

SOME RECOLLECTIONS of USS SNOOK (SSN-592)
December 1962 - June 1965
by
Tom Ross

I reported to SNOOK on 1 December 1962 in Naha, Okinawa, from where she commenced her return to San Diego following her first deployment to the Western Pacific. I served in her for two and a half years until late June 1965 as her Weapons officer (twice) and in various engineering billets.

SNOOK was the last of the six submarines of the SKIPJACK class. She was 252 long, had a beam of 32 feet, displaced 3500 tons submerged and 3070 tons surfaced. Unclassified reports allege that her maximum speed was in excess of 30 knots and that her test depth was 700 feet. Officially, the Navy claimed that she was faster than 20 knots and could dive deeper than 400 feet. Her complement was nine officers and 76 enlisted.

She was unique in that she had an artificial fire place. This was the hallmark of her first commanding officer, Howard Bucknell. Before commanding SNOOK, he commanded a conventional submarine and subsequent to commanding SNOOK he commanded a ballistic missile submarine. They also had artificial fire places.

SNOOK and two other SKIPJACK submarines, USS SCAMP (SSN-588) and USS SCULPIN (SSN-590), were the first three nuclear submarines home ported in San Diego. In addition to SNOOK, SCAMP and SCULPIN, about 12 conventional submarines were home ported in San Diego. All were served by two submarine tenders.

In connection with the home porting of nuclear submarines in San Diego Bay, the Navy constructed the Nuclear Submarine Pier near Ballast Point at the entrance to the bay. Before the advent of the pier, the tenders moored to buoys near the Coast Guard Station and the conventional submarines moored to the tenders. Although a plaque at the head of the pier named the pier the Nuclear Submarine Pier, the Submarine Force began using it for its tenders and conventional submarines. During my time on SNOOK, she seldom moored to the pier because berthing spaces were taken by one or both tenders or by conventional submarines. Her usual berth was alongside a tender.

The Nuclear Submarine Pier led to the establishment of an official Submarine Base in San Diego (now, the Point Loma Naval Base). More later. In time, the plaque naming the pier the Nuclear Submarine Pier was removed. Today, the pier is simply one of several piers at the Point Loma Naval Base.

Six officers with whom I served on SNOOK became flag officers, i.e., admirals of some grade. Only three officers with whom I served on my three other submarines (one from each submarine) made flag. Two of SNOOK's officers made full Admiral (four stars): Jim Watkins who became Chief of Naval Operations and my Annapolis class mate Bruce DeMars who became one of Admiral Rickover's successors. Ron Thunman reached Vice Admiral (three stars) and was

Deputy Chief of Naval Operations for Submarines. Those who reached Rear Admiral (two stars) were Stan Anderson, Ralph Bird and Mike Barr. On SNOOK, I served with a very talented group of officers.

In late January 1963, SNOOK got underway for the Mare Island Naval Shipyard near Vallejo, California, in the northern reach of San Francisco Bay (known as San Pablo Bay), for a three week Restricted Availability. She started the availability on February 1. The purpose of the availability was to drydock her for a routine inspection of her hull welds. While I was on active duty, San Diego lacked the capability to drydock a nuclear submarine.

I introduce both the Mare Island Naval Shipyard and Commander Submarine Group San Francisco, at this point.

The Navy established the Mare Island Naval Shipyard in 1854. I will usually refer to it as Mare Island. It served the Navy for about 135 years before it was closed in or about 1990. I spent four shipyard periods there: two on SNOOK, one on PERMIT and one on HAWKBILL. In the 1960s and early 1970s, Mare Island was both a construction and repair yard for nuclear submarines. By the late 1970s, the Navy had concentrated new construction work into two private yards, the Electric Boat Company in Groton, Connecticut, and the Newport News Shipbuilding and Drydock Company in Newport News, Virginia, Naval shipyards, like Mare Island, then concentrated on repair work. Mare Island was a family shipyard. I often encountered three generations of the same family working in the yard.

The Submarine Force had established Commander Submarine Group San Francisco and his staff to support the needs of submarines at Mare Island and at Hunter's Point Naval Shipyard in San Francisco. Hunter's Point repaired conventional submarines; it also has been closed. The Commander was headquartered in Mare Island. Among the services that the Submarine Group provided were: an attack trainer to help maintain tactical skills; officer quarters and mess; enlisted barracks and mess; transportation between the two shipyards, the Travis Air Force Base, the Alameda Naval Air Station, the Moffet Field Naval Air Station, the Oakland Airport and the San Francisco Airport. I often used these services. Like the two shipyards it served, the Submarine Group has entered history. While it existed, it was a great benefit to submariners.

The Navy extended SNOOK's three week restricted availability in several steps from three weeks to seven months. The first extension was authorized in mid February to complete hull welding that should have been completed during construction. Mare Island found numerous hull welds that were undercut, i.e., the required weld material had never been laid in the welds. Fortunately, the welds held during repeated dives to test depth. Ingalls Ship-building Company in Pascagoula, Mississippi, who built SNOOK, and the Navy inspectors who accepted her for service, were

grossly negligent. As a direct result of SNOOK's hull weld problems, the Navy pulled all nuclear submarine work from Pascagoula.

The decision to extend the availability led to my wife Pat and I maintaining two residences for half of 1963: the home we rented in San Diego and a temporary residence in Vallejo. During my time on SNOOK, we needed my Submarine Pay to pay double rent or to cover my air travel. In 1964, during SNOOK's second stay in Mare Island, we lived in Vallejo for about a month. Thereafter, I commuted between Mare Island and San Diego about two weekends a month. Submarine pay kept us from going into debt to spend time with each other.

On February 23, Bill Yates relieved Howard Bucknell as SNOOK's Commanding Officer.

During most of 1963, I was the Weapons Officer. My primary task was to prepare SNOOK for carrying and, if necessary, using the Mark 45 Torpedo, commonly known as ASTOR. This weapon was a tactical nuclear weapon of 10 kiloton yield designed to sink Soviet submarines. To be certified to carry ASTOR, the Navy required mechanical modifications to the torpedo tubes and the torpedo storage area to prevent unauthorized access to the nuclear warheads. The extension to complete the hull welds provided the time for Mare Island to make the mechanical modifications. The Navy authorized the money to complete the modifications. In addition to the modifications, SNOOK needed to prepare and to implement several administrative programs to insure the proper handling of the nuclear warheads. SNOOK was scheduled to be the first submarine in the Pacific to carry ASTOR.

On April 10, USS THRESHER (SSN-593) was lost with all hands off New England during a test dive following an overhaul.

THRESHER's loss triggered another extension of SNOOK's availability. SNOOK had repeatedly requested that all of her sil brazed joints be inspected by a newly developed ultrasound inspection technique. The Navy did not authorize the time or the money during the hull weld inspections or during the time the hull welds were completed. After THRESHER was lost, the Navy found the time and the money to inspect SNOOK's sil braze joints. Although what caused the loss of THRESHER will never be known with certainty, one theory holds that a sil braze joint gave way, the resulting flooding caused a reactor shut down, and she was unable to recover from the flooding. SNOOK was concerned about her sil brazed joints because several had developed leaks, one of which had caused minor flooding. Many submarine sea water systems were then made from monel, a copper and nickel alloy. When monel pipes are joined, they are sil brazed together. Until the advent of ultrasound testing, sil brazed joints were tested by a simple hydrostatic test – subject the joint to 150% of the sea pressure that it will see at test depth and hold the pressure for a set period of time. If the joint did not leak during the test, the joint was certified for service. The weakness of this test was that if the joint passed once it may or may not pass on a subsequent test or a deep dive. An ultrasound test directly measures whether the sil braze material completely bonded the two pipes together.

The ultrasound testing of SNOOK's sil braze joints kept her in Mare Island until late August. She had over a 1000 such joints, many of which were accessible for inspections only after large pieces of equipment were moved out of the way. All of the joints were inspected. Most failed the ultrasound test and were sil brazed again. Many had to be sil brazed several times until they passed. When SNOOK left Mare Island, we had high confidence in the integrity of her sil brazed joints. Eventually every submarine had its sil brazed joints inspected and, if necessary, redone until they passed

Following the investigation into the loss of THRESHER, the Navy instituted the Submarine Safety Certification Program, commonly call the SUBSAFE Program. It had many facets. I will address a few.

First, the Navy limited the depths to which submarines could dive until certain mechanical improvements were completed. For example, SNOOK was limited to 500 feet rather than her full test depth. Any submarine under construction had these improvements completed during construction even if it meant delaying delivery to the Navy. Operating submarines had these improvements done during scheduled general overhauls or restricted availabilities.

Second, improved testing, e. g., ultrasound testing of sil brazed joints, would be down.

Third, an operating envelope was developed that provided minimum speed limits while submerged. The first step in a flooding casualty is to increase speed and take an up angle to head towards the surface. A submarine accelerates faster from high speeds than from low speeds. The minimum required speed varied directly with the depth, i.e., the deeper the submarine cruised, the higher the minimum speed. While using propulsion power to reach safety, a submarine will blow main ballast to offset the weight of the water flooding into her.

Fourth, the reactor scram recovery procedures were changed to provide an immediate ability to use the stored heat of the nuclear reactor to drive a submarine towards the surface in the event of flooding. Even with the reactor shutdown, there is sufficient stored heat in the metal of reactor to generate steam to drive the ship shallower.

On or about Labor Day, SNOOK returned to San Diego to commence refresher training.

In October or November, approximately a dozen civilians, including women, fell into San Diego Bay between SNOOK and the pier. Some background first.

Rear Admiral Harlfinger was the senior submarine officer in San Diego. He took command of the San Diego submarines after SNOOK left for Mare Island.

A decommissioned Army post, known as Fort Rosecrans, was in the vicinity of the Nuclear Submarine Pier.

Admiral Harlfinger set about occupying and converting the unused buildings of Fort Rosecrans into a Submarine Base. No one officially authorized him to do that. Congress had neither authorized the establishment of a Submarine Base nor allotted money for one. Admiral Harlfinger's goal was for the Navy to present to the Congress a fully functioning Submarine Base and then seek Congressional support of it. He reportedly built the Submarine Base with "volunteer labor and surplus materials". Sailors did much of the work and materials intended for repair work on submarines were diverted to base renovation.

In addition to using "volunteer labor and surplus materials", the Admiral hired local contractors to do some of the renovation. He paid for their services with profits from permitting civic groups, e. g., the Rotary Club, to use the Officers Club for their luncheon meetings. As incentive for these groups to use the club for their meetings, he authorized the groups to tour a nuclear submarine if in port.

In October or November, SNOOK was the host submarine for one of these tours authorized by Admiral Harlfinger. The stream of guests boarding SNOOK stopped when the first women in high heels reached the vertical ladder descending into the torpedo room; she could not descend the ladder very rapidly. When the line of guests halted, about a dozen persons were stopped on the brow from the pier to SNOOK. The brow gave way under the weight. I was on the pier handing out brochures on SNOOK. I jumped down to one of the separators between SNOOK and the pier to help people out of the water. The Admiral took all who were dunked into the water to the tender for medical examinations and to have their clothes washed or dry cleaned. Divers searched for lost purses and glasses; all were found. Those who missed the tour because of the unexpected dunking toured SNOOK on subsequent weekends when she was in port. I hosted one of those weekend tours. My guests joked about the warning sign that was now posted at the brow: NO MORE THAN SIX PERSON AT ONCE

In the middle of December, SNOOK was ordered to deploy to the Western Pacific earlier than schedule. She was scheduled to deploy in late Winter or early Spring. Her sister submarine SCULPIN had deployed earlier in December. When SCULPIN reached Hawaii, she developed a mechanical problem. The need to repair the problem aborted her deployment and SNOOK was ordered to replace her. Initially, SNOOK was order to deploy before Christmas. Subsequently, the departure date was delayed to the day after New Year.

Our unexpected deployment canceled SNOOK's Nuclear Weapons Acceptance Inspection scheduled in early 1964. Passage of that inspection would have been the last step for SNOOK to be authorized to carry the ASTOR nuclear torpedo. SNOOK deployed only with conventional torpedoes. Her Nuclear Weapons Acceptance Inspection took place in early 1965 when I was again the Weapons Officer. For most of 1964 another officer served as the Weapons Officer and

I served under the Chief Engineer in various capacities in preparation to qualify as a Chief Engineer .

Our first port call in the Western Pacific was in Subic Bay in the Philippines. From Subic Bay, I went to Hong Kong for my fifth visit. Because nuclear submarines could then only call in Subic Bay or Naha on Okinawa in the Western Pacific, the Navy flew groups of nuclear submarine sailors to Hong Kong and to Yokosuka for five days of liberty. An officer was placed in charge of each group. The Executive Officer drafted me to be the Officer-in-Charge of the Hong Kong group. I told the group of 24 sailors who went with me that they did not need muster with me daily but that they better make the final muster for the trip back to Subic Bay. The only time we were together was at the final muster in a bar in the airport. We all came down with dysentery after returning to SNOOK. Our beer glasses must have been contaminated.

On or about February 15, SNOOK departed Subic Bay on a special operation that lasted 60 days. I cannot divulge where we went and what we did. Special operations were intelligence gathering operations on the Soviet Navy. The two major ports from which the Soviet Navy operated in the Western Pacific were Vladivostok near where the USSR, China and North Korea meet, and Petropavlovsk on the Kamchatka Peninsula.

Several unclassified sources purport to describe special operations. Among these sources are various television documentaries, Tom Clancy's novel *The Hunt for Red October* and Sherry Sontag's and Drew Christopher's book *Blind Man's Bluff*.

A submarine special operation is akin to Sir Francis Drake sailing in Queen Elizabeth's interest. For two months a submarine on a special operation maintains radio silence, i.e., does not send any messages to her superiors. She carries out her superior's written orders to go to some area in the ocean and act in the interest of the United States. The first the superior hears about what the submarine did is when she returns to port.

On or about April 16, SNOOK entered Naha, Okinawa. She handed over her patrol report and the data she collected to the proper authorities. The Commanding Officer briefed his superior, Commander Submarine Flotilla Seven. Two months of personal and official mail awaited us. In addition, fresh milk, eggs and salad awaited us.

And COFFEE! We ran out of coffee about seven days before reaching Naha. In provisioning for sea before the patrol, a supply clerk had counted sugar cans as coffee cans. If the miscounted sugar cans were coffee cans, we would have had coffee for the entire patrol. The supply clerk felt the crew's displeasure. We drank a lot of tea and hot chocolate the last seven days.

Most of May was spent in two major fleet exercises. In the first, SNOOK played the role of a Soviet submarine shadowing a US aircraft carrier task group. Her mission was to gather as much intelligence as she could about what the task group was doing. What SNOOK gathered was then compared to what the task group did to determine how much information the task group could be

making available to a shadowing Soviet submarine. Unfortunately, the task group revealed plenty.

In the second fleet exercise in May, SNOOK played the role of a Soviet cruise missile submarine. The mission of those Soviet submarines was to attack US aircraft carriers with cruise missiles. The then existing Soviet cruise missiles had a range of or about 200 miles. To launch a cruise missile, the then Soviet submarines had to surface for about 15 minutes and had to know the location of the aircraft carrier. SNOOK demonstrated that she could detect the aircraft carrier sometimes in excess of 60 miles and she could be on the surface for more than 15 minutes and not be detected by the forces guarding the aircraft carrier. In time, tactics and equipment were developed to combat the Soviet cruise missile submarines.

In late May, SNOOK departed the Western Pacific from Subic Bay in the Philippines and headed for Pearl Harbor.

During her transit to Pearl Harbor, SNOOK inadvertently turned her carbon monoxide removal equipment into a carbon monoxide generator. No one was killed but several of us were exposed to high levels of carbon monoxide.

The device that removes carbon monoxide is called the Carbon Monoxide and Hydrogen Burner. Two burners were installed; one was a spare. A burner works at or about 600 degrees Fahrenheit to convert carbon monoxide to carbon dioxide (which is removed by another machine) and hydrogen to water (which is harmless). Smoking cigarettes and cooking generated carbon monoxide. To effect the conversion, an oxidation catalyst is needed in addition to the heat. The catalyst was a substance called hopcalite. Hopcalite looks like charcoal. Charcoal is used on a submarine in the ventilation system to filter out odors. Under the practices then in use, hopcalite was changed after a specified number of hours of use.

In late May, one of the burners was due for a hopcalite change. The mechanic checked the supply records for the locker in which the spare hopcalite was stored, went to the locker, and took a can which he thought had hopcalite. At that time, hopcalite and charcoal were stored in similar cans. The mechanic pulled a can of charcoal that had mistakenly been stored with the hopcalite. The can that the mechanic pulled was not labeled. The mechanic assumed that because the supply records said it was hopcalite, it was hopcalite. The mechanic replaced the spent hopcalite with what he thought was new hopcalite (but was actually charcoal) and restarted the burner.

As the burner heated to operating temperature, it began generating carbon monoxide like the charcoal grill it had become. The burner was located in one of the engineering spaces. When smoke began to appear in the engineering spaces, the Officer of the Deck sounded the General Alarm and announced fire in the engineering spaces.

In case of a fire, my duties required that I proceed to the scene. When I entered the engineering spaces, I noted watchstanders passed out and foaming at the mouth and had the word passed that

we had a toxic gas casualty and that all hands should don their emergency breathing masks. Before I donned my mask, I checked the upper levels for the source of the fire and the Executive Officer checked the lower levels. I did not use a mask because a mask restricts movement to a few feet from an air outlet and we needed to find the source of the fire. The Executive Officer found the burner red hot, shut it down, and used a fresh water hose at a chemical sampling sink to start putting the fire out. By the time I donned my mask, I was beginning to feel the effects of carbon monoxide poisoning. I would lose my eyesight whenever I tried to move; when I stood still I could see; I was able to think and speak even when I lost my sight.

The Commanding Officer surfaced SNOOK and started ventilating the ship with fresh air to remove the carbon monoxide. Those of us who had been exposed to high levels of carbon monoxide were first led to the torpedo room, the compartment furthest from the fire and with the lowest concentration of carbon monoxide. It also had an oxygen bleed station. Oxygen was bled into the torpedo room to raise its oxygen level to help displace the carbon monoxide. One by one, we were taken to the bridge to breathe some fresh air. We also were issued two ounces of medicinal brandy to help us sleep. We were taken off the watch bill for eight hours. The next day, none of us had any after effects from our carbon monoxide poisoning and we were returned to full duty.

SNOOK's carbon monoxide casualty led to a change in procedures in changing hopcalite. A white neutral substance was mixed into hopcalite to help distinguish it visually from charcoal. More importantly, a chemical test was developed to determine what was labeled as hopcalite was really hopcalite.

SNOOK almost proceeded directly from Pearl Harbor to the Mare Island Naval Shipyard. The Navy had selected her to be the test submarine for a new electronic intelligence suit. The installation would take about four months and needed to be done in Mare Island. The installation and testing of the new equipment was one of the nation's highest priorities. When SNOOK arrived in Pearl Harbor in early June, Commander Submarine Force Pacific told Bill Yates about the project and his intention to send SNOOK directly to Mare Island. Bill Yates asked for a four week delay to permit his crew sometime with their families in San Diego before proceeding to Mare Island. The Commander granted the delay.

On July 13, SNOOK arrived at Mare Island to start her restricted availability to install her new electronic suit. For the first 10 days or two weeks, not much happened. Mare Island only worked SNOOK one shift a day, five days a week. Apparently, Mare Island understood that the construction and delivery of the ballistic missile submarines it was building was the nation's top priority. Bill Yates complained to his superiors about the Mare Island's lack of urgency, they complained to their superiors, etc. The result, SNOOK became the shipyard's top project. Mare Island manned her three full shifts a day, seven days a week, and completed the availability two weeks earlier than scheduled even after wasting the first two weeks of the planned four month availability.

During the initial period when Mare Island ignored SNOOK, Pat and I spent a pleasant time together. We rented a furnished apartment in a new apartment complex in Vallejo. It had a swimming pool and a playground. I came home on non-duty days at 1500 or 1600; we often swam in the pool after I came home.

When Mare Island turned its attention to SNOOK, my days of idleness ended. On most non-duty days, I came home between 2000 and 2200. On duty days, I was unable to sleep because of the constant need to interface with the shipyard workers who were working SNOOK around the clock. When I came home at night on the day after duty, I was exhausted from being awake 36 or more hours.

Although the main purpose of the availability was the installation of the new electronic suit, considerable supporting work was undertaken, work that fell in my areas of responsibility. Some examples follow.

To install the new electronic suit, one half of the upper level of the Operations Compartment was gutted. The area that held the radio room, the inertia navigator, the electronic intercept equipment was ripped out and rebuilt. Ventilation and hydraulic lines were rerouted, this work was under my supervision.

To support the new suit, our two periscopes were exchanged for newer periscopes with special antennae, our radio direction mast and electronics signal intercept masts were exchanged for new masts. The bearings for the masts that were not being exchanged were rebuilt. The external hydraulic system that operated the masts and periscopes was rebuilt. Essentially, SNOOK's sail and the masts inside were rebuilt. All of this work fell under my supervision.

Both main turbines throttles were overhauled. During the deployment earlier in the year each had leaked. This too was under my supervision.

Near the end of August, Pat, the children and I drove to San Diego for what we thought was going to be a week's stay before returning to Vallejo. I was sent to a nuclear weapons course in San Diego. When we reached our home, our children were excited to be in their regular home with all of their toys. After seeing their reaction and recognizing that the time demands on me were preventing me from seeing her and the children very much in Vallejo, Pat and I decided that she and the children would remain in San Diego and I would commute by air on as many weekends as I could.

During September and October, I flew from San Francisco to San Diego 5-6 times. Some of the visits were from Friday evening to Sunday evening; others were only from sometime on Saturday to Sunday evening. Submarine Group San Francisco operated a free taxi service between Mare Island and the San Francisco Airport. The Group controlled a fleet of vehicles. Each submarine in Mare Island furnished some of her sailors to Submarine Group San Francisco as drivers. I flew military standby on the Pacific Southwest Airways (now merged into another airline). PSA was

also known as the "Poor Sailors Airways". Its fares were reasonable. Full fare round trip between San Francisco and San Diego was about \$40. On military standby, the round trip fare drop to about \$25. Flights were hourly. When I knew was going to board the next flight on standby, I called Pat with the arrival time. The flight took about an hour. She and the children would meet me on arrival. The San Diego terminal was then at Palm Street and Pacific Highway. The present terminal did not open until the late 1960s.

On November 1, SNOOK departed Mare Island for San Diego and refresher training in preparation to deploy with her new electronic suit in early 1965.

On November 14, Jim Watkins relieved Bill Yates as SNOOK's Commanding Officer.

In December, I started my second stint as Weapons Officer. In January 1965, SNOOK passed her Nuclear Weapons Acceptance Inspection. Two years after I started preparing SNOOK to carry ASTOR torpedoes, I supervised her certification to carry them and her first loading of them

In February, I took my Chief Engineer examination in Admiral Rickover's offices in Washington DC. On the second day of the examination, the oral examination day, I received orders, ordering me to report back to SNOOK by 0800 on the following day. The reason that I was needed could not be divulged during the unclassified telephone calls between SNOOK and Admiral Rickover's staff. The staff accelerated my oral examinations and drove me to the Dulles Airport for a late night flight to San Diego.

I arrived in time and SNOOK got underway for about 10 days during which she surveilled a Soviet intelligence ship disguised as fishing trawler. The trawler had come from Petropavlovsk and was patrolling along the California coast. SNOOK most likely could have undertaken this operation without me. However, when SNOOK got underway, Jim Watkins did not know how long she would be required to keep the trawler under surveillance. Not knowing how long SNOOK would be at sea, he wanted all of his officers with him.

On March 16, SNOOK departed San Diego on a two month special operation to test her new electronic suit against the Soviet Navy. The suit had performed to or exceeded the expectations for it in exercises during refresher training out of San Diego.

Before SNOOK reached her station, the muzzle door of her Trash Disposal Unit developed a leak that placed the TDU out of service for the remainder of the patrol.

The TDU is similar in function to a torpedo tube. It has two doors: a breech door in the galley and a muzzle door near the bottom of the hull. To get rid of trash and garbage, the muzzle door is shut, the breech door is opened, the trash and garbage are loaded into it, the breech door is shut, it is filled with water and equalized with sea pressure, the muzzle door is open and water is pumped into it to expel the trash and garbage. When the trash and garbage is gone, the muzzle door is shut and it is drained to be made ready for reuse.

A tin can had broken loose from one of the trash bags and fouled the muzzle door. SNOOK surfaced to permit several of us to attempt to clear the obstruction. When on the surface, the Operations Compartment in which the TDU was located was sealed off from the adjacent compartments. Air pressure in the Operations Compartment was increased to that of the sea pressure at the muzzle door. We broke the interlocks between the breech and muzzle doors. We opened the breech door and looked down the 12 foot tube to the muzzle door. We could see the can but we were unable to dislodge it. When we concluded that we could not fix it, we shut the breech door, reconnected the interlocks, bleed off the air pressure in the compartment. SNOOK then dove to resume her transit.

For the next 40 days, we handled our trash and garbage as follows. Dry trash was stored in various spaces within the ship. Bones and other solid garbage were placed in the freezer. Liquid garbage was taken to a small head in the engineering spaces and flushed into its sanitary tank from where it was periodically discharged overboard. We did not put any trash or garbage in the main sanitary tank for fear that we would foul its discharge system. This tank collected the waste from all heads but the one in the engineering spaces and from all showers and wash basins. Without it, life would have been miserable.

After 40 days, we ran out of space for the dry trash. SNOOK surfaced. An all hands working party passed the trash to the bridge from where it was thrown overboard. It took over an hour to empty the ship of the accumulated dry trash. When SNOOK was ready to dive, we had to put an amount of water into her variable ballast tanks equal to the weight of the trash discarded. We estimated the weight of what we had thrown over board. We underestimated. On the first attempt to dive, SNOOK remained on the surface. To get her to dive, we doubled our original estimate.

On or about May 20, SNOOK terminated her patrol in Naha, Okinawa. The data she acquired with her new electronic suit was ten or more times greater than that gathered in 1964 by her previous suit. Subsequently, SNOOK was awarded the Navy Unit Commendation and Jim Watkins her Commanding Officer was awarded the Legion of Merit for this mission. The Secretary of the Navy's *Citation* of SNOOK read as follows:

For exceptionally meritorious service in support of military operations during the Spring of 1965 while serving as a member of the Submarine Force, United States Pacific Fleet. Conducting an extended submarine, USS SNOOK conclusively proved the operational value of a unique electronics system, thereby substantially enhancing the combat readiness of all U. S. nuclear submarines. The professional and technical competence, meticulous attention to detail, and inspiring devotion to duty of SNOOK's officers and men, reflect great credit upon themselves and the United States Naval Service.

All personnel attached to and serving aboard USS SNOOK during the above designated period are hereby authorized to wear the Navy Unit Commendation Ribbon.

In connection with turning over the data collected, Jim Watkins orally briefed the Commander Submarine Flotilla Seven (the officer in charge of all submarines in the Western Pacific). Upon completion of the briefing, the Commander surprised all of us present by not asking any questions about the new electronic suit or about the recently completed patrol. Instead, he waxed eloquent about the task he was going to assign SNOOK now that she was under his operational control. He was going to install a 50 caliber machine gun on her bridge and send her to Vietnam to become part of the *Market Time* patrol. These patrols stopped and search junks suspected of carrying supplies from North Vietnam to the Viet Cong in South Vietnam. Jim Watkins respectfully suggested that SNOOK should be sent on another special operation to exploit her unique capability. The Commander rejected the idea and emphasized that the Submarine Force had to part of the Vietnam War. All Jim Watkins could say to these new orders were "Aye Aye, Sir". However, the Project Manager for the new electronic suit who was present at the briefing was not subject to the Commander's orders. As soon as the Commander left, the Project Manager called his superiors in Washington DC. Within 24 hours, SNOOK orders to *Market Time* were canceled and she was ordered on another special operation to start in July.

One of the casualties of the Vietnam War was the suspension of clear thinking among many of our leaders, civilian and military. I was shocked that a senior submarine officer considered interdicting a Vietnamese junk with a nuclear submarine with the most advanced intelligence gathering suit available a suitable employment of that submarine. When the idea crossed his mind, he should have rejected it. The real threat to the US was the Soviet Navy not Vietnamese junks. SNOOK was the most advanced submarine then available to gather intelligence about the Soviet Navy.

After Naha, SNOOK went to Sasebo, Japan. She was the second nuclear submarine to call in a Japanese port. We were greeted by protestors against nuclear power plants. Protestors in Japan, like protestors in the US, apparently are not guided by reasoning. Japan was developing land based nuclear power plants. These plants did not bother the Japanese protestors. Their concern was the nuclear plants in US submarines, plants that would spend a limited time in Japan whereas the Japanese plants would be there all the time. The majority of the protestors were not from the Sasebo area but from the Tokyo plain. Groups opposed to the US presence in Japan hired the protestors and paid for their transportation to Sasebo. More police were present than protestors.

Upon completion of her call in Sasebo, SNOOK went to Subic Bay to repair her Trash Disposal Unit. For several days, the ship repair facility tried to repair the TDU with SNOOK alongside the pier. Divers worked in the water at the muzzle door. Other workers worked inside SNOOK at the breech door. The Operations Compartment was sealed off from the rest of the ship and pressurized to prevent flooding through the TDU, similar to the way we made our inspection at sea (see above). When this approach did not yield success, SNOOK was drydocked. The TDU was then quickly repaired without the need to pressurize the compartment.

Going on liberty was interesting when the Operations Compartment was pressurized. The compartment not only contained the control room, the sonar room, the radio room, etc., it also

was the main berthing compartment. To depart or to return to the ship, we used the bridge access trunk. This trunk had a lower and an upper hatch. To depart the ship we proceeded as follows. We shut the upper hatch, pressurized the trunk to the pressure in the compartment, opened the lower hatch, entered the trunk, shut the lower hatch, bled off the air pressure in the trunk, opened the upper hatch and exited the trunk. To return to the ship, we reversed the procedure. We shut the lower hatch, bled off the air pressure in the trunk, opened the upper hatch, entered the trunk, shut the upper hatch, pressurized the trunk to the pressure in the compartment, opened the lower hatch and entered the ship. The crew became quite proficient in these procedures.

On June 17, the day on which SNOOK departed Subic Bay for Chinhae, South Korea, I received message orders to leave SNOOK in June and proceed to USS JAMES MADISON (SSBN-627) to become Chief Engineer of her Blue Crew.

On the way to Chinhae, one of SNOOK's newer officers attempted suicide. SNOOK had almost reached Chinhae. She was ordered to return to Naha in Okinawa to transfer the officer to a hospital on Okinawa.

The young officer, another officer and I shared a stateroom. In hindsight, we should have noted that he was depressed. I recall one instance in Subic Bay, in which he reached out for our help. He was upset over being reprimanded by the Executive Officer. The other officer and I responded: welcome to the club, getting your ass chewed out is part of the job, let's have a beer tonight. He didn't join us for the beer. We and others in the wardroom were all too busy to recognize that this officer needed help.

On the night he tried suicide, he was scheduled to be observed handling the engineering plant under simulated casualty conditions. I was the Engineering Officer of the Watch; he was my trainee. The Commanding Officer and Chief Engineer would run the casualty drills a couple hours into my watch. The officer asked for time to study in the wardroom. I gave him my permission. When the Commanding Officer and the Chief Engineer arrived in the engineering spaces, the officer was not with them. A search was commenced for him. He was found in the officers head with a knife stuck in his chest. He missed his heart and collapsed a lung. SNOOK's hospital corpsman drained the lung and closed the wound. The Commanding Officer broke radio silence to report what had happened. SNOOK was ordered to Naha, Okinawa, to transfer the officer

On June 26, SNOOK called at Chinhae. She was the first nuclear submarine to call in South Korea. Chinhae is located about 25 miles west from Pusan on the southern coast of South Korea.

I was detached the next day.

I prepared the above for Erica Phung, a granddaughter of MMCS (SS) Ethan McKay with whom I had the honor to serve in SNOOK. 9 August 2014