

## Epilogue

By the time Rickover's Submarine Doctors had completed their tours of duty, no additional physicians were being trained in such depth and breadth for "inner space" medicine. While doctors were still being assigned to staff these submarines for two or three years, none had enjoyed the magnificent and remarkable educational experience afforded we lucky early few. Atmospheric conditions aboard the boats were now all well managed, and the unforeseen events anticipated earlier were simply no longer expected. Happily, history confirms our Cold War strategic challenge by the Soviets was met; the standoff ended with Armageddon avoided and even the Iron Curtain brought down to great fanfare.

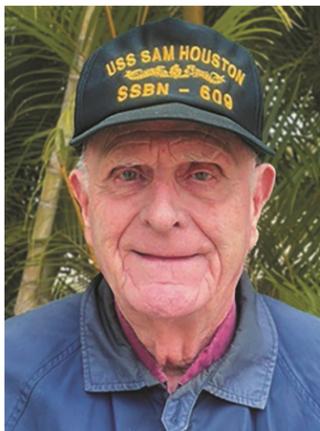
The experience of the Submarine Doctors was indeed a rare and valued one for a small cadre of special Navy physicians. And we wouldn't have traded it for the world.

## About the Authors



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**Dick Briggs** joined the Navy in 1958 during the Cold War while attending Case Western Reserve University School of Medicine. He volunteered for the submarine service when Admiral Hyman G. Rickover initiated the Polaris FBM program. In 1961 he became a commissioning crew member and Plank Owner on USS John Marshall (SSBN-611). Dick left the Navy to pursue private practice as an orthopedic surgeon in 1963 and retired after forty years.



Kevin O'Donnell, M.D.

**Kevin O'Donnell** joined the Navy in 1955 during his first year at Georgetown University School of Medicine. He volunteered for sub duty and the Polaris program in 1961. Kevin was a Plank Owner on USS Sam Houston (SSBN-609) and completed a three-year tour. After a long and successful career, Kevin retired from private practice in urological surgery in 2005. He remained in the Navy Reserves for seventeen years and currently lives in Sanibel, Florida.

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# Docs Below Decks in the New Nuclear Navy



by J. Richard Briggs, M.D. and Kevin T. O'Donnell, M.D.

**W**hen the first nuclear-powered submarine, USS *Nautilus* (SSN-571)—undoubtedly the most celebrated U.S. naval vessel of her time—returned from her shakedown cruise in 1956, something unimaginable happened. Dr. John H. Ebersole, the career naval officer and specialist in submarine medicine assigned to the new submarine, reported that “The carbon dioxide scrubbers don't work, and the carbon monoxide burners keep exploding and catching fire. [The *Nautilus*] just isn't habitable.” He was referring to crucial equipment controlling the atmosphere within the boat, essential environmental gear critical to the well-being of everyone aboard.

Research was conducted toward improvements, but the Naval Bureau of Medicine and Surgery proved of limited help, and the Bureau of Ships required an admiral's clout to get anything done. Under these conditions, much remained unclear in the art and science of health care for nuclear submarine crews making long voyages under the sea.



USS John Marshall (SSBN-611)  
Medical Officers: James A. Zimble (Gold Crew; eventual USN Surgeon General) and J. Richard Briggs (Blue Crew).

Admiral Hyman G. Rickover, Director of Naval Reactors and thus in charge of the nuclear-powered submarine program, had earlier decreed nuclear-trained doctors be assigned to each new submarine. He understood that “unprecedented long submergence could lead to [medical] situations as yet unforeseen.” (*The Rickover Effect*, Theodore Rockwell. 2002.)

But at the time, Submarine Medicine remained an unproven technical specialty in the undersea service, one dealing more in questions than answers about its place and function in the new nuclear Navy. Although trained physicians knew how to set a broken arm, pull a tooth, or even remove an appendix, as yet there was no real precedent in how to practice medicine in an upholstered steel tube three hundred feet below the ocean's surface.

In 1960, ten young Navy doctors were chosen for Admiral Rickover's aforementioned nuclear program and put through a study and training curriculum designed specifically for them. Courses included Deep Sea Diving (at the sub school in New London, Conn.), a refresher course in nuclear physics, and a tour of duty at a prototype nuclear reactor. Eight of these eager physicians survived their intense year of schooling and special preparation, then reported for duty aboard the newest Polaris missile submarines. We were two of them, each thrilled at the prospect of this rare and exciting opportunity, and unable to understand how any doctor might turn it down. What follows is our story.

Again, the year was 1960 and the Vietnam conflict was just beginning to heat up. Communism continued to spread to the drumbeat of war, and the U.S. was at a standoff with Russia. This so-called Cold War motivated both countries to build up troops, ships, and planes, plus arm themselves with a seemingly endless quantity of nuclear-armed missiles. The balance of power was tenuous as the population of each side nervously awaited some trivial incident to trigger Armageddon.

Meanwhile, Hyman Rickover's crusade to build a fleet of nuclear-powered ballistic missile submarines was already in full swing. These would be state-of-the-art vessels carrying maximum firepower, and the military hoped they would tip the nuclear balance in favor of the West. Rickover was a first-generation American (his family having emigrated from Eastern Europe) who had graduated from the U.S. Naval Academy in 1922 with an acknowledged passion for engineering. Although he'd been unhappy at Annapolis, he was serious about his studies and in his focus on nuclear power. In fact, he had become obsessive about it; no one would stop him from creating a formidable—and fully safe—nuclear Navy. Rickover was renowned for having neither time nor patience for slackers, and his rise to high office and ultimate success were inexorable but never easy—for him or those around him.

By this time, Rickover's Squadron 10 of nuclear-powered, fast attack submarines were already in place at New London, Conn. Their exploits—*Nautilus's* transit under the arctic ice, *Triton's* submerged circumnavigation of the globe, and *Skate's* surfacing at the North Pole—were adventures of the highest order, nearly legendary at this point in naval history. *Skipjack* and *Seawolf* were indeed in full operation, and several other boats were just off the ways and undergoing sea trials, including the later infamous *Thresher* and *Scorpion*.

But the seagoing U.S. arsenal needed something more—an end-game weapon with which to fully intimidate our Eastern adversary, suppressing any thought of nuclear aggression on its part. A plan was soon conceived to cut apart a nuclear fast-attack submarine and add 180 more feet of hull to house sixteen A-2 Polaris nuclear-armed missiles. This weapons system would be undetectable and constantly moving—unable to be counter-targeted by our enemies, in other words.

The crews were flown back and forth to Prestwick, Scotland by military aircraft, and then journeyed on to Holy Loch Navy Base by bus. While waiting, men were billeted on the *USS Proteus* (AS-19) submarine tender, and later on, aboard the *USS Hunley* (AS-31) tender in the middle of the estuary, until their respective submarines returned from patrol. After one crew moved off the boat, the relieving crew moved in and spent a month topping off supplies and preparing for the next run. The time in Dunoon, Grennock, and Gurrock, Scotland was always very pleasant, though dark during most of the winter and wet (if not light) most of the summer. The submarine's officers were often invited to private homes, and occasionally found themselves in charming pubs experiencing the true personality and hospitality of Scotland.

While on patrol, humidity aboard the boats was kept at 50% for the benefit of the machinery and instruments onboard, and the temperature at about 75°F, except in the engine room spaces. Smoking was allowed since there were twelve 220-volt electrostatic precipitators which kept the air clean. Drinking water came from distilled sea water treated through anion and cation exchange resins; this left it absolutely pure. It was so pure, in fact, that you couldn't taste this onboard water, so a few salt tablets were usually added for effect. After two weeks our fresh produce was gone, but the tradeoff was daily fresh-baked bread, rolls, and sticky buns. The meat was dehydrated and frozen, but it was excellent after thawing and cooking. We also had a good variety of meat plus canned goods. Overall, the food aboard a ballistic missile submarine was very good, and meals were prepped and served six times a day. The average coffee consumption was close to thirteen cups per person per day.

Although life under the sea became very routine, we also had moments of excitement springing from frequent drills and occasional encounters with Russian vessels. Our boats were very sophisticated for their time, and we could positively identify other ships by sonar from many miles away. We received a constant stream of messages and Familygrams from the USN through our underwater antennae, though we could not send out any messages without giving away our presence and position. We were always fully aware of what ships were in the sea around us, what planes were regularly flying overhead, and what the wind speed was over our targets in Russia. Unlike those dark days aboard the early *Nautilus*, our carbon dioxide scrubber and carbon monoxide burner problems were long-solved; all now worked as designed. What few other environmental or atmospheric issues we encountered were easily managed.

The object of the patrol was to remain undetected for the entire time we were at sea. Thus, we moved at only about three knots and on "patrol quiet" for our entire run. To our knowledge, no Russian submarine ever found any of our Polaris missile boats at sea. After completing a varied number of patrols, some boats were retired in accordance with SALT II Treaty limitations, and others were altered to accommodate amphibious commando/anti-terrorist teams. Eventually, all these gallant submarines were decommissioned and turned over to the scrapper's torch.

Finally, we were ready for deployment. With the good Admiral looking over our shoulders, we were sent off in different directions to fill medical positions on submarines where needed. Some went to boats already in operation, like the *George Washington* and *Patrick Henry*. Others went to new construction, their boats still works-in-progress in the shipyards.

Those sent to new construction—including Kevin O’Donnell, Lt. (MC) USN, assigned to the *Sam Houston* (SSBN-609), and J. Richard Briggs, Lt. (MC) USN, ordered aboard the *John Marshall* (SSBN-611) at Newport News Shipbuilding—spent the last several months before commissioning organizing the boat’s medical department with two corpsmen on each crew (“Blue” and “Gold” crews). We set up our sickbay in a little room located on the middle deck beneath the Command Center, between its periscopes. It featured a folding operating table and overhead light. All the instruments, medications, bandages, splints, etc., were stowed in the many drawers and cabinets lining this small space. The nucleonics lab was nearby, where Geiger counters and other monitoring equipment were kept.

Now with the boat actually in the water, a so-called “fast cruise” was initiated. This is where everything gets run, spun, dialed or pushed while the sub is still secured to the pier. Sea trials followed, testing all maneuvering abilities to their extremes in search of any flaw: speed, steep-angle dives and surfacing, sharp turns, test-depth dives, and All Back full speed at depth. After this, the boat carried out detailed post-shakedown runs to be sure everything did what it was supposed to before the Navy would accept her.

The commissioning of each new SSBN was usually full of pageantry, with flags flying and speeches delivered by honored guests. The evening following the ceremony was spent in revelry and celebration, the boat’s officers in dress whites milling about with dignitaries and the high brass.

Once all tests were passed, each boat sailed to the Caribbean Sea for sound trials and then on to Cape Canaveral for missile firing practice. During this time, the ship’s doctor and corpsmen assumed the duty of radioactive monitoring of the primary nuclear reactor system, the secondary low pressure steam system, the atmospheric conditions for radioactivity, and air quality relating to oxygen, carbon dioxide and monoxide, Freon, and air pressure within the boat itself. Some doctors actually stood watch as diving officers. Other collateral duties for medical officers included photography, public relations, re-enlistment promotion, voter registration, and most important, movie projectionist for the wardroom. The doctor was consulted if any medical problems came up which the two Chief Corpsmen couldn’t handle by themselves.

Missile shots at Cape Canaveral generally launched without a hitch, and the boat was then turned over to the Gold Crew to proceed on the submarine’s first real patrol. While she and her Gold Crew were gone, her Blue Crew returned to New London for R & R, more training, and some time to enjoy their families.

This approach was unheard of, but would ultimately work like magic: throttled, the Russian Bear soon became more circumspect and less bellicose. Still, the U.S. Navy’s growing fleet of imposing ballistic missile submarines was of little strategic value unless these big “boomer” boats could be quickly and fully deployed. Each was designed to be on station for two months, carrying her sixteen missiles pre-programmed to reach targets within the USSR. The submarines themselves were truly floating missile platforms; they travelled slowly, silently, and deliberately, well-hidden beneath the sea. And they operated employing two separate crews, swapping them out every three months while adding a month in-between for refit and resupply. Although these alternating crews were perhaps the healthiest young men in the Navy, assorted illnesses, accidents, or injuries had to be anticipated as possible—even likely—while underway. During peacetime, medical emergencies could be handled by surfacing the sub and transferring sick or injured parties to a larger ship—such as a cruiser or aircraft carrier—a vessel equipped with a sizable sick bay and trained medical personnel. However, with so few ballistic missile boats on station, and with their imperative need to remain undetected while on patrol during the Cold War, it was essential now to deal with any crew member’s medical needs by using only the personnel and supplies available onboard. Surface transfers could no longer be permitted.



**Dr. O’Donnell in the altitude chamber at the U.S. Navy Deep Sea Diving School, Wash., D.C. in 1960.**

It was therefore decreed that physicians trained in “Submarine Medicine” would be placed aboard all these boats in order to manage new or unexpected conditions affecting the health of the crew—in other words, any medical, surgical, dental, traumatic, or psychological issues which might arise during a patrol.

Returning to our own story, we two were among the first USN medical officers slated for this very specific “special assignment” training, and it all began with orders to report to the U.S. Navy Deep Sea Diving School (DSDS) in Anacostia on the first Monday of September 1960. This six-week course was designed to improve our physical condition, so it included rigorous daily calisthenics and running in addition to “hard hat” (helmeted) diving

instruction in training tanks and in the Anacostia River. We got used to diving to depths of 300 feet using pure air, helium and oxygen, as well as to strapping on a self-contained underwater breathing apparatus (SCUBA) for further versatility. We experienced, firsthand, nitrogen narcosis and “the bends,” and also learned how to treat these conditions as well as air embolisms occurring inside the decompression chamber.

During this time in Washington, arrangements were made for us to meet Admiral Rickover and his staff. We were first interviewed (though interrogated might be a better word) individually by several USN Commanders, each with complete dossiers about us on their desks. The following Saturday we were instructed to report to the Admiral's office at the Main Navy Building at 7:59 a.m. The doors would be opened precisely at 0758 and then closed promptly at 0800 by a Marine Sentry. In those two minutes, ten medical officers and twenty U.S. Naval Academy seniors had to manage to scramble through. Afterward, we waited nervously in a room furnished with straight-backed chairs and a large central table piled high with copies of *Proceedings of Congress*. Each candidate was escorted out by a Commander (an aide to the Admiral), one at a time, for his own interview. We thought it odd that no one returned. As we were later ushered into his office, we were advised to listen carefully to the Admiral's questions and deeply consider our answers.

We found Admiral Rickover installed behind a mammoth mahogany desk. He was a short man with a thatch of wiry white hair. Rather than being in uniform, he was wearing a dark blue suit and wide tie. There was a cup full of yellow pencils perched on the corner of his desk. Little else was about. When instructed by the Commander to be seated, we did so—instantly—and were immediately uncomfortable. It felt as though the front legs of the chair were two inches shorter than the back ones, and the morning sun angled just so through the venetian blinds to glare directly into your eyes.



**J. Richard Briggs relates his interview this way:**

*The Admiral asked why I had such an interest in this particular program. I explained that as soon as I had heard about the opportunity, I was excited at the prospect of being a part of the modern nuclear Navy. If I was so enthused about the program, the Admiral wanted to know, would I be willing to sign up for six more years? I replied:*

*“Absolutely—if I’m as interested in the program at the end of my three years obligated duty as I am now.” He took immediate exception to this and accused me of duplicity, saying I was calling a thing black and then white. Then he admonished me for “weasel wording.” “Do you confuse*

*your patients this way too?” he asked. My jaw dropped when he then said, “Get him out of here!”—and the Commander grabbed me by the shoulder and whisked me from the room.*

*Once he had me in a vacant office, the Commander told me to wait there, saying the Admiral might want to speak to me again. I found a Washington Post newspaper and had read it nearly all the way through when I was invited to return for a second try. The Admiral said: “Well, what have you decided?” I replied, “Just so I understand you correctly, would you restate your question, sir?” He slowly repeated the question, and I*

*gave him the exact same answer. He was absolutely livid. He grabbed a yellow pencil, broke it in two and launched it at the desk. As I was suggesting this might simply be a matter of semantics, he was already yelling “Get him out of here!” again.*

*I waited in the same vacant office for what seemed quite a long time when a woman in uniform finally walked in and said, “Oh, are you still here? You may as well leave, since you’re finished.” I said, “You mean I’m kaput, washed out?” She answered, “Oh, I don’t know about that. But the Admiral has gone home, and you may as well go too.”*

*I went back to the main hallway only to find our entire contingent of medical candidates wandering around in confusion. One of my colleagues had signed an affidavit to lose thirty pounds in three months. Another had agreed to winter over at McMurdo Sound in Antarctica for a second time. There were several senior midshipmen who had actually vowed to become first in their academic class.*

*The following Monday morning, we asked our chief instructor in class whether or not we had passed the interview. He said, “If you’re here, you passed.” We looked around and counted; there were nine of us left.*

Thus, it always was with Admiral Rickover. Every nuclear submarine officer carried a story about his “interview” with this famous Navy curmudgeon, and a great many such stories were shared. After my time in the Admiral's hot seat, I was never again intimidated by an interview in my life.

The next three months found us in basic Submarine School and Diving Medicine training at the Submarine Base in Groton, Conn. In addition to the didactics of classroom studies, we all took our free ascent training swim in the 100-foot water tower and participated in diving operations on the *Skylark* ASR (Auxiliary Submarine Rescue) vessel. We concluded our schooling with a seven-day exercise aboard the WWII-era diesel-powered fleet submarine USS *Crevalle* (SS-291), a Guppy II (Greater Underwater Propulsion Power) *Gato*-class conversion.

Now there were eight of us left in the program; one candidate had developed a cardiac irregularity and was dropped from further training.

Next, we remained in Groton for a three-month stint at Nuclear Power School—the first month a review of college physics, the rest dedicated to nuclear physics and the practical application of nuclear power, radiation monitoring and atmospheric control. We completed the year with temporary additional duty (TAD) at the S1C Nuclear Reactor Prototype in Windsor, Conn. training at Combustion Engineering. Although we did not actually stand watches or operate the reactor, we were confined to study cubicles and expected to digest three or four thick manuals of technical material. There were roving guards to assure we did not sleep nor dally.