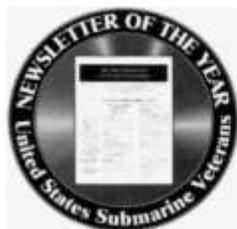


American Submariners Inc.
4370 Twain Ave.
San Diego, CA 92120-3404



The Silent Sentinel

August 2016



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.

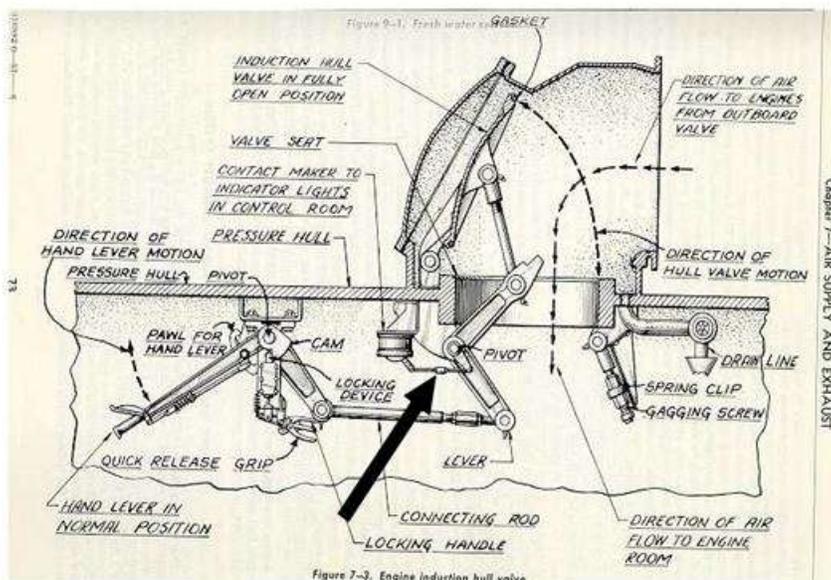


Figure 7-3. Engine induction hull valve

What would happen if the Contact Maker Linkage on a Sargo class diesel boat was not connected to the Engine Induction Hull Valve Pivot? Simply put, the Christmas Tree would show the Induction Valve shut when it actually was open! And this is exactly what caused the loss of Squalus, according to TMC(SS) Ret. Arthur Dawes in an interview that I conducted with him in the early 1990s.

Dawes (now on eternal patrol) noted that Squalus and Sculpin were both in Portsmouth for shipyard upgrades—they were worked on side by side by the same Portsmouth Naval Shipyard crew. When work was complete, Squalus was the first of the two to go for a test dive (Sculpin remained dockside).

Dawes, who was serving on Sculpin at the time, told me that when the report came in that Squalus had sunk, Sculpin crew immediately started checking

their own watertight integrity. It was then that they discovered that the Contact Maker linkage on the Engine Induction Hull Valve Pivot was disconnected! Had they not done so, two disasters would have occurred that day rather than just one!

I have never bought the white collar propaganda that loss of Squalus was caused by officer/crew error or catastrophic failure (the Naval Institute Press seems to have an affinity for this old wives' tale). Rather, I am convinced that Squalus was lost on account of human error—specifically, that of the Portsmouth Naval Shipyard workers who neglected to reconnect a contact maker linkage. M. HYMAN

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Position is Open

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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*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*

August 2016 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 . *February 9 th.* 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

Benny Williams

Submarine Losses in August

Originally Compiled by C J Glassford



USS Bullhead (SS-332)

Lost on August 6,1945 with the loss of 84 crew members in the Lombok Strait while on her 3rd war patrol when sunk by a depth charge dropped by a Japanese Army plane. Bullhead was the last submarine lost during WWII.

USS Flier (SS-250)

Lost on August 13,1944, with the loss of 78 crew members while on her 2nd war patrol. Flier was transiting on the surface when she was rocked by a massive explosion (probably a mine) and sank within less than a minute. 13 survivors, some injured, made it into the water and swam to shore. 8 survived and 6 days later friendly natives guided them to a Coast Watcher and they were evacuated by the USS Redfin (SS-272).

USS S-39 (SS-144)

Lost on August 13,1942 after grounding on a reef south of Rossel Island while on her 3rd war patrol. The entire crew was able to get off and rescued by the HMAS Katoomba.

USS Harder (SS-257)

Lost on August 24,1944 with the loss of 79 crew members from a depth charge attack by a minesweeper near Bataan while on her 6th war patrol. Harder had won a Presidential Unit Citation for her first 5 war patrols and CDR Dealey was awarded the Congressional Medal of Honor posthumously. Harder is tied for 9th in the number of enemy ships sunk.

USS Cochino (SS-345)

Lost on August 26, 1949 after being jolted by a violent polar gale off Norway caused an electrical fire and battery explosion that generated hydrogen and chlorine gasses. In extremely bad weather, men of Cochino and Tusk (SS-426) fought to save the submarine for 14 hours. After a 2nd battery explosion, Abandon Ship was ordered and Cochino sank. Tusk's crew rescued all of Cochino's men except for one civilian engineer. Six sailors from Tusk were lost during the rescue.



San Diego Base, United States Submarine Veterans Inc.

Minutes of Meeting - 12 July 2016

1900 - Base Treasurer David Ball called the meeting to order

Conducted Opening Exercises - Pledge of Allegiance lead by Chief of the Boat Fred Fomby.

Treasurer David Ball lead the prayer

Base Treasurer David Ball conducted Tolling of the Boats for boats lost in the month of July.

Base Treasurer David Ball recognized Past Commanders, dignitaries and guests.

Secretary Jack Kane announced 17 (18 total, 1 signed in late) members present.

Treasurer David Ball gave his report. Checking Balance is \$7098.00, Savings Balance is \$22,263.00. Charlie Marin Scholarship Fund is \$2,455.00. A copy of the Treasurer's Report will be filed with these minutes.

The minutes of the 16 June 2016 meeting were approved as published in the Sentinel.

Base Treasurer Called For Committee Reports

Acting Chaplain David Ball reported the following on the Binnacle List: Bennie Williams is in acute care at Grossmont Hospital.

Chairman Joel Eikam reported the last two parades were Oceanside and Julian. The float will be setup at static display at the SUBVET Picnic on 23 July.

Chairman Ray Febrache was absent.

Scholarship Chairman Paul Hitchcock reported that three scholarship's were awarded. Checks will be mailed to the recipients as all three are at school out of state.

Storekeeper Phill Richeson said to call him if you need anything from the store between meetings.

Base Vice Commander Warren Branges was absent. Treasurer David Ball announced the next SUBVET Breakfast is 31 July. Volunteers are needed to cook and serve.

Base Vice Commander Warren Branges was absent. It was noted that the Flag trailer is being modified.

Chairman David Kauppinen was absent.

Shipmate Nihil Smith reported that the Eagle Scout Program will do 3 Eagle Scout presentations in the near future (late July, early August). The San Diego Program has done 47 Eagle Scout awards since its inception.

1919 - Base Treasurer called for a break.

1930 - Base Treasurer called the meeting back to order. 50/50 drawing was held. Padres Bobble-head and Padres tickets were raffled as well as the 50/50 cash.

1934 - Unfinished Business

Base Treasurer David Ball introduced the following

Southern California SUBVETS Picnic will be held on Saturday, 23 July 2016 at Smuggler's Cove on Naval Base Point Loma. Side dishes and desserts are welcomed. Submarine Tours will be at 1000 and 1300. Submarine Tour reservations should be sent to Bob Bissonnette via e-mail. Send name and SSN. Tour participants must have a photo ID. No Cell Phones are allowed on the tour.

The Joint SUBVET Christmas Party is scheduled for 3 December 2016. Social Hour will be 1300-1400 - Dinner at 1400. Menu Choice will be Cornish Hen or Pork Chops. Cost will be \$20 per person.

The USSVI National Convention will be held in Reno NV August 15 through 21. Registration is still open. Cutoff date for reduced room rates (\$79 + tax) is 15 July. The SD Base advertisement for the Convention Brochure was sent.

National Election voting totals are anemic. Only 9% of the San Diego Base members have voted. There is a laptop setup on the side table for voting on-line.

1950 - New Business

Base Treasurer David Ball presented a proposal for obtaining San Diego Base Challenge Coins. The initial run of 100 coins would cost \$680. We will sell the coins for \$10.00. A motion was made and passed to order 100 coins. Delivery will be in 3 to 4 weeks.

Base Treasurer David Ball presented Shipmate David Kaupinnen's suggestion to change the 50/50 drawing to 40/30/30 with 30% going directly to replenish the Scholarship Fund. It was also announced that David's former employer was contributing \$400 to the scholarship fund for volunteer work David has performed over the last year. A motion to change the 50/50 drawing was tabled until next meeting.

1957 – Good of the Order

The Meeting was adjourned at 2000

Jack Kane, Secretary

/s/ Jack E. Kane

Sailing List for 12 July 2016

Fred Fomby	Phill Richeson	Jack Kane
Bob Farrell	Nihil D. Smith	David Ball
Ed Farley	Robert Golembieski	Matt Baumann
Mert Weltzein	Chris Stafford	Paul Hitchcock
Ron Gorence	Dennis McCriecht	Ron Gorence
Michael Hyman	Joel Eikam	Peter Lary

Current News

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

Battle of the RoboSubs: Young Engineers Compete for Underwater Supremacy Sierra Jones, Office of Naval Research, Navy.mil, August 5

ARLINGTON, Va. – After months of planning, building, programming, testing and tweaking, it all came to down to one moment -- the 19th annual International RoboSub Competition, held in San Diego, July 25-30.

Forty-six teams competed in this year's event, sponsored by the Office of Naval Research and the Association for Unmanned Vehicle Systems International Foundation. The robotics contest challenged students to design, build and race submarines through a complex obstacle course, where points were awarded for the number and difficulty of successfully completed mission tasks.

"RoboSub showcases the talents of high school and college students from around the world," said Kelly Cooper, a program officer in ONR's Sea Warfare and Weapons, Ship Systems and Engineering Research Division. "This year saw our largest competitor field ever. To be successful, each team had to use their creative engineering skills to construct vehicles to navigate the course and its realistic missions -- all autonomously."

The mission theme for this year's contest was "A Pirate's Life for Thee," and required teams to navigate an obstacle course made of PVC pipes; "weigh anchor" by dropping markers within a predetermined area; "set course" by shooting mock

torpedoes through a cutout; "scuttle a ship" -- essentially touching buoys and pulling a surface ship underwater; and "bury a treasure" by finding an object emitting a sonar signal, grabbing the object and then moving and releasing it.

In addition to building an autonomous underwater vehicle, teams were also responsible for creating websites and videos and writing journal papers outlining their work.

"This event allows participants to not only demonstrate their engineering skills, but also their academic knowledge," said Cooper. "Both are vital aptitudes for students as they enter into the workforce, naval or otherwise."

The hope is these students will turn their excitement and interest for RoboSub into a future designing and building advanced unmanned capabilities for our warfighters, explained Cooper.

"It's important we continue our involvement in events like this," said Cooper. "For naval forces, autonomous systems represent a rapidly expanding field, so it's essential we continue to reach out and connect the needs and interests of the naval community with the engineers of the future."

California Institute of Technology was this year's biggest winner and brought home the top prize of \$6,000. Indian Institute of Technology Bombay won second prize and \$5,000; Cornell University took third and \$2,000; G.I. Nevelskoy Maritime State University came in fourth, earning \$1,500; Kasetsart University and Chulalongkorn University secured fifth place and \$1,500; Harbin Engineering University placed sixth, taking home \$1,000; and McGill University took seventh and \$1,000.

Special awards went to the National University of Singapore and McGill University for static judging, Ohio State University for the best technical paper and Northwestern Polytechnical University as the best new team.

Other U.S. teams included Amador Valley High School, Beaver Country Day School, Carl Hayden High School, Coleman University, Duke University, East Los Angeles College, Embry-Riddle Aeronautical University, Georgia Institute of Technology, Kennesaw State University, Montana State University, North Carolina State University, Oregon Institute of Technology, Prairie View A&M University, San Diego City College, San Diego Robotics 101, San Diego State University, St. George School, Texas A&M University, University of Arizona, University of California Riverside, University of Central Florida, University of Colorado Boulder, University of Florida, University of Southern California, Utah State University, and Washington State University.

International teams included Brazil's Federal University of Rio de Janeiro; Canada's cole de Technologie Superieure, University of Alberta, University of Toronto and University of Victoria; India's SRM University, Team BangaloreRobotics; Japan's Kyushu Institute of Technology; and Russia's Far-Eastern Federal University.

Destructive Behavior & Leadership, Are They are Related?

Stephen L. Capps, FORCM COMSUBLANT, AUSN, Summer 2016 Edition

I have come to the realization that everything I learned about leadership and being a productive citizen, I learned from a chief petty officer. My past is not what you might think given my leadership position. I do not know who my father is and neither did my mother. Besides my own children, I have no living relatives. I spent time in foster and juvenile homes all across the country, including Father Maloney's Boys Haven, until I quit high school and joined the Navy on my 17th birthday. If there was anyone who knew nothing about life, how the world worked or was more scared about what their future was going to look like, it was me. I have since honed my reading and writing skills and earned a degree in oceanography. For this I credit leaders throughout my Navy career that inspired me to be better. As leaders we have a responsibility to mold even the most disenfranchised youth so that everyone has a chance to be successful. Effective leadership and good management skills have a significant impact on destructive behavior, which is complex.

Destructive behavior includes suicidal thoughts, spousal abuse, sexual assault and harassment, drug abuse and alcohol related incidents. Some say these actions are beyond leadership's control, others say this is "Sailors" being Sailors. While I do not believe we can achieve zero incidents in these areas I do believe we can do more to prevent and reduce these outcomes. I often ask myself and other leaders, why do Sailors drink and drive given the Navy's extensive campaign on alcohol misuse or why do Sailors who succeed in boot camp have suicidal thoughts a few months later? Similarly, why does a chief petty officer with 12 years of service find themselves in a destructive behavior situation? I believe there are common denominators that we, as leaders, need to explore.

Involved Leadership

As leaders we need to be "all in." We must remember that a fundamental goal is to mold morally grounded Sailors into the next generation of productive citizens. This translates to leaders teaching and mentoring from a "buy-in" position. There is no thing as inherent knowledge – people don't just "know things," it comes with experience. Success is producing an environment where your people want to work for you, and developing a level of trust and being genuine is critical. Good leaders understand

that everyone comes from different backgrounds and that their thought patterns require that we educate ourselves about those we are privileged to lead.

Employing People

Consider how we employ people. How often do Sailors arrive for duty only to find a divisional plan that changes nearly every hour due to a supervisor's lack of organization?

The result is Sailors arriving home later than expected and frustrated with their work environment and an upset spouse who has been waiting at home all because a chief or LPO did not plan accordingly. As leaders we must understand the impact our failures can have on producing the anxiety that serves as a catalyst for destructive behavior. We must avoid the assumption that our Sailors have the requisite skills for life just because we give them a uniform, three meals a day and a paycheck. We must maintain the high standards of leadership and managerial skills daily and not allow involved leadership to atrophy. Tying this all together is the core of what shapes destructive behavior. If we gainfully employ our Sailors, train them and help them achieve all aspects of their required rating and qualifications progressions, and develop them into the next generation of subject matter experts by leading them with genuine concern and personal involvement, we can significantly reduce destructive behaviors. I challenge all leaders, enlisted and officers, E-4 to O-10, to think about how you can reduce destructive behavior by asking: How well do I know my Sailors? How much anxiety exists in my area of influence? To what extent is my leadership and management style contributing to this anxiety and what am I doing about it? Destructive behaviors will not be solved by addressing the behavior; you must address the things that are creating anxiety in the workplace. I believe in naval leadership. I know what involved leadership has done for me and other Sailors to positively shape our behavior and lives.

I look forward to seeing you around the Fleet.

Navy Chief Becomes First Woman To Earn Silver Submarine Pin

David Larter, Navy Times, August 3

[It must have been interesting to see her Dolphins "tacked-on." Mike]

For the first time, a woman has earned the silver dolphin pin that distinguishes a fully trained submariner.

Chief Culinary Specialist Dominique Saavedra's personal achievement made history as she became the first woman to don the enlisted submarine qualification insignia during a Tuesday ceremony at Puget Sound Naval Shipyard, Washington.

Saavedra, who is getting ready to deploy with the crew of the guided-missile submarine Michigan, had to lean in to get her quals done, embarking on the deployed guided-missile sub Ohio to get signed off.

"I couldn't be more proud to wear the 'dolphins,'" Saavedra said in a Navy release. "To have earned the respect of my fellow submariners is more rewarding than expected. I am honored to serve as a qualified member in such a prestigious community."

The Michigan will be the first sub to deploy with its full crew of enlisted women, said Submarine Group 9 spokesman Lt. Cmdr. Michael Smith.

Michigan is undergoing modifications in the shipyard that include accommodations for enlisted women, the release said.

Earning the pin is one of the foremost goals of a new arrival to the submarine force, typically known as a "nub." It takes months of study on all of the submarine's systems and damage control methods, culminating in a qualification board.

Saavedra's accomplishment comes just over four years after the first women officers earned their gold dolphins. Women officers began serving on missile subs in 2011 and on Virginia-class attack boats in 2015.

Saavedra's skipper said the pinning ceremony showed that women were going to be key to the success of submarines in the future.

"Chief Saavedra's accomplishment reinforces the fact that there are very capable women who have the talent and desire to succeed in the submarine force," Capt. Joe Turk said. "Drawing from talented individuals like Chief Saavedra helps us maintain the world's best submarine force."

The second group of enlisted women are currently in the training pipeline to serve on the guided missile sub Florida out of Kings Bay, Georgia. The third round of selection will be announced in October, a recruiting drive for women to serve on the Ohio, based in Bangor, Washington.

The goal is to have enlisted women make up about 20 percent of each crew, said Smith, the SUBGRU 9 spokesman. For the guided missile boats, that means a goal 27 E-6 and below, and two chiefs, he said.

The living space modifications include separate nine-person bunk rooms for E-6-and-below women with a separate head and shower and quarters for female chiefs including a separate head. Women officers have separate state rooms, but must share the head with male crewmembers (by putting up a sign when women are using it).

U.S. Navy To Produce More Of Its Deadly Mark 48 Heavyweight Submarine Torpedo **Arthur Dominic Villasanta, Yibada.com, July 30**

The U.S. Navy will re-start production of its long-lived Mark 48 heavyweight submarine torpedo to build a newer and more modular version of this already excellent weapon.

The 45 year-old Mark 48 torpedo arms all U.S. Navy submarines but was recently upgraded to sink deep-diving submarines and high performance surface warships of the Chinese and Russian navies.

This huge, wire-guided torpedo weighing 1,600 kilograms has the unique ability to circle around and again attack a surface warship it failed to hit on its first try. The torpedo is nicknamed "the keel buster" because its warhead is designed to explode beneath the keel of an enemy ship, thereby breaking its back and sinking it more quickly.

The newest version of the torpedo, the Mk-48 Mod 7 Common Broadband Advanced Sonar System (CBASS), is optimized for both the deep and littoral waters and has advanced counter-countermeasure capabilities.

The modular Mod 7 increases sonar bandwidth, enabling it to transmit and receive pings over a wider frequency band. It takes advantage of broadband signal processing techniques to greatly improve search, acquisition and attack effectiveness.

More important, the version is a lot more resistant to Chinese or Russian countermeasures.

Lockheed Martin, which developed the new version of the Mk-48 in 2011, will also be in charge of the production re-start. Under the terms of the contract, Lockheed Martin will deliver 20 Mod 7 CBASS kits to the Navy every month.

The company expects selling some 250 torpedoes to the Navy over the next five years. There are some 760 Mk-48 torpedoes in the U.S. Navy's inventory.

The Mod 7 can deliver a 290 kg high explosive warhead at an enemy surface ship out to a maximum range of 38 kilometers at a speed of 102 km/h. It can also destroy enemy submarines hiding at a depth of 800 meters.

The Mk-48, which is 5.8 meters long, arms all U.S. Navy submarines, including Ohio-class ballistic missile submarines and Seawolf-, Los Angeles-, and Virginia-class attack submarines. It is also used by Canadian, Australian and Dutch submarines.

America is Hacking Other Countries with Stealthy Submarines **Brian Fung and Andrea Peterson, Washington Post, July 29**

When Donald Trump effectively called for Russia to hack into Hillary Clinton's emails Wednesday, the GOP nominee's remarks touched off a (predictable) media firestorm. Here was a presidential candidate from a major U.S. party encouraging a foreign government to target American interests with cyberspying — an act that could not only expose national security information but also potentially undermine the actual security infrastructure of the United States.

Cyberwarriors working for Moscow and other regimes are already poking and prodding at our networks, so there's little reason to think Trump's words were all that damaging in themselves. But it's a good opportunity to talk about the state of state-sponsored hacking, and to offer a reminder that the United States is just as active in this space as the next government.

The U.S. approach to this digital battleground is pretty advanced. For example: Did you know that the military uses its submarines as underwater hacking platforms?

In fact, subs represent an important component of America's cyber strategy. They act defensively to protect themselves and the country from digital attack, but — more interestingly — they also have a role to play in carrying out cyberattacks, according to two U.S. Navy officials at a recent Washington conference.

"There is a — an offensive capability that we are, that we prize very highly," said Rear Adm. Michael Jabaley, the U.S. Navy's program executive officer for submarines. "And this is where I really can't talk about much, but suffice to say we have submarines out there on the front lines that are very involved, at the highest technical level, doing exactly the kind of things that you would want them to do."

The so-called "silent service" has a long history of using information technology to gain an edge on America's rivals. In the 1970s, the U.S. government instructed its submarines to tap undersea communications cables off the Russian coast, recording the messages being relayed back and forth between Soviet forces.

These days, some U.S. subs come equipped with sophisticated antennas that can be used to intercept and manipulate other people's communications traffic, particularly on weak or unencrypted networks.

"We've gone where our targets have gone" — that is to say, online, said Stewart Baker, the National Security Agency's former general counsel, in an interview. "Only the most security-conscious now are completely cut off from the Internet." Cyberattacks are also much easier to carry out than to defend against, he said.

One of America's premier hacker subs, the USS Annapolis, is hooked into a much wider U.S. spying net that was disclosed as part of the 2013 Edward Snowden leaks, according to Adam Weinstein and William Arkin, writing last year for Gawker's intelligence and national security blog, Phase Zero. A leaked slide showed that in a typical week, the Navy performs hundreds of so-called "computer network exploitations," many of which are likely the result of submarine-based hacking.

"Annapolis and its sisters are the infiltrators of the new new of cyber warfare," wrote Arkin and Weinstein, "getting close to whatever enemy — inside their defensive zones — to jam and emit and spoof and hack. They do this through mast-mounted antennas and collection systems atop the conning tower, some of them one-of-a-kind devices made for hard to reach or specific targets, all of them black boxes of future war."

But even this doesn't compare to what the Navy wants to be able to do next: turn its submarines into motherships for underwater drones that can maneuver themselves even closer to shore and conduct jamming or hacking operations while allowing the sub to work at a distance.

"We want the boat to grow longer arms," said Rear Adm. Charles Richard, director of the Navy's undersea warfare division. "We are at all-ahead flank [speed], both on unmanned aerial and undersea vehicles."

It's unclear how far behind — or ahead — other navies may be when it comes to submarine-based cyber offense. Many of the cybersecurity and military experts we interviewed for this story had hardly heard of the Defense Department's own undersea cyber capabilities.

But, Baker said, "espionage is a game where there's a lot of following the leader — so it's perfectly possible it's happening in this field as well."

What is clear is that the U.S. military operates some of the most sophisticated information networks ever designed, and it's using them to penetrate foreign computer systems as part of an evolving cyber strategy.

We may never know precisely what dirt the Pentagon is digging up with its submarine espionage, or be able to draw a link between it and any political or military events in the real world. But despite the rising prominence of Russian hackers in this news cycle — and Chinese hackers before that — it's worth pointing out that the United States has grown fairly proficient in cyberspace, too.

Lockheed Martin Will Build New Shallow Submarine For Navy SEALs

Kelsey D. Atherton, Popular Science, July 25

Traveling underwater offers Navy SEALs a lot of advantages. Troops are hard to see below the waves, and until they reach the shore they're no louder than the ocean itself. The problem is all the water. The current "swimmer delivery vehicles" used by the Navy's elite special forces require them to wear scuba gear the entire time, because they're exposed to the sea itself. A new submarine, from Submergence Group LLC and defense giant Lockheed Martin, will instead carry SEALs covertly, underwater, and inside an enclosed submarine.

It's called the Dry Combat Submersible. From Lockheed Martin:

Currently, personnel transiting underwater use the SDV to reach their final destination — the personnel are in dive gear and exposed to the undersea environment. DCS allows the personnel to get closer to their destination before they enter the water, and be more effective upon arrival.

"Our advancements in undersea technologies will ensure personnel are equipped with technologically capable and adaptable systems that can easily be refreshed with the latest capabilities," said Erika Marshall, general manager and program director at Lockheed Martin's site in Palm Beach. "These reliable undersea vehicles will protect personnel, ensure they arrive ready to execute their mission, and return them safely."

Lockheed's existing dry manned submersibles, the submarines likely most similar to this new one, can operate for over 24 hours underwater before running low on air, travel just over 5 mph, and carry enough fuel to go 70 miles. There isn't much known about the existing advanced swimmer vehicle, but both it and the Dry Combat Submersible are built to get SEALs close to shore in shallow waters.

Riding in a shallow-water submarine probably isn't the most exciting thing a SEAL will do, but the key to a successful infiltration is avoiding excitement for as long as possible.

The Mirage of A Transparent Ocean

Rear Adm. Charles Richard, Navy Live Blog, July 29

Mankind is unique in the sense that when faced with a problem not solvable with our naturally gifted tools, we have the ingenuity to invent something that can assist in our endeavor. Humans are not amphibious yet, when the desire for exploration

presented itself, the first mariners came to be. The past centuries have seen tremendous technological advancements but by no means do we have full awareness of all the climates we operate in today.

In the context of the undersea domain, a concept of a “transparent ocean” has been “the next big thing” for decades. Is there ever a way that we could see and know everything that operates in the ocean? Will big data, unmanned systems, ocean sensor systems and/or cyber threats have the same effect as radar had on airplane detection? Radar-based air defense systems revolutionized air warfare beginning in the 1930s and some might believe there could be a single technology to have the same kind of sudden, powerful and game-changing effect in the undersea domain. However, we are confident in our continued ability to exploit the undersea to our advantage even with the continued progress of technology. Allow me to explain.

The recent tragedies involving Malaysian Flight 370 and EgyptAir Flight 804 is evidence the oceans are anything but transparent. Both of these commercial airliners have technology designed to help find a plane in the event of a crash – an emergency locator transmitter. In the case of the EgyptAir flight, the authorities were working from a fairly well-defined datum to localize their search but it still took weeks to pinpoint the exact location of the EgyptAir flight 804; the Malaysian flight remains missing. By comparing an active, stationary transmitter to a moving, quiet submarine, one can more readily understand why finding a submarine is still a difficult task.

The Physics Of The Undersea Domain Are Brutal.

Finding and attacking submarines isn't as easy as it sounds. The general-purpose tools that work on the surface, land and in the air – radar, optics, radio, vision, bullets, bombs and missiles – are all useless undersea. Water distorts how information is sent and received, so these tools and weapons do not perform as expected or at all. The tools that do work undersea, like acoustics, still distort the information but, if translated correctly, the information can still be used. The translated information isn't relayed as a complete answer. It takes sequential processing of seemingly implausible events, from indirect detection (hearing a noise) to direct detection (listening to a clear signal) to classification (understanding what we are listening to) and localization (knowing exactly where the source of the signal is at), just to find a submarine. If this sequence is broken at any point, the submarine remains hidden. To successfully attack a submarine, the entire sequence must be completed and a highly sophisticated weapon must be accurately placed. The physical properties of water make it very hard to find and kill submarines. The U.S. Navy has to take advantage of these difficulties to keep our submarines hidden while using systems that make it possible for us to find other submarines. It is a relentless, daily struggle with our global competitors.

Submarine Security Is Not Automatic.

The daily struggle to maintain a dominant position requires superiority in both submarine security, aka hiding, and in anti-submarine warfare, aka finding. It requires a better understanding of the ocean environment, better tools, better information processing, better operators, better intelligence on adversary capabilities and better ability to counter advances by the competition. The Navy's job is, and has been, to occupy the dominant position across all of these undersea disciplines so we must be vigilant in being the best in undersea science, technology, engineering, intelligence and operational skill. We are constantly striving to improve both our ability to hide and our ability to find.

Limitless Thinking Meets Rigor.

In 1968, realizing the importance of preserving our advantage in submarine security, the Office of the Secretary of Defense for Acquisition, Technology and Logistics (OSD-AT&L) and the Navy chartered the SSBN Security Technology Program to avoid surprises and preserve a survivable sea-based strategic deterrent. The Navy's SSBN Security Technology Program and SSN/SSGN Survivability Program maintain healthy efforts to do just that. The SSBN Security Technology Program and SSN/SSGN Survivability Program identify emerging risk areas and map out proactive mitigation plans years before anything starts showing up in the mainstream media. The objective is to research what other nations might be doing to find our submarines as well as what is scientifically possible to achieve. The scientific rigor must be conducted; we cannot accept inaccurate answers or imprecise measurements in brutal competitions undersea.

These dedicated efforts and established rigor have resulted in a submarine force able to conduct undetected operations around the world, penetrate adversary safe havens, threaten attacks with surprise at the time and place of our choosing, provide persistent and survivable strategic deterrence, and leverage the multiplying effect of our submarines' ambiguity and uncertainty. We will continue to do the hard work necessary so that our submarine force remains able to exploit undersea stealth and deliver our Nation all of the strength and power that come with it.

How We Sustain Superiority As Technology Evolves.

The SSBN Security Technology Program and SSN/SSGN Survivability Program are just two parts of an integrated Navy approach to preserving undersea superiority that spans the undersea community and rests on:

- A culture built around monitoring, anticipating, recognizing and responding to changes in the threat. We work to ensure that we can make the needed changes early, quickly, smoothly and effectively. Every day it is predict, act, evaluate, feedback and repeat.
- A culture empowered to think about what is possible and see if it can happen. We monitor and stimulate science, technology, engineering and intelligence to preserve our position on the cutting edge of undersea advances.
- Robust stealth in the design, construction and maintenance of submarines. A stealthy new submarine can only be kept that way by careful maintenance, skilled craftsmen and operators over the life of the ship.
- The technologies that we use to achieve stealth must be protected from compromise in how we plan and execute operations. Stealth can be undermined by too much speed or predictability, too many transmissions and too small of an operating area; this includes planners and submarine crews. Smart, highly-trained, experienced professionals plan undersea missions and operate U.S. submarines.
- Sufficient numbers of submarines and operational unpredictability are required because even the stealthiest submarine can be found if an adversary knows exactly where and when to look. The U.S. Navy forces the competition to watch as many places as possible, all the time.

The Final Analysis.

The ocean will remain constant, unforgiving and brutal, but there is no doubt that change and adaptation will continue in undersea warfare. The U.S. Navy will continue to take vigilant, proactive steps accounting for technology advancements and behavior adjustments in the competition. Our nation expects and deserves nothing but the best in undersea science, technology, engineering, construction, maintenance, intelligence and operational skills. We will continue to find and we will continue to hide.

Naval Lab To Develop Optic-Guided Torpedoes **G. V. Prasada Sarma, The Hindu, July 28**

Having delivered heavyweight torpedo Varunastra to the Navy and anti-torpedo decoy system Mareech, the Naval Science and Technological Laboratory (NSTL) here will now embark on the development of optic-guided heavyweight torpedoes and lightweight torpedoes with extended range.

“We are moving towards strategic domain taking up products for various advanced platforms, and the user confidence is high,” NSTL Director C.D. Malleswar said.

Long strides

The NSTL will see the launch of major projects every year during the next three or four years.

The submarine variant of Varunastra would be test-fired in about two months and the optic-guided torpedo trials will begin by the year-end, according to Mr. Malleswar, who held a press conference on Wednesday on the eve of 47th Lab Raising Day.

The NSTL worked with BDL and BEL in concurrent engineering mode and once the Navy placed the orders, 73 Varunastra and 33 Mareechs, costing about Rs. 2,000 crore, will be made by them for deployment. Besides, he said, the NSTL has made long strides in fire-control system.

‘Agni’ award

It has developed Panchendriya for submarines, another system for helicopters. Its integrated anti-submarine warfare complex ‘MOD 0’ has been inducted on six Rajput Class ships.

ASW complex ‘MOD C’ has been designed for corvettes of Kolkata, Kamorta and Kochi Class and these are also ready for inducting Varunastra and Mareech.

International facility

The NSTL has been given ‘Agni’ award in self-reliance for fire-control systems, Mr. Malleswar said.

Door is also open for defence exports with requests from countries like Vietnam and Myanmar, he said.

He attributed the delay in developing Varunastra to the challenges under water.

He recalled that during the trials in 2014, the torpedo recovery vessel sunk and the torpedo under trial was recovered from over 200 metre depth. It was the first time that a torpedo was recovered from such depths, he said.

Mr. Malleswar, who is laying down office this month-end, said the NSTL had an excellent international facility in hydrodynamic research with Seakeeping and Manoeuvring Basin inaugurated recently by the Defence Minister at which sea-keeping abilities of vessels are tested with models.

The Cavitation tunnel identifies operational regimes for a ship or submarine.

The recently installed propulsion system integration centre integrates engines and propellers. It also works on minimising signature of vessels to prevent detection by enemy ships.

“So we have total ship designing indigenously with weapons, propellers, fire control systems, mines and decoys,” Mr. Malleswar said.

“There is no looking back and we are confident of doing anything,” he said.

North Korea Building New, Larger Submarine Pens

Nick Hansen, Stanford, California and Jeremy Binnie, London, IHS Jane's Defence Weekly, July 26

North Korea is constructing a fortified structure near the port city of Sinpo that will have what appears to be two covered docks (pens) that could shelter ballistic missile submarines (SSBs).

Located 2.25 km south of the Sinpo shipyard, close to the Mayang-do Naval Base on the country's east coast, the new base may be the largest active military building project in North Korea at the moment.

Airbus Defence and Space imagery shows construction of the base prior to August 2012. Much of the harbour seen in Google Earth imagery from 2009 (an area covering some 6,000 m²) had been blocked off by a sea wall and filled in by August 2012. Spoil from the surrounding hills was likely used as filling material.

The harbour area was nearly filled in by October 2013, excavation of the docks was progressing, and the construction of a new pier had begun. The docks were taking shape by 3 October 2014, with the North Koreans getting ready to pour their concrete bases.

By mid-2015 the steel structures over the docks were being set and some concrete slabs had been laid to form the roofs of the pens. The two pens are approximately 150 m long, 10 m wide, and 14 m apart.

Airbus Defence and Space imagery from 14 July 2016 revealed that construction on the pens had progressed to the extent that portions of them were being covered with earth. Construction was still ongoing on the front of both pens and a barge was tied to the seawall. The new pier, now 137 m long and 13 m wide, was nearing completion.

North Korea already has several submarine bunkers, at least some of which are capable of accommodating its obsolescent Romeo attack submarines.

