The second ship of their class, USS Frank Cable (AS-40) is forward-deployed at Apra Harbor, Guam, where she serves U.S. Submarines - and - surfaces combatants - on deployments to the western Pacific. She was built by Lockheed/Seattle and commissioned in 1980. Frank Cable is one of two forward-deployed tenders that provide vital services to submarines while away from their homeports. She is seen here with USS Salt Lake City (SSN-716).

THE SUBMARINE'S SECRET WEAPON

A Tender Tale

by Randall Guttery

Even though Japan succeeded in destroying or damaging much of the battle line of the U.S. Fleet at Pearl Harbor, it is a great irony of World War II that their own senior officers immediately acknowledged two major failures: First, that the U.S. aircraft carriers escaped destruction; and second, that the air attack had largely ignored the Pearl Harbor submarine base. Subsequently, with the main body of the Pacific Fleet incapacitated, U.S. submarines were virtually the only forces left to carry the fight to the enemy. As Admiral Chester W. Nimitz observed,

"When I assumed command of the Pacific Fleet on 31 December 1941, our submarines were already operating against the enemy, the only units of the fleet that could come to grips with the Japanese for months to come. It was to the Submarine Force that I looked to carry the load until our great industrial activity could produce the weapons we so sorely needed to carry the war to the enemy. It is to the everlasting honor and glory of our submarine personnel that they never failed us in our days of great peril."

The image that most people have of the submarine operations that ensued is one of hunting down the enemy on far-flung war patrols and then returning home victoriously with a broom tied to the mast - as often as not passing under the Golden Gate Bridge - to a comfortable port where liberty, rest, and recreation awaited. That may have been Hollywood's version in the war films of the era - but reality was different.

Day One - Wednesday, 24 May 1944

The submarine's crew is exhausted - and the boat itself is in need of numerous repairs and general upkeep. As the mooring lines are doubled up, several chiefs from the tender board *Parche* to begin the process of determining what's needed. Refit Crew 203 is assigned for this upkeep - they will perform many tasks from cleaning the boat inside and out, to scraping barnacles, painting, repairing, replacing, stowing, etc. As the ship's "wish list" is presented, a clearer picture emerges of all of the things that will need to be accomplished in a very short time - *Parche* is due to depart for its next war patrol in just 16 days. Members of Refit Crew 203 come onboard - with chippers, scrapers, mops, brooms, rope-slung scaffolding, and paintbrushes in hand. There is no time to be wasted - every moment is precious in getting the job done. Specialists from *Proteus* for handling *Parche*'s more complicated and demanding repairs begin to show up. Storekeepers meet with the boat's supply personnel to get started on drawing, transferring, and stowing the thousands of pounds of food, supplies, munitions, and spare parts that will be loaded onboard during the upkeep. Once *Parche*'s crew has completed these initial meetings, they retire to the Boat Crew's quarters onboard *Proteus* to get some much-needed sleep - while Refit Crew 203 and the tender's specialists and technicians continue their work on the submarine.

Day Two - Thursday, 25 May 1944

Having had a good night's rest - and a hearty breakfast on one of *Proteus*'s two mess decks, *Parche*'s crew assembles to review and debrief the patrol they just completed. Interviews are conducted to collect every bit of information that might have potential intelligence value, and these data are collated by Submarine Squadron TWENTY personnel and passed along to the fleet. As the day wears on, *Parche*'s crewmembers are cycled through *Proteus*'s sick bay - examined for anything that might need attention. A visit to "the chair" in the Dental Department is a stop as well - the last thing a Sailor needs on patrol is a toothache.

Day Three - Friday, 26 May 1944

After *Parche*'s crew completes their medical checks, they are released to work on the boat. By this time, Refit Crew 203 has made a lot of progress on scraping the hull - removing damaged paint and repainting exposed metal. Inside cleaning is also underway, as well as more complicated technical and mechanical repairs. *Parche*'s crew - debriefed, poked, prodded, and patched - also pitch in to get their boat ready for her next sortie. To maximize accessibility, the crew eats and sleeps on the tender, where there is less noise, and preparing meals doesn't get in the way of the work. While some jobs need to continue 24 hours a day, much of the effort knocks off in the evenings, giving most of the Sailors a chance to rest and relax. Movies are a popular entertainment and are shown nightly on the tender. Training in new techniques and submarine tactics also take place onboard *Proteus*, where there is room - and enough quiet - to ensure that classes will be productive. Depending on the need, many *Parche* crewmembers will receive anywhere from an hour to several days of technical training on the operation of next-generation equipment, such as the new SJ Radar that is being fitted to many submarines at this time. And so it will go for the next thirteen days - and then *Parche* will be ready to sink more Japanese shipping. In fact, she left on schedule on 17 June for her second war patrol - and action in the Luzon Strait that won her skipper, "Red" Ramage, the Medal of Honor. [Ed. Note: See "Submarine Hero - Lawson P. "Red" Ramage" in the Winter 1999 issue of UNDERSEA WARFARE.]

Auxiliary, Submarine - the Tender

Tenders were crucial to the ultimate success of World War II's Pacific submarine campaign because of the vast distances that characterized the theater. In the scenario described above, nearly a week of transit time was eliminated from *Parche*'s war patrol, because *Proteus* was capable of supplying all of *Parche*'s needs at a site much closer to her patrol areas than Pearl Harbor. And, as the war moved closer to Japan, so did the tenders - *Proteus* to Guam in February, 1945, for example - bringing the submarines' "base" and all it took to support them closer to where they were needed.

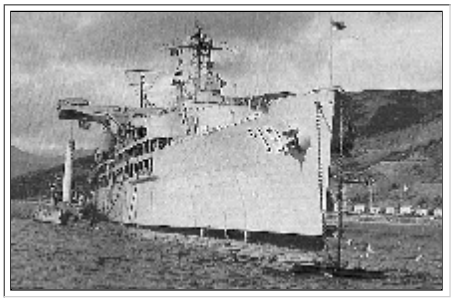
Since World War I, submarine tenders have had facilities onboard to provide just about every repair, replacement, service, or supply a submarine might need. Today's tenders are essentially complete factories - with pattern shops, foundries, and machine shops with precision lathes, surface mills, presses, and welding machines. Even if a replacement part isn't stocked or otherwise available on the tender, it can often be fabricated in hours. The sheet-metal shop can make partitions, ductwork, and piping. Electrical workers can run wiring, re-wind motors, and repair other electrical equipment, as well as servicing or replacing the massive battery banks. Electronics shops are fully qualified to deal with radio, radar, sonar, navigation aids, and fire control equipment. There are weapons specialists for torpedoes, missiles, and launching systems, plus optical technicians to attend to the boat's

periscopes. As noted, complete medical and dental facilities are provided to see to the crews' health and well being - and, of course, a warehouse of supplies - from toilet paper to torpedoes - that the crew will need on its next patrol. Moreover, tenders are manned - particularly at senior levels - with very experienced personnel, and their cumulative expertise is invaluable to the boats that come alongside for repair and refit services.

As submarines were positioned at more and more ports, local "station ships" found themselves hosting the crews of the local submarine flotilla, particularly since a surface ship was easy to tie up to - and was handy as a source of help.

Originally built as the steam yacht *Thespia*, USS *Hist* was purchased by the U.S. Navy in 1898 for service in the Spanish-American War. In 1903, she was assigned to support the earliest U.S. submarines operating in Long Island Sound and thus became the Navy's first tender.

The first of two tenders to be named after the American submarine pioneer, USS *Holland* (AS-3) was launched at Bremerton in 1926 and fitted at first with a powerful bow crane for lifting submarines. Holland escaped from Manila at the very beginning of the World War II and then served in the Pacific for the duration of that conflict, eventually becoming the flagship of VADM Charles Lockwood, COMSUBPAC, at Guam.



Originally commisioned in January 1944, USS *Proteus* (AS-19) was present at the Japanese surrender in Tokyo Bay 20 months later and in 1960 underwent an extensive conversion to prepare her for servicing the first submarines of the new SSBN force. Here, her large extendable X-Y crane offloads a Polaris missile canister onto a waiting submarine.

The Accidental "Marriage"

The United States entered the world of the "Silent Service" when it purchased its first serviceable submarine, USS *Holland* (SS-1), in 1900. Within three years, it acquired six more. At that time, submarines were little more than crude surface craft that could submerge briefly to strike at an enemy - and then scurry away beneath the waves. Since these small boats were generally considered coastal defense assets and, in any event, could not carry much fuel, food, or weaponry, they generally operated from a shore station, where the crew could find berthing and messing ashore. Very soon, however, as submarines were positioned at more and more ports, local "station ships" found themselves hosting the crews of the local submarine flotilla, particularly since a surface ship was easy to tie up to - and was handy as a source of help.

This cozy relationship developed to the point where the host eventually became a kind of mother ship. The Navy soon realized that one advantage of putting submarine supplies, spare parts, service facilities, and berthing on a surface ship was that it made them as portable as the submarines themselves. If a flotilla was sent off to a distant port, the tender could just go right along - and setting up a new forward submarine base became almost as simple as dropping the anchor. Thus emerged an important early role for the submarine tender - to operate at advance bases all over the world so that the U.S. Navy could project submarine presence wherever it was needed. Still another impetus was the fact that day-to-day life onboard early submarines was horrible - and the better accommodations a tender could offer were sorely needed to keep a boat's crew healthy and fit for duty.

In October 1909, the newly-reassigned USS *Plunger* (SS-2) arrived at the Charleston (South Carolina) Navy Yard and moored alongside the gunboat USS *Castine* (PG-6), a parent ship of the Atlantic Submarine Fleet. Shortly thereafter, *Castine*'s medical officer, Assistant Surgeon Micajah Boland, inspected Plunger and two other "submarine torpedo boats" and graphically described living arrangements onboard. He found "...their sanitary condition to be far from satisfactory, notwithstanding the fact that they had been at sea only about forty-five hours." He continued,

One officer and a crew of 10 or 12 men had been living, that is, sleeping, cooking, eating, and answering the calls of nature aboard each of these boats in addition to performing their duty

navigating them. Being small, they pitch and roll considerably...[and] due largely to the foul air in the boats... practically the whole crew is seasick. Food has to be carried in crates and... even the cooked meats soon spoil, increasing the foulness of the air; and the use of the toilet, which is only screened off, adds to the unpleasant odor. The small electric stoves with which the boats are supplied can not furnish heat enough, hence they are cold and damp at certain seasons of the year and, in rough weather when water is shipped down the conning tower hatch, which must be kept open, they are wet and extremely uncomfortable. These conditions are a serious menace to the health of the members of the crew; there seems to be no remedy for them on prolonged cruises.

Surgeon Boland recommended that cruises be limited to 36 hours and that when not underway the crews of the submarines, "...except those absolutely necessary to be on the boats, live on board the parent ship."

The Beginnings

In March 1903, USS *Hist*, a converted yacht, was assigned to host the submarines then operating in and around Long Island Sound, where they had been attached to the Torpedo Training Station, Newport. For the next several years, *Hist* shared tending duties with USS *Nia* and USS *Castine* at Newport and other East-Coast bases such as Norfolk. In August 1903, USS Fortune made her way to the West Coast and arrived at Mare Island to serve as a tender for the submarines under construction by the Union Iron Works in San Francisco.

The first ship designed specifically as a submarine tender, USS *Fulton* (AS-11) was built at Mare Island and was on shakedown when the Japanese attacked Pearl Harbor on 7 December 1941. In a little known incident during the aftermath of the Battle of Midway in early June 1942, *Fulton* was sent "in harm's way" to retrieve nearly 1,900 survivors of the sinking of the USS *Yorktown* (CV-5). In this 8 June 1942 photograph, *Fulton* docks at Pearl Harbor on returning.

It didn't take long for several early boats to be transferred to the Far East. In 1908, the collier USS *Caesar* (AC-16) arrived at Manila with USS *Porpoise* (SS-7) and USS *Shark* (SS-8) carried in the well decks as cargo. After the two submarines were placed in service, however, Porpoise's deck log noted that, "Due to the small size of these 'boats,' officers and men lived onboard the gunboat *Elcano*" (PG-38), the station ship at Cavite. In October 1909, Caesar returned with two more submarines, USS *Adder* (SS-3) and USS *Moccasin* (SS-5), and in early 1910, the venerable steam sloop-of-war USS *Mohican* relieved *Elcano* as tender to the Asiatic Submarine Fleet. By World War I, nine submarines - and several associated tenders - were serving in the Philippines.

At the beginning of that conflict, most senior American naval officers considered the submarine to be an auxiliary platform and not a primary fighting ship. However, Germany's early success with the *Unterseeboot* taught both the U.S. and Royal Navies how potent submarines could be, and during the 1920s and 1930s, a strategic debate raged in both nations about whether submarines should be used as an adjunct to fleet operations or primarily as commerce raiders. No clear answer emerged until the experience of World War II, but as early as the mid-1920s, the United States had tacitly acknowledged the importance of submarines by building them in increasing numbers and providing more dedicated support.

During their first decade, the Navy's *de facto* submarine tenders were treated primarily as accommodation ships, and as often as not, these early auxiliaries were anointed as "tenders" simply by being ordered to become one. But as submarine propulsion, weapons, fire control, environmental, and other internal systems became more and more complex, so did the equipment, skills, services, and supplies needed to properly maintain them. Increasingly, tenders better equipped with the specialized facilities and machinery needed to do the job were built and brought on line. USS *Holland* (AS-3), for instance, was launched in 1926 and had a special crane installed in the bow for lifting submarines. But with undersea technology advancing rapidly between 1930 and 1940, even these more modern tenders soon became inadequate to the task.

So it was that an entirely new class of ship - designed from the keel up as a submarine tender - was developed specifically to satisfy the needs of the new boats. The first of this class - and the second tender to bear the name - USS *Fulton* (AS-11), was at sea on her shakedown cruise on 7 December 1941, and only ten days after Pearl Harbor, the second of them - USS *Sperry* (AS-12) - was launched at Mare Island. Eventually, the *Fulton* class would number seven ships, commissioned between 1941 and 1945. Five remain afloat in the reserve fleet.

By the end of the World War II - their "high-water mark" and "finest hour" - 17 submarine tenders were operating around the world, actively engaged in the full range of support activities described above. But then, with the general draw-down after the war, all but four were retired. The Korean War (1950-1953) saw two brought back into service - and all of the *Fultons* except *Proteus* served throughout the Cold War. The latter was unique. After

participating in the Japanese surrender in Tokyo Bay and tending submarines briefly in Japan after the war, *Proteus* was "retired" to New London, Connecticut, where she was assigned - though not in commission - as the "station ship" at the Submarine Base, providing support services from 1947 until 1959. More would follow.

Nuclear Power and Nuclear-capable Tenders

With the development of submarine nuclear power shortly after mid-century, U.S. submarines became capable of staying at sea - and submerged - for months. Because of their near invulnerability, they emerged as the ideal platform to carry America's nuclear deterrent to sea, and the Fleet Ballistic Missile Submarine (SSBN) was born with the commissioning of USS *George Washington* (SSBN-598) in December 1959. Operating from advance bases around the world, the "boomers" became the force-in-being that kept the peace during the dangerous era that followed the Soviets' demonstration of nuclear weapons and intercontinental ballistic missiles of their own. However, if the SSBNs represented the "tip of the spear," it was the submarine tenders that kept them there, and they followed up their contribution to winning World War II with no small role in winning the Cold War.

With the new strategic submarines - and their missiles, launch systems, and nuclear power - came the need for a new class of tender. Since USS *Hunley* (AS-31) - purpose-designed and built for that mission - was some years from completion, a quicker alternative had to be found. Meanwhile, *Proteus* had served more than a decade at New London, tending both the older World War II boats still in service and their nuclear-powered counterparts coming on line in increasing numbers. As such, she was still in good condition and ready to sail. Thus, *Proteus* was quietly moved to Charleston Naval Shipyard, cut in half, and fitted with a new 44-foot hull "plug," fabricated in place. This additional section contained special nuclear-material storage facilities, handling, testing, and machining areas, and other necessities for servicing both nuclear-powered attack and ballistic-missile submarines. Other specialty shops and machinery were installed to maintain the fire control, navigation, and launcher systems that first appeared on the new SSBNs. The final element of the conversion was the installation of a huge X-Y crane, capable of lifting more than 30 tons, and equipped with extension arms that could swing out over a submarine to load equipment, supplies, and most importantly - Polaris missiles. *Proteus*'s conversion was completed in late 1960, and in January 1961, she hosted George Washington at New London, completing the first tender refit of an SSBN. Since the original Polaris missile had a range of only 2,500 miles, the early SSBNs had to be based relatively far forward to be able to reach targets deep in the European and Asian continents. Therefore, in March 1961, Proteus established the first advance SSBN refit site at Holy Loch, Scotland, where her first "customer" was USS *Patrick Henry* (SSBN-599). Later relieved by Hunley, *Proteus* then instituted a second advance SSBN site at Rota, Spain, and after the second USS *Holland* (AS-32) was completed, Proteus was off yet again - this time with USS *Daniel Boone* (SSBN-629) - to inaugurate a third overseas basing site at Apra Harbor, Guam, where she had already tended submarines during World War II. In addition to carrying out her primary duties both at Guam and on WESTPAC cruises between 1964 and 1992, *Proteus* and her crew also provided assistance for typhoon victims and refugees from the fall of Saigon and helped out during the aftermath of the Mount Pinatubo eruption. She was finally decommissioned in September 1992 - and even then was recycled for service as a berthing ship (IX-518) at Bremerton until 1999.

Recent Strains on the "Marriage"

A half-century of evolving technology has culminated in larger submarines capable of storing enough weapons and provisions for patrols of very long duration. Moreover, compared to their diesel counterparts, these boats only need refueling after years of operation - rather than each month or so - and their nuclear plants provide enough power to allow them to reach patrol stations from stateside bases in days rather than weeks. At the same time, submarine-launched ballistic missiles can attain ranges of 4,000 miles, and SSBNs can stay closer to home and still cover their targets. Some of these new submarines are larger than many tenders - and are actually too large to be serviced by even the newest of the latter, since the tenders' fixed cranes can't reach important equipment within the hull without repositioning. Also, factors such as the fall of the Soviet Union and economic pressures for reducing the military have shrunk the fleet as a whole. Altogether, these influences have motivated a Navy decision to reduce the tender fleet to a bare minimum of two - USS *Frank Cable* (AS-40) at Apra Harbor, Guam, covering the Pacific; and USS *Emory S. Land* (AS-39) at La Maddalena, Sardinia, covering the Mediterranean and eastern Atlantic. (Both Cable and Land are members of the three-ship Land class commissioned between 1979 and 1981; the newest of the class, USS *McKee* (AS-41), was decommissioned in 1999.) It's a far cry from the end of World War II - but given reductions in the Submarine Force as a whole, many think it's the right call.

Reality Check

VADM Albert Konetzni, former SUBPAC Commander, noted in a recent interview that while the rest of

the world was growing their undersea fleets, the United States had been downsizing theirs. He observed that while there are some 293 submarines of all nations in the Pacific, he had only 25 SSNs, plus SSBNs within that total. And to service his 25 fast-attacks and eight boomers, he only had one tender. VADM Konetzni's point was, of course, the need for more submarines and better utilization of the ones we have now. But there is still something to be said for making tender-level support available "over there" as well as at U.S. shore facilities. Recent actions in the Persian Gulf, Bosnia, and now Afghanistan have created significant additional work for the tenders at La Maddalena and Guam - from routine repairs, to re-arming Tomahawk shooters, to servicing surface ships. Moreover, Navy plans to forward-base several SSNs at Guam will create even more demand for tender services in the near future. Thus, it's reassuring to have several tenders in the reserve fleet that could be recalled to active service if needed. The United States has learned some hard lessons about preparedness in the past - one hopes we haven't forgotten them. And certainly, today's submariners shouldn't forget what the tenders have done for the Submarine Force over the years - and what they're still doing today.

Former ET1 Randy Guttery served onboard USS *Proteus* between 1971 and 1975, and his website, www.tendertale.com, is a comprehensive source of ship photographs, historical information about submarine tenders, and first-person accounts of life in the tender community. Mr. Guttery now lives in Meridian, Mississippi with his wife of 30 years and is a strong supporter of Meridian's U.S. Naval Air Station - the home of Naval Jet Strike Pilot Training.

One of the only two submarine tenders on active duty today, USS *Emory S. Land* (AS-39) serves both submarines and surface ships at La Maddalena, Sardinia. *Land* was built by Lockheed Shipbuilding in Seattle and commisioned in July 1979. Recently, *Land* was awarded the Battle "E" Efficiency Award and was runner up for the big deck ships category of the 2002 CAPT Edward F. Ney Award for Food Service Excellence.

Commanding Officer at the Tip of the Spear

by CAPT Kevin P. Ryan, USN

When offered the opportunity to be Commanding Officer of a submarine tender, I hesitated for about a nanosecond before saying, "absolutely." Command-at-sea, a crew of 1,100, visiting ports throughout the Pacific, repairing submarines and surface ships... What was there not to like?

The majority of my wardroom is Limited Duty Officers (LDOs). They are the people who, as petty officers and chiefs, excelled in every job. Ask any CO of a submarine going through DMP right now what they think about their LDOs and they'll sing high praises. There are more than 300 great female Sailors, who include khakis and blueshirts, serving in all ratings onboard, including Hull Technician, Boatswain's Mate, Mess Management Specialist, Damage Controlman, and Gunner's Mate. They exceed all expectations.

Of course there are many challenges. Executing a Med moor when the average age of the 40 deckhands is 19; being at the end of a logistics train where you live and die by supply support to conduct repairs; typhoon sorties; 600 pound superheated steam; elevators, conveyors, and fly-away teams... every day is a challenge! And driving this thing... Well, it's similar to the time I rented a Ryder Truck to move some furniture... Got to remember that it's possible to "drive over the curb" if you don't compensate for the length of vessel behind you!

Add the warm weather, great water-sport activities, and the friendly people of Guam - who are true Americans... It's a great job - perhaps the most challenging and rewarding major command that the Submarine Force has to offer - and all at the "tip of the spear."

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