

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



*The Silent Sentinel*  
*December 2015*



*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.

*San Diego Base Members of the USSVI*

*The below news item is forwarded for information.*

*To support our getting payment for 2016 dues in to the system at USSVI National, Submit Dues for 2016 as noted in the attached EMail from National. please contact me for any questions or verification you may need as to status. Your dues can be accepted at the November or December meeting or any time before that. I would request a drop-dead date of December 15th in order to give our Treasurer time to get the money into National USSVI Office before Christmas with time to spare.*

*FYI - The National WebSite will be rebuilt with a Feb roll-out time frame. It is a complete new construction with the ability to pay your National Dues by credit card over the internet. San Diego Base dues will still be handled locally.*

*If you have any questions, please give me a shout.*

*Ray Ferbrache  
Membership Chairperson  
USSVI San Diego Base  
arayz@san.rr.com  
Cell Phone 610-972-4474  
My cell will always take a note and give it to me.*

***SEASONS GREETINGS***

## U.S. Submarine Veterans San Diego Base

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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.*

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY/STATE/ZIP: \_\_\_\_\_

EMAIL: \_\_\_\_\_

TELEPHONE: \_\_\_\_\_

Would like the SILENT SENTINEL emailed: YES \_\_\_\_\_ NO \_\_\_\_\_

Robert Bissonnette  
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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 2015 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 8th*. 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](http://www.ussvisandiego.org)*

### **BINNACLE LIST**

*Benny Williams*

## ***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 (Pickrel(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 - 10 November 2015**

1900 - Base Commander Bob Bissonnette called the meeting to order  
Conducted Opening Exercises - Pledge of Allegiance lead by Secretary Jack Kane.

Base Commander Bob Bissonnette lead the prayer and conducted Tolling of the Boats lost in the month of November

Base Commander Bob Bissonnette recognized Past Commanders, dignitaries and guests.

Secretary Jack Kane announced 22 members present.

Treasurer David Ball gave his report.. A copy of the Treasurer's Report will be filed with these minutes.

The minutes of the 13 October 2015 meeting were approved as published in the Sentinel.

It was noted that the Sentinel has the Base Commander's old Email address. Bob's new address is:  
rjbissonnette2011@gmail.com.

**Base Commander Called For Committee Reports**

Base Commander Bob Bissonnette reported the following on the Binnacle List: Benny Williams.

Parade Chair Joel Eikam announced the following parades: Veterans Day Parade in San Diego, tomorrow. Muster is 9:30am to 10:30am. Mother Goose Parade is Saturday November 21st. Muster between 9:00am and 9:30am. Last Parade is Chula Vista Twilight Parade on 5 December.

Membership Chair Ray Febrache announced that the new National website will up and running by February. Members will be able to pay National dues on the website by credit card. Please pay your dues by/or at the next meeting, 8 December.

Scholarship Chairman Paul Hitchcock reminded everyone that Scholarship applications are due by 15 April 2016. Applications can be downloaded from the USSVI San Diego website.

Storekeeper Phill Richeson has 2016 Calendars and new Key Chains this month.

Base Commander Bob Bissonnette announced that the next SUBVETS Breakfast will be held on Sunday, November 29th. 2015. Breakfast will be free for WWII Submarine Veterans.

Base Commander Bob Bissonnette reminded everyone that flags will be set out at 7:00am and taken down at 5:00pm, tomorrow, Veterans Day.

Base Commander reported that new Banners for the Float are complete and have been placed on the float. Thanks to Jim Hare for donating the new side banners and a new carry banner.

Eagle Scout Co- Chairman Nihil D. Smith reported that new patches and certificates were being developed at National. The Boy Scouts of America asked USSVI to take the BSA Logo off of our patch and Certificates due to potential trademark infringements.

1940 - Base Commander called for a break.

1951 - Base Commander called the meeting back to order. 50/50 drawing was held. \$53 was raised for the Base Treasury. Shipmate Dennis McCreight won the first prize and donated \$25 of his winnings back to the base.

**1950 - Unfinished Business**

Base Commander Bob Bissonnette noted the San Diego Base Christmas Party will be held on Saturday, 19 December 2015. Location: VFW Hall, 4370 Twain Avenue, San Diego. Menu will be choice of Cornish Hen or Pork Chops with fixings. Cost is \$20 per head. Secretary David Ball is taking reservations and payments. Seating begins at 1330 with dinner served at 1400. If you have any door prize donations, bring them to next meeting or bring them to the Party.

Base Commander Bob Bissonnette asked for a motion to participate in the Chula Vista Starlight parade on Saturday evening, 5 December 2015. Motion was made and passed. The Secretary will finalize the parade registration.

A discussion followed about the feasibility of, and reasons for participating in parades. The discussion was tabled and will be brought up again next month. Next year's parade schedule will be discussed.

Base Commander Bob Bissonnette reported that we fielded a team at the Chula Vista Veterans Home walk in October.

Base Commander Bob Bissonnette announced that the Western Region Roundup will be held in Laughlin Nevada next spring. Dates TBD.

Base Commander Bob Bissonnette reported on progress for a place to display Submarine Memorabilia. The initiative to place memorabilia at Terri Ulmer's Destroyer Wheelhouse in Alpine is a non-starter. Terri has not responded to several requests for tours and follow-up discussions. We are waiting for a response to our queries concerning display space aboard USS MIDWAY Museum. Bob will make copies of the videos showing the burial at sea for our dearly departed shipmate, CJ Glassford, provided by USS San Francisco. We will try to show that video at the December meeting.

### 2005 - New Business

Base Commander Bob Bissonnette read a resignation note from Base Chaplain Russ Mohedano. Russ was offered a new job in Iowa City, IA at short notice. Russ has relocated and will no longer be able to function as Base Chaplain. A volunteer is need to fill the position. If you are interested email the Base Commander.

### 2036 – Good of the Order

Shipmate David Kauppinen briefed the members on an initiative to establish a Submarine Memorial in Phoenix AZ. Flyers are available on the back table.

Nominations are being taken by the USSVI National Elections next year. All National positions are open.

A Submarine Book Auction was held and \$80 was raised.

Shipmate Tom Polland reported that Shipmate JJ Lynch is on binnacle. JJ had a heart attack and was taken to Balboa Hospital recently. He survived, and is in recovery. His recovery is slow and he is very weak due to pancreatic complications. JJ is now recovering at home.

The Meeting was adjourned at 2021

Jack Kane, Secretary

/s/ Jack E. Kane

### Sailing List for 10 November August 2015

Bob Bissonnettee	Paul Hitchcock	David Ball
Dennis Mortenson	Tom Pollen	Dennis McCreight
Ed Welch	Jack Kane	Phill Richeson
David Kauppinen	Joe Dubois	Bud Rollison
William R. Johhston	Peter Lary	Ron Gorence
Mike Hyman	Nihil D. Smith	Robert J. Golembieski
Glenn Gerbrand	Ed Farley	R. L. Febrache
Joel Eikam	Joe Sasser	

## Current News

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

### Today In Undersea Warfare History:



### ***Russian Mystery Submarine Likely Deployment Vehicle for New Nuclear Torpedo***

Sam LaGrone, USNI, Dec 4

Russia’s plan to create a giant nuclear torpedo capable of wiping out a coastal city could be farther along than just graphics on a briefing slide and gives purpose to a mysterious nuclear submarine, currently under construction.

Last month the Kremlin leaked its plan to develop the new Status-6 (or Canyon) strategic weapon under the guise of a state controlled television feed accidentally catching a glimpse of the program overview.

The torpedo, according to the leaked details, is designed to “destroy important economic installations of the enemy in coastal areas and cause guaranteed devastating damage to the country’s territory by creating wide areas of radioactive contamination, rendering them unusable for military, economic or other activity for a long time,” according to a translation of the document by the BBC.

According to the leaked images, the Status-6 maybe as large as 80 feet long and powered by a nuclear reactor to give the torpedo a range of thousands of miles to deploy a warhead of up to 100 megatons.

The existence of the weapon also presents the best explanation yet to a mysterious submarine laid down last year in Russia’s Sevmash shipyard in Severodvinsk.

The Project 09851 nuclear submarine Khabarovsk has some similarities its new Borei-class of ballistic missile submarines but shorter and absent any ballistic missiles tubes.

Instead, according to study of the imagery by naval analyst H I Sutton, Khabarovsk is being custom built to field up to six of the Status-6 torpedoes.

Sutton determined the Khabarovsk design follows on a similar configuration found on the test submarine Sarov launched in 2007 that could also accommodate a torpedo the size of Status-6.

“The leaked graphic strongly hints toward the Khabarovsk having two side-by-side hulls in the bow,” wrote Sutton.

“The basic reason behind this arrangement is that the torpedoes have to fire forward, and are carried externally to the occupied pressure hulls.”

The configuration would create a first-of-its-kind strategic weapons platform purpose built to sidestep the growing effectiveness of American ballistic missile defense (BMD) systems.

Just before the reveal of Status-6 on state television, Russian president Vladimir Putin told military officials the U.S. ballistic missile defense Aegis Ashore installation in Romania and Poland were, “an attempt to undermine the existing parity in strategic nuclear weapons and essentially to upset the whole system of global and regional stability.”

While little about the Status-6 or the purpose Khabarovsk can be proved definitively at the moment — the attention the disclosure has generated does benefit the Russian military-industrial complex.

“Ship, submarine and weapons exports remain a major source of income for the Russian economy and news of new advanced Russian mystery weapons and submarines, regardless of whether they ever enter production or not, helps enhance their reputation on the international arms market, and also contributes to a growing pride the Russian people feel regarding their defense forces,” Eric Wertheim — naval analyst and author of U.S. Naval Institute’s *Combat Fleets of the World* — told USNI News on Thursday.

Still, the emergence of the weapon has registered official concern from U.S. officials.

“We are concerned about [Status-6] as a threat to the United States, but if it turns into a system that is widely put into operational deployment,” Rose Gottemoeller, undersecretary of state for arms control and international security, told the House on Tuesday.

“I think it is a troubling system.”

## ***Taiwan Turning The Screws On Washington's Sub Deal***

Wendell Minnick, Defense News, Dec 5

WASHINGTON - In 2001, President George W. Bush's administration released the largest arms package to Taiwan since the closing of US military bases on the island in 1979. The deal included four Kidd-class destroyers, 12 P-3C Orion maritime patrol aircraft and eight diesel-electric submarines.

Since then, the package has been completed except for the submarine offer. The many sticking points include the fact the US has not built diesel-electric attack submarines since the last Barbel-class was finished in 1959. But that has not stopped Taiwan's Navy from pushing forward on an official release via the Foreign Military Sales (FMS) office before beginning an indigenous build program.

Taiwan's frustrations with the US FMS process it began 14 years ago are growing, leading it to pursue an indigenous construction effort that it hopes will provide some tactical and strategic leverage against China's rapidly growing naval modernization efforts.

On Dec. 1, the Washington-based Project 2049 Institute sponsored a conference on the topic with Taiwan's Rear Adm. David T.W. Yang presenting the keynote speech. The conference, “A Deep Dive: Taiwan's Future Submarine Program,” included commentary by Mark Stokes, executive director of the Project 2049 Institute.

Stokes said the US FMS effort was frozen in 2007 due to a number of factors: political considerations and U.S.-China relations; domestic debates in Taiwan over pursuing an FMS program or an indigenous build; perceived cost effectiveness in the US of building only eight subs; US operational considerations regarding waterspace management as more countries in Asia procure submarines; and past US Navy institutional concerns over fears in the nuclear submarine community that cheaper diesel electric subs might be forced upon them during future budget cuts.

It should be noted that Stokes served as the Pentagon's team chief and senior country director for China, Taiwan and Mongolia in the Office of the Assistant Secretary of Defense for International Security Affairs during the 2001 arms release. He is described by many within the US and Taiwan defense industries as the architect of the original arms package and continues to be a major advocate of Taiwan's acquisition of submarines.

Yang, who is a military attaché at Taiwan's de facto embassy, the Taipei Economic and Cultural Representative Office, told the conference that Taiwan has improved its anti-submarine warfare (ASW) capabilities with the procurement of the P-3 aircraft, but additional enhancements are required. “The training programs, however, failed to meet requirements because of limitations of the aging submarines ... and Taiwan's defensive capabilities are adversely affected.”

Taiwan's only two combat-operational submarines are Dutch-built Zwaardvis-class subs acquired in the late 1980s. It also has two of the oldest submarines in operation — two Guppy-class submarines acquired in the early 1970s that served at the end of World War II. These submarines are described as training platforms, not operational ones.

Yang said the Guppys should be replaced and the Zwaardvis “urgently” need to be refurbished. He said the FMS program has been “suspended through the ‘interagency review’ phase for over a decade ... [and now] Taiwan has been urging the US to accelerate the FMS process to provide Taiwan with the urgently needed submarines.”

Yang said Taiwan has created the Indigenous Defense Submarine (IDS) program to fulfill its requirements. IDS will be built locally with some foreign, including American, assistance.

“In consideration of the longstanding security cooperation with the US, acquiring submarines from the US government will remain as the priority option,” he said. “Until there is a concrete response from the US, a dual-track ‘FMS-plus-IDS’ policy will be implemented.”

Yang admitted that Taiwan was “in communication” with Japan for a possible deal for Soryu-class submarines. Japan’s export defense restrictions have been eased, and Japan and Australia are currently working on a joint submarine program.

Bob Nugent of AMI International, a Bremerton, Washington–based naval market analysis and advisory firm, said he could “envision a scenario where there is an outright sale to Taiwan of Japanese submarines.” The current price is around \$500 million a hull for the Soryu, and that includes airindependent propulsion — significantly less than the US offer estimated at \$800 million for just the design stage.

China and Japan are bickering over control of the Senkaku Islands in the East China Sea, which Japan controls and China claims as its territory. Additional friction was created in 2013 when China announced an air defense identification zone in the East China Sea, which included the airspace over the Senkakus. Increased Chinese fighter and surveillance flights into Japanese air space in recent years have also rattled Tokyo.

Both Taiwan and Japan face an enormous Chinese submarine fleet that now numbers over 70 submarines. Yang called the growth “aggressive.”

## ***How Reliable Is the U.S. Nuclear Triad?***

Dan Holliday, Slate Magazine, Dec 5

In a word: reliable. I’m trying to be rigorous to the black-and-white meaning of the word without employing needless adverbs. Either something is reliable or it isn’t. There is nothing more reliable than the American nuclear triad.

The most powerful arm of the U.S. nuclear triad (indeed, that of Britain and France as well) is that of the ballistic missile submarine. The U.S. employs 14 nuclear ballistic submarines (the French and British four each; the Brits use the same nukes as the U.S.). In each Ohio-class submarine, there are 24 UGM-133 Trident II (some do still carry Trident I’s) submarine-launched ballistic missiles. Each of these can be MIRV’d with many nuclear warheads—assume the most conservative at eight, a credit to START I. The warheads can be a variant of either the newer W88 (of which most are) or the older and larger W76.

The W76 has 100 kt of explosive power, or five times Nagasaki. The W88 has 475 kt, or 24 times Nagasaki. That’s a lot. The U.S. has, right now, deployed half of the 14 (which doesn’t prevent the ones at port from launching, though if they’re undergoing maintenance, it’s unlikely they could). Fourteen submarines multiplied by 24 nuclear missiles is 336. Each of those missiles is likely to carry the full compliment of eight MIRVs (multiple independently targetable re-entry vehicles), which the U.S. wisely seeks to reduce to three, if I recall correctly. That’s a total nuclear strike capacity of 2,688.

Even if 90 percent of them fail to reach their targets—an almost fantastically outrageous estimate; the U.S. nuclear missiles are the most modern and generally can graciously be expected to have no more than a 10 percent dud rate, and even that’s crazy—then 269 cities could independently be neutralized. A nation like China or Russia doesn’t even have that many major metropolitan areas. But given how these things work, the point of the MIRV is to independently strike a city multiple times. This means that most cities over a million would be struck five to 20 times, ensuring total annihilation. There is no combination of navies on Earth, even if all of them unified (including the U.S.’s close allies) that could neutralize them before launch.

We haven’t even touched on the land-based intercontinental ballistic missiles or the U.S. Air Force–launched cruise missiles or gravity-assist bombs.

The U.S.’s second “deterrent” is the ICBM LGM-30 Minuteman. There are 450 of them based inside the U.S. They all currently carry the W62, 170 kt nuclear warhead, about eight and a half times Nagasaki. These are clearly less destructive in aggregate than what the U.S. Navy has. They aren’t a “first strike” force but rather a last-resort weapon to ensure that if the Navy and Air Force fail to deter an enemy, then that enemy would be totally annihilated. There are unlikely many places in Russia that get more than a few of these each pointed at it. The 10 major cities likely have a few each, then the rest are likely aimed at targets throughout Russia.

The last and most nimble portion of the U.S.’s nuclear arsenal is the Air Force. The Air Force currently employs 3,000 B61 air-drop atomic bombs with a total yield of 340 kt, about 17 times Nagasaki, that can be delivered by high-speed aircraft. There are

sufficient B61s in Europe through the U.S.'s nuclear-sharing agreement (a classified number between 150 and 250) that any nation in Europe could be struck rather quickly.

The Air Force also employs 600 B83 gravity bombs with a total maximum yield of 1.2 mt, or 60 times Nagasaki. It's the largest bomb in the U.S. arsenal and is kept on hand to ensure that any bunker could be collapsed and its inhabitants neutralized. It's physically larger but still able to be mounted on bombers as well as fighters. These are not (at least not said to be) maintained in Europe.

To reiterate: reliable

### ***Dozen Submarines Hulls To Be Built In Quonset***

From Staff, The Jamestown Press, Dec 3

According to U.S. Sen. Jack Reed, the opening of the new General Dynamics Electric Boat facility is expected to create 2,300 jobs at the Quonset Point factory.

The plant officially opened on Nov. 20. The \$47 million facility is 123,000 square feet. The plan calls for workers to build replacement hulls for 12 Ohio-class submarines. Reed called the replacement program for the aging submarines "the Navy's number-one priority."

Where's the story?PointsMentioned Map1 Points Mentioned

Designs call for the replacements to be 560-feet long and built for stealth. The submarines are engineered to serve for as long as 42 years without needing mid-life refueling.

### ***Congress Has Established a Special Fund to Pay for New Nuclear-Armed***

Ballistic Missile Submarines

Kris Osborn, Scout.com, Dec 2

Lawmakers are working on a special fund created to pay for the Navy's expensive next-generation nuclear-armed ballistic missile submarines, the Ohio Replacement Program.

Members of Congress discussed the details of the National Sea-Based Deterrence Fund, a special effort established in 2015, at a recent hearing on the topic. The fund was established as a way to allocate specific acquisition dollars to pay for the new submarines. In total, the Navy hopes to buy 12 of the new submarines to serve into 2085 and beyond.

The issue and challenges of the new fund were discussed at a hearing of the House Armed Services Committee Seapower and Projection Forces Subcommittee chaired by Rep. Randy Forbes, R-Va.

Production for the lead ship in a planned fleet of 12 Ohio Replacement submarines is expected to cost \$12.4 billion — \$4.8 billion in non-recurring engineering or development costs and \$7.6 billion in ship construction, Navy officials have said.

The Navy hopes to build Ohio Replacement submarine numbers two through 12 for \$4.9 billion each in 2010 dollars.

A key concern for lawmakers and Navy officials is to find a path forward for the new submarines without depleting the services' annual shipbuilding fund needed to build vital assets such as aircraft carriers, destroyers, amphibians and other submarines.

"If the Congress funded the purchase of the Ohio Replacement submarines through the National Sea-Based Deterrence Fund, which was established in the fiscal year 2015 National Defense Authorization Act, the Navy could potentially save several hundred million dollars per submarine by purchasing components and materials for several submarines at the same time," Eric Labs, Congressional Budget Office, told lawmakers.

"If the Navy is still constrained with the historical level of shipbuilding, \$16 billion a year, and they must pay for the Ohio Replacement out of that...the result would be buying 192 ships over a 30 year period instead of 264, and that would lead to a 237 ship Navy by 2045 instead of the 305 ships the Navy envisions," Labs added.

Forbes, Subcommittee Chairman, said the Pentagon will need to increase its overall budget to help support the new fund.

"While the Navy's plan purports to achieve a 308 ship Navy by 2022, it assumes that there will be a significant expansion in the funding for shipbuilding beyond what we have seen in recent history. I think a more plausible alternative is to increase the

overall Department of Defense topline and ensure that a credible Navy build plan is accommodated within this higher top line," Forbes added.

The new fund has several specific provisions designed to lower costs for the new fleet of submarines, including an "Economic Order Quantity Authority" which can help create larger bulk purchases or economies of scale. Other aspects of the fund allow for contracts to support advanced construction of the submarines and also create an ability for incremental funding to buy long-lead items needed years in the future.

"BBC (Block Buy Contracting) is an option for reducing the unit procurement costs of the first several Ohio replacement program ballistic missile submarines (SSBN[X]s), and both MYP and BBC are options for reducing the unit procurement costs of the latter ships in the class. If these contracting mechanisms were used across all 12 boats in the class, and if doing so reduced their unit procurement costs by about 10%, the effect would be to get a bit more than one of the 12 planned boats in the class for "free," compared to procuring them with annual contracting," Ron O'Rourke, Congressional Research Service, told the Subcommittee hearing.

The Ohio Replacement Program, a so-called SSBN, is scheduled to begin construction by 2021. Requirements work, technical specifications and early prototyping have already been underway at General Dynamics Electric Boat.

Designed to be 560-feet-long and house 16 Trident II D5 missiles fired from 44-foot-long missile tubes, ORP will be engineered as a stealthy, high-tech nuclear deterrent able to quietly patrol the global undersea domain.

Navy officials explain that the Ohio Replacement submarines' mission is one of nuclear deterrence.

Detailed design for the first Ohio Replacement Program is slated for 2017. The new submarines are being engineered to quietly patrol the undersea domain and function as a crucial strategic deterrent, assuring a second strike or retaliatory nuclear capability in the event of nuclear attack.

The Navy is only building 12 Ohio Replacement submarines to replace 14 existing Ohio-class nuclear-armed boats because the new submarines are being built with an improved nuclear core reactor that will better sustain the submarines, Navy officials have said.

As a result, the Ohio Replacement submarines will be able to serve a greater number of deployments than the ships they are replacing and not need a mid-life refueling in order to complete 42 years of service.

Electric Boat and the Navy are already progressing on early prototype work connecting missile tubes to portions of the hull, officials said. Called integrated tube and hull forging, the effort is designed to weld parts of the boat together and assess the ability to manufacture key parts of the submarine before final integration.

In 2012, General Dynamics Electric Boat was awarded a five-year research and development deal for the Ohio Replacement submarines with a value up to \$1.85 billion. The contract contains specific incentives for lowering cost and increasing manufacturing efficiency, Navy and Electric Boat officials said.

The U.S. and U.K. are together immersed in a common missile compartment effort for ORP. In fact, the U.S. and U.K. are buying parts together for the common missile compartment and working on a \$770 million contract with General Dynamics' Electric Boat. The U.S. plans to build 12 ORPs, each with 16 missile tubes, and the U.K. plans to build four nuclear-armed ballistic submarines, each with 12 missile tubes.

The ORP is being designed with a series of next-generation technologies, many of them from the Virginia-Class attack submarine. In particular, the ORP will utilize Virginia-class's fly-by-wire joystick control system and large-aperture bow array sonar.

The ORP will also use Virginia-class's next-generation communications system, antennas and mast. For instance, what used to be a periscope is now a camera mast connected to fiber-optic cable, enabling crew members in the submarine to see images without needing to stand beneath the periscope. This allows designers to move command and control areas to larger parts of the ship and still have access to images from the camera mast, Electric Boat and Navy officials said.

## ***New Dive Locker At Sub Base Boasts Rewarming Area, Bigger Space***

Julia Bergman, New London Day, Dec 2

No More Slipping Into Semidry Wetsuits.

Just a quick glimpse inside the nearly 100-year-old brick building, which housed the 40-plus waterfront divers assigned to Naval Submarine Base New London until about a month ago, shows why the new space is more than a welcome sight.

Navy and government officials will gather at the north end of the sub base Thursday afternoon for a ribbon-cutting ceremony for the new diver locker.

The state gave the Navy \$4.65 million to pay for the new building, which brings state investments in the sub base to \$14 million since 2009.

The old building was once a torpedo shop. Master Diver Joseph Cannon explained how the ceiling would leak at times, and the sinks would get stopped up. If you weren't one of the first to take a shower, you couldn't expect hot water, he said. Every room felt tight and crammed.

"I can't express enough how much we actually appreciate this," Cannon said.

The first thought Navy Diver 2nd Class James Mostek, 22, had when he walked into the new building, which is more than double the size of the old one, was how much more space there is. More space in the locker room. More space for training.

The new facility will be used by divers assigned to the waterfront who conduct underwater maintenance on submarines homeported at the sub base.

"Anything you can do to a ship or submarine to keep it out of dry dock," Navy Diver 1st Class Nate Martin, 39, said of the divers' work. "Dry dock expenses are massive."

The new facility is broken into two wings – essentially administration on one side and equipment on the other.

The administration side features a small kitchen and lounge area with a flatscreen TV. In the old building, the majority of the divers had to share one computer, but now they have several they can use to complete required online certification and training.

"Because it's brand new, you can take ownership of it," Martin said. "It's yours from the start."

Some of the divers are fairly new to the sub base. One of them, Navy Diver 3rd Class Michael Felton, 22, only spent a short time at the old building.

Felton said the new facility is "really nice" and he was looking forward to using the drying room for his wetsuit and the rewarming room.

The rewarming room – where divers can sit in tubs of hot water or in the sauna to warm up – is on the equipment side of the building.

The drying room is climate controlled and dries the divers' wetsuits so they don't have to put on cold ones in the morning. And the halls, bathrooms and locker room areas all have heated floors.

"So when we come out of the cold water or the cold air, it's nice to know that that's there, especially with the winter coming," Mostek said.

## ***N-Capable Arihant Submarine Successfully Test-Fires Unarmed Missile***

Staff, One India, Nov 27

India's first indigenously-developed nuclear-powered nuclear attack submarine, Arihant, has successfully test fired a dummy or unarmed missile, reliable sources said.

The vital first test in ejecting a missile from its onboard silos was conducted on Wednesday, proverbially adding a feather to the cap of the Indian Navy and scientists from DRDO and BARC, the sources said.

The firing was done remotely from a far away location by the Strategic Forces Command (SFC), India's nuclear command authority which is tasked with creating nuclear deterrence.

To mention more achievements, the submarine has also successfully completed its critical diving tests, and significantly, met nearly all its design and designated parameters just about 100 percent, including the maximum possible power option tests.

It is actually good news all over, but the final step before the submarine is formally inducted in the Indian Navy as INS Arihant, will be the firing of proper missiles - albeit with unarmed warheads. Details are unavailable but this should happen soon enough as there are indications of the submarine taking part in the International Fleet Review (IFR) being hosted by the navy in February, 2016. The boat should be operational by then.

Notably, only operational ships and submarines can take part in an IFR.

The missile fired was a dummy version of DRDO's B 5, which approximately has a range of 800 km to 1,000 km. Later, missiles with a reach of 3,500 km to 4,000 km are likely to be inducted onboard. India plans to build some half-a-dozen Arihant class submarines in line with its nuclear doctrine which calls for No First Use but Massive Retaliation if attacked.

Arihant is built with Russian designs, but this will be the country's first nuclear attack submarine, classified in international naval lingo as SSBN.

India has one more nuclear-powered submarine, INS Chakra, leased from Russia, but that cannot fire nuclear missiles. The classification for such boats is SSN.

Like any submarine, both Arihant and INS Chakra are pearl shaped to accommodate the vertically launched missiles, and designed to move faster underwater than on the surface. They can stay deep in the darkness of the oceans for months, the only restrictions being the limits on human tolerance and availability of nuclear fuel.

It may be recalled that the project for nuclear submarines was sanctioned soon after the 1974 nuclear test by prime minister Indira Gandhi but it suffered when Morarji Desai and V.P. Singh occupied the office in the coming years.

In 1983, Gandhi once again pushed the project with required funds, but it was only in 1998, when India conducted the second round of nuclear tests, that prime minister Atal Bihari Vajpayee sanctioned the project afresh and a decision was also taken to involve the private sector. Larsen & Toubro, India's premier engineering construction company, was involved right from then onwards.

L&T, as it is known, has done commendable work in gradually and systematically building a horizontal supply-chain base and meeting the DRDO and naval specifications. DRDO, or Defence Research and Development Organisation, has been in-charge of the India's missile systems programmes throughout, which it has delivered with distinction.

Nuclear propulsion systems have been installed and managed by experts from BARC, or Bhabha Atomic Research Centre. Indications of Arihant's journey have been coming out for some time, and recently, the Indian Navy chief, Admiral Robin Dhowan, mentioned the possibility of its inclusion in the IFR although he did not understandably commit anything.

The tests are done one-by-one and for a nuclear boat, every single check is critical.

