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## *The Silent Sentinel*

*November 2011*



### *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.



Glen Gerbrand presents new Eagle Scout Vincent J Skalka II a Subvet Eagle Scout Patch and Commendation

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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.*

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

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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*

### **November Meeting**

Our monthly meetings are held on the second Tuesday of the month at VFW Post 3787, 4370 Twain Ave., San Diego. Our next meeting will be on 8 November, 2011. 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**  
CJ Glassford  
Al Strunk

## ***Submarine Losses in October***

Submitted by C J Glassford



- S – 37 (SS 142) - 43 Men on Board:  
Battery Explosion, on 10 Oct 1923, in the San Pedro Harbor, California : “ 3 MEN LOST “
- O – 5 (SS 66) - 33 Men on Board:  
Rammed and Sunk, on 20 Oct 1923, by the United Fruit Steamer, “ABANGAREZ”, in Limon Bay, Canal Zone:  
“ 3 MEN LOST “
- S – 44 (SS 155) - 56 Men on Board:  
Sunk, on 7 Oct 1943, by a Japanese Destroyer, Northeast of Araitto Island, off Amchitka :  
“ FIFTY FOUR MEN LOST - TWO SURVIVORS “
- WAHOO (SS 238) - 80 Men on Board:**  
Sunk, on 11 Oct 1943, by Japanese Naval Aircraft, Submarine Chasers, and Minesweeper, In La Peruse Straits, off Japan :  
“ ALL HANDS LOST “

- DORADO (SS 248) - 76 Men on Board:  
Sunk, on 13 October 1943, Cause Unknown, Either Accidentally Bombed and Sunk by Friendly Fire of Guantanamo Based Flying Boat, or Sunk by German Submarine Mine, in the West Indies :  
“ ALL HANDS LOST “
- SEAWOLF (SS 197) - 99 Men on Board, Plus 17 Army Personnel:      Accidentally Sunk, on 3 Oct 1944, by US Naval Aircraft from the USS MIDWAY (CV 63), and USS ROWELL (DE 403), off Moratai Island:      “ ALL HANDS LOST “
- ESCOLAR [ Bell] (SS 294) - 82 Men on Board:  
Possibly Sunk, on 17 Oct 1944, by a Japanese Mine in the Yellow Sea:  
“ ALL HANDS LOST “
- SHARK #2 [Bell] (SS 314) - 87 Men on Board:  
Sunk, on 24 Oct 1944, by Japanese Depth Charges, in South China Sea, West of Luzon :  
“ ALL HANDS LOST “
- DARTER (SS 227) - 71 Men on Board;  
Ran Aground, on 24 Oct 1944, on Bombay Shoal, in Palawan Passage. Crew Rescued by USS DACE (SS 247), Later Scuttled by USS NAUTILUS (SS 168), and USS DACE (SS 247) :  
“ NO LOSS OF LIFE “
- TANG (SS 306) - 78 Men on Board:  
Accidentally Sunk, on 24 Oct 1944, by Circular Run of      It's own Torpedo, in Formosa Strait :  
“ 9 POW'S, SURVIVED “



Meeting of the Submarine Veterans Inc., San Diego Base for October 11, 2011

1900 - Meeting called to order by Base Commander Bob Bissonnette.

Conducted opening exercises:

Reading of our creed:

Pledge of Allegiance lead by Fred Fomby:

Conducted Tolling of the Boats for the month of October:

USS O-5(SS 66)	29 OCT 1923	3 MEN LOST
USS S-44(SS155)	07 OCT 1943	56 MEN LOST
USS WAHOO(SS238)	11 OCT 1943	ALL HANDS LOST
USS DORADO(SS248)	12 OCT 1943	ALL HANDS LOST
USS SEAWOLF(SS197)	03 OCT 1944	ALL HANDS LOST
USS ESCOLAR(SS294)	17 OCT 1944	ALL HANDS LOST
USS SHARK II(SS314)	24 OCT 1944	ALL HANDS LOST
USS DARTER(SS227)	24 OCT 1944	NO LOSS OF LIFE
USS TANG(SS306)	25 OCT 1944	78 LOST 9 SURIVED

A moment of Silent Prayer observed for our shipmates still on patrol.

E-board members and VIP introduced by Junior Vice Commander:

One new member Jack Lester presented.

Secretary reported sailing list indicates 32 members aboard

The Treasurer is out of town this month, no report:

Chaplains Binnacle list:

CJ Glassford  
Al Strunk  
Bob Medina  
Mike Hyman

Parade Committee report: Jack Kane is not present tonight, but the Borrego Springs Desert Festival will be held on October 22 at 1000. If you are planning to attend we need your name before the Parade.

November 11, is the San Diego Memorial day Parade. The parade starts at 1100. Parking may be a problem so come early. Also, more info will be available on the web by 1<sup>st</sup> November.

We are still having problems insuring the float during parade events. If you know of a company who will cover the float please let us know.

Membership: We have one new member: Jack Lester, welcome Jack.

Annual Dues are due by December 31.

Scholarship Fund: 15 March 2012 is the deadline for new applications. If you have possible candidates you should contact them soon and encourage them to apply.

Storekeeper: We have a new patch catalog if you order thru the base you can get a discount on all items.

Breakfast Committee: Our next breakfast will be October 30 from 0800 to 1200. Breakfast is only 6 dollars so come on out and bring your family.

We will be holding a food handlers class here at the VFW starting at 0900 on October 29, 2011. The class is for food handlers is only good here at the VFW and you need the class if you plan to volunteer.

1920 – Base Commander called for Break.

1937 – Commenced meeting:

Unfinished Business:

The Boat tour was very successful and thanks for everyone who showed up, it was a great turn out. If anyone is interested in another Boat tour email me with the names of the people in your group, and the last four digits of everyone's Social Security number. The age limit for the tours is eight years old. We will have more information at the next meeting.

Annual Christmas Party: We are planning to have the Christmas party on December 17<sup>th</sup>. It will be a joint party, Sub base and WWII to be at 1:30 to 4:00 pm. This will provide the opportunity for everyone to attend. Cost will be \$20.00 per person. At present we plan to have Cornish hen or roast beef.

We would like to have door prizes so if you have something that would be appropriate please let me know.

We need someone to volunteer to take over the membership committee. Ron has requested he be relieved due to personnel issues. Everything is in order and he can let you know what you need to do.

Good of the Order:

There is lots of submarine related material in the back, please take a look before you leave.

There are some new guide lines from USSVI about Kaps for Kids .

USSVI has a new blog which gives out latest information with in the organization.

Check to website for information concerning addition Social Security benefits for veterans. We are looking at a 3.6 cola increase.

Ozark Runner base has produced a CD on WWII boats.

Fixing the float: Fred Fomby will be in charge and will get out more information. Fred would like to get this done by the end of the month.

A member who is a volunteer at the Ron McDonald house requested there is a need for volunteers to help out at the cooks at the center . If interested let me know. Thanks

2000 – Meeting adjourned by Base Commander.

Sailing list for October 11, 2011

FRED FOMBY	BOB BISSONNETTE	TOM WARNER
JIM BILKA	JIM HARER	STEVE LAMPRIDES
LARRY KENDALL	ED FARLEY	BENNY WILLIAMS
CLIFF BRITT	PAUL HITCHCOCK	JUANITA WILLIAMS
CHARLIE MARIN	DOC COATES	BUD ROLLISON
PHILLIP RICHESON	PHILL RICHESON	GLENN GERBRAND
BOB OBERTING	RAY FERBRACHE	HARRY MCGILL
JACK LESTER	BOB FARRELL	RUSS FILBECK
MERT WELTZIEN	KURT GREINER	RON GORENCE
MANNY BURCIAGA	JACK ADDINGTON	JOEL EIKAM
JOE ACAY	LARRY DORE	

**Sub Force Competing For Shrinking Dollars**

*Military.com, October 24*

The U.S. Navy's submarine force has long prided itself on operating out of sight, as the military's self-described "Silent Service." But in the face of shrinking defense budgets, the Navy's submariners may need to learn how to make more noise in order to get noticed among the many competing priorities inside the Pentagon.

The submarine force, like much of the military, mostly still uses ships and equipment originally designed to fight the Cold War. The missions of that era — hunting for Soviet ballistic-missile submarines and their world-ending cargoes of nuclear weapons — today have given way to a broader array of different, but no less important tasks, the Navy's top sub commanders say.

Vice Adm. John Richardson, commander of the Navy's submarine force, told a conference of the Naval Submarine League outside Washington last week that his ships and crews are in a "fourth phase" of undersea warfare. It demands that sailors keep all their traditional submarine expertise, plus train to operate in shallow water, conduct surveillance; work closely with special operators; and be prepared to attack targets inland on a moment's notice. The submarines of tomorrow also will begin to use more of the unmanned vehicles that already have revolutionized war in the air.

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Richardson and other Navy presenters gave the example of this year's Libya operation. Three nuclear submarines were part of the international naval presence off Libya's coast, and one of them, the guided missile sub USS Florida, fired the most Tomahawk cruise missiles of any warship: 93 weapons with 93 hits.

The Florida is a former ballistic missile submarine converted to serve in Richardson's "fourth phase;" instead of carrying 24 nuclear missiles as part of the U.S. strategic deterrent, the ship can accommodate more than 150 Tomahawks and has ample room for SEAL special operators. It had been away from the U.S. for some 15 months when it got the assignment to join the armada off Libya, Navy officials said — proof, they said, of submarines' enduring versatility.

The long-term problem, another top commander said, is that the Navy's submarines are in such high demand the fleet cannot keep up. That would be a challenge in the best of times, but Vice Adm. Bill Burke, the service's top logistics boss, said the prospects were even drearier given DoD's reduced budget growth.

"We are likely to make significant changes to our force structure — likely in the negative direction," he said. That means that by the 2020s, the Navy may not have enough submarines to meet the demand that today's brass forecasts for tomorrow's commanders.

President Barack Obama and Republican congressional leaders agreed earlier this year to reduce DoD's budget by about \$450 billion over the next decade as part of their deal to raise the U.S. debt ceiling. But that was only the first stage of a two-stage agreement: If a special "super committee" of lawmakers can't agree on a plan to reduce the U.S. debt by about \$1.2 trillion that can pass Congress by Christmas, the second stage of the deal goes off, and DoD loses another \$500 billion.

Defense Secretary Leon Panetta and congressional defense advocates have said the consequences of the so-called "sequestration" would be unthinkable for the Pentagon, and that would trickle all the way down to the submarine force. If the Navy can't keep building its Virginia-class attack submarines at the rate of two per year, its projected "submarine gap" could get even worse, Burke and other officials warned.

As it stands, Richardson's submarine force is trying to do the best it can with what it has. Crews are beginning to plan for deployments lasting seven months, up from the current six, so that fewer submarines will be available for more time to take commanders' missions. And as all the strategy and budget dynamics play out, the submarine force also has to absorb two major changes to its culture: The introduction of women into submarine crews and an outright ban on smoking while underway.

**Virginia Mutates**  
*Strategy Page, October 25*

One of the U.S. Navy's four SSGNs (cruise missile firing nuclear sub) was used in combat for the first time last March, firing 90 missiles at Libyan targets. But those four SSGNs will all be retired in about 15 years, and the navy has a plan for replacements, even though there is very little money for new ship types. The plan is to build some modified (to be SSGNs) Virginia SSNs (nuclear attack subs). This will be done by adding a 30 meter (94 foot) section to the hull, which would contain 26 cruise missiles. Virginias already carry 16 of these, but the SSGN models would have a more respectable 40. Fifteen "stretched" Virginias would provide about the same amount of cruise missiles, but spread among more ships. A Virginia SSGN would cost about 25 percent (\$500 million) more than a Virginia SSN.

The current SSGNs made an impressive combat debut last March 19th. Most of the Tomahawk cruise missiles (over a hundred) launched on that day were fired by one ship; the SSGN USS Florida. While this was the first time an SSGN saw combat, it was not the first time nuclear subs have fired missiles in wartime (U.S. SSNs have fired Tomahawks several times.)

The USS Florida was one of four Ohio class ballistic missile submarines (SSBN) converted to cruise missile submarines (SSGN). The USS Florida and the other three SSGNs entered service over the last five years. Each of these Ohio class SSGNs carry 154 Tomahawk cruise missiles, along with space for 66 commandos (usually SEALs) and their equipment.

The idea of converting ballistic missile subs to be SSGNs, rather than scrap them to fulfill disarmament agreements, has been bouncing around since the 1990s. After September 11, 2001, the idea got some traction. The navy submariners love this one, because they lost a lot of their reason for being with the end of the Cold War. The United States had built a powerful nuclear submarine force during the Cold War, but with the rapid disappearance of the Soviet navy in the 1990s, there was little reason to keep over a hundred nuclear subs in commission. These boats are expensive, costing over a billion each to build and over a million dollars a week to operate. The four Ohio class SSBN being converted each have at least twenty years of life left in them.

The idea of a sub, armed with 154 highly accurate cruise missiles, and capable of rapidly traveling under water (ignoring weather, or observation) at a speed of over 1,200 kilometers a day, to a far off hot spot, had great appeal in the post-Cold War world. The ability to carry a large force of commandos as well was also attractive. In one sub you have your choice of hammer or scalpel. More capable cruise missiles are in the works as well. Whether or not this multi-billion dollar investment will pay off remains to be seen, but it certainly worked off Libya. And then there's the new Tomahawk. The RGM-109E Block IV Surface Ship Vertical Launched Tomahawk Land Attack Missile weighs 1.2 ton, is six meters (18 feet) long, has a range of 1,600 kilometers, getting there at a speed of 600-900 kilometers an hour, flying at an altitude of 17-32 meters (50-100 feet) and propelled by a jet engine generating only 600 pounds of thrust. Accuracy is on a par with JDAM (10 meters/ 31 feet). The Block IV Tomahawk can be reprogrammed in flight to hit another target and carries a vidcam to allow a missile to check on prospective targets.

### Defense Department Increases Research Grant To Electric Boat

*Hartford Courant, October 24*

The Department of Defense has awarded \$90 million for advanced submarine research and development to the Electric Boat and Newport News shipyards, Sen. Richard Blumenthal said late Monday, most of which will be spent in Connecticut.

The money, 75 percent aimed at Electric Boat in Groton, is smaller than some recent maintenance contracts but it signifies a long-term commitment by the Pentagon, Blumenthal said — especially since the amount is more than double last year's \$35 million.

“It shows that there is a continuing commitment to build submarines despite uncertainty about overall Department of Defense funding and budgets,” Blumenthal told The Courant. “And it’s also of significance for the suppliers.”

### **EB Wins \$90 Million Contract To Develop Advanced Submarine Technology**

*The Day, October 24*

Sen. Richard Blumenthal said Monday night that Electric Boat has been awarded a \$90 million contract for engineering and technical design services to support the research and development of advanced submarine technology.

Seventy-five percent of the work will be done at EB in Groton, while the other 25 percent will be done in Newport News, Va., Blumenthal said. He added that the award is about double the amount of money awarded last year.

“It’s highly significant and it shows that submarine work will continue despite any uncertainty of the Department of Defense overall funding,” Blumenthal said. “The contract is very important not only for Electric Boat but also for its suppliers in southeastern Connecticut and the jobs it supplies.”

### **HII Receives Submarine Contract**

*UPI, October 24*

NEWPORT NEWS, Va., Oct. 24 (UPI) — The U.S. Navy has contracted Huntington Ingalls Industries’ Newport News Shipbuilding division for engineering work on its submarines.

The \$118.9 million award covers engineering, design, configuration management, integrated logistic support, database management and modernization support on Los Angeles class, Seawolf class, Virginia class and Ohio class submarines, special mission submersible interfaces, submarine support facilities and related programs.

Work is expected to begin immediately and continue through September 2012.

“Maintaining an optimal fleet for the U.S. Navy is our commitment and we take pride in not only building the world’s most advanced submarines, but also maintaining them throughout their service life,” said Jim Hughes, NNS vice president, Submarines and Fleet Support.

NNS is one of only two U.S. shipyards capable of building nuclear-powered submarines and has completed more than 200 ship repair projects for the U.S. government since the early 1990s, ranging from paint repair to complete hull and machinery renovation.

Huntington Ingalls Industries designs, builds and maintains nuclear and non-nuclear ships for the Navy and U.S. Coast Guard and provides after-market services for military ships around the globe.

### **That Sinking Feeling: Smith, Subs And National Security**

*ABC News (Australia), October 25*

If Stephen Smith wants to replace Prime Minister Julia Gillard he would be in a stronger position if he did a better job in his portfolio.

As he has only been Defence Minister since September 2010, it might be a bit harsh to judge his efforts so far, but he has one very big issue that seems to be dragging.

The main issue for any defence minister is to ensure that Australia has done everything possible to be able to defend itself against direct armed attack. The security of our country is the highest priority of any government. A strong defence force is our most important insurance policy to maintain our security and so there is no acceptable excuse for not paying the premium.

The Minister’s job is to ensure we have “the ability to conduct independent military operations in the defence of Australia by way of controlling the air and sea approaches to Australia, and denying an adversary the ability to operate, without disruption, in our immediate neighbourhood”.

For that reason, the Government’s 2009 Defence White Paper stated that one of its main priorities was “a significant focus on enhancing our maritime capabilities”.

And at the centre of that wish list are 12 new submarines to be built in South Australia in Australia’s biggest ever defence project. To me, this seems particularly ambitious; especially without looking at the alternatives. The existing six Collins class submarines, ordered by a previous Labor government, have been disappointing from the start. It is not obvious why Labor wants to risk a repeat of that experience. The Navy has struggled to even have enough crew, submarines have been too regularly out of service and in the Minister’s own words (ABC TV July 20, 2011), “There are longstanding maintenance and sustainment difficulties with our Collins class submarines”. And now he says he can’t start on the new project until he knows how long the existing submarines will last.

An interim report is due in about six weeks with the final due March 2012. But I am not sure that isn’t a smoke screen. The Minister has not encouraged any informed public debate and tried to keep the Opposition and the public in the dark.

The Australian Strategic Policy Institute has recently been quoted as saying that the wish list for military hardware is already a long way behind schedule.

There are various options to enhance our submarine fleet. One option is to buy off the shelf, but that has been ruled out. The Navy always says our needs are unique so we have to build our own submarines. Certainly, we need boats that can travel long distances quickly and remain, for substantial times, undetected. The Europeans build diesel submarines and some have substantial capabilities. They would be cheaper and maybe more practical and reliable. Even if they could not meet all our requirements, perhaps in stronger collaboration with the US, we could have an even stronger submarine force.

These issues are nowhere properly canvassed by the Government; they want the assembly done in SA and that is that. But the options should be discussed. In addition to the European option, another option is to buy nuclear submarines from the Americans but “the Government has ruled out nuclear propulsion for these submarines”.

I presume Labor’s reason is purely political. Labor agreed to a new nuclear reactor in Sydney a few years ago for medical and research purposes. But today any mention of the word ‘nuclear’ is just not possible for a Government in bed with the Greens. But sensible discussion about the defence of Australia is too important to be subject to a Green veto.

Nuclear propulsion instead of diesel does not mean Australian submarines would carry nuclear weapons. Nuclear powered boats can travel further and faster so whilst 12 boats are needed if using diesel propulsion, some lesser number may be more than adequate with nuclear propulsion. All these cost differences need to be examined. Servicing a nuclear reactor would mean that we would have to have an arrangement with the US for maintenance as we do not have substantial nuclear technology in Australia. A joint submarine base with the US in Australia would be good for Australia.

And there is no rational reason for us to be too shy about a nuclear-powered ship when, as the White Paper says, Australia has been relying on the nuclear deterrent for years and, under successive governments, has acknowledged the value to Australia of the protection afforded by extended nuclear deterrence under the US alliance.

Working with the US also fits our national interest to work closely with our principle ally. There is nothing new about Australia working closely with the US; Australia already has extensive arrangements with the US in situations where costs are prohibitive for us to operate alone, eg. space-based assets and some sensitive special technologies.

Of course, if we are to build the submarines ourselves it will end up as an open cheque book and the cost will escalate. In the White Paper, the Government says that all purchases should be subject to the principle “that military-off-the-shelf and commercial-off-the-shelf solutions to Defence’s capability requirements will be the benchmark against which a rigorous cost-benefit analysis of the military effects and schedule aspects of all proposals will be undertaken”. But this will not apply to the biggest ever defence project where the estimates are anywhere between \$36 billion and \$70 billion.

From the same people who gave Australia pink batts and school halls, there is every reason to have misgivings about how this project will be developed. If it ends up with cosy union deals, like the desalination plant in Victoria, the cost to the taxpayer could be astronomical and the boats might end up no better than the Collins'.

It would be in everybody's interest, including his own, if Minister Smith was a lot more open about the critical decisions yet to be taken on this project so vital to Australia's long term security.

### New Russian Ballistic Missile Sub Begins Sea Testing

*Global Security Newswire, October 24*

Russia has begun tests of a new Borei-class ballistic missile submarine in the White Sea, Russia Today reported on Monday (see GSN, Sept. 7).

Pacific Fleet sailors assigned to the Alexander Nevsky received specific preparation for operating the submarine, according to Russia Today. Russian Prime Minister Vladimir Putin last year noted the vessel was undergoing dock testing, according to a previous report (see GSN, Dec. 14, 2010).

Russia's initial Borei-class submarine, the Yuri Dolgoruky, has been used for vetting Russia's new Lirer ballistic missile (see GSN, Aug. 10; Russia Today, Oct. 24). The same vessel is expected to launch a new trial flight of the Bulava ballistic missile in the White Sea before the end of the month, an official told ITAR-Tass on Monday (see GSN, Oct. 13; ITAR-Tass I, Oct. 24).

Russia's Sevماش shipyard is assembling a third Borei submarine, Vladimir Monomakh, and the country's navy hopes to receive five more vessels in the same class before the end of the decade. The submarines are individually priced at roughly \$750 million, according to the shipyard, and each could be armed with between 12 and 20 multiple-warhead nuclear missiles (Russia Today).

Meanwhile, the Russian Defense Ministry and the country's Federal Nuclear Center in Sarov indicated they would pursue a number of collaborative initiatives, including efforts related to armaments, ITAR-Tass reported on Sunday. The Sarov site, 310 miles east of Moscow, hosts nuclear research and weapons production operations, according to an earlier report (ITAR-Tass II, Oct. 23).

### Submarine Force Is Preparing For A Changing Landscape

*The Day, October 23*

McLean, Va. - Vice Adm. John M. Richardson, commander of the submarine force, said he is struggling to come up with a name for the new era of undersea warfare, but "post-Cold War" just doesn't do it.

He and other leaders of the submarine force say they are entering the next generation of warfare, marked by fewer resources, the proliferation of long-range, precise weapons and battles in cyberspace.

They will have fewer submarines at their disposal as the aging Los Angeles-class submarines retire more quickly than they are replaced in the fleet. The budget is shrinking as the entire federal government looks to cut spending.

At the same time, more nations and groups will have access to long-range weapons because the technology is getting cheaper, Richardson said, and they will increasingly use cyberspace to try to harm U.S. interests.

What China can do today with its weapons, Richardson said, "Hamas will be able to do in the very near future."

This fall the submarine force will exercise its war plan in a maneuver they are calling "Agile Dagger," to prepare in case all of the submarines need to get to sea quickly.

And Richardson said the submarine force is "starting to man the ship to fight in the cyber domain."

More than 300 submariners changed their jobs to serve as information systems technicians, a new position on subs for experts in information assurance and networks.

Submarines will be needed for the fight in the cyber domain, and to make sure the military can get to places where adversaries try to deny access to surface ships and aircraft, Richardson said.

"It's only going to get more complex," Richardson said last week at the Naval Submarine League's 29th Annual Symposium. "I don't see a simplification of the security environment on the horizon."

Ballistic-missile sub needed

Three U.S. submarines launched more than 100 Tomahawks into Libya in March to take out the war-torn nation's air defenses as part of Operation Odyssey Dawn.

The conflict came to a head Thursday with the death of Moammar Gadhafi.

Rear Adm. Barry L. Bruner, director of the Undersea Warfare Division, wonders what would have happened if the scenario had unfolded elsewhere, if the submarines were off the coast of a nation that had the latest missiles and top-notch submarines. What if submarines were the only forces that could get close enough to strike? he asked.

"There is no doubt we would do well," he said at the symposium, held Wednesday and Thursday at the Hilton McLean Hotel, Tysons Corner, outside of Washington, D.C. "The question is, how are we going to do in the future? That's my dilemma."

The strategy in this new era, Bruner said, has to be "all about priorities."

At the top of the list is the program to build a new ballistic-missile submarine, Bruner said. Keeping the production rate for Virginia-class submarines at two per year is next, followed by developing a module to add more missile tubes to Virginia-class submarines and developing payloads, he added.

Bruner stressed that this was a strategy- "that doesn't mean we're going to be able to do it all."

Leaders in Congress and the Defense Department have said that everything will be scrutinized as they look to reduce the mounting national debt.

The program to replace the 14 current Ohio-class ballistic-missile submarines is a target because of its price: \$5.6 billion in fiscal 2010 dollars for each submarine after the first ship, a figure the Navy is trying to pare down to \$4.9 billion each.

But there has also been talk about reducing the production rate for Virginia-class submarines back to one submarine annually.

The Navy's Virginia-class program manager, Michael E. Jabaley, said he's always concerned that current events and fiscal pressures will hurt the program, and two per year is the best way to build these submarines.

Richardson said he plans to use a "very tight narrative about what the undersea forces can do" to make the case that the nation "gets a tremendous return" on its investment in the submarine force.

The decision makers need to know the submarine force's story, said retired Rear Adm. John B. Padgett III, national president of the Naval Submarine League.

"The submarine force has a strong story to tell, and it's incumbent on the submarine force to get that strong story out in the public so that those who are in the position to make decisions, whether they're voters or congressional representatives, will have the facts in place," said Padgett, who lives in Old Lyme.

"If you do an assessment - what do you get for the money you invest - submarines come out on top," Padgett said. "Whether they come

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out on top enough to be able to get all the things we need, that's the question."

More deployments a goal

Electric Boat's design for the new ballistic-missile submarine is the first new submarine design in 20 years.

The Navy plans to buy the lead ship in 2019 and construction is expected to take seven years. Richardson said that it is still early, but the submarines will "most likely" be built under an arrangement between Electric Boat and Newport News Shipbuilding in Virginia, the two shipyards that construct the Virginia class.

And the Navy now wants to buy 45 to 50 Virginia-class submarines instead of 30, Jabaley, who has been selected for promotion to rear admiral, announced at the symposium.

Extending the class gives the Navy and EB flexibility to change the design and introduce new technology efficiently because there will be more submarines on which to recoup the upfront costs, Jabaley said.

EB is also working on a concept for a module with missile tubes that could be added to the Virginia submarines to boost firepower, known as the Virginia Payload Module. Bruner said the module is not a program, but he is trying to make it one.

Future Virginia-class submarines will not only look different with these innovations, but they could also spend more time at sea.

Jabaley said the goal for the next group, or block, of the class, is to reduce the number of major maintenance periods during the life of the submarine from four to three so they will be able to deploy 15 times instead of 14.

Some of the current submarines may also deploy for longer periods to compensate for fewer submarines in the fleet, Richardson said, but this would be done judiciously, on a case-by-case basis, in response to emergent demands.

There is no plan to extend deployments beyond the traditional six months force-wide, he added.

There will be ongoing fiscal troubles and emerging threats, Bruner said, but the submarine force has technology that it hasn't had in the past and the newest submariners have talents and traits previous generations didn't.

The next generation of warfare is here, along with the "generation of warriors who man those ships.

"And they're awfully darn good," Bruner said.

"The question is," he added, "how do you tap all that talent, all the technology, and how do you fund it in a fiscally constrained environment to get us where we want to go strategically?"

The submarine force, Rear Adm. David C. Johnson said, has the "strategic advantage in the undersea realm."  
"And," he said, "we do not intend to give it up."

### **Navy Works On Unmanned, Undersea Vehicles**

*Federal News Radio, October 21*

When you think of unmanned defense systems, drones hurtling through the air is probably top of mind.

But the Navy is working on an unmanned underwater vehicle.

The service is working with General Dynamics to develop underwater mine detection vehicles.

The Navy awarded the company a \$48 million dollar contract earlier this month for the project, dubbed the Surface Mine Countermeasure Unmanned Underwater Vehicle. The vehicles, which will be launched from the service's new Littoral Combat Ships, will eventually be able to pick out and identify sunken mines in underwater areas with lots of clutter.

Capt. Duane Ashton, the program manager for unmanned systems in the Navy's program executive office for Littoral Combat Ships. He joined the Federal Drive with Tom Temin and Amy Morris to discuss the new device and how it furthers Navy's trend toward using more unmanned vessels.

### **Gaddafi Dead: The Incredible Story Of The British Nuclear Submarine That Secretly Played A Part In Tyrant's Downfall**

*London Mirror, October 24*

REBELS who overthrew brutal tyrant Colonel Gaddafi had a secret helper they never saw but whose awesome power they learned to respect.

Now the conflict is over we can reveal British nuclear-powered submarine HMS Triumph had been stationed beneath the waves off Libya – and firing missiles.

The hi-tech craft slipped quietly out of Devonport after UN Security resolution 1973 was passed on March 17.

It made for the Mediterranean with a mission to enforce the no-fly zone designed to protect civilians from being massacred by Gaddafi's heavy military hardware.

The 130-strong crew had not been allowed to tell their families first. Instead they quickly had to write letters which were taken ashore and posted.

As the rebellion gathered pace, HMS Triumph successfully fired Tomahawk cruise missiles at more than a dozen key Libyan targets.

Moving close up to the shore, her covert surveillance capabilities helped to foil attempts by Gaddafi's special forces to mine Misrata's port entrance, which would have sunk vessels carrying hundreds of civilians fleeing the violence.

HMS Triumph's captain, Commander Rob Dunn, 48, said: "Not since the Second World War has a submarine been used this effectively and flexibly. We were sitting incredibly close to the coast, watching and listening to the battle raging around Misrata and providing the most up-to-date intelligence and early warnings of impending attack against the port and the Nato ships providing its security."

Cdr Dunn, from Plymouth, added: "We are the special forces of the maritime world. We do things that would make your hair curl." To stay undetected Cdr Dunn's crew had to live in near silence.

In-built features such as carpeted decks and a washing machine perched on blocks that absorb shock reduced noise.

Periscope use was kept to a minimum. And in battle conditions the men stopped showering or frequently flushing toilets because releasing the waste water into the sea might have given them away.

One of the submariners with his finger on the button during this tense period was Mick Troth, 29, whose job it is to precision-target each Tomahawk.

He has to ensure the caps are open and the tubes are flooded before twisting the safety key and – on the captain's order – launching the missile.

Mick, of Chesterfield, Derbys, said: "Being off Libya was very nerve-racking. We were doing it for real and everyone was on edge.

"Everything was checked again and again. But when I pressed the fire button for real it was pretty shaky.

"I don't mind that our work is secret and we don't get much recognition. We know we've done a good job."

The missiles have a long range and can take a while to reach their targets.

When the men have finished firing they go off to eat, suddenly realising as they finish their pizzas that the strike was just taking place.

Life on a submarine has to be different from that of a surface warship because of the special conditions.

Hatches, compartments and air pressure are all checked hourly. Rapid reactions to fire and flood are endlessly rehearsed.

There is not enough room for everyone to have a bunk so there are only 80 beds on board. A third of the crew take turns, hot-bunking in cramped dormitories.

Visitors of all ranks sleep wedged between missiles and torpedoes in the weapons compartment.

They know if their submarine were to go to the bottom in areas where the ocean is miles deep... it could be the end.

United by the secrecy of their work and the dangers they face, submarine crews are a tight-knit band of brothers who draw on a rich seam of what they call Jack – naval humour which spices up their daily diet of relentless watch-keeping.

Food is obsessed over and items have nicknames such as snorkers for sausages and Nellies wellies for spam fritters.

The weekly menu is more than just a list of meals. It helps the crew remember what day it is during months spent underwater. If it is fish and chips it must be Friday. There is a weekend roast and on Saturday night the steak is eagerly awaited.

Recent plans on HMS Triumph to change Wednesday's curry to a mixed grill resulted in "uproar" and were swiftly torpedoed.

There is alcohol on board but not a lot gets drunk because the men have to remain alert. Each night, deep in the bowels of the sub, the engineers bake potatoes by nestling them next to machinery as they closely monitor the nuclear reactor.

Crew member Graham "Scouse" Finley, 30, said: "I don't know what the right temperature is for spuds but if we put them on at 10.30pm they're perfect three hours later, crispy on the outside and fluffy in the middle.

"I personally like mine with a bit of butter, cheese and curry paste, though some put all sorts on theirs." The Liverpoolian LET – Leading Engineering Technician – added: "You could probably do other food like trout but you wouldn't want to stink out the engine room."

Submariners anyway are notorious for smelling less than luxurious inside. One compensation is the sailors are the best paid in the Royal Navy. A stint at sea boosts a senior rating's pay by about 30% pushing it close to £40,000.

The service has lost far fewer people than other areas of the Navy because no subs were axed in the recent military cuts.

The 8,000-strong community of submariners was deeply shocked by Ryan Donovan's conviction for murdering Lt Cdr Ian Molyneux on HMS Astute last April.

If the men are on a secret deployment when a relative dies they wouldn't be able to disembark or contact their family.

In some of those cases the captain may break the news just before the next port visit. Then the sailor travels home. Women have never served on British subs because of fears toxins in the atmosphere could damage their fertility or harm an early-stage foetus.

But they already work on submarines in other navies. The Australians and Canadians even have mixed bunk spaces.

Now medical research has finally cleared the way here. It is up to the MoD to make a decision, with the possibility of females joining the Vanguard class of submarines as early as 2014.

Chief Petty Officer Paul Foran, 47, said: "There's no doubt in anyone's mind that women can do the job. But I do wonder how many will want to do it and what numbers would be needed to make them feel comfortable on board."

CPO Foran, a Glaswegian and a submariner for 31 years who the men call JK, added: "I would welcome it. We already have gay men on board. I think we're just being a bit British about it."

### Is This The Beginning Of The End For Britain As A Nuclear Power?

*London Express, October 23*

PHILIP Hammond's appointment as defence secretary has once again thrown open the debate over the future of Britain's independent nuclear deterrent.

Outwardly the argument is whether Mr Hammond, pushed by budgetary concerns and appeasing the Lib Dems, will reduce our submarine-based Trident system, or replace it with something different.

The real question for those who appreciate that Britain can never be without a robust nuclear deterrent is much more delicate: will a US-centric Trident system be replaced by a joint Anglo-French policy to shore up European defence?

Mr Hammond, successor to Dr Liam Fox, is viewed with trepidation by senior military and defence experts, who rate him a "budget man", not a "deep defence thinker".

Guy Anderson, chief analyst with IHS Jane's Defense & Security Intelligence & Analysis, said: "Dr Fox argued hard to maintain an independent nuclear deterrent and expended much political capital on the issue. While Dr Fox hinted he would have been willing to resign over it, Hammond is unlikely to share his strong feelings."

The MoD has assuaged concerns with a statement in which the Defence Secretary said: "I have always supported Britain retaining its nuclear deterrent as the ultimate insurance against the most extreme threats and wholeheartedly believe in maintaining a continuous, submarine-based deterrent."

Speaking to the Sunday Express last night Mr Anderson said: "This may well be his position but it is not clear how far he would push if funding started to bite. His record is causing concern among military figures."

Indeed, Mr Hammond has abstained from every vote concerning the renewal of Trident, though party sources were last night suggesting this was due to "family commitments". Specifically at stake is not the US Lockheed Martin missile system, expected to continue in service until at least 2042, but the four Faslane-based Vanguard submarines.

One of these constantly patrols the oceans in radio silence for up to three months, its 16 Trident missiles sharing up to 48 warheads – the ultimate safeguard of Britain's security. The Vanguards will have to be replaced within 20 years. Since a replacement takes 20 years to design and implement, a stand has to be taken soon and politics has already played a role.

While preliminary work is underway on a submarine replacement programme, estimated to cost £20 billion at 2006 values, any decision to go ahead has been postponed until 2016. Ostensibly this was done to push back the £3 billion initial development costs until 2020.

It had more to do with the belief that the Conservatives will have their own, non-coalition mandate by then and be able to tackle the thorny issue without Lib Dem pressure.

Mr Hammond has three main options. First, he could advocate scrapping or emasculating the nuclear deterrent, as advocated by Nick Harvey MP, Armed Forces Minister and a Lib Dem.

The argument is that as Iraq, Afghanistan and Libya show, the world has moved on from the Cold War days where Mutually Assured Destruction was the only game in town. A Cabinet Office level study is examining alternatives and is due to report at the end of next year. Those to the right of the party say that an alternative, cheaper land-based system might work but there are drawbacks.

One expert explained: "The problem with having a land-based system, even a mobile one, is that it can be tracked by any nation with the technology to do so. However, most nations do not have the sophistication to do this."

The number of submarines could be slashed to two, with constant patrols scrapped. This would save considerable money, with the downside that Britain would not be in a position to "de-escalate" a ballooning conflict.

Secondly, we could just replace the Vanguards on a like-for-like basis. This would require considerable design help from the US but would safeguard about 11,000 jobs.

The third option is trickier. There have been overtures from France about a new age of mutual nuclear assistance.

France has only recently rejoined Nato but it has been operating a highly effective submarine, air and land-based Intercontinental Ballistic Missile system.

This could work by sharing a "continuous at-sea deterrence", taking turns keeping an Anglo-French underwater vigil.

SHARING a nuclear deterrent may send senior military chiefs into a lather but in some lights it makes sense. In 2009, President Nicolas Sarkozy declared: "There can be no situation in which the vital interests of either of our two nations could be threatened without the vital interests of the other also being threatened."

Certainly, the very thought of Britain giving up a totally independent nuclear deterrent and pitching in with France, sends shivers down the spine of military kingpins.

As former First Sea Lord Admiral Lord West told the Sunday Express: "I would much rather see closer ties with the US since our interests are more often than not more aligned."

Atlanticists should consider two things: nuclear issues are separate from any other aspect of defence and the US has already made clear it would not oppose any move that would strengthen Europe and relieve America's financial burden.

President Obama's position on nuclear arms has already caused ripples of worry here and in France – he seeks a world in which no nation holds nuclear weapons.

Etienne de Durand, from the French Institute of International Relations, said: “France is increasingly worried that the US is slowly in withdrawal, as was shown in Libya, and that this might also influence the UK's ultimate resolve to maintain its nuclear deterrent. “France does not want to be the only nuclear power in Europe.”

### **Tomorrow's Missile Subs: Smaller, Cheaper, With Lots Of Robot Pals**

*Wired, October 20*

On March 19, the guided-missile submarine Florida fired more than 90 of the roughly 120 Tomahawk cruise missiles that took down Libyan air defenses, clearing the way for NATO strike planes. It was the major-combat debut for America's fleet of “SSGN” subs. Each of the four vessels packs up to 154 Tomahawks, making them some of the world's most powerful warships.

But there's a problem. The SSGNs, commissioned in the last five years, are actually modified ballistic-missile submarines dating from the 1980s. Around 2026, their nuclear power cores will wear out. At that point, the Navy must replace the subs ... or lose a huge portion of its missile firepower. But building new submarines the size of the SSGNs could cost up to \$8 billion apiece, nearly half what the Navy spends on ships every year. In other words, way too much.

Fortunately, Electric Boat in Connecticut, the Navy's main submarine-builder, has a plan. Instead of designing new SSGNs from scratch, Electric Boat intends to pack the current Virginia-class attack submarines with extra missiles — and give them new eyes and ears in the form of sophisticated underwater and flying robots. The meaner, smarter Virginias wouldn't carry as many missiles as today's SSGNs, but at just \$2 billion a pop, the Navy could afford many more of them.

The Virginia missile-boat plan is key to preserving the Navy's overwhelming firepower advantage. It's also the subject of my latest feature for AOL Defense.

The four current SSGNs were still being modified when, in 2003, Navy officials approached Electric Boat with the germ of an idea. The brass had crunched the numbers and knew it would have a submarine missile gap in the 2020s. Could Electric Boat tweak the Virginia boats then in production to duplicate some of the SSGNs' capabilities?

Electric Boat took a hard look at the Virginia design and concluded that the 377-foot submarine could be “stretched” to carry more than its standard loadout of 12 Tomahawks. “We looked at a variety of length plugs to see how much the ship can take without changing its performance,” program manager John Biederka said. Ninety-four feet was the optimal extension. With the additional space, the Virginia design could accommodate the same seven-foot-diameter missile tubes as on the SSGN — though only four of them, compared to 22 on the older sub. Each tube packs seven Tomahawks, potentially boosting the Virginia's missile arsenal to 40.

That's a far cry from the SSGNs' 154 Tomahawks. But with at least 10 Virginias tentatively slated to get the hull extension starting around 2019, the Navy will have what Electric Boat vice president John Holmander called a “more distributed” missile-sub fleet, rather than the capacious but concentrated four-boat force it has today. Plus, the Navy plans to equip the Virginias with new robots that can help the smaller missile boats make better use of their weapons.

First up: the so-called “large-diameter Unmanned Underwater Vehicle,” projected to enter service in 2020. Three feet across and torpedo-shaped, this UUV will carry sensors and, eventually, its own weapons. The large UUV “will gain access to places that manned platforms cannot — minefields, shallow water, the sea floor,” said Capt. Duane Ashton, head of the Navy's underwater robot development.

The step after that is adding an Unmanned Aerial Vehicle that can launch from a Virginia's large-diameter tubes and spot targets for the vessel's Tomahawks. “Combined with a submarine's traditional ability to provide a stealthy and persistent source of weapons in even the most access-constrained littoral environment, an organic [Unmanned Aerial System] will provide submarines a fully organic capability to detect, identify, precisely locate and quickly strike modern [Surface-to-Air Missile] engagement radars,” wrote Owen Cote (.pdf), an analyst at the Massachusetts Institute of Technology.

The Virginia hull-extension is firmly in the Navy's planning but hasn't been funded yet. The undersea robot is funded but its development has barely begun. The sub-launched aerial drone is still just a concept. It could take all three to effectively replace today's SSGNs.

### **The Navy's Next Boomer**

*DOD Buzz, October 20*

The Navy's top submarine planners are confident they can build a new class of ballistic missile boats on time and on cost, without swallowing up the service's entire shipbuilding budget. But to get there, they admit, everything has to go perfectly.

Capt. Dave Bishop, program manager for what the bubblehead community now calls “the Ohio-replacement,” – not “SSBN(X),” – gave the Naval Submarine League a detailed brief on his long-term plans on Thursday outside Washington. Although surface-dwellers still debate whether the Navy should “stretch” its Virginia-class attack submarines to build a new class of boomers, the sub force treats it as a done deal, and Bishop's work has been quietly progressing underneath the surface.

In fact, for Bishop's purposes, almost everything is settled: He is planning a class of 12 newly designed, newly built ballistic missile subs equipped with 16 tubes apiece, down from the 24 aboard current Ohio class. The new boomers' tubes will be able to accommodate the Navy's existing arsenal of Trident D-5 nuclear world-enders, augmented down the road with a life-extension program. The new subs also would be able to handle a theoretical new missile of tomorrow. (More on that later.)

The detailed design work for the lead ship will begin in 2015; construction would get underway in 2017, with the start of assembly of the missile compartment; then major work on the boat itself would begin in 2019. Figure about seven years for full assembly, then add time for a shakedown availability, test missile shots for both Gold and Blue crews, and the first Ohio-replacement boomer could take its first deterrent patrol in around 2029, Bishop said.

During the construction phase, Bishop said the Navy wants to build the first boat in about 84 months, as compared to the 86 months it took to build the first-in-class fast attack sub USS Virginia.

“That means we need to get everything right,” Bishop said. “We can't afford to over-expend on anything.”

So he wants to borrow as much as possible from the Virginias and have as much design work finished as possible before the serious work gets underway – sounds like common-sense ideas, but the Navy does not always adhere to them. Specifically, Bishop wants engineers to finish about 60 percent of design work before major construction.

“We have to get that right, now,” he said. “There is no more room to slip funding or schedule and not impact my 2019 start. So we have to stay on target.”

What does it all mean? Same as always: Money. The Navy hasn't designed a new submarine class in decades, and it hasn't designed a new ballistic missile submarine since the 1970s. That means a lot of “non-recurring engineering costs” for the original work to design and build the first ship, plus the costs to build the next 11 and operate and sustain them all.

Naval observers worry it could cost so much money the Navy might not have any left over to build the other ships it wants – and will need as its 1980s-vintage cruisers and destroyers begin to leave the fleet in large numbers. The Navy's top logistics officer, Vice Adm. Bill Burke, acknowledged it's still a common fear, and also that there are voices inside the Building that want to delay or even cancel a new boomer to afford other ships.

“It's a bitter pill because none of us want to see the Navy get any smaller,” he said. “There are people telling me, ‘Hey Bill, that's a great idea.’ There are still people out there who believe we're going to wreck the shipbuilding plan with the Ohio replacement.”

Burke said he doesn't agree; he thinks the Navy can prioritize and balance all its programs. Service officials and some congressional allies tried for a time to pay for a new boomer with another part of the federal budget, arguing that the new SSBN was a national strategic asset, not just a Navy toy. But that case does not seem to have won many converts.

Bishop's numbers tell the story: He anticipates the first ship will cost \$4.5 billion to plan and design, then \$6.8 billion to build, for a total overall cost of about \$11.3 billion. He believes the follow-on boats will cost about \$5.6 billion apiece. But Bishop thinks he can use "government improvements" and "shipbuilder improvements" to get that follow-on cost down, to around \$4.9 billion per copy.

Add up that roughly \$700 million per-ship reduction over all the follow-on submarines, and Bishop's goal is to reduce the overall cost of the program from about \$62 billion to around \$54 billion, in fiscal 2010 dollars.

What if he can't? What if, as in some Navy shipbuilding programs, there are delays and overruns in the class until about the third or fourth hull? What if congressional dysfunction means the Doomsday Device is triggered, or lawmakers allow the U.S. to default on its debt? Well, that's not allowed to happen. And it's just best not to think about the state of the surface force in the 2020s.

Bishop was not glum about his prospects – he talked eagerly about the plan to use modular construction to build the new submarines, which he said would save time and money. Robots will do a lot of the welding and assembly of the Ohio replacement's missile tubes, for example. By comparison, when human welders built the USS Ohio's missile tubes, the work was so hot and dangerous that they couldn't stay on the job for more than 30 minutes at a stretch, Bishop said.

All this time, money and effort will be worth it because it will yield the best ballistic-missile sub in the world, Bishop said. The boats will have 159 racks for 155 planned crew members, meaning sailors won't have to share. And they'll have a comparatively spacious boat, about the same length as the Ohio — some 560 feet — despite its eight fewer missile tubes, and bigger: Planners want the Ohio replacement to displace some 19,700 tons, according to Bishop's presentation, as compared with the Ohio's 18,700-ton submerged displacement.

"It's becoming a real life submarine," Bishop said, promising another update at a future sub conference. "Hopefully next time we'll have a little bit more detail along the way."

### **Navy Fires Ballistic-Missile Sub Commander**

October 21, 2011

Military.com|by Amy Bushatz

The Navy relieved another commanding officer from duty Wednesday, marking the second CO to be fired this week and the 20th this year. Cmdr. Joseph Nosse, commander of the Bangor, Wash.-based Trident ballistic-missile sub USS Kentucky, was relieved due to a "loss of confidence" in his ability to command, according to a Navy release.

The firing comes on the heels of a separate decision early this week to can Capt. David Geisler, commander of Command Task Force 53 in Bahrain. He was also removed for loss of confidence, according to the Navy.

Nosse, who took over Kentucky's Gold Crew in February 2010 and the combined crew in August, has been temporarily assigned to the staff of Commander, Submarine Group 9, also based out of Bangor.

### **64 Sailors Caught Illegally Using Or Distributing Designer-Drug Spice**

Commander, U.S. 3rd Fleet Public Affairs, October 20

SAN DIEGO (NNS) — Sailors from three commands have recently been investigated and identified as using the designer drug Spice, officials from U.S. 3rd Fleet announced Oct. 20.

The use of synthetic drugs in the Navy, to include Spice, is illegal, and the Navy continues to aggressively investigate the use of synthetic drugs and hold those in violation accountable.

"The Navy's policy on drug abuse is simple and clear - zero tolerance," said Vice Adm. Gerald R. Beaman, commander, U.S. 3rd Fleet. "Drug abuse puts lives and missions at risk and undercuts unit readiness and morale. The use of synthetic drugs, to include Spice, is illegal and the Navy continues to aggressively investigate the use of synthetic drugs and hold those in violation accountable."

Eleven Sailors from USS San Francisco (SSN 711) and three Sailors from floating dry dock Arco (ARDM 5) received non-judicial punishment in the past month for using the designer drug Spice, and two others were found to have used other illegal drugs. Of those, six Sailors also admitted to cocaine use, and one was found to have used methamphetamines. All are being processed for separation in accordance with the Navy's zero tolerance policy. One additional Sailor from USS San Francisco continues to be investigated on a possible distribution charge.

Forty-nine Sailors have been identified from the USS Carl Vinson (CVN 70) connected to the sale, possession, or use of Spice. The alleged ring includes two distributors, one middle man, and 46 users. Of the 49 suspects, eight have been administratively separated for prior drug use identified via the command urinalysis program and three have already been separated for non-misconduct related reasons. While the investigation remains open, the two distributors and the middle man continue to be investigated for possible legal action, and the other identified Sailors remain subject to appropriate disciplinary action and administrative processing.

"Our Sailors must understand the dangers and consequences of using drugs — substance abuse risks the lives of shipmates and erodes readiness," said Rear Adm. Frank Caldwell, commander, Submarine Force, U.S. Pacific Fleet. "I need my Sailors to be ready for any tasking. Shipmates must watch out for shipmates and spread the word that this behavior is absolutely inconsistent with our Navy core values of honor, courage, and commitment. Abusers will be caught."

The Navy has a series of measures in place to educate Sailors about the perils of drug use and dependency; to deter them from ruining their professional careers and personal lives by choosing to use drugs; and an aggressive program to detect drugs in the unlikely event a Sailor decides to use them.

By holding Sailors accountable for drug abuse, the Navy better protects and retains the overwhelming majority of Sailors who conduct themselves honorably. The Navy continues to actively investigate suspected illicit and designer drug use and possession. If it is determined that additional Sailors have used drugs, those Sailors will be held accountable and if appropriate, processed for separation.

On March 1, 2011, the United States Drug Enforcement Administration (DEA) exercised its emergency scheduling authority to control five chemicals used to make Spice and other "fake-pot" type products.

### **China's Overhyped Sub Threat**

The Diplomat, October 20

By David Axe, The Diplomat, Oct 20, 2011

*Beijing's submarine fleet is not as big or powerful as US military planners once feared. Have its blue-water ambitions been overstated?*

It was the US Navy's biggest jolt in years. On October 26, 2006, a Chinese Song-class attack submarine quietly surfaced within nine miles of the aircraft carrier USS Kitty Hawk as the 80,000-ton-displacement vessel sailed on a training exercise in the East China Sea between Japan and Taiwan.

The Song-class vessel, displacing 2,200 tons, was close enough to hit the Kitty Hawk with one of its 18 homing torpedoes. None of the carrier's roughly dozen escorting warships detected the Song until it breached the surface.

The Song's provocative appearance was, for the Americans, 'as big a shock as the Russians launching Sputnik,' one NATO official told Britain's Daily Mail newspaper, referring to the Soviet Union's launch of the first-ever space satellite in 1957. 'This could well have escalated into something that was very unforeseen,' said Adm. Bill Fallon, then commander of US Pacific forces.

The incident underscored the then explosive growth of the People's Liberation Army Navy's undersea force, as well as Beijing's apparent intention to wrestle the Western Pacific away from the once-dominant US Navy. 'The Chinese are building a credible submarine force which will make it very difficult for the US Navy to maintain sea control dominance in or near coastal waters off of China,' warned Rear Adm. Hank McKinney, former commander of the US Pacific Fleet's submarine force.

Of particular concern to American defence officials was the projected introduction, over the coming decade, of up to 20 new nuclear-powered attack submarines, known as 'SSNs,' that are an order of magnitude more capable than the Song class. 'The acquisition of increasing numbers of SSNs would give it (the PLAN) the ability to contest US naval forces farther from China's shores,' Thomas Mahnken wrote in China's Future Nuclear Submarine Force, edited by Naval War College professor Andrew Erickson and published in 2007.

Yet nearly five years later, McKinney's and Mahnken's alarm has been proved false. The PLAN still possesses a tiny number of nuclear-powered submarines. The Songs and other short-range diesel boats remain the backbone of China's undersea force. Beijing's production of new submarines has declined and the PLAN's overall undersea fleet is likely to contract in coming years. 'I don't think they know whether they want to make the full-up commitment it would take to do this (submarine) thing right,' Owen Cote, Jr., an analyst at the Massachusetts Institute of Technology, says of the Chinese.

Meanwhile, the US Navy and its Pacific allies have crafted plans to stabilize or even grow their own submarine fleets. In 2006, Western observers feared the undersea balance of power in the Pacific would tilt. In a sense, they were right. It has tilted – back towards the United States and its allies.

How that happened speaks volumes about China's evolution as a regional power.

#### Crunching the Numbers

In early 2011, the PLAN possessed 'more than 60 submarines,' according to the Pentagon's Congressionally-mandated annual report on Chinese military capabilities.

That force included five nuclear-powered attack submarines: three of the 1980s-vintage Type 091 Han-class SSNs that are rapidly reaching the ends of their service lives, plus two Type 093 Shang-class boats. The next-generation Type 095 SSN is due to enter service around 2015, according to Pentagon estimates.

The PLAN's diesel-sub fleet is much larger than the nuclear fleet: more than 50 in all, including 13 Songs, four of the newer Type 041 Yuan class, plus a dozen Russian-made Kilos. Obsolete Romeo- and Ming-class vessels round out the total for diesel boats.

Four or five experimental ballistic-missile submarines or 'boomers' – all but one of them nuclear-powered – comprise the remainder of the PLAN undersea force. By comparison, in 2011 the US Navy possessed 53 attack submarines, four guided-missile submarines and 14 ballistic-missile boats: 71 in all.

Just five years ago, US analysts predicted the Chinese submarine fleet would outnumber the American sub fleet by 2011. Writing in China's Future Nuclear Submarine Force, Richard Fisher of the International Assessment and Strategy Center predicted the PLAN would have around 74 boats in 2010 – a figure at least a dozen higher than the real, current total.

Something happened between 2006 and 2011 that changed the calculus for the PLAN submarine force – and by extension for China's regional aspirations. Actually three things happened: China stopped importing submarines, while also putting the brakes on domestic sub production; and the US Navy successfully doubled its submarine production.

Moscow factored in the former changes. The purchase of a dozen Russian Kilos helped to boost the PLAN's acquisition rate for submarines in 2005 and 2006. In both of those years, Beijing added seven submarines to its fleet, including seven Kilos overall.

But Russia is unlikely to resume supporting such a high rate of Chinese submarine acquisition, as Beijing is a potential strategic rival to Moscow – and since the Russian Navy's own sub force is steadily declining to long-term levels of just a dozen each nuclear attack, nuclear ballistic-missile and diesel-attack boats. 'There are powerful incentives for Russia to keep China just below its future submarine capabilities,' Fisher noted.

With an end to Russian imports, China must build all its own submarines. But here, too, Beijing relies on Russian assistance. As late as 2003, 'Russia continued to be the main supplier of technology and equipment to India's and China's naval nuclear propulsion programs,' the US Central Intelligence Agency reported.

The high rate of Chinese sub procurement in 2005 and 2006 justifiably drew the attention of Western analysts. But by using those years as their baseline, analysts often projected PLAN sub force levels that were unrealistically high.

From 2007 on, China acquired only domestically-built submarines, meaning the growth of the PLAN undersea force was constrained by the not inconsiderable limitations of the Chinese arms industry, which can't function without Russian-provided engines and electronics – and which, even at the best of times, struggles with safety and quality control.

A possible case in point: in early August, there were unconfirmed reports that a Type 094 boomer leaked radiation during work on its electronic systems in the port of Dalian, apparently prompting the PLAN to cordon off the area and crack down on media coverage of the alleged incident.

With the Kilo purchase complete, Beijing added just two boats in 2007, none in 2008 and two each in 2009 and 2010. It appears that, barring a major reversal of the current trend, the PLAN will acquire no more than two submarines a year over the medium term.

That's the same submarine production rate as in the United States – though only recently. In the early 2000s, Washington purchased just one submarine a year, on average. A cost-savings initiative launched in 2005 drove the price of the current Virginia-class attack submarine down to around \$2 billion apiece, allowing the US Navy to purchase two Virginias annually starting this year.

US-built submarines traditionally last up to 35 years, versus fewer than 30 for lower-quality, Chinese-built boats. With similar pre-existing force levels and identical production rates, the US undersea fleet will level off at a higher level than the Chinese fleet will.

'Excluding the 12 Kilos purchased from Russia, the total number of domestically produced submarines placed into service between 1995 and 2007 is 30, or an average of about 1.9 per year,' wrote Ronald O'Rourke from the US Congressional Research Service. 'This average rate of domestic production, if sustained indefinitely, would eventually result in a steady-state force of domestically produced submarines of about 38 to 56 boats of all kinds, again assuming an average submarine life of 20 to 30 years.'

And that's being optimistic. 'It's possible that the greater resources required to produce nuclear-powered boats might result in a reduction in the overall submarine production rate,' O'Rourke wrote. 'If so, and if such a reduced overall rate were sustained indefinitely, it would eventually result in a smaller steady-state submarine force of all kinds.'

According to current Pentagon projections through 2040, the US submarine fleet should never dip below 51 boats, with a peak of 73 in 2013 and 2014. And all of those boats are nukes – a not insignificant distinction.

#### Sub versus Sub

Even under the most favourable projections, the PLAN will possess just a handful of nuclear-powered attack submarines at a time over coming decades. China's SSN fleet could actually decline in the short term, as the three ancient Type 091s are likely to leave service before an equal number of Type 095s are ready.

That matters because only nuclear-powered submarines, with their high endurance, are capable of true 'blue-water' operations far from shore bases. It's for that reason that all of the US Navy's submarines are nuclear-powered: Washington's global military presence demands it.

To project power beyond its own coastal waters, Beijing needs nuke boats. The fact that China isn't building large numbers of SSNs reflects either a lack of serious interest in a true, global naval presence – or an inability to back up grand military ambitions with working hardware.

China is left with an undersea fleet composed mostly of diesel attack submarines, which by virtue of their short range tend to be defensive in nature. 'Current Chinese diesel submarines rarely deploy outside the first island chain (west of the Philippines) and essentially never deploy beyond the second (east of the Philippines),' Cote wrote. 'Nor would these submarines be well-suited for extended deployments into the Pacific or Indian Oceans because of range and crew habitability constraints.'

Even as defensive weapons, China's diesel submarines lack flexibility. For one, 'the PLA has only a limited capacity to communicate with submarines at sea,' according to the Pentagon's annual China report. Moreover, the PLAN's subs are optimized for attacking surface targets such as US aircraft carriers. Lacking the most sophisticated sensors and weapons, they're far less useful for hunting US submarines. 'China has very limited (Anti-Submarine Warfare) capabilities and US submarines are the most difficult ASW target in the world,' Cote wrote.

'Thus, China would have difficulty preventing US submarines from operating in its shallow coastal waters,' Cote continued. That's important because one of the American subs' main tasks is to destroy enemy submarines. China's undersea fleet cannot prevent the United States' undersea fleet from hunting it down in its own home waters.

Considering the imbalance between large, sophisticated, ASW-optimized US submarines and their smaller, less flexible, surface-attack-focused Chinese rivals, a census of the two nations' undersea boats can create a false impression of near parity: 60 Chinese subs versus 70 US ones. But if the American vessels can hunt the Chinese vessels almost with impunity, it almost doesn't matter how many submarines Beijing possesses.

Even if numbers really did matter, the trends aren't in China's favour. Beijing might match the United States in submarine production rates, but it can't possibly keep up with the combined sub acquisitions of Washington and its closest Pacific allies. Japan is in the process of adding six diesel attack boats to its current force of 16. Australia aims to double its fleet of six diesel boats. South Korea is also doubling its six-strong undersea fleet. Two years ago, Vietnam purchased six Kilos from Russia.

The Song submarine's surprise appearance alongside the USS Kitty Hawk helped stoke fears of Chinese undersea dominance that were further fuelled by a brief surge in PLAN sub acquisition. Today, with more US and allied submarines entering service and fewer Chinese boats on the slipways, those fears – and the policies and assumptions they produced – warrant reconsideration. China isn't building a world-class, globally-deploying submarine force. It's building a mostly defensive, regional undersea force – and a smaller one than once predicted.

### **Experts: Navy Needs More Long-Range Strike**

*By Michael Fabey, Aviation Week, Oct 18, 2011*

For the first time since U.S. Navy ships and submarines played cat and mouse with Soviet counterparts, America is finding it much more difficult for its forces to roam the seas at will and project forward presence where and when it wants.

While the most obvious example of the shorter naval operations leash is U.S. wariness of venturing too far into Chinese territorial waters, the restraints are becoming more global. And it is not the vessels that have many defense analysts concerned, but the missiles and related systems that pose the greatest risk for the Navy.

Speaking about anti-access concerns around a month ago — shortly before he stepped down as U.S. chief of naval operations — Adm. Gary Roughead said, "When systems and capabilities can proliferate the way they proliferate today, it's not all about China."

For example, he said, if he had been asked to conduct certain operations in Middle Eastern waters 10 years ago, "We would have mustered up all the amphibs without batting an eye."

But, he noted, an Israeli ship was almost sunk by an anti-ship missile fired by terrorists in that region. Access can no longer be taken for granted. Long-range strike, he said, is important for the Navy. "You do want that forward presence, you do want to put pressure on." Such weapons will help U.S. carrier groups and other naval forces defend against coastal missile systems, he said.

"There is great fixation on aircraft carriers," he said, "with little discussion on fixed land-based systems, whose GPS coordinates will never change. The GPS coordinates of an aircraft carrier at this minute will be different than it will be an hour from now."

The Chinese certainly became fixated on aircraft carriers in 1996, when the U.S. parked two carrier groups in the Taiwan Straits to protect Taiwan. "The 1996 crisis embarrassed the PLA (People's Liberation Army," says David Shlapak, one of the authors of the Rand Corp. report, "Conduct with China, Prospects, Consequences, and Strategies for Deterrence," released earlier this month.

The central maritime focus for PLA after that moment, Shlapak says, became defending against a threatening carrier group. China has developed a significant shield against carrier groups, combining submarines, sub torpedoes, ballistic missiles and state-of-the-art anti-ship missiles.

"The question for the U.S. Navy becomes this: How much risk am I willing to take?" Shlapak says.

The U.S. has to decide now whether it is worth the gamble to move its vessels close to those types of threats or whether it is better to pull back to a safer distance. "The U.S. has not had to deal with something like this since the Cold War," Shlapak says.

### **Could The Nuclear Triad Become A 'Bi-Ad?'**

*National Defense Magazine, October 18*

Now is not the time to discuss removing one leg from the three-legged stool known as the nuclear triad, the head of U.S. Strategic Command said Oct. 18.

"I continue to stand by a need for a triad," Air Force Gen. C. Robert Kehler, Stratcom commander, told reporters in Washington, D.C.

The prospects for budget cuts have prompted some pundits to question the need to fund all three parts of the nation's methods of delivering nuclear weapons — land-based intercontinental ballistic missiles, bombers and submarines armed with sea-launched missiles.

Wouldn't it be better to do away with one of the three and make the remaining two more robust rather than to trying to sustain all three? Kehler was asked.

"I will tell you that in the near term that we can sustain a triad. I think there will be interesting questions about both the scope and pace of modernization as we go forward," he said.

"In that structure, I believe that a triad of force makes the most strategic sense, makes the most operational sense and ultimately is the right way to go forward today," he said.

Modernizing the forces may include a long-range bomber to replace the aging B-52, he said. But it must include an attack submarine to replace the Ohio-class submarines, which will need to be replaced starting in the late 2020s, he said. Research and development needs to continue, so a replacement is ready by the time the first Ohio-class submarine is ready to retire, he said.

Unlike the B-52, which is entering its sixth decade of service, submarines are subject to extreme pressures underneath the ocean. The metal that encapsulates the crew simply wears out, he noted.

In the distant future, there could be a discussion about eliminating one of the three legs. It will depend on new treaties, the strategic situation the nation finds itself in, "and of course, there is a budgetary dimension to this," he added.

The question remains whether budget pressures will allow the Defense Department to continue with plans to modernize new platforms such as submarines and long-range bombers.

"Can we in fact spend the resources to modernize all of the triad? Those are not all questions for today," he said.

He warned about making budgetary decisions that would leave the military less capable of carrying out its nuclear mission. "We can have a hollow nuclear force and we need to be very careful about that. You can have a hollow nuclear force in the industrial base that supports the weapons," he said.

The Air Force found itself in trouble "a few years back" because it made some budgetary decisions to fund conventional forces over nuclear forces, Kehler said, referring to an incident where cruise missiles with their warheads still attached were flown on a routine logistics flight over the continental United States.

"You can have a hollow nuclear force just like you can have a hollow conventional force," Kehler said.

## Borrego Springs Parade







# Digitizing Our U.S. Submarine WWII War Patrol Reports

## Forward:

**"This effort by EMC (SS) John Clear USN (Ret) is truly remarkable. For over 40 years, although declassified, the remarkable exploits of the U. S. Submarine Force during WWII sat on microfilm in a few museums and files, essentially untouched. His initiative revealed factual accounts of each U. S. submarine war patrol during WWII. In my view, that delay in publication was a travesty which should not have occurred for our WWII submarine veterans.**

**The Cold War is over. It should not take four decades before the importance of U. S. Submarine efforts during that period are made public."**

**Very Respectfully, VADM Roger F. Bacon, USN (Ret)**

## Digitizing Our U.S. Submarine WWII War Patrol Reports

**I first became acquainted with the WWII U.S. Submarine War Patrol Reports microfilm collection at the Naval Undersea Museum, Keyport, WA in the summer of 2006, while volunteering as a docent at the museum. This little known and very infrequently used collection is housed within the 3<sup>rd</sup> floor, non-lending library of this outstanding facility which is one of only a small handful in our nation where these reports can be viewed.**

**Being a retired SubLant and SubPac Chief, whose naval career had included tours of duty on three of these WWII veteran submarines, I was interested in their war time history and achievements. With help from the museum's staff (in particular Jennifer Heinzelman, Collections Manager), I soon became well versed with the library's microfilm reader as to how to set-up and peruse the film rolls of the 255 U.S. submarine's war patrol records. These numerous microfilm rolls are housed in large collection drawers there within the library.**

**What immediately struck me in reading these histories from the microfilm copies of the original paper reports was the succinct manner in which these histories had been recorded at the time of and where these events occurred. Some of these reports were almost "casual" in their presentation of these awesome events. As an example: one of my previous tours of duty was on the USS Sealion SS-315 which just happened to be the only submarine in history to sink an enemy battleship in wartime. To read the pertinent pages from within this particular report of this patrol one would think that this type of occurrence was rather commonplace and not of such monumental importance as it had been. Well known submarines and individual heroes of these times seem to be "alive" in their patrol report depictions. The officers making the input and the yeomen that typed up these multi-copy reports on their old Underwood typewriters did so with an almost clinical detachment, ultimately providing an insight as no other form of written historical log or book has given us.**

**Again with the aid of the staff I was able to print out some of these pages but it was a very slow and cumbersome chore. It wasn't until I was able to reconnect the microfilm reader's output directly to a computer and hence save pages in a digital format that this effort began to come together and make sense. From my research I had found that nearly half of these microfilmed reports were photographed in 16mm and the rest in 35mm, in that, again, I found another problem. The 16 mm pages were an easy and direct "save to" on the p.c., but the 35mm had to be worked on with an average of three shots and then laboriously "stitched" together with the computers software. To say that this slowed down the procedure is an understatement. Fast calculations showed that I had about 5 years of 8 hour days ahead of me at the rate that I was preceding.**

**By the fall of the year I had been hooked on this project. One day while talking with an active duty LCDR and Jennifer, I decided that this project had to be taken on in earnest in order to more easily share these historic times with the many rather than just the few that had access to these microfilm libraries. I wanted to get these stories out while we still had some of our WWII submarine veterans with us, whose stories were told within these pages.**

**Further research found that recent technology had been developed that could now take on this conversion in a manner that would not require the manual, laborious efforts thus far expended. This newer technology was basically a huge machine that could read and convert these microfilm rolls faster than I ever could hope to accomplish. Two major companies were queried as to cost. The pricing, while fair (quoted at over six thousand dollars), was not something that the museum, nor its supporting foundation, would be able to fund. With the help of a long time friend, Dan Martini EMCM (SS), USN Ret., a partnership was formed and registered in Jefferson County of Washington State**

with the express purpose of handling this project. The museum agreed to lend out the microfilm rolls (some 255) to the company that we had agreed upon and the partnership would pay the cost of the conversion process.

It was at about this time that Vice Admiral Roger Bacon, of the museums foundation, had heard of our project and wanted to help make the project move into reality. Admiral Bacon's father had been a highly respected WWII submarine Commanding Officer and thus Admiral Bacon's interest in these reports had been in mind for many years.

The initial run received from the conversion company came down to 28 full DVDs containing all of the 1,600+ war patrol reports of the 255 submarines involved. We were provided with two master copies, one in .jpg (picture) format and the other in .pdf (Adobe Reader) format. These reports were assembled in hull number sequence, oldest to the newest of the participating WWII subs. As per SubPacs instructions, the vast majority of the war patrol reports were written within the require guidelines as follows;

- |   |  |
|---|--|
| (A) Prologue                                    | (M) Radar  |
| (B) Narrative (date & time)                     | (N) Sound gear & conditions                        |
| (C) Weather                                     | (O) Density Layers                                 |
| (D) Tidal information                           | (P) Health, food & habitability                    |
| (E) Navigational aids                           | (Q) Personnel                                      |
| (F) Ship Contacts                               | (R) Miles steamed, fuel used                       |
| (G) Aircraft                                    | (S) Duration                                       |
| (H) Attacks                                     | (T) Factors of endurance remaining                 |
| (I) Mines                                       | (U) Communication, radar and sonar countermeasures |
| (J) Anti-submarine measures and evasive tactics | (V) Remarks  |
| (K) Major defects                               |  |
| (L) Radio                                       |  |

It was also at this point that we registered our newly converted war patrol reports and were issued an ISBN number of 13: 978-0-615-17769-4. together with an intellectual copyright being filed (to protect the digital conversion).

By early 2007 we had the final masters on hand and began further production from these sets. Admiral Bacon (as our mentor) financed the first (costly) five sets and donated these to the Newport, RI and Monterey, CA Naval War College libraries, the St. Mary's, Georgia Museum, USS Nautilus Museum, Groton, CN and the USS Bowfin Museum, Honolulu, HI. The partnership in turn provided a master set to the Naval Undersea Museum and to some eight submarines stationed at Bangor Submarine Base, WA during our quarterly NSL NW meetings.

Later that year, during the 2007 USSVI Alaskan Cruise Convention, these patrol reports were first introduced, in their new user friendly digital format to the submarine community at large. We also posted this information on the internet at the same time. It was the partnership's agreement, to provide at no cost, any copy of any submarine reports to any WWII sub vet or his immediate family, several hundred individual boat's patrol reports were thus sent out. Many submarine authors, (Tom Clancy, et al), researchers, and historians were among the initial purchasers.

By 2009 it was decided to make these reports available for free viewing to the general public directly on the internet. Rich Pekelney of the Historic Naval Ships Association, (HNSA), was contacted and uploaded all of the reports onto their website with a bravo zulu sent back to the partnership and our mentor Admiral Bacon. While able to view the reports for free via the internet, these pages are not easily copied or printed out.

In quick order further improvements in computer software allowed the reports to be further converted to a "compressed pdf" format greatly reducing the production time and lowering the overall cost to less then 1/10 of the initial offering. The total of the reports including all of the appendices (which include some fifteen cross references, by boat, C.O. etc.) are now on just 4 DVD's in this compressed .pdf format.

We have archived the initial run in the .jpeg format to allow for further "cleaning up" (in time) of some of the reports that were either too light, dark, smudged or had any other problems in their reading quality.

The outcome of this effort has provided an easy to use reference of the thousands of pages that if printed out on single sided paper, would be a book at over 22 feet across, a massive work!

The company, (now a corporation), has continued to provide these reports at an extremely low cost to a world wide audience. Our initial desire to acknowledge our WWII Submarine Veterans still alive has been well met and we will continue in our stated efforts through Submarine Memorabilia, Inc...

John Clear EMC(SS) USN Ret.  
Submarine Memorabilia, Inc.  
180 Robin Lane  
Port Ludlow, WA 98365-9522  
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# Listing of all U.S. Submarines in WWII (Pacific) by Name (alpha), Hull Number (i.e. SS-218), Number of Patrols Made & Total Pages Within War Patrol Reports.

Albacore	218	10	551	Cero	225	8	485	Herring	233	7	156	Razorback	394	5	275	Seadragon	194	12	468
Amberjack	219	3	82	Charr	328	3	114	Hoe	258	8	320	Redfin	272	7	290	Seahorse	304	8	439
Angler	240	7	338	Chub	329	3	138	Icefish	367	5	177	Redfish	395	2	201	Seal	183	12	557
Apogon	308	8	253	Cobia	245	6	269	Jack	259	9	304	Robalo	273	3	143	Sealion	315	6	330
Archerfish	311	7	223	Cod	224	7	466	Jallao	368	4	127	Rock	274	6	67	Searaven	195	13	594
Argonaut	166	2	82	Crevalle	291	7	506	Kete	369	2	36	Ronquill	396	5	251	Segundo	398	5	236
Argonaut	475	1	78	Croaker	246	6	266	Kingfish	234	12	522	Runner	275	3	94	Sennet	408	4	146
Aspro	309	7	286	Cutlass	478	1	21	Kraken	370	4	144	Runner	476	1	77	Shad	235	11	362
Atule	403	4	190	Cuttlefish	171	3	92	Lagarto	371	2	43	S-11	116	6	40	Shark	174	3	201
Balao	285	10	410	Dace	247	7	691	Lamprey	372	3	85	S-13	118	4	36	Shark	314	?	???
Bang	385	6	235	Darter	227	4	290	Lapon	260	8	325	S-15	120	3	25	Silversides	236	14	467
Barb	220	12	503	Dentuda	335	1	47	Lionfish	298	2	74	S-17	122	6	63	Skate	305	7	108
Barbel	316	4	139	Devilfish	292	4	97	Lizardfish	373	2	101	S-18	123	7	72	Skipjack	184	10	391
Barbero	317	2	100	Diablo	479	2	17	Loggerhead	374	2	59	S-23	128	7	61	Snapper	185	11	371
Barracuda	163	6	36	Dolphin	169	3	61	Macabi	375	1	32	S-26	131	2	120	Snook	279	9	334
Bashaw	241	6	312	Dragonet	293	3	117	Manta	299	1	37	S-27	132	1	107	Spadefish	411	5	308
Bass	164	4	47	Drum	228	13	350	Mingo	261	7	257	S-28	133	7	451	Spearfish	190	12	495
Batfish	310	6	331	Entemedor	340	1	26	Moray	300	1	29	S-30	135	9	152	Spikefish	404	4	113
Baya	318	5	229	Finback	230	12	417	Muskellunge	262	7	250	S-31	136	8	152	Spot	413	3	189
Becuna	319	5	200	Flasher	249	6	265	Narwhal	167	16	357	S-32	137	8	120	Springer	414	3	86
Bergall	320	5	175	Flier	250	2	130	Nautilus	168	15	452	S-33	138	8	128	Steelhead	280	7	308
Besugo	321	5	268	Flounder	251	6	278	Paddle	263	8	381	S-34	139	7	92	Sterlet	392	5	237
Billfish	286	8	285	Flyingfish	229	12	555	Pampanito	383	6	240	S-35	140	8	143	Stickleback	415	1	33
Blackfin	322	5	60	Gabilan	252	6	225	Parche	384	6	274	S-36	141	2	87	Stingray	186	16	470
Blackfish	221	12	432	Gar	206	15	347	Pargo	264	8	482	S-37	142	7	173	Sturgeon	187	11	315
Blenny	324	4	495	Gato	212	13	552	Perch	176	2	349	S-38	143	9	40	Sunfish	281	11	459
Blower	325	3	123	Golet	361	2	27	Permit	178	14	598	S-39	144	5	117	Swordfish	193	13	422
Blueback	326	3	267	Grampus	207	6	243	Peto	265	10	380	S-40	145	9	146	Tambor	198	12	461
Bluefish	222	9	402	Grayback	208	10	477	Pickarel	177	7	254	S-41	146	8	160	Tang	306	5	206
Bluegill	242	6	389	Grayling	209	8	143	Picuda	382	6	291	S-43	154	3	107	Tarpon	175	12	393
Boarfish	327	4	154	Greenling	213	12	427	Pike	173	8	219	S-44	155	4	99	Tautog	199	13	653
Bonefish	223	8	508	Grenadier	210	6	199	Plottfish	386	6	203	S-45	156	4	95	Tench	417	3	125
Bonita	165	7	43	Grouper	214	12	311	Pintado	387	6	236	S-46	157	5	133	Thornback	418	1	76
Bowfin	287	9	524	Growler	215	11	404	Pipefish	388	6	248	S-47	158	7	186	Threadfin	410	3	146
Bream	243	6	365	Grunion	216	1	30	Piper	409	3	111	Sailfish	192	12	366	Thresher	200	15	120
Brill	330	3	89	Guardfish	217	12	590	Piranha	389	5	227	Salmon	182	11	431	Tigrone	419	3	200
Bugara	331	3	62	Guavina	362	6	242	Plaice	390	6	354	Sand Lance	381	5	168	Tilefish	307	6	257
Bullhead	332	3	75	Gudgeon	211	12	566	Plunger	179	12	357	Sargo	188	12	447	Tinosa	283	11	521
Bumper	333	2	82	Guillemo	363	5	300	Pogy	266	10	334	Saury	189	11	431	Tirante	420	2	131
Burnfish	312	6	297	Gunnel	253	8	352	Pollack	180	11	372	Sawfish	276	10	364	Toro	422	2	51
Cabezon	334	1	36	Gumard	254	9	489	Pomfret	391	6	359	Scabbardfish	397	5	223	Torsk	423	2	70
Cabrilla	288	8	368	Hackleback	295	2	95	Pompano	181	7	182	Scamp	277	8	229	Trepang	412	5	326
Cachalot	170	3	52	Haddo	255	10	384	Pompon	267	9	227	Scorpion	278	4	102	Trigger	237	12	381
Caiman	323	4	117	Haddock	231	13	334	Porpoise	172	6	213	Sculpin	191	9	285	Triton	201	6	205
Capelin	289	1	64	Hake	256	9	320	Puffer	268	9	483	Sea Cat	399	4	155	Trout	202	11	289
Capitaine	336	1	61	Hailbut	232	10	357	Queenfish	393	5	248	Sea Devil	400	4	228	Trutta	421	2	154
Carbonero	337	2	50	Hammerhead	364	7	283	Quilback	424	1	63	Sea Dog	401	4	199	Tullibee	284	4	125
Carp	338	1	56	Harder	257	6	325	Rasher	269	8	543	Sea Fox	402	4	148	Tuna	203	13	497
Catfish	339	1	38	Hardhead	365	6	314	Raton	270	8	317	Sea Owl	405	3	184	Tunny	282	9	472
Cavalla	244	6	323	Hawkbill	366	5	250	Ray	271	8	399	Sea Poacher	406	4	193	Wahoo	238	7	165
												Sea Robin	407	3	177	Whale	239	8	427
												Sea Wolf	197	15	590				