it."

According to O'Beirne dealing with a child's distress at long-term separation requires a delicate approach.

"Fathers are encouraged to spend quality time with their children, explaining clearly, on the child's level, the importance of why he has to leave, and reassuring the child that dad will return," she said.

"If you aren't clear with children," O'Beirne stressed, "little kids can drum up some remarkable reasons why dad left, particularly if they have been privy to the standard



fighters that parents seem to have before deployment. Things like that, seen through a kid's eye, can get interpreted badly."

As homecoming day draws closer, anxieties and expectations about the impending reunion run high. O'Beirne and Ross agree the homecoming is perhaps the most important aspect of a Navy separation.

"We know from our counseling statistics the homecoming is really the most difficult emotional adjustment for all members of the family, maybe even more so than the initial separation," O'Beirne revealed. "Because the myth is so strong that, 'I'm not going to have trouble with the reunion, it will be wonderful,' people rarely admit they had some difficulty with it."

"As a result, a lot of families feel terribly guilty when their homecoming doesn't play out like a Hollywood honeymoon," said O'Beirne. "The problem can escalate until they need counseling."

"We often hear a lot of negativism about deployment," said Ross. "I do it myself when my husband is deployed — I don't like it much when he's gone — and I find myself dwelling on the negative. But, there

are some positive points unique to a military community.

"As wives, we can use this period to pursue new opportunities, learn new things and try new experiences. We couldn't do that if we weren't in this kind of environment."

Ross said that with the proper commitment and reflection, separation can make a marriage stronger.

"As far as the marriage goes, a separation is unique," she explained. "There's no other place where a couple can examine the changes that are taking place in their relationship, and then merge them together after homecoming to really examine what their marriage is all about."

"Many people go through marriage in a very status quo-type of way," Ross concluded. "For people who go through deployment, there are continuous opportunities to re-examine strengths and weaknesses and to grow together. There are not too many places where you can make that determination." □

*Orr is assigned to NIRA Det. 4, Norfolk. JO3 Chris Alves, assigned to the public affairs office, Commander, Submarine Group 2, contributed to this story.*

# Saying goodbye

## *A child's point of view*

Story by Dana Toal

I live here in Groton and, like many of my friends, my dad rides submarines for a living. He also has to go away from me and the rest of my family a lot, just like some of the other dads around here. I miss him a lot when he is gone. He goes away a lot — sometimes for as much as six months.

It's hard to say goodbye. You cry and it hurts inside. He writes me from a lot of different places and when my dad calls me from somewhere far away, it makes me smile and feel better inside. My dad says even though I can't go with him, he takes me, my little brother and my mommy with him in a special way — he always takes us with him in his heart. A lot of times I would give anything just to hug him or give him a kiss.

My dad took me to his boat to talk to some of the other dads so I could see how they felt when they were away from their families. Here is what some of them said to me:

(a) Paul Menke has been in the Navy for 25 years. He is the engineer supervisor. He has a wife named Sue and two daughters that are married. He misses good barbecued hamburgers and Star Trek! He also misses sunshine and fresh air. I asked him why he joined the Navy. He said, "It was a challenge." His wife lives in another state so even when the boat comes home, he still can't hug her. He can only call her.

(b) LT Tim Walker has been in the Navy for five years and is the communication officer. He misses fresh juice and Notre Dame football. I asked him why he joined the Navy. He said it is a challenge to him. He



Photo by Julie Iwain

likes his job and the men he works with. He even gets to drive the boat at times.

(c) Nathan Fields has been in the Navy for four years and he is a machinist's mate. He has a wife named Tammy. He worries about her while he is gone. He wonders if things go wrong for her while he is gone. He says not knowing how she is or not being able to talk to her when he wants to is real frustrating. He also misses her shrimp salad. Nathan said he joined the Navy because he didn't have enough money for college. He likes his job because he likes to work with his hands. He helps to provide the oxygen for the boat. (They don't have air to breathe on a submarine like we do, so they have to recycle the air and make new air.) He also says that when he first joined the Navy, he liked to travel. It was fun. But not anymore because Tammy can't be

**Seeing what Dad does when he is gone is one technique to help children cope with separations.**

with him.

My mom and dad argue before my dad leaves, but they make up before dad has to go. It is so hard to say goodbye. You know that you can't do anything about it.

When I talked to the other men on my dad's boat, I found out that everyone leaves someone behind that they care about. It doesn't matter if you're married or if you're not. It doesn't even matter how long someone has been in the Navy. It is hard for all of them, and it's their job. □

*Toal, daughter of Lisa and MMC(SS) Edward Toal, is a student at Mary Morrison School, Groton, Conn. Reprinted with permission of The Day Publishing Co., New London, Conn.*

# Deja vu

## *Sub museum brings back vet's memories*

Story by Kelly Wilson

**B**ob O'Neal recently got to lie down again in the bunk he used while serving on a U.S. Navy submarine during World War II. He climbed out of the same torpedo room, stood at the same helm and remembered the stuffy, cramped quarters he lived in for almost two years. He also recalled the war patrols his sub, USS *Cod* (SS 224), participated in.

O'Neal, who served in the Navy from April 1943 to November 1945, was surprised to discover that *Cod* was still around. In fact, it is the only authentically restored World War II American submarine in existence.

O'Neal's son, Pat, of Erie, Pa., came across an article about *Cod* in a newspaper last July.

"It looked like the same type of boat my father was on during the war," Pat said. "Up in the corner, I recognized the number 224 and thought, 'Wow, that is Dad's ship. I didn't know it still existed.'"

The sub is now a museum in Cleveland. Pat took his father there during an August visit.

"It was a surprise to me," said the senior O'Neal, who was a quartermaster during World War II. The entire family toured *Cod* free of charge since O'Neal was a former crew member.

*Cod* made seven war patrols, with O'Neal participating in the last four. The final patrol was the most memorable, he said, because it was captured on film.

"On the last patrol run, it was one sailor's assignment to record several reels of film," O'Neal said. One of the crew got a copy of the film last year and transferred it to video tape. O'Neal and 25 other former crew members received copies at a recent reunion.

As O'Neal watched the video, he remembered the young faces as they held up placards bearing their names, and recalled some of the incidents that occurred during that seventh patrol run as the crew sank Japanese ships in the South Pacific.

He remembered the only sailor lost — Andrew G. Johnson — who washed overboard while fighting a fire in the sub's torpedo room. O'Neal said Johnson had a premonition that the crew wasn't going to make it back.

"His grandfather died at 25, his father died at 25, and he was 25. . . . He was the only one [of the crew] who didn't get back."

The most memorable event was rescuing the crew of *O-19*, a Dutch submarine that foundered on a reef in the South China Sea. After the Dutch were aboard, the Americans destroyed the [Dutch] sub with torpedoes "so the Japanese couldn't get to it," O'Neal said.

He also recalled a time when the submarine had to submerge to avoid a hit from an enemy plane.

"We had left the boarding party on a Japanese ship after an attack," O'Neal said. "When we came back up, we didn't know which one they were on. We searched three days. Another sub found them and returned them."

O'Neal enjoyed reminiscing at the reunion. He hadn't seen many of the crew for 47 years. "When I got out, I was out" and didn't stay in contact, he said.

Surviving crew members received a book written by a fellow sailor who is now deceased. "He slept in the bunk to the left of me," O'Neal said.

Pat O'Neal was almost as excited as his father to visit the sub. "As a child, I remember mulling over albums and hearing [about] all the things that went on during World War II," he said. "Dad was really enthused."

O'Neal said he's happy *Cod* is being seen today. He even donated some items to the museum — a remnant from *O-19* given to him by a Dutch sailor and a *Cod* pennant. □

*Wilson is a writer for the Quincy Herald-Whig, Quincy, Ill.*

**Surviving crew members of USS *Cod* visited the sub museum at their last reunion.**





# GULF FIRST...

## *Sub Arrival in Gulf Transmitted Electronically*

Digital technology was used to document and transmit images of the first U.S. submarine to enter the Persian Gulf Nov. 3, 1992. USS *Topeka* (SSN 754) sailed through the Strait of Hormuz into the Gulf before starting a routine scheduled maintenance period. The event was photographed with a standard 35mm camera outfitted with an electronic storage system that records the image digitally. Images were then electronically transmitted to the Pentagon via satellite.

Though submarines have routinely operated in the region as an integral part of carrier battle groups, this is the first time a submarine has actually entered the Gulf. The photo was released Nov. 5 by DOD and ran on the Associated Press wire. It appeared on the front page of the San Diego Union-Tribune Nov. 6.

U.S. Navy photo by PHAN(AC) April Hatton, Combat Camera Norfolk Image transmitted from COMUSNAVCENT, Bahrain, by LT Rod Hill, PAO USS Ranger (CV 61).

