

American Submariners Inc.
4370 Twain Ave.
San Diego, CA 92120-3404



The Silent Sentinel *December 2017*



Our Creed and Purpose

To perpetuate the memory of our shipmates who gave their lives in the pursuit of their duties while serving their country. That their dedication, deeds, and supreme sacrifice be a constant source of motivation toward greater accomplishments. Pledge loyalty and patriotism to the United States of America and its Constitution.

In addition to perpetuating the memory of departed shipmates, we shall provide a way for all Submariners to gather for the mutual benefit and enjoyment. Our common heritage as Submariners shall be strengthened by camaraderie. We support a strong U.S. Submarine Force.

The organization will engage in various projects and deeds that will bring about the perpetual remembrance of those shipmates who have given the supreme sacrifice. The organization will also endeavor to educate all third parties it comes in contact with about the services our submarine brothers performed and how their sacrifices made possible the freedom and lifestyle we enjoy today.



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The Silent Sentinel via Email

To all of my Shipmates and families who currently receive our Great newsletter via the mail who would like it sent via email or continue to receive it via mail, please fill out the form and mail it to the base or myself. We are trying to cut the cost of the newsletter down from \$3700 to about \$1900 a year. By receiving the Silent Sentinel via email will cut down the printing and mailing cost. The other plus to receiving it via email is you can save it on your computer and not have the paper lying around the house.

A subscription to the Silent Sentinel newsletter will be available to surviving family members via internet email, at no charge, upon notification of the Membership Chairman. If a printed hard-copy is preferred, via US Post Office delivery, an annual donation of \$5.00 will be requested to cover costs.

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USSVI Base Commander
c/o VFW Post 3787
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*DUE TO LOGISTICS CONSTRAINTS, ALL INPUTS FOR THE SILENT SENTINEL MUST BE IN MY HAND NO LATER THAN **ONE WEEK** AFTER THE MONTHLY MEETING. IF I DO NOT RECEIVE IT BY THIS TIME, THE ITEM WILL NOT GET IN. NO EXCEPTIONS! MIKE*

December Meeting

Our monthly meeting is held on the second Tuesday of the month at VFW Post 3787, 4370 Twain Ave., San Diego. Our next meeting will be on *December 12th*. The post is located one-half block West of Mission Gorge Road, just north of I-8. The meeting begins at 7 p.m. The E-Board meets one hour earlier at 6 p.m.

*Check us out on the World Wide Web
www.ussvisandiego.org*

Binnacle List

Harry Humpreville and Glen Gerbrand

Submarine Losses in December

Originally Compiled by C J Glassford



USS Capelin (SS-289)

Lost on Dec 2, 1943 with the loss of 76 men. She was on her 1st war patrol, but her exact location, date and cause of loss remain a mystery. She may have been lost to mines or an operational casualty.

USS Sealion (SS-195)

Lost on Dec 10, 1941 with the loss of 4 men. To prevent her from falling into enemy hands, she was scuttled in Manila Bay after incurring severe bomb damage during the initial Japanese attack. One other Sealion man was later captured and died in POW camp.

USS F-1 / Carp (SS-20)

Lost on December 17, 1917 with the loss of 19 officers and men when it was sunk after collision with the USS F-3 (Pickerel(SS-22)) off San Clemente, CA.

USS S-4 (SS-109)

Lost on December 17, 1927 with the loss of 40 officers and men when it was sunk after being rammed by USCG Paulding. Salvaged in 1928 and recommissioned.





***San Diego Base, United States Submarine Veterans Inc.
Minutes of Meeting - 14 November 2017
At VFW Hall, 4370 Twain Avenue, San Diego CA 92120***

1910- Base Commander Warren Branges called the meeting to order.

Conducted Opening Exercises - Pledge of Allegiance lead by Past Commander Fred Fomby

Base Commander Warren Branges lead the prayer.

Base Commander Warren Branges Tolling of the Boats for boats lost in the month of November.

Junior Vice Commander Manny Burciaga recognized Past Commanders, dignitaries and guests.

Base Secretary Jack Kane announced 15 members and one guest present.

Base Treasurer Joe Peluso gave his report. A copy of the Treasurers Report will be filed with these minutes.

Minutes of the October meeting were published in the Sentinel.

Base Commander Warren Branges called for Committee Reports

Binnacle List - Base Commander reported Harry Humpreville, and Glen Gerbrand on Binnacle.

Parade Committee - Secretary Jack Kane reported for Parade Chairman Joel Eikam. We have concluded the 2017 Parade Season with participation in the San Diego Veterans Day Parade on 11 November.

Membership Committee - Chairman Ray Febrache. We have currently have 254 base members. Scholarship Committee - Committee Chairman Paul Hitchcock was not present. We will start the Scholarship process again in the new year.

Storekeeper - Paul Hitchcock has volunteered to become Storekeeper. SK inventory for turnover is in progress.

Breakfast Committee - Chair Base Commander Warren Branges. The 29 October Breakfast was poorly attended. Very few plates were served. The next Breakfast will be 29 April 2018.

52 Boat Memorial - Chair Base Commander Warren Branges- The City has put landscaping on hold for the time being. The next "ALL FLAGS DAY" - will be 7 December 2017, Pearl Harbor Day Remembrance.

Float Committee - Chair David Kauppinen - No Report.

Eagle Scout Program - Co Chairs Nihil Smith and Glenn Gerbrand. No Report.

1928 - Base Commander called for a break. 50/50 Raffle held.

1950 - Unfinished Business

Baja Fishing Trip Fund Raiser - David Ball was not in attendance. Recap of Fund Raiser. 300 tickets @ \$10 per ticket. First Prize 2 Day Baja Fishing Trip with 3 day stay at Old Mill Hotel in San Quintin Baja or \$500. 2nd Place - Prize not claimed by 1st Place winner. 3rd Place \$100. The drawing will held at the Base Christmas Party on 2 December 2017.

Annual Christmas Party - Will be held at the VFW Hall, 4370 Twain Avenue, San Diego on Saturday, 2 December 2017.

Meals will be Pork Chops or Cornish Hens. Admission will be by tickets. Each ticket is \$20.00. Seating starts at 1300. Meal served at 1400. See Base Commander Warren Branges for tickets.

2018 Membership Drive of Active Duty Submariners. Base Commander Warren Branges met with COMSUBRON 11 Command Master Chief. "Rolling out" details will be forthcoming.

Monthly Meeting as LUNCH/BRUNCH. The Base Commander will work on setting up the March/April Meeting as a Saturday Lunch/Brunch. We were unable to find a suitable venue to hold at Saturday meeting in November.

Member donations to the Hurricane Harvey/Irma Relief Fund stands at \$430+. Donations will be solicited at the Christmas Party. All funds raised will be sent to National in December.

99 for 99 Scorpion Fund will benefit the 2018 Scorpion Memorial in Norfolk. 2018 is the 50th Anniversary of the loss of Scorpion. Each Base is asked to donate \$99 to the fund. National is donating \$999. A motion will be made at the next meeting concerning this donation. Junior Vice Manny Burciaga will be attending the 50th Year Memorial Observance in Norfolk. The Ceremony will be in May 2018. Manny will let the member's know the exact date at the next meeting.

NAVY MUSEUM in ALPINE. Base Secretary will contact Tarry Ulmer about touring his property in Puetz Valley. Juanita Williams reported that Terry has facilities for an outdoor picnic/luncheon/pot luck.

2004 - New Business

The Submarine Birthday Ball will be held on Saturday 21 April 2018 at the Sheraton Hotel in San Diego. We will take up the question of sponsoring WWII Submarine Veterans attendance during the December meeting.

The Old Timers Luncheon for 2018 will be held at Roncador on Friday, 20 April 2018. We will provide Tolling of the Bell Ceremony.

Wreath Laying for Submarine F1. The Undersea Reserve Unit will sponsor a wreath laying for Submarine F1 lost off La Jolla 17 December 1917. This will be small boat transfer to a ship - two hour or longer transit - ceremony - return transit and small boat transfer. Tentatively scheduled for 13 December. Let Warren know if you are interested in attending.

2020 - Good of the Order

Shipmate Russ Fillbeck showed his All Submarine Class Poster with some signatures. He asked if any CO/XO/COB etc would sign next to their boat designation. He will have the poster framed when he has as many signatures as possible. Russ also has Holland T-Shirts for order. See Russ after the meeting.

The Meeting was adjourned at 2029.

/s/ Jack E. Kane

Jack Kane, Secretary

Sailing List for 14 November 2017

Members

Fred Fomby

Bob Farrell

Jack Kane

Warren Branges

Matt Baumann

Bill Earl

Manny Burciaga

Richard Vannol

David Martinez

Mert Weltzien

Ron Gorence

Ray Febrache

Peter Lary

Russ Fillbeck

Joe Peluso

Guests

Mike Williamson

-WRD-6

USS Sealion (SS-195) - Perpetuating the Memory

by David Kauppinen



The USS Sealion (SS-195) was a Sargo Class submarine commissioned November 27, 1939 at Groton, Connecticut, with Lieutenant J. K. Morrison, Jr. in command.

After shakedown, the Sealion was attached to SUBDIV 17 and transited to the Asiatic Fleet based at Cavite Naval Station, Phillipines, in August 1940. After taking part in Navy exercises over the next 16 months, LT. CDR. Richard G. Voge took command and the submarine commenced an overhaul at Cavite in December 1941.

On December 10, three days after the Pearl Harbor attack, Cavite was attacked by 54 Japanese Navy Bombers. **Upon seeing the attacking planes, the C.O. ordered all hands below. A few minutes later, two bombs hit Sealion, one aft of the conning tower, destroying the machine gun mount, the main induction, the battery ventilation, and the conning tower bulkhead. A fragment from this bomb pierced the conning tower of the adjacent USS Seadragon (SS-194) and killed Ensign Sam Hunter who became the first submarine casualty of the war.** The second bomb penetrated the maneuvering space at the rear of the after engine room killing 4 crew members; Sterling Cecil Foster EMC(SS), Melvin Donald O'Connell EMC(SS), Vallentyne Lester Paul EM3(SS), and Ernest Ephrom Ogilvie **MM1(SS)**. Subsequently, the stern sank with 40% of the deck under water, and she took on a 15 degree starboard list. Since the Naval Station was destroyed in the attack, repairs to the Sealion were impossible. Consequently, all useful equipment **such as gyro, radio, and sound equipment was removed, and she was** scuttled on Christmas day 1941, becoming the first American submarine lost during World War II.

At the time of the Sealion attack, Eli Thomas Reich was the Executive Officer and Engineer. Subsequently, he became the C.O. of the second USS Sealion (SS-315) in March 1944. On November 21, 1944 on her third war patrol, the Sealion II encountered an enemy convoy moving through the Taiwan Strait containing 3 battleships, a cruiser, and 6 destroyers. She fired 9 torpedoes at two of the ships and ended up sinking the battleship Kongo and a destroyer.

Karma - during WWII, it was a customary for torpedomen to mark a name on the head of each torpedo as it was loaded into a tube. Usually these were the names of wives, girlfriends, factory employees, and other significant individuals. However, on November 21 four of the Sealion fish fired at the convoy carried the names Foster, O'Connell, Paul, and Ogilvie, the crewmen lost in the bombing of Sealion I three years earlier.

Photo Gallery





Current News

“Plataginet, I will; and like thee, Nero,
Play on the lute, beholding the towns burn” (*Henry VI*, Shakespeare)

New Mission to Find Missing Argentinian Submarine Staff, Hydro International, December 7

The U.S. research vessel 'Atlantis' will launch a search-and-recovery mission for the missing Argentinian submarine 'ARG San Juan', equipped with a U.S. Navy remotely operated vehicle (ROV) flown down to Argentina. The vessel will load CURV aboard and is scheduled to depart on its new mission on 7 December.

Atlantis, operated by the Woods Hole Oceanographic Institution (WHOI), docked 2 December in the Argentinian port of Comodoro Rivadavia to mobilize the U.S. Navy's Cable-operated Underwater Recovery Vehicle (CURV) that was flown in from Dover Air Force Base in Delaware on 1 December. Since 21 November Atlantis had joined a number of ships in the area in a search for the submarine, which went missing 15 November with 44 crew members aboard.

The 6,400-pound CURV is equipped with sonar to detect targets in the deep and high-resolution camera systems. It can dive to 20,000 feet and is controlled by a cabled tether that also transmits real-time data back to the ship. If the sub is located, the CURV will conduct a close-up inspection, document its condition, and perhaps find clues to determine the cause of the accident.

Atlantis has often been the platform to launch the WHOI-operated ROV Jason and is well suited to the task. Atlantis is a very capable ship and has a very experienced crew for conducting complex underwater vehicle operations, said Rob Munier, vice president for marine facilities and operations at WHOI.

Atlantis, which is owned by the U.S. Navy, was en route to a planned oceanographic mission in the South Atlantic when Navy officials diverted it to head to the area where last communications were received from the San Juan. The ship used its sophisticated multibeam sonar and an underwater communications system to search areas prescribed by the Argentinian Navy. Crew members monitored the equipment around the clock - work that was demanding and emotionally laden. The port stop allowed the ship to change crews, refuel, and load CURV and its containerized control room and accompanying equipment.

CURV will be operated by Phoenix International. Phoenix and WHOI have worked together before, including on a 2010 expedition to return to explore the wreckage of the Titanic.

Underwater Drone Tech Bubbles Michael Sainsbury, InnovationAus, December 6

Hot on the heels of Australia's landmark \$90 billion Naval Shipbuilding Plan, a debate has been raging about a new technology that will first supplement and eventually supplant many of the functions that are now performed by Australia's submarines – the NSP's largest component.

Right now in the Royal Australian Navy, the long-touted underwater drone technology, officially known as unmanned underwater vehicles (UUV), is finally moving away from the research lab and into reality.

It's not just for defence and related purposes that UUVs are being used. Ocean and climate researchers are also pinning their hopes on the new class of submersibles to considerably add to man's knowledge about the ocean, and to be able to make better predictions about it.

UUV's are increasingly coming in all shapes and sizes. Broadly speaking there are two classes of UUVs: remotely operated underwater vehicles (ROVs) controlled by a remote human operator in the same way that aerial drones are, and the sophisticated robots that are autonomous underwater vehicles (AUVs) that operate independently of direct human control.

Some pundits critical of the Future Submarines program that is the centre-piece – in terms of cost – of the Naval Shipbuilding Plan, have been saying for a number of years that UUV's will obviate the need for Australia's submarine program, which is valued at a very rubbery \$50 billion (as per the admission of Admiral Greg Sammut recently).

It is also generally conceded by most, including the hefty phalanx of skeptics (and sore losers) of Australia's current Future Submarines plan, that large submarines will remain necessary for the type of long-distance operations Australia's force will need to perform.

As with many things the truth is probably somewhere in the middle, although its something of a truism that technological advances tend to be initially over-hyped, while the eventual ramifications are under-estimated.

As Euan Graham Director of International Security Program at the Lowy Institute wrote recently "...in future they will be likely to function as standoff platforms for launching underwater drones, which 'will be the platform of choice for operations in areas of significant risk, such as in littoral waters or choke points, where the adversary can focus its resources.'"

Early model UUVs were used to gather information on weather currents, ocean temperatures and topography, but their capabilities are growing. Much of the early work on UUV is around sensors that will change the way both researchers and defence forces use the ocean.

“More types of sensors will emerge from the research labs. They’ll exploit much subtler physical, chemical and biological changes in the environment arising from the presence or activity of a submarine,” Professor Roger Bradbury of the National Security College at the Australian National University wrote recently in *The Australian*.

“The sensors themselves will rapidly improve in sensitivity, and rapidly reduce in size and cost.”

“The range of sensor platforms will expand from manned platforms such as ships and planes to unmanned and increasingly autonomous aerial, surface and underwater drones.

“The dwell time of the platforms will increase as batteries and other energy systems improve. And the computational and networking ability of these swarms of sensors will increase, allowing synoptic real-time images of targeted waters to be developed”.

But as UUVs develop they will become bigger and more sophisticated, although from a warfare point of view one of the main function of a defence submarine is being able to vertically launch a ballistic missile, an achievement that is some time away for UUVs.

Still, the varying submersible craft in the growing UUV Family are being developed by all major military powers, including US, China, Russia and a number of European nations.

The RAN is following in the footsteps of the United States Navy, which in September this year created its first ever dedicated underwater drone unit which is known as Unmanned Undersea Vehicle Squadron One, or UUVRON 1, after it split it off from what was reported as “a secretive submarine unit.”

“Today we are transitioning our UUV detachment into the first UUV squadron,” US Navy Captain Robert Gaucher, the outgoing head of DEVRON 5 said during the event. “Why is this historical? It’s because in standing up UUVRON 1, it shows our Navy’s commitment to the future of unmanned systems and undersea combat”.

With so much going on, there are obvious opportunities for Australian technology companies, particularly as the funds start to flow into the defence budget.

The government’s stated rationale in building new submarines and ships in Australia, despite the fact that cost savings could have been achieved offshore, was to develop local capacity and industry, and this clearly extends to UUVs.

So it’s interesting to note that the world’s only publicly listed unwater drone company Aquabotix Technology Corporation, is quoted on the Australian Securities Exchange.

The company, which makes UUV’s for a range of markets and has inked a contract with the US Coast Guard, believes it has identified a gap in the consumer market of a viable “recreational underwater drone” that CEO Durval Tavares reckons is a potentially large market segment for the company.

Still, after raising \$7 million for its March initial public offering, shares in Aquabotix with the canny Australian Securities Exchange code of UUV, have drifted lower.

It’s encouraging to see that investors are backing UUV technology but for now, the real action, at present, remains tapping into the military and research side of UUVs.

France To Have Its First Women Submariners On Mission Staff, RFI Radio, December 4

The French Navy announced on Monday that four women will join the crew of a nuclear-powered ballistic missile submarine (SSBN) that will soon be on patrol.

The four female officers, including a doctor, underwent a two-year period of training, before joining "their submarine a week, ten days ago", said Admiral Christophe Prazuck, Navy Chief of Staff.

"They are training on land and at sea," said Admiral Prazuck. It is planned that they will make the next patrol with their comrades ". Among these pioneers are "a nuclear expert" and "an expert in diving safety".

The third woman will be shift manager.

France has four nuclear-powered ballistic missile submarines. At least one is permanently at sea. Each mission lasts 70 days.

Until now serving on French submarines was not open to women. Serving in the submarine corps opened to women in 2014 but they were confined to posts on land.

"To respect our privacy rules, it's easier for officers who have single rooms in nuclear-powered submarines. We'll decide what comes next, " added Admiral Prazuck.

Several countries in the world already have women onboard their submarines, including the United States, Great Britain, Australia, Canada, Sweden and Norway.

The crew of the Argentinian navy submarine San Juan, missing since 15 November in the South Atlantic, included the first female submarine officer in Latin America.

The French army has a total of 15% women in its ranks, ranking fourth in the world in terms of feminisation behind the Israeli, Hungarian and American armies, according to the Ministry of the Armed Forces.

Women make up 14.7% of French Navy staff, 9% of whom are at sea.

Families Of Lost Argentina Submarine Crew Decry Government Response Jorge Otaola, Reuters, December 3

BUENOS AIRES - Dozens of relatives of the 44 crew members of an Argentine submarine that went missing on November 15 marched from a naval base on Sunday, demanding to know what happened and criticizing the government’s response to the tragedy.

Holding posters with photos of the crew and chanting "Search and Rescue!" the family members walked away from a naval base in Mar del Plata, following a press conference during which the navy said the submarine had still not been located.

The disaster has spurred soul searching over the state of the military in Argentina, which now has one of Latin America's smallest defense budgets in relation to economic size after a series of financial crises.

"Our disagreement is with the government, not with the navy," said Marcela Moyano, wife of crew member Hernán Rodríguez, during the protest. "Whoever is responsible needs to be held responsible."

Spokesman Enrique Balbi said on Thursday the navy had abandoned hope of rescuing the crew alive, noting the ARA San Juan had air supplies for a week while 15 days had passed since it last reported its position.

Some family members complained they were not advised before the general public of the end of the rescue mission and have also demanded more contact with President Mauricio Macri in Mar del Plata, where the San Juan was scheduled to end its journey.

While local media have speculated Macri will soon declare a period of national mourning for the submarine crew, he has been silent in recent days.

"He (Macri) needs to be here because this is the priority, there are 44 families behind this situation and someone has to be in charge," said Marcela Fernández, wife of Alberto Sánchez.

Macri's defense minister met with families in Mar del Plata on Friday.

***North Korea Appears Ready To Accelerate Submarine Weapons Tests,
Adding To Nuclear Threat
Jeff Daniels, CNBC, December 1***

There are signs that North Korea's submarine missile program is expanding as it prepares its second test, adding to the risk that the nuclear-armed country could one day threaten the U.S. or its Asian allies with yet another powerful weapon in its arsenal.

Experts suggest North Korea having fully submersible submarines firing a nuclear ballistic missile pose a dangerous scenario because they could offer the hermit regime a better chance of survival and might be harder to detect. It comes on the heels of North Korea on Tuesday launching a new Hwasong-15 intercontinental ballistic missile, a road-mobile weapon the state-owned KCNA media claimed could carry a "super-large heavy warhead, which is capable of striking the whole mainland of the U.S."

The North Koreans appear to be getting more aggressive on submarine-launched ballistic missile (SLBM) development and now have several shipyards active in the offshore-weapons program. The North is not believed to have the capability today to launch multiple ballistic missiles from a submarine. However, experts say the totalitarian state is working at a feverish pace and could have this submersible as early as next year.

"If North Korea can deploy not only developmentally a submarine-launched ballistic missile that is effective and deploy it on ballistic missile submarines, it certainly complicates defense against missile attacks," defense analyst Joseph S. Bermudez Jr., co-founder and CEO of Colorado-based imagery analysis firm KPA Associates LLC, told CNBC in an interview Friday.

In a 38 North blog post Friday, he revealed that "commercial satellite imagery from Nov. 11, 16 and 24 show that North Korea's second submersible ballistic missile test stand barge — a platform that allows for underwater missile launches outside of submarines — located at the Nampo Navy Shipyard is being prepared to enter service."

38 North, a project of the U.S.-Korea Institute at Johns Hopkins School of Advanced International Studies, said the "second missile test stand barge [is] almost operational." Bermudez wrote, "Once in service, this barge will help facilitate a broader SLBM testing regime and potentially establish a SLBM capability within the West Sea fleet [of North Korea's navy]."

Bermudez, a 38 North contractor, explained that the test stand barge and platform are used to simulate the weapons that would be inside the submarine because it's considered too dangerous and costly to do such early testing inside a real submarine. He also said that the North Koreans know the U.S. military is watching its SLBM and submarine development so they have been doing things to mitigate the satellite surveillance capabilities, including resorting to concealment in some cases.

Still, Bermudez called the Nampo shipyard activities on the regime's west coast "a strong indicator that Pyongyang is advancing" in its SLBM program. And he said the North Koreans will need a series of tests from the submersible barge before deploying ballistic missiles on submarines.

Last year, North Korea conducted a test of its SLBM technology near its port city of Sinpo and reportedly flew one missile at least 500 kilometers (or about 300 miles), according to South Korea's Yonhap news agency. Sinpo, located on the country's northeast coast, also is where the North reportedly has renovated large buildings that might be involved in the construction of a new SLBM-capable submarine.

The Sinpo-class experimental submarine that the North Koreans have today is believed to be up to about 2,000 tons and have a nautical range of about 2,800 kilometers (about 1,500 miles). Yet it features just a single launch tube and Bermudez said "no one considers that an operational capability."

According to Bermudez, Pyongyang is apparently building a submarine that will feature multiple tubes for ballistic missiles and greater capability at sea. He estimated the new submarine "could be launched any time next year and going forward."

To be clear, though, he said just because the submarine may launch doesn't necessarily mean it's fully operational. The expert explained how it typically takes a year or two after the submarine is launched that it "truly becomes operational" because it will go through a range of sea trials and necessary crew training.

Even so, having the submarine-launched ballistic missiles with nuclear capability is potentially a nightmare scenario for South Korea and Japan. That's because the submarines could potentially avoid detection by some of the most advanced defense systems.

For example, missiles fired by North Korean submarines off the east coast of Japan could potentially dodge detection from Japan's Patriot anti-missile system by launching from behind radar. At present, the detection is focused on missiles coming from land-based missiles in North Korea.

Similarly, the current THAAD anti-missile system deployed by the U.S. in South Korea is focused on identifying missile threats from the North. As a result, a submarine missile from the North Korean navy could be launched behind radar and perhaps evade existing defense systems.

"Up to now we've only had to worry about them coming from north to south or from west to east in the case of Japan and the United States," said Bermudez. "If they deploy a ballistic missile submarine with operational missiles, it can come from almost any direction around the peninsula."

Experts say U.S. bases in the Western Pacific, including Guam, also are potentially at risk if North Korea deploys submarines with SLBM weapons. At this point, though, it's not believed that the North Korean submarines have a range to reach the United States mainland.

That said, if the North's submarines could reach closer to the U.S. West Coast they would not need an intercontinental ballistic missile to threaten major American cities, says Loren Thompson, a defense industry consultant and chief operating officer of the Lexington Institute, a Virginia-based public-policy think tank.

"The biggest problem the U.S. faces in dealing with a North Korean nuclear launch is that you can't stop it if you don't know where it's coming from," Thompson said. "That is why the North Koreans are building mobile missile launchers on land and why they're trying to develop the ability to launch from under the seas."

At the end of the day, Thompson said what the North Koreans want is something the United States has in its nuclear arsenal — "a survivable retaliatory capability. If it's at sea, they might be very well obtain it."

But he said technological hurdles in developing a submarine with multiple ballistic missiles is rather challenging. That may be one reason North Korean hackers last year reportedly stole blueprints from Daewoo Shipbuilding, a large South Korean maker of submarines.

"You can't just launch the missile," Thompson said. "The exhaust will destroy the submarine. You have to push it into the air with gas, like compressed oxygen, and then ignite it once it's in the air. That is just more more complicated than launching from a land base."

North Korea's largest submarines at present include the so-called Romeo-class submersibles that are based on an old design from the Soviet Union. The 1,800-ton vessels are considered relatively easy to detect using anti-submarine warfare technology available to the U.S. and its Asian allies.

In fact, North Korean leader Kim Jong Un has been featured in state-run media taking tours and riding on board the green-painted Romeo-class submarines operated by the North's navy. Some estimates are the North has around 20 of the Romeo-class submarines.

The North Koreans also are known to have some 50 smaller submarines that are harder to detect and can sink ships with torpedoes. One of those submarines was believed to be responsible for sinking the South Korean Cheonan navy ship in 2010, resulting in the deaths of 46 sailors.



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