SUMMER 2016

UNDERSEA WARFARE

U. S. SUBMARINES... BECAUSE STEALTH MATTERS

INDO-ASIA-PACIFIC PARTNERS

Committed to a Relationship of Stability and Security

INSIDE

Issue No. 62 Summer 2016

On the Cover

Nae Dyong (SS 069) underway during Rim of the Pacific (RIMPAC) 2012

UNDERSEA WARFARE

THE OFFICIAL MAGAZINE OF THE U.S. SUBMARINE FORCE

INDO-ASIA-PACIFIC PARTNERS

Committed to a Relationship of Stability and Security

Departments

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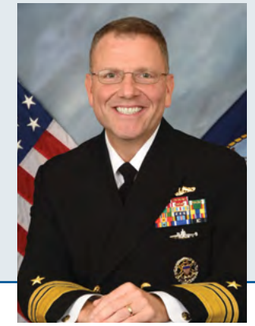
FORCE COMMANDER'S CORNER

Vice Adm. Joseph E. Tofalo, USN
Commander, Submarine Forces



Undersea Warriors,

Greetings from Norfolk! Last issue, I spoke about a historical advantage enjoyed by the U.S. Submarine Force: a strong culture of continuous learning and innovation, which is crucial to dealing with the ever increasing pace of global change. Changes in the Asia-Pacific region represent key elements in that larger global picture. Recent developments have dramatically altered the political, economic, and strategic environment for the United States and our allies there. China has significantly expanded its military budgets and even constructed over 3,000 acres of artificial islands in the South China Sea, signaling its intention to become the prominent regional power with even broader maritime influence. North Korea, as the only nation to conduct nuclear weapon tests this century, continues to aggressively expand its nuclear capabilities.

This issue focuses on the Asia-Pacific, the dynamic environment there, and another tremendous advantage we enjoy: the highly professional submarine forces that partner with us. You will read about the diverse histories of our allied submarine forces operating in the region as well as the unique operational, collaborative, and submarine rescue capabilities that each brings to the fight. These partnerships will only grow more important as we work to overcome the challenges we face together and get faster at innovation in our technology, processes, tactics, and strategy.

"Leadership at all levels, in any submarine force, must continuously focus on training and leadership development to give people the tools they need."

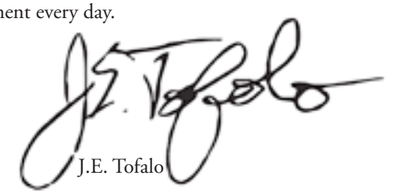
You may also be struck, as I was, by a common theme shared by all Submariners: the particular demands that submarining places on people. Submariners operate far forward, usually independently and "behind enemy lines" for long periods of time without external support, in both peacetime and wartime. Submarines have small crews. Each person has multiple roles, the safety of the ship depends on each individual's performance, and initiative is expected from everyone.

This environment places an extreme premium on the personal honesty and integrity of the people running the boat. It's all about trust—many different kinds of trust. Trust in the knowledge and integrity of a crewmember who certifies a safety item. Trust in those who build or repair submarines to go to test depth or into combat. Trust in the judgment of those who plan operations and exercises. Trust in the submarine leadership to do the right thing when faced with a difficult situation and no ability to get advice from ashore.

Trust cannot be surged. It is built up over time by consistent high performance as individuals and teams. I've often said that an empty submarine sitting at the pier is capable of only one thing: rusting. The team that can run that machine does not appear magically out of nowhere full of confident experts with all the tools and personal experience needed to meet the high standards the submarine environment demands. Leadership at all levels, in any submarine force, must continuously focus on training and leadership development to give people the tools they need. That common commitment to personal and organizational excellence is the hallmark of the Submariner the world over.

Every Submariner across the world lives that commitment every day.

Thank you for all you do. Keep charging!



J.E. Tofalo

DIVISION DIRECTOR'S CORNER

Rear Adm. William "Bill" Merz, USN
Director, Undersea Warfare Division

Undersea Warfare Team,

I recently relieved as the Director of Undersea Warfare (N97), and my wife, Martha, and I are very excited to be back in the DC area. Under the supervision of my deputy, Capt. Brian Howes (ret), our team of "combat investors" is the best in the business and very attuned to our near-, mid-, and long-term financial requirements. For my part, I happily provide the guidance and connective tissue that binds our investments with our peacetime and warfighting missions, all within the structure of the CNO's Design and our Force Commander's Guidance. As the new Director, I think it's important to provide to you, in clear terms, what these missions really are. For those who have worked with me in the past, it should come as no surprise that I will view our investment priorities through the lens of these missions.

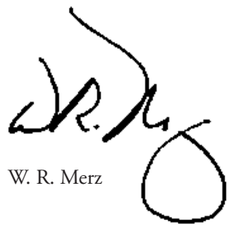
In basic terms, we have two warfighting missions: Strategic Deterrence and Theater Undersea Warfare (TUSW), both of which have inherent skills applicable in peace and war.

First, on the Strategic Deterrence front, Ohio Replacement is on track to phase-replace its predecessor and the first hull will transition to "ship construction" within the next few weeks. The shipbuilders have done a remarkable job of not just designing a worthy replacement for the *Ohio* class, but doing so in an exceedingly efficient and cost effective manner. For example, although more than twice the size of *Virginia*, Ohio Replacement will be built in approximately the same amount of time. Think about that for a moment. This *boat* remains our Navy's number one priority, and it is incumbent upon all of us in the Force to understand what it means to our nation.

"Think about that for a moment. This *boat* remains our Navy's number one priority, and it is incumbent upon all of us in the Force to understand what it means to our nation."

Second, TUSW is a term we need to be comfortable with. It is the integrated fight that encompasses our specific missions in support of larger Fleet objectives—in short, it's what we do. To that end, and more specifically, we are responsible for attriting the enemy and providing access. Accordingly, TUSW includes the combined operations of Theater Anti-Submarine Warfare (TASW), Theater Anti-Surface Warfare (TASUW), Intelligence, Surveillance, and Reconnaissance (ISR), strike, and Special Operations Forces (SOF) in both independent and netted environments; and we do this from a universally offensive posture. To date, we have 12 *Virginia*-class boats at sea and 12 under construction. We are delivering two per year and working on a unified build strategy that maintains this pace while building Ohio Replacement. But—and this is important—we must be equally committed to supporting the larger undersea team of Integrated Undersea Surveillance Systems (IUSS), specific elements of surface and aviation assets, unmanned systems, and the growing capabilities of our key allies. It takes a village to conduct effective TUSW, and the key attributes are speed, stealth, endurance, lethality, and connectivity.

That's my primer. In future issues I will provide updates on our progress in improving and advancing these missions. This edition of *UNDERSEA WARFARE Magazine*, however, focuses on operations in the undersea domain in the Pacific, highlighting our partnerships with foreign navies, articulated in their own words, regarding capabilities, goals and motivations. Please enjoy the read and please reach out to us with topics (or inputs) for our next edition. It is a great time to be a Submariner, and I look forward to working with all of you as we advance the preeminent undersea force into the future. We own the seas.



W. R. Merz

UNDERSEA WARFARE
The Official Magazine of the U.S. Submarine Force

Charter

UNDERSEA WARFARE is the professional magazine of the undersea warfare community. Its purpose is to educate its readers on undersea warfare missions and programs, with a particular focus on U.S. submarines. This journal will also draw upon the Submarine Force's rich historical legacy to instill a sense of pride and professionalism among community members and to enhance reader awareness of the increasing relevance of undersea warfare for our nation's defense.

The opinions and assertions herein are the personal views of the authors and do not necessarily reflect the official views of the U.S. Government, the Department of Defense, or the Department of the Navy.

Contributions and Feedback Welcome

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CHINFO Merit Award Winner

Silver Inkwell Award Winner

LETTERS TO THE EDITOR

In keeping with *UNDERSEA WARFARE* Magazine's charter as the Official Magazine of the U.S. Submarine Force, we welcome letters to the editor, questions relating to articles that have appeared in previous issues, and insights and "lessons learned" from the fleet.

UNDERSEA WARFARE Magazine reserves the right to edit submissions for length, clarity, and accuracy. All submissions become the property of *UNDERSEA WARFARE* Magazine and may be published in all media.

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FROM THE EDITOR

Correction: The Winter 2016 edition of *Undersea Warfare Magazine* featured an article titled "The History of America's Undersea Strategic Deterrence: From V1 to D5." Regrettably the article contained some factual inaccuracies, namely surrounding details about early missile launching capable U.S. submarines. The article incorrectly states that USS *Halibut* (SSGN 587) had two missile hangers similar to USS *Growler* (SSG 574) and USS *Grayback* (SSG 577). USS *Halibut* (SSGN 587) had a single missile hatch for launching missiles.

In the same issue, The Nuclear Power Training Unit article incorrectly stated that ex-USS Sam *Rayburn* (SSBN 626) began service as an MTS in 1986, the date she actually began service as an MTS was in 1989.

We regret the errors occurred and will endeavor to ensure future articles are factually accurate.

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PHOTO CONTEST

Check out the winners of this year's Photo Contest located on the inside back cover.

Partnerships by Choice in the Indo-Asia-Pacific Region

By Rear Adm. Bill Merz, Commander Submarine Group 7, Commander Task Force 54/74

Representatives from Kawasaki Heavy Industries, Japanese Maritime Self Defense Force, Japanese Maritime Self Defense Fleet and U.S. Navy Submarine Group 7 gather for a photo at the conclusion of a celebration of the 100th anniversary of submarine operations in Japan.

Rear Adm. Leopoldo Alano, commander of Philippine Fleet, shakes hands with Rear Adm. William Merz, commander of Task Force 74, during a reception aboard the littoral combat ship USS *Fort Worth* (LCS 3).

Rear Adm. Abdul Rahman, commander, Royal Malaysian Navy Submarine Force, and Rear Adm. William Merz, operate a submarine dive simulator at submarine training facilities at Submarine Squadron.

Greetings from Yokosuka, Japan, the command and control node for Submarine and Theater Undersea Warfare (TUSW) operations in the highly dynamic 5th and 7th Fleet Areas of Operation. Like our other TUSW task forces, we leverage our talented and diverse teams to advance our combined warfighting skills that contribute to regional security and stability. While the complexity of forward operations requires continuous and simultaneous execution of multiple lines of operations, as TUSW commanders we principally focus on advancing readiness—the foundation of our warfighting effectiveness. TUSW is a rapidly evolving mission area that requires integration of doctrine, skills, and technologies across multiple platforms, warfighting communities, and partner nations to neutralize both undersea threats (e.g. Theater ASW), and threats from under the sea (e.g. Strike and ASUW). Our principle missions are to attrite the enemy and to provide access for the larger battle force. We are the critical enabler for projecting force from the sea in any contested environment.

In this issue of *UNDERSEA WARFARE Magazine* you will be exposed to the submarine forces in the Indo-Asia-Pacific, home to over 230 submarines spanning 11 countries, and growing. You will learn from our closest friends across the region, the leaders of the submarine forces of the Royal Australian Navy (RAN), Japan Maritime Self-Defense Force (JMSDF), Republic of Korea Navy (ROKN), Royal Malaysian Navy (RMN), and Republic of Singapore Navy (RSN). In their own words, you will learn about their histories, our common values, and their extraordinary spirit as Submariners that transcends all of us. Most importantly, you will feel the significance of our enduring regional alliances and partnerships. I extend my heartfelt thanks to each of them for their contribution to this issue.

You will also read about our supporting surface vessels—submarine tenders, oceanography survey vessels, and ocean surveillance ships equipped with the Surveillance Towed-Array Sensor System (SURTASS). These assets are absolutely critical in all phases of warfare, from preparation of the battlespace and protection of our high-value units to staging and positioning expeditionary logistical support, doing most of their work behind the scenes without fanfare. Simply put, they enable the enablers.

As an emerging major mission area, TUSW is the offensive arm of undersea warfare and is immensely complex. Theater Anti-Submarine Warfare (TASW) is the "majority" mission of the TUSW Commander, and within the last year we have leveraged the talents of allied and U.S. submarines, destroyers, surveillance platforms, and air assets. There is no single proprietary favorite platform; if you're in the area, you're on the team and it's best to be ready to don the TASW jersey on short notice. For example, we have shifted Tactical Control (TACON) of U.S. and allied assets between task forces nearly 50 times in the last several months in support of the TASW commander's efforts. Far forward, there is the stark reality of the importance of a deliberate approach to warfare, and that approach is team-based. The overarching theme is "warfighting first," recognizing our role as the first responders to virtually any credible warfighting scenario at sea.

I want to extend my sincerest gratitude to all of our Sailors, both active duty and reserve, civilians, and supporting families across our combined TASW forces, with a special Bravo Zulu for our allies. I'm exceptionally proud of your contributions to our combined warfighting efforts and our resulting ability to promote peace, stability, and security throughout the Indo-Asia-Pacific. It has been a distinct privilege and honor to be part of such an effective team, and I look forward to our many future successes.

Play hard!

Above, Rear Adm. William R. Merz, commander, Submarine Group 7, speaks to members of the Japan Maritime Self Defense Force submarine force during a celebration of the 100th anniversary of submarine operations in Japan.

Australian Submarine Force

by Captain Matt Buckley, CSC, RAN, Commander, Australian Submarine Force

It is a privilege to contribute to this edition of *UNDERSEA WARFARE Magazine*. This Australian contribution follows one by Commodore (now Rear Admiral) Gregory Sammut, CSC, Royal Australian Navy (RAN) in the spring 2013 issue. At that time, we in the RAN were about to celebrate our Centenary of Submarines. The admiral's contribution focused on the history of submarines in the Australian context and outlined where the Australian submarine capability may be heading in the future. The RAN Submarine Arm is now in its 101st year, and much of what we are doing now and plan to do in the future leverages on our rich history.

Centenary events are a natural point to pause for reflection. As the commander of the RAN Submarine Force for the latter half of our centenary year, it occurred to me—as we were joined by allies and friends for celebrations—that our history and our future is intrinsically intertwined with those of other submarine-operating nations. My intention is to highlight the importance to the RAN Submarine Force of our relationships with other submarine-operating nations, particularly in the Indo-Pacific region.

The Royal Australian Navy (RAN) Submarine Force has a long history of operating its submarines throughout, and occasionally beyond, the Indo-Pacific region. The RAN's first two submarines, *AE1* and *AE2*, were acquired from the British Royal Navy on February 28, 1914 at Portsmouth, England.[1] On September 14, 1914, a day after German reservists surrendered German New Guinea to Australian forces, *AE1* left Rabaul to patrol in the Bismarck Sea and never returned. *AE2*'s claim to fame was penetrating the impenetrable Turkish defences in the Dardanelles on April 25, 1915, torpedoing a Turkish destroyer. Five days later, *AE2* was scuttled in the Sea of Marmora after taking heavy fire.[2]

The RAN Submarine Force has come some way since our humble beginnings of two *AE*-class submarines of only 726 tons dived displacement with a range of around 3,000 NM.[3] Today the force comprises six *Collins*-class submarines of 3,400 tons dived displacement with a range of over 11,000 NM and a submerged endurance of several months.[4] The force, based at HMAS *Stirling* in Western Australia (WA), also includes the fully deployable Australian Submarine Rescue System and the Submarine Escape Training Facility. The force is supported by a fleet headquarters in Sydney, a Strategic Submarine Capability Branch and Submarine Operations Centre in Canberra, a Submarine School at HMAS *Stirling*, and a robust submarine sustainment industry.

CO of HMAS *Waller* briefs fellow EX PAC REACH 2013 participants on *Collins* class escape tower.

RAN Submarine Rescue Ship MV *Besant* at Fleet West base.

The *Collins*-class is now around halfway through its planned life and has undergone significant modernization programs. A key element in the class' continuous improvement is the joint U.S. Navy / RAN AN-BYG-1 Combat Control System and ADCAP Heavyweight Torpedos. These programs have provided significant and ongoing development of the capability and interoperability with the U.S. Navy. Another key element to the continuation of a potent and enduring submarine capability is Australia's enterprise approach to sustainment and upgrade. The RAN's Submarine Enterprise involves navy and wider defence and industry working as a unified body to achieve agreed targets for the availability and utility of the force.

As an island nation that intersects the Indian and Pacific Oceans, it is important that RAN submarines be able to be out and about in the region. Perhaps not surprisingly from an Australian perspective, this is usually referred to as going "up top," and for all Australian Submariners it is the fundamental and most exciting part of submarine service. Every time RAN submarines deploy up top, RAN Submariners experience the wonderful breadth of cultures that exist across the region and, more important, engage with the navies, and especially submarine forces, of other nations.

Australian Submariners gain valuable experiences while on deployment, most often with the submarine forces of Singapore, Malaysia, Indonesia, the Republic of Korea, Japan, and most recently, Vietnam.

Many RAN Submariners have also been privileged to work closely with the U.S. Navy's Submarine Force through joint exercises, port visits, and courses. The relationships and professional experiences gained through working with the U.S. Submarine Force and other submarine-operating nations such as Great Britain, Canada, and the Netherlands to name but a few, have reinforced the view that, through engagement, the RAN submarine force can become safer and more effective Submariners.

In the Indo-Pacific region, an important RAN focus is to continue to advance ties between fellow submarine-operating nations. The Asia-Pacific Submarine Conference, which Australia will host in 2016, and the PACIFIC REACH series of exercises are excellent platforms for building these relationships. Similarly, observer programs within the RAN's BLACK CARILLON Submarine Escape and Rescue Exercises provide an opportunity to advance understanding of the Australian Submarine Rescue System (ASRS) and improve international cooperation.

The ASRS is a fully deployable fly-away capability for assisting disabled submarines across the breadth of the Indo-Pacific region. This capability was proven in 2013 when the system was deployed 2,000 NM across the continent for BLACK CARILLON 13. In 2015 and 2016, the key objectives of BLACK CARILLON were to integrate the ASRS with the newly acquired Escape Gear Ship MV *Besant* and Rescue Gear Ship MV *Stoker*. At 83 metres and 93 metres respectively, these purpose-built vessels will enhance the RAN's existing Submarine Escape and Rescue System.

Seeing the success of forums such as the Asia-Pacific Submarine Conference, in 2014 the RAN hosted a Submarine Operational Safety Conference that comprised senior delegates from a variety of navies including Indo-Pacific submarine operators such as the United States, Japan, and Pakistan. The conference focused on sharing ideas on submarine safety beyond escape and rescue to include elements such as exercise safety, submarine licensing, damage control training, and the prevention of mutual interference. Opportunities such as these are an important mechanism for advancing mutual understanding and creating a safer environment for submarine operations.

Royal Australian Navy *Collins*-class submarine HMAS *Sheean* (SSG 77) makes her way into Pearl Harbor, Hawaii, during Exercise Rim of the Pacific (RIMPAC) 2014.

HMAS *Rankin* (SSG 78)

One of the best ways for the RAN submarine force to engage in the region is by getting its submarines deployed up top. With a small force of six conventional submarines, this requires an integrated effort in sustainment and support. This effort is complemented by the cooperation of allies and friends in the region. Being able to conduct port visits to neighboring countries, especially those that operate submarines, is a vital part of building and maintaining collaborative networks among colleagues. Over the course of the last three years, RAN submarines have deployed and visited ports in the USA, Japan, India, Malaysia, and Singapore. This is a cycle that will continue in coming years as existing relationships with long-term allies and friends are affirmed and new relationships are forged.

Like many of the submarine forces in the Indo-Pacific region, the RAN submarine capability has a bright future. The intent is to grow our workforce of highly skilled Submariners and support personnel. It is these people who are the foundation of any effective submarine capability and, as the RAN submarine force expands, will be even more vital to assuring our future. The RAN will continue to upgrade the *Collins* class to ensure that it remains a contemporary and highly potent platform and will do likewise with our Escape and Rescue Systems. Successive Australian governments have committed to an expanded submarine force and the acquisition of the next platform in the mid-2020s. This new platform will be like the *Collins* class in size, range, and endurance and will likely share the Joint U.S./Australian combat system and torpedo. Moreover, the RAN submarine force will continue to deploy frequently into the region, all the while building on existing relationships and developing some new ones.

1 http://www.ae1submarine.com/voyage_portsmouth_singapore.html

2 https://www.awm.gov.au/encyclopedia/ww1_navy/ae1_ae2/

3 http://www.navy.gov.au/hmas-ae1

4 http://www.navy.gov.au/hmas-collins

Japan Maritime Self Defence Force–Fleet Submarine Force

by Vice Adm. Seiichi Doman, Commander, Fleet Submarine Force

It is with great honor that I contribute this article to the renowned U.S. military publication *UNDERSEA WARFARE Magazine* as commander of the Japan Maritime Self Defense Force's (JMSDF) Fleet Submarine Force. My heartfelt gratitude goes to Rear Admiral Merz, Commander, U.S. Submarine Group 7, a sister command to JMSDF Fleet Submarine Force, for providing me with this opportunity.

This year marks the 60th anniversary since the inception of JMSDF's submarine force. When adding 40 years from the Imperial Japanese Navy (IJN), later succeeded by the JMSDF, the total number of years that Japan operated submarines comes to 100 years. Serving as Submarine Force Commander during this memorable time is a true privilege, and I have great admiration for the accomplishments of our predecessors who steadily built the history of Japan's Submarine Force and for the Submariners who are currently attending to their missions, quietly, somewhere deep in the sea.

History of Japan's Submarine Force

The history of Japan's Submarine Force begins with the IJN, later succeeded by JMSDF. The IJN Submarine Force was launched when *Holland*-class submarines were delivered in 1905, five years after the birth of the U.S. Submarine Force. The IJN's five *Holland*-class submarines were procured for use in the Russo-Japanese War, which had broken out the previous year. While these submarines were never deployed during the war, the IJN Submarine Force continued to grow, absorbing foreign technology and uniquely evolving into a world-renowned 65-vessel force when it faced the Pacific War.

Rather than attacking enemy sea lanes during the submarine warfare in the Indian and Pacific Oceans during WWII, the IJN focused on winning a decisive surface fleet battle using key warships. Its submarine doctrine placed heavy emphasis on the attrition of enemy warships.

As the war took a turn for the worse for the IJN, submarines were used for delivering supplies to frontline islands and for search and security missions, resulting in needless submarine losses. This was further compounded by a lag in submarine innovation and mass production, causing the IJN Submarine Force to be decimated by allied antisubmarine warfare in terms of quantity, tactics, and technology by mid-war. The IJN Submarine Force suffered losses of over 80 percent by the war's conclusion, which also marked the end of the IJN Submarine Force's 40-year history.

In 1952, seven years after the end of WWII, the JMSDF was established, with anti-submarine warfare (ASW) as its primary mission. As a submarine would be necessary for conducting ASW training, the United States loaned the JMSDF the ex-USS *Mingo* (SS 261), in January 1955. A crew consisting primarily of former IJN Submariners came together and traveled to New London, Conn., to receive training at the U.S. Naval Submarine School. Upon completion in August of the same year, *Mingo*, renamed *Kuroshio*, was turned over to the crew. It was at this point that Japan's Submarine Force began etching its place in history again for the first time since 1945, after a 10-year pause.

Photo by MC2 Shaun Griffin

JS *Takashio* (SS 597) arrives at Pearl Harbor Aug. 11, 2016.

In 1960, Japan quickly embarked on domestic submarine production with pre-war submarine manufacturer Kawasaki Heavy Industries, starting construction of its first post-war submarine, *Oyashio*. Another domestic submarine manufacturer, Mitsubishi Heavy Industries, also began building submarines. To date, these two companies have produced a total of 51 submarines, each carrying a piece of JMSDF Submarine Force history. Japan's 1977 National Defense Program Guidelines expressed that 16 submarines would be needed to adequately defend the waters in and around Japan.

JMSDF's first teardrop-shaped submarine *Uzushio*, modeled after the U.S. Navy's *Barbel*-class, was commissioned in 1971 with significant advancements in underwater detection and maneuvering capabilities. Thereafter, the JMSDF continued making advancements in sound quieting in the *Harushio* class, side arrays for improved detection in the *Oyashio* class, and undersea maneuverability using Stirling air-independent propulsion (AIP) on the *Soryu* class.

Photo by MC2 Shaun Griffin

JS *Takashio* (SS 597) arriving at the submarine piers of Joint Base Pearl Harbor-Hickam.

The JMSDF Fleet Submarine Force was established in 1981 with two submarine groups and a Submarine Training Center (STC) under its command, becoming the first JMSDF fleet with a submarine school. The STC was pivotal in establishing the foundation for Japan's submarine force, including Submariner training and development and supporting the integration of new systems.

The JMSDF has long cooperated with the U.S. Navy. It has sent one submarine to Hawaii annually since 1963 to receive U.S. Navy training and mentorship. This has increased to two submarines beginning in 2013. The JMSDF participated in RIMPAC from 1986 through 2010 and continues to reinforce cooperation at sea by conducting various PASSEX training exercises in and near Japan's territorial waters and exchanging information between the two commands. In addition to working with the U.S. Navy, the JMSDF is participating in events such as the biennial joint submarine rescue training PACIFIC REACH with the United States, Australia, South Korea, and Singapore, as well as the Asia Pacific Submarine Conference.

Current Undertakings by JMSDF Fleet Submarine Force

Japan's 2010 National Defense Program Guidelines increased the number of submarines needed to adequately defend Japan's waterways from 16 to 22, noting needs to reinforce underwater intelligence, surveillance, reconnaissance, and patrols. That this policy decision produced so little domestic debate is extraordinary given Japan's current fiscal situation. This appears to indicate a widely held understanding among Japan's citizens of the effectiveness and value provided by a strong submarine force. In light of the current maritime security challenges, the JMSDF Submarine Force recognizes the trust that Japanese citizens are placing in it as represented by this increase.

Despite this 40-percent increase in the number of submarines, it won't have much effect without advancing the force's capabilities as well. The most critical issue concerning force augmentation is Submariner training and operational experience. The STC has already begun bolstering its training posture to accommodate an increase in recruits entering the program, implementing policies to accelerate promotions to next rank for all dolphin insignia holders and promoting strong personal accountability from each and every service member.

There are countless other issues being addressed: procurement of new torpedoes, expansion of mooring and supply facilities, improving operational availability through standardized repairs, etc. Vital to advancing the submarine force's capabilities is the JMSDF's plans to advance to the next generation of submarine. JMSDF military leaders must take into consideration capabilities required of a new submarine and how and in what situations these submarines would operate with U.S. and other partner submarine forces. The JMSDF Submarine Force must also be able to clearly communicate its requirements to the engineers and shipyards.

Clearly, the JMSDF Submarine Force is in the midst of transformation and expansion. It is receiving technological and operational support from the U.S. Navy, which is pivotal in implementing these upgrades. Despite Japan having built its own conventional submarines and the U.S. Submarine Force having only nuclear-powered submarines, there remains an extremely close relationship between the JMSDF Submarine Force's and the U.S. Submarine Force's leadership, engineering arms, undersea medical arms, shipyards, and submarine weapons manufacturers. Without a doubt, this relationship created Japan's submarine force. The JMSDF recognizes that everyone taking part in this cooperative relationship is a partner bound by shared values, and relationships fostering open discussions between uniformed, civilian, public, and private sectors must be maintained to bring these improvements to fruition through united effort.

The JMSDF Fleet Submarine Force came to life through abundant experience and advanced technology that former IJN Submariners gained from U.S. Navy support after WWII. A borrowed U.S. Navy motto, "know your boat" decorates the entrance of STC along with the reminder, "We are at the center of battle." This is to relay to new Submariners the lesson from IJN days that all decisions must be centered on the battle.

The JMSDF Submarine Force continues to expand its knowledge and effort guided by these mottoes as it continues to contribute to the defense of Japan with demonstrated operational capabilities and safety. In the JMSDF Submarine Force's 60-year history, not a single submarine has been lost due to an accident, and each submarine has remained commissioned through its designed service life.

Of course, a successful past by no means guarantees perpetual success, but it does solidify the foundation on which we stand. Admittedly there remain some equipment, operations, and crew training issues that need attention, but as long as the JMSDF Submarine Force humbly recognizes these issues, accepts the challenge of transformation, and continues to improve its submarines, it will be able to capitalize on the force's undersea potential. Continuous effort and expansion of combat capabilities are prerequisites to deepening cooperation with the U.S. Navy's Submarine Force and, most importantly, it is the force's unwavering contribution to the security of Japan.

Royal Malaysian Navy Submarine Force

by Rear Admiral Datuk Abdul Rahman Bin Haji Ayob, Royal Malaysian Navy Submarine Force Commander

With a coastline of 4,700 km, an Exclusive Economic Zone covering an area of 598,540 square km, and geographically straddling some of the most important sea lines of communication in the world, Malaysia is without doubt a maritime nation with an important role to play. The prime agency designated with the responsibility to safeguard those interests is the Royal Malaysian Navy (RMN), hence its core mission is to be prepared and able at all times to deploy naval forces to protect Malaysia's maritime sovereignty and interests.

The RMN had long aimed to develop a flexible yet balanced force structure in order to accomplish its stated mission. The induction of two *Scorpene*-type submarines from a consortium comprising DCNS of France and Navantia of Spain in 2009, called the *Perdana Menteri*-class in Malaysia, and the subsequent creation of the Royal Malaysian Navy Submarine Force (RMN SF) complement this long-standing ambition. As it is, the RMN SF's primary function is to provide credible conventional deterrence in support of the RMN and the Malaysian Armed Forces roles. Its tasks range from ensuring that the submarines are able to effectively accomplish all assigned missions as well as maximizing availability for operational tasking and training.

KD *Tunku Abdul Rahman* and HMAS *Dechaineux* underway during joint exercise.

The Submarine Force Beginnings

The RMN had indeed recognized the need for a submarine force as part of its fleet since the early 1980s. Several officers had been sent abroad to gain basic knowledge about submarines. This program continued and increased in its intensity in the 1990s with approximately 43 officers and men sent to friendly countries to further enhance RMN understanding in the field of submarine operations, maintenance, and management. There had been several initiatives to acquire submarines, particularly in the 1990s; unfortunately they did not come to fruition primarily due to financial constraints faced by the Malaysian government. The RMN got its break in the new millennium when the government signed a contract to acquire its first two submarines.

A comprehensive submarine training contract was signed a year later and took effect in March 2003. Over 150 RMN Submariners were subsequently trained under this contract. Meanwhile, construction for a new naval base at Sepangar Bay to accommodate the submarines began in February 2007 and was completed in August 2009. The inception of the RMN SF was finally completed with the commissioning of the two *Perdana Menteri*-class submarines in January and November 2009.

Royal Malaysian Submariners at the Submarine Training Centre working with the SIMDIVE.

Perdana Menteri-class Submarines

Malaysia's *Perdana Menteri*-class submarines possess very good underwater maneuverability and stealth, with advanced design features incorporating a teardrop or "Albacore" hull form, sail-mounted hydroplanes, cross-configuration tail planes, and very low acoustic, electromagnetic, and infrared signatures.

Other than "tropicalization" of the boats, involving installation of additional systems to enhance the submarines' ability to operate in the warmer and more saline waters of the southwestern Pacific, the Malaysian submarines include many of the same features of the earlier submarines of this type. They are fitted with SUBTICS integrated command combat system and UDS International-supplied weapons control and sonar systems.

Another feature that makes these submarines potent weapons platforms is their ability to launch SM 39 Exocet anti-ship missiles from the 533mm torpedo tubes while submerged. The RMN SF conducted a successful live firing of the SM 39 Exocet in 2010.

Submarine escape training exercise

The RMN SF conducted its first ever live-fire test of its wire-guided torpedo using the Blackshark heavyweight torpedo, the submarines' primary weapon, in 2014. The live firing marked an important milestone in RMN SF development as the two submarines were considered to have attained their full operational capability.

Training

A submarine is only as good as its crew. The primary focus of the first five years during the establishment of the RMN SF was developing basic submarining skills, especially in submarine navigation and diving safety. The RMN SF realized that this was a crucial stage in the force's development to inculcate a correct submarining culture, not only within the force but also within the navy. This phase was vital in order to ensure that the RMN SF would be able to further develop its competencies in a safe, efficient, and effective manner. These overarching goals and requirements became the guiding principles on which the whole training process was designed.

Today, the RMN Submarine Training Centre (STC) is a fully operational training centre capable of training and producing Submariners at all levels of competency to meet RMN SF requirements. The centre has expanded its curricula to include subjects related to submarine operations and warfare.

The STC is responsible for the training and qualifying of RMN Submariners at various levels of competency, ensuring that the training is conducted in line with RMN SF standards and requirements, verifying Submariners' competency and currency, and managing and maintaining all training equipment, systems, and tools assigned to them. Apart from a steady growth in suitably qualified and experienced instructors, the STC facility has grown over the years as well. Currently it is equipped with several state-of-the-art simulators, namely:

- Diving Control and Platform Simulator (SIMDIVE)
- Submarine Navigation Safety, Combat System, Sensors and Periscope Simulator (SIMTAC)
- Flood and Leak Trainer
- Fire Fighting Trainer
- Submarine Escape Trainer (SET)

The training centre is complemented with fully equipped training laboratories including mechanical, electrical, electronic, hydraulic, and pneumatic facilities. These laboratories are equivalent to those available in any modern engineering training centre in the world. The STC also assists the squadron in training their crews on the simulators to keep them current or prepare them for specific missions while ashore. With the availability of these simulators, the STC has completed its training inventory, which is on par with some of the world's most modern submarine-operating navies.

Currently the STC conducts over 20 different courses for RMN Submariners and Submariner candidates each year. As this is being written, the STC has trained approximately 200 officers and men in various specializations and levels of qualification ranging from the Basic Submarine Qualification Course (also known as Level 1 course) to the Submarine Commanding Officer Course (Level 5).

Submarine Rescue

The importance of submarine rescue cannot be over emphasized. The RMN signed an eight-year contract in 2012 with a domestic company, Target Resources Sendirian Berhad (TRSB), to provide Submarine Escape and Rescue – Intervention (SMER-I) capability. The induction of this capability not only provides the RMN with the ability to deal with distressed submarine incidents at sea, but also marks a significant contribution by the RMN SF to the international rescue community.

International Engagements

The RMN SF recognizes the need to collaborate with other submarine forces. To this end, the RMN SF established multiple bilateral and multilateral arrangements with submarine-operating nations including the United States. These arrangements are important as they provide an avenue for the RMN SF and its partners to engage and build mutual trust through various activities such as joint exercises.

The RMN SF's hosting of the 14th Asia Pacific Submarine Conference (APSC) in 2014 is a sterling example of such collaboration. The APSC brings Submariners from every navy in the region together to share technologies, procedures, and lessons learned with the aim of advancing our collective capability in the critical mission of submarine escape and rescue.

The creation of the RMN SF is a significant milestone and a step closer toward having a balanced and credible force for the RMN and Malaysian Armed Forces. Within a relatively short time the RMN SF has been able to establish itself among the safer and more capable submarine forces in the Asia Pacific region.

As one of the youngest members of the "submarine club," however, the RMN SF is not under any illusions as to what its capabilities and limitations are. Therefore, the RMN SF intends to continue to foster close ties with other more experienced submarine-operating nations. Despite the many challenges, the RMN SF aspires to meet the high standard set by the RMN while staying true to its motto: "*Safety, Stealth, Success*."

Republic of Singapore Navy

by Col. David Foo, Republic of Singapore Navy, Commanding Officer, 171 Squadron

The Republic of Singapore Navy (RSN) has operated diesel-electric submarines for 20 years, starting with the acquisition of four Swedish-built *Challenger*-class (ex-*Sjöormen*) submarines from 1995 and the addition of two Swedish-built *Archer*-class (ex-*Västergötland*) submarines in 2005. In 2013, the Singapore Ministry of Defence (MINDEF) signed a contract with ThyssenKrupp Marine Systems GMBH to acquire two new Type 218SG submarines customized to the RSN's operational requirements. Earlier this year, two of the *Challenger*-class submarines, RSS *Challenger* and RSS *Centurion*, were retired from service.

Competent, Confident, and Committed Submariners

Within the RSN, a robust submarine training system has been developed to train competent submariners to operate these complex machines in a safe manner. Besides training with the Royal Swedish Navy in the early years, RSN Submariners have participated in training with established submarine-operating navies like the United States Navy, Royal Australian Navy, German Navy, Royal Netherlands Navy, and Royal Navy. The RSN has also sent prospective submarine commanders to the gruelling submarine command courses conducted by the German Navy and Royal Netherlands Navy.

Since the return of the first RSN submarine to Singapore in 2000, the RSN has conducted local submarine courses to qualify new Submariners. In 2015, the RSN's Submarine Training Centre (STC) was established to co-locate all training facilities and simulation systems, as well as drive all training activities.

The Submarine Training Centre was given the name "RSS *Challenger* – Submarine Training Centre" in honour of the RSN's first submarine and training platform.

MV *Swift Rescue* is a Submarine Support and Rescue Vessel (SSRV) of the Singapore Navy.

Submarine Rescue: What more can we do?

Although submarines are manned by well-trained and competent crews, there are inherent risks operating these highly maneuverable platforms in the undersea environment. A collision with a surface vessel, another submarine, or an underwater obstruction could severely damage the submarine and render it unable to surface. Therefore, a credible submarine rescue capability is necessary to ensure that Submariners can be rescued from a disabled submarine within the shortest time possible as survivability will inevitably decrease with time.

In 2008, the RSN became the first navy in Southeast Asia to operate an indigenous submarine rescue capability with the launch of the submarine support and rescue vessel (SSRV), MV *Swift Rescue*. With its deep-submergence rescue vessel, *Deep Search and Rescue 6* (DSAR6), *MV Swift Rescue* offers a fully integrated submarine rescue system able to conduct a range of operations, including rescue, medical treatment, and heli-evacuation of casualties.

The RSN's approach to submarine rescue is premised on being self-sufficient in all envisaged rescue scenarios and partnering with regional navies to augment existing capabilities to strengthen the overall submarine rescue capability of RSN submarines. We also believe in making available the capability for rescuing other distressed submarines in the region. The RSN has signed submarine rescue agreements with navies like the United States Navy, Indonesian Navy, Royal Australian Navy, and Vietnam People's Navy, and is working toward similar agreements with other regional navies.

Regional cooperation in submarine rescue was enhanced through the conducting and participating in exercises. This includes the multilateral Exercise *Pacific Reach*, which the RSN hosted in 2000 and 2010. Navies operating submarines in the Asia-Pacific region came together to exchange knowledge about submarine escape and rescue (SMER), building trust in submarine rescue among the participating navies.

Beyond submarine rescue exercises, the RSN has participated in key SMER conferences such as the North Atlantic Treaty Organization (NATO) SMER Working Group meetings and the annual Asia-Pacific Submarine Conference (APSC). Recently, the RSN co-hosted the 15th APSC with the United States Navy in Singapore. The conference saw a record number of 23 participating navies and SMER organizations. Since its inception in 2001, the APSC has been an important platform to foster mutual understanding and cooperation between the participating navies in SMER issues such as the interoperability of rescue assets both internationally and in the Asia-Pacific region.

Although there is clear emphasis placed on SMER in the Asia-Pacific region, submarine rescue remains a reactive measure and not a preventive one. Like-minded navies need to collaborate on operational safety measures to reduce the risk of a submarine accident.

Submarine Operational Safety: Why is there a need?

In recent years, the number of submarine-operating navies in the Asia-Pacific region has grown and the number of diesel-electric submarines could reach 130 in five years' time.[1] There is high shipping traffic along the sea lines of communication in the Straits of Malacca and Singapore, as well as across the South China Sea, East China Sea and Sea of Japan. The relatively shallow depths in many parts of the South China Sea do not allow two submerged submarines to operate in the same water column safely. Hence, such areas are akin to a two-dimensional water space rather than a three-dimensional one.

There is also a risk of collision between submarines and deep-draught vessels, fishing vessels, military vessels with deployed undersea devices, unmanned underwater vehicles, and sea-based oil rigs. With an increasing number of submarines operating in such a congested and confined water space, it may not be unreasonable to assume that it is an accident waiting to happen.

To avert a potentially catastrophic submarine accident in the Asia-Pacific region, it is vital for submarine-operating navies to embrace a submarine operational safety framework that is practicable and aligned with national interests, given the sensitive nature of submarine operations.

An obvious method of preventing submarine collisions is to de-conflict submarine movements, as well as deploy undersea devices between affected parties in a given area under the responsibility of a designated Submarine Operating Authority (SUBOPAUTH). For example, NATO adopts a multilateral Prevention of Mutual Interference (PMI) arrangement under a common SUBOPAUTH among its submarine-operating members.[2] However, the effectiveness of such a system is premised on trust and close collaboration among its members. While bilateral arrangements on PMI may be readily acceptable in the Asia-Pacific region, it may be a bridge too far for a multilateral framework on PMI. However, there is still room for multilateral cooperation on other key aspects of submarine operational safety.

2014 Asia Pacific Submarine Conference

Challenger-class and *Archer*-class submarines at sea

Sharing Non-Sensitive Information to Enhance Safety

Information sharing and exchange amongst navies have greatly enhanced operational responses against common threats such as maritime terrorism and piracy. Similarly, submarine-operating navies can benefit from information sharing on "non-submarine threats" to submarine navigational safety. For example, a Submarine Safety Information Portal (SSIP) that leverages the RSN's Information Fusion Centre (IFC) capabilities could provide real-time or near-real-time tracking and locating of deep-draught vessels, fishing activities, sea-based oil rigs, and seismic activities so that national SUBOPAUTHS can put in place the necessary preventive measures. The IFC, located at the Changi Command and Control Centre, maintains an extensive global and regional shipping database and serves as an information exchange node to facilitate timely responses to Maritime Security incidents. In addition, the SSIP can also facilitate submarine rescue by maintaining real-time tracking of Vessels of Opportunity (VOOs) and submarine rescue assets.

Sharing Best Practices and Establishing Common Standards

Besides information sharing, submarine-operating navies can also exchange best practices in non-sensitive areas like material safety, training/exercise safety, and risk management. There is also scope for developing safety procedures similar to the International Regulations for Preventing Collisions at Sea (COLREGS) or Code for Unplanned Encounters at Sea (CUES) to address the situation when two submarines have an unplanned encounter at sea. These initiatives can significantly enhance submarine operational safety, but will require mutual trust and cooperation of submarine-operating navies in the region.

In 2014, the Royal Australian Navy organized the inaugural Submarine Operational Safety Conference (SMOSC) to highlight the need for regional collaboration on submarine operational safety matters. In 2016, the RSN co-organized the second SMOSC with the Republic of Korea Navy to take the initial efforts one step further toward the goal of developing an effective submarine operational safety framework for the Asia-Pacific region.

Over the last 20 years, the RSN has gradually built up a capable submarine force to safeguard Singapore's sovereignty and maritime economic lifelines. In increasingly congested and confined water spaces within the region, the prospect of a submarine accident is plausible. Hence, it is in the mutual interest of Asia-Pacific submarine-operating navies to collaborate on submarine rescue and operational safety matters. As the saying goes, the sooner, the better.

1 Channel NewsAsia. Singapore proposes framework for submarine operations safety, 21 May 2015, http://www.channelnewsasia.com/news/singapore/singapore-proposes/1861632.html.

2 North Atlantic Treaty Organization. NATO's Submarine Forces: a Pivotal Capability, 25 April 2014, http://www.mc.nato.int/PressReleases/Pages/NATO's%20submarine%20forces,%20a%20pivotal%20capability%20-%20an%20interview%20with%20Commander%20Allied%20Submarines.aspx

Republic of Korea Submarine Force

by Lt. Cmdr. Lee Jongkwan, Republic of Korea Navy

"Dream, Challenge, Creation" is a vision once set forth by an infant submarine force, and it contains a profound meaning: with the dream of building a submarine force and the spirit of challenge, we create a new history. For the Republic of Korea Navy (ROKN) Submarine Force, this vision has now become the backbone of its growth.

The ROKN left a significant mark in history by establishing the Submarine Force Command on February 1, 2015. It was a historical achievement 70 years after the establishment of the ROKN. Accordingly, the Republic of Korea (ROK) rose to become the world's sixth country that operates a submarine force command, following the United States, Japan, France, the United Kingdom, and India.

With the command came the establishment of a unified system through which every submarine-related field such as operations, maintenance, combat readiness, and education and training, which were Submarine Flotilla 9's traditional responsibilities, can be managed in an integrated way. Thus the command was better positioned to conduct operations more efficiently.

Nae Dyong (SS 069) underway during Rim of the Pacific (RIMPAC) 2012

History of the Republic of Korea's Submarine Force

The history of the ROK Submarine Force began with the establishment of Submarine Squadron 57 in 1990. Starting with the acquisition of three *Dolgorae*-class midget submarines, the force took over the ROKN's first submarine, ROKS *Chang Bogo* (SS 061), which was built in Germany in 1992 and commissioned in 1993. The submarine force obtained the capability to independently build submarines by acquiring ROKS *Lee Chun* (SS 062), the first submarine to be built at a Korean shipyard, in 1994. As a result of continuous production of *Chang Bogo*-class (Type 209) submarines, a total of nine *Chang Bogo*-class submarines are currently operating in the ROKN.

In 1995, Submarine Flotilla 9 was established for the systematic conduct of submarine operations. Along with the establishment of Submarine Force Command in 2015, the 5th Submarine Squadron was also established. Hence, Submarine Force Command now consists of five submarine squadrons, one education and training squadron, a submarine shipyard, and a base battalion.

Additionally, in 2007, only 15 years after the ROKN's first submarine was commissioned, ROKS *Son Won Il* (SS 072), the first submarine in Asia equipped with Air-Independent Propulsion (AIP), was commissioned. A total of six *Son Won Il*-class (Type 214) submarines have been built thus far.

The ROK Submarine Force has participated in a total of 23 combined exercises abroad. Starting with ROKS *Lee Jong Moo*'s (SS 066) participation in the Rim of the Pacific (RIMPAC) Exercise in 1998, the force has proven its excellent operational capabilities with its remarkable achievements in such combined exercises. In particular, ROKS *Lee Chun* (SS 062) was lauded with the phrase, "One shot, one hit, one sink," after sinking the retired cruiser, USS *Oklahoma City* (CG 5), with a single torpedo during Tandem Thrust in 1999. Since then, "One shot, one hit, one sink" has become the ROKN Submarine Force's slogan.

A *Chang Bogo* class submarine arrives at RIMPAC

Education and Training for Submariners

As Submariners are the pride of the force and the "Silent Guardians," the core element of employing submarines, cultivating crew members is essential. Therefore, education and training aimed at making every Submariner an expert in submarines has always been a top priority. Trainees selected to be Submariners undertake six months of basic submarine courses such as underwater acoustics, oceanography, and the history of submarine warfare and another six months of training on board. Once these are accomplished, trainees attain the Submarine Qualification System (SQS), and finally become Submariners.

In addition to education for Korean Submariners, the ROKN can also provide foreign Submariners with education and training. From 2013 to 2015, a total of 28 Submariners from Indonesia, the United Arab Emirates, Thailand, and Malaysia completed the basic submarine education program at the Submarine Education and Training Squadron. Accordingly, the ROK transitioned from a country getting education abroad to a country educating other countries.

Korean Submarine Education and Training Squadron

This accomplishment was only possible because of the foresight of ROK and ROKN leadership to understand the importance of investing in a completely indigenous submarine capability, from training to submarine building. This is truly a remarkable achievement given the short amount of time in which it was realized.

Into its 23rd year of operating submarines, the ROKN Submarine Force has a fortunate record of no accidents as of 2016. As of April 2015, the ROKN Submarine Force logged 2 million accident-free miles of submerged navigation. Every ROKN Submariner keeps the principle, "Dive 100 times, surface 100 times," close to his heart.

An MH-60S assigned to the Blackjacks of Helicopter Sea Combat Squadron (HSC) 21 performs a medical evacuation of a sailor from Republic of Korea Submarine SSK *Lee Eok Gi* (SS 071) to hospital ship USNS *Mercy* (T-AH 19).

The Way Ahead for the ROKN Submarine Force Command

North Korea is trying to develop a new undersea capability to employ as an asymmetric weapon: submarine-launched ballistic missiles (SLBMs) and the submarines to launch them. This imbalance of power threatens to destabilize not just the Korean Peninsula, but all of Northeast Asia.

It is under these circumstances that the ROKN Submarine Force Command has decided to develop its own indigenous strategic weapons system to counter this threat from North Korea and employ far more systematically and efficiently its submarines—a strategic weaponry system that protects the oceans of the Republic of Korea in the most powerful and clandestine way. Starting in 2020, submarine forces will continue to be secured, such as the introduction of 3,000t class submarines that will be designed and built based on the ROK's technology only.

What is equally important as securing submarine forces is the cultivation of excellent Submariners for the enhancement of the Submarine Force Command. Thus, the improvement of education, training systems, and equipment needs to be pushed ahead continuously. To enable this, cooperative relationships with other advanced submarine-operating countries must be solidified through continued participation in combined exercises, and efforts will need to be made to foster submarine operational capabilities that are comparable to those of other advanced countries so that we can operate together effectively as a team.

The ROKN Submarine Force Command has been burdened with the mission of protecting the waters surrounding the ROK and serve on the front line to counter North Korea's threats. The ROKN's Submariners will forge ahead to accomplish this mission.

ROKS 1,800 ton submarine *Ahn Jung Geun* is seen during a media day for a naval fleet review off South Korea's southeastern coast near Busan, South Korea.

by MC 2C Brian G. Reynolds

For Commander, Submarine Group 7 (CSG 7), maintaining peace and security throughout the undersea domain of the U.S. 5th and 7th Fleet area of operations (AOO) is like playing a game of chess on a liquid chess board that blankets more than 50 million square miles.

COMSUBGRU 7 — More than Just the Subs

Headquartered at Fleet Activities Yokosuka, Japan, CSG-7 coordinates all submarine operations from the Western Pacific Ocean to the Red Sea. Also as Commander, Task Force (CTF) 54 and CTF 74, the command boasts more than a half century of undersea dominance.

Maintaining this strategic undersea advantage is no simple task. It entails a copious amount of moving parts; although the submarines are the center of battle, it's not all just about the submarines.

The Guam-based submarine tenders, oceanographic survey vessels, and all of the Navy's towed-array surveillance ships operating in the Western Pacific; all fall under the tactical control of CTF 74.

The Tenders

The job of keeping U.S. submarines supplied and operating forward takes an ample amount of work from two of the U.S. Navy's most flexible vessels—the submarine tenders.

The Navy's two submarine tenders, USS *Emory S. Land* (AS 39) and USS *Frank Cable* (AS 40), play a vital role in keeping CSG 7's submarines operating forward. The two tenders furnish maintenance and logistical support for nuclear-powered attack, ballistic-missile, and guided-missile submarines.

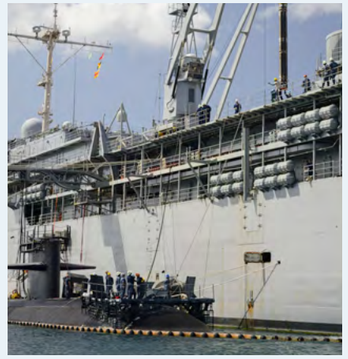
Submarines are small vessels compared to other U.S. Navy ships. They do not have the ability to carry large amounts of supplies and weapons. This is where submarine tenders come into play.

Submarine tender USS *Frank Cable* (AS 40) is moored in Sepangar Bay for a routine port visit.

"The tenders are a floating maintenance activity," explains Lt. Cmdr. Patrick E. Tembreull, deputy chief of staff for materials of CSG 7. "They have similar roles to an Intermediate Maintenance Facility, but are unique that they are mobile and self-sufficient. They are normally assigned as the lead maintenance activity for Guam-based submarine availabilities."

Submarine tenders also carry an extensive supply of replenishment and repair parts. These supplies can be rapidly shipped to anywhere they are needed around the globe.

One of the aspects that makes submarine tenders so much of an asset to CSG 7 is their inherent flexibility. They provide fly-away teams who can deploy from tenders to anywhere in the U.S. 7th Fleet AOO on short notice. These teams have been called upon to repair emergent material conditions in virtually every port that CSG 7's submarines visit. They are also equipped to tend submarines in a wide variety of environments.


Lowering a Tomahawk cruise missile onto the USS *Oklahoma City* (SSN 723).

Machinery Repairman 1st Class (SW/AW) Nathan Kopp (right) and Machinery Repairman Fireman Bradley Widby, both assigned to the submarine tender USS *Frank Cable* (AS 40)

Tenders are essential and extremely versatile assets that provide and maintain CSG 7's vessels to be mission ready around the clock and throughout the year.

Ocean Surveillance Ships

Submarines operate under a cloak of silence. In the dark abyss of the deep, it is often more crucial to hear the opponent than to lay eyes on them. This concept is why anti-submarine warfare (ASW) is a strategic focus for CTF 74.

ASW plays a colossal role in what CTF 74 does on a daily basis, and ocean surveillance ships play

"The ships also perform repairs in remote locations when they tend submarines," says Tembreull. "They can tend submarines at pier or at anchor and have a range of mooring options to fit different environmental conditions. Tenders have even tended [guided-missile destroyers] in the past."

Similar to ocean surveillance ships, MSC personnel play a pivotal role in ships' operations. Integrated in 2010, MSC mariners are responsible for handling the tenders' deck operations, navigation, and food services. However, U.S. Navy Sailors maintain the ships' support structures and repair missions.


Submarine tender USS *Emory S. Land* (AS 39) transits alongside the Military Sealift Command dry cargo and ammunition ship USNS *Charles Drew* (T-AKE) 10 during a fueling-at-sea in support of Operation Damayan.

into that role adeptly. In fact, ASW is their sole purpose. These ships deploy a Surveillance Towed-Array Sensor System (SURTASS) that provides mobile detection, tracking, and reporting of submarine contacts at a long range. In short, SURTASS ships act as CTF 74's ears in the deep.

Roland Ailenbuade was a Sonar Technician (Surface) 1st Class aboard the ocean surveillance ship USNS *Able* (T-AGOS 20). He describes SURTASS as "an array attached to a cable. The cable is 4,900 feet long and there are two of them, port and starboard. We deploy [the array] which is made up of hydrophones that pick up sound in the water." Ailenbuade is now a theater ASW specialist at CSG 7.

The information that is gathered by the array is then sent back to the ship via the cable. Equipment on the ship analyzes the data. It is then the job of sonar technicians to determine what the data that the array picked up actually entail.

"We train to differentiate what a submarine looks like, what surface ships look like, even what whales look like," Ailenbuade says. "Anything in the water, we train to tell which is which."

USNS *Impeccable* (T-AGOS-23)

It is the collected data that are important to CSG 7, whose leadership uses it to make critical decisions on where to place its submarines and other assets. CSG 7 also uses the information to protect high-value units such as aircraft carriers and amphibious assault ships.

As Ailenbuade puts it, "[CSG 7] thinks big picture SURTASS is a strictly ASW platform, and it's a big integral part of what we do here."

Ocean surveillance ships are manned primarily by Military Sealift Command (MSC) mariners, but also embark U.S. Navy Sailors.

These vessels are responsible for bringing decision-making data to CSG 7 and are crucial to the overall mission of the command.

USNS *Able* (T-AGOS 20)

Oceanographic Survey Vessels

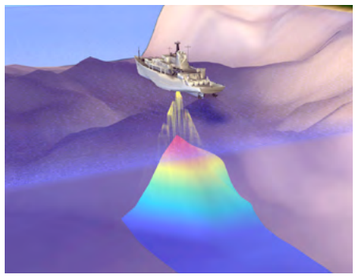
The Chinese military strategist and philosopher Sun Tzu once taught, "Know yourself; know your enemy. Your victory will never be endangered. Know the ground. Know the weather. Your victory will be total."

MSC's special mission program boasts six *Pathfinder*-class oceanographic survey ships. These ships are equipped with numerous hull-mounted multibeam echo sounders and towed side-scan sonar systems that allow precise mapping of the ocean floor. Each ship can also carry up to two hydrographic survey launches, which carry a similar sensor suite. In addition to their bottom-mapping capabilities, survey ships carry a wide variety of oceanographic sensors that they use to measure oceanographic conditions.

According to CSG 7's Meteorological and Oceanographic Officer Lt. Cmdr. Jonathan Savage, "Understanding the environment better than one's opponent is a tremendous advantage. the U.S. Navy is able to exploit that advantage thanks in large part to the work these survey ships do every day."

Oceanographic survey ships are manned by a crew of 24 civilian personnel. For each survey mission, a team will embark consisting of up to 27 scientists, including civilians, from the Naval Oceanographic Office (NAVO) at Stennis Space Center, Miss.. While the ship's crew expertly navigates along a precise track, the NAVO scientists collect precise bathymetric and oceanographic information.

USNS *Pathfinder* (T-AGS 60)



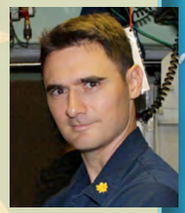
As with any military operation, an intrinsic knowledge of the environment is essential to success. The bathymetric, hydrographic, acoustic, and oceanographic surveys that *Pathfinder*-class ships perform enable warfighters to exploit the tactical advantage created through understanding of the undersea environment. Oceanographic survey vessels operating in this area play an imperative part in how CSG 7 applies Sun Tzu's two-and-a-half-millennium-old philosophy.

So in conclusion, when looking at the Asia/Pacific nautical chessboard on a global scale, it entails having all of the chess pieces in strategic positions. While CSG 7's submarines are at the tip of the spear of operations in the U.S. 7th Fleet AOO, their success relies on the myriad of moving parts behind the scenes. Ocean surveillance ships, oceanographic survey vessels, and submarine tenders maintain CSG 7's theater ASW dominance.

Mass Communication Specialist 2nd Class Brian G. Reynolds, Commander, Submarine Group 7 is Deputy Public Affairs Officer.

Why Go Guam?

When detailed to USS *Chicago* in 2012, I couldn't have been more excited regarding the move to Guam. I looked forward to being at the forefront of the "Pivot to the Pacific" and an integral part of forward-deployed submarine operations supporting the Defense Strategic Guidance. At the completion of my Department Head tour in May 2015, I could state beyond a doubt that my tour there was the most personally and professionally gratifying experience that I could possibly imagine.



Lt. Cmdr. Krueger

If you desire fast-paced, fast attack submarine operations coupled with a homeport in a tropical paradise, then look no further than Guam. The Guam Mission Cycle (GMC) can be demanding when transitioning between mission underways, Continuous Maintenance Availabilities, and back underway for another mission or work up for an estimated 50% at sea availability. The GMC includes 11 weeks of underway time in the 22 week cycle. However, if you desire operational experience doing the missions fast attack submarines are all about without a six month deployment, a Guam SSN schedule will appeal to you. During my tour, my wife was able to meet me in fantastic ports such as Singapore, Sterling Naval Base in Western Australia, and Subic Bay in the Philippines. During our post-mission stand downs, we visited New Zealand and Australia and took amazing scuba diving trips to Chuuk and Palau (as if the diving in Guam isn't fantastic enough). Guam is a convenient stepping stone for traveling to locations throughout Southeast Asia. My wife was able to visit Vietnam, Laos, Cambodia, Thailand, Japan, and Bali while we were stationed in Guam. How's that for seeing the world!

Take it from a served engineer on a forward-deployed fast attack: I couldn't imagine a more rewarding sea duty. The crews are tightly knit, they are mission focused, and the supporting facilities at Naval Base Guam exceed expectations. Guam is hands down my homeport of choice!

USS *Chicago* (SSN 721) returns to Apra Harbor, Guam.

There were two primary goals in this year's Rim of the Pacific (RIMPAC) theater anti-submarine warfare exercise:

- **Training RIMPAC forces to improve our ability to operate together**
- **And the safety of RIMPAC submarines and personnel while training in the Hawaiian operating area.**

RIMPAC 2016: An Exercise in Response and Interoperability

By Rear Adm. Frederick J. "Fritz" Roegge
Commander, Submarine Force, U.S. Pacific Fleet

China and the United States led a multilateral submarine rescue tabletop exercise at Joint Base Pearl Harbor-Hickam during RIMPAC 2016. (PLAN photo by Kaiqiang Li)

Meeting these objectives is no small task: RIMPAC 2016 was the largest ever, featuring 42 surface ships and five submarines from 26 nations, for many of whom English is a second language.

To enhance exercise safety, there's an escalating series of training events. This process begins with briefing and training in port during the harbor phase, progresses through unit-level training in coordinated anti-submarine exercises, followed by group-level training through integrated operations, and culminates with "free play." If our training is effective and we do our job well managing waterspace and preventing interference, then every participating ship will complete RIMPAC with no scraped paint, dented fenders, or worse. Preparing for what could be worse, however, is also part of RIMPAC.

As the size of RIMPAC increases, so does its complexity and the scope of its events. This year it's notable that RIMPAC participants conducted their first-ever bilateral and multinational submarine rescue vignette. The humanitarian nature of search and rescue makes for common ground; all countries should be able to cooperate in submarine rescue, but good intentions aren't enough. It also requires highly specialized equipment and expertise that must be practiced.

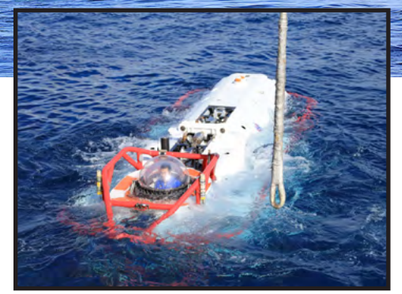
Approximately 50 navy, military, and civilian personnel from eight countries kicked off the submarine escape and rescue exercise with a symposium where participants reviewed global submarine search and rescue techniques, including the use of the International Submarine Escape and Rescue Liaison Office rescue coordination website. Australia, Canada, Chile, China, the Republic of Korea, Japan, and the United Kingdom joined us for the symposium, which was followed by a submarine rescue tabletop exercise held at Joint Base Pearl Harbor-Hickam. The tabletop exercise was structured to take participants through the critical decision-making process of searching for and locating a disabled submarine.

The nations participating in the tabletop exercise worked through the complex scenario for global rescue system deployment and exchanged ideas on ways to further improve cooperation for any real event with an overall goal of minimizing time to first rescue.

An *LR-7* submersible undersea rescue vehicle from PLAN submarine rescue ship *Changdao* (867) submerges off the coast of Hawaii to perform a mating evolution between the *LR-7* and a U.S. faux-NATO rescue seat laid by USNS *Safeguard* (T-ARS-50) during RIMPAC 2016. (PLAN photo by Kaiqiang Li)

Following the tabletop exercise, participants practiced what they learned and took their partnership to sea.

During the at-sea exercise, U.S. Navy submarine rescue experts embarked aboard the Chinese People's Liberation Army Navy (PLAN) submarine rescue ship *Changdao* (ASR 867) and worked with PLAN counterparts to launch the ship's undersea rescue vehicle, *LR-7*. The purpose of this event was to determine whether the *LR-7* is compatible with the rescue seating surfaces on western submarines. To do this, the U.S. Navy used a seating surface of the correct dimensions that can be used for training. Divers from Mobile Diving and Salvage Unit One, using their mixed-gas helium-oxygen deep diving system from Military Sealift Command's Rescue and Salvage Ship USNS *Safeguard*, placed this training rescue seat on the ocean bottom just off the coast of Oahu. The *LR-7* then conducted a successful, first-ever mating evolution with this faux-U.S. rescue seat.



A sailor from the Chinese navy submarine rescue ship *Changdao* (867) sits in an LR-7 submersible undersea rescue vehicle off the coast of Hawaii following a successful mating evolution between the *LR-7* and a U.S. faux-NATO rescue seat laid by USNS *Safeguard* (T-ARS 50)

There are more than 400 submarines operating around the world and their numbers are growing. The ocean is not very forgiving, so although it's rare for a modern submarine to become disabled, it's not unprecedented. As with insurance, one hopes that these submarine rescue skills will never be needed in a real-world scenario, but it's important that we have them and that we're ready at a moment's notice to use them. With the successful completion of these RIMPAC submarine escape and rescue events, we've added to the community's ability to respond should there ever be a need to do so.

International Cooperation

Twenty-six nations, more than 45 surface ships and 5 submarines, more than 200 aircraft and 25,000 personnel participated in Rim of the Pacific 2016, more countries and personnel than in any previous years. This year's RIMPAC marked the 25th in the series that began in 1971 and is now held every two years.

This year's exercise participants were Australia, Brunei, Canada, Chile, Colombia, Denmark, France, Germany, India, Indonesia, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, People's Republic of China, Peru, the Republic of Korea, the Republic of the Philippines, Singapore, Thailand, Tonga, United Kingdom, in addition to the United States.

The U.S., Australia and Canada have participated in all 25 RIMPACs since 1971. RIMPAC 2016 marked the first time Denmark, Germany and Italy participated in the maritime exercise. Each nation displayed capabilities ranging from disaster relief and maritime security operations to sea control and complex warfighting exercises, including a mass casualty drill, replenishments at sea, submarine search and rescue, aircraft refueling and multi-day diving operations.

by Lt. Cmdr. Jonathan Ahlstrom, XO USS Asheville

Dynamic Leadership Challenges in the Shipyard


USS *Asheville* in drydock at Pearl Harbor Naval Shipyard undergoing extensive modernization.

When one hears the phrase dynamic leadership in the Submarine Force, it often inspires thoughts of great World War II leaders who remain immortalized in the tomes of history. One thinks of Vice Adm. Lawrence Ramage in command of USS *Parche* (SS 384) leading a pre-dawn attack on a Japanese convoy in July 1944 or Rear Adm. Eugene Fluckey in command of USS *Barb* (SS 220) who tracked a 30-ship enemy convoy and engaged them in Nankuan Chiang Harbor in January 1945, or Rear Adm. Richard O'Kane in command of USS *Tang* (SS 306), displaying one of the most incredible feats of gallantry, expending every torpedo aboard while engaging a Japanese convoy and then using the submarine as a battering ram. While these men were exemplary leaders, true leadership is not always conducted in such a high-profile manner. The truth is that leadership is a steadily applied pressure, a daily grind, and when done right, is the most satisfying part of the job for anyone given the opportunity to lead.

The story of USS *Asheville* (SSN 758) is not an uncommon one today. Appropriately named the "Ghost of the Coast," the *Los Angeles*-class attack submarine was commissioned Sept. 28, 1991 and has been plying the ocean depths in support of national tasking for the past 25 years. Returning from a six-month Western Pacific deployment in July 2013, *Asheville* entered a new phase of operations, one that would prove to be a formidable challenge for her and her crew.

In February 2014, *Asheville* settled into drydock at Pearl Harbor Naval Shipyard for an extended engineered overhaul. Here she would undergo modernization of her combat control systems and a variety of upgrades to the nuclear propulsion plant. What was projected as a 22-month overhaul now sits at 40 months, with sea trials scheduled for the summer of 2017. A variety of factors contribute to this 18-month delay, from newly discovered material problems to a resource-strapped industry.

The part of this story less explored, and sometimes less appreciated, is what to do with a crew of roughly 170 Sailors who are assigned to a submarine that does not float, does not practice its primary mission, and is no longer eligible to compete against its peers for the coveted Battle Effectiveness Award. It is in this rare environment, under these conditions, that dynamic leadership comes to bear.

The work for Submariners in the shipyard is never easy. Where Sailors would normally stand watches related to their ratings, they are now involved in establishing work controls for systems being gutted in support of upgrades and repairs. Work conditions on the submarine are invariably hot and uncomfortable, and the work itself is often highly technical and complex. When these conditions repeat day in and day out for extended periods, and the measure of actual progress is not visible, motivation and job satisfaction become harder to attain.

Beyond the work itself, three additional aspects present leadership challenges to a submarine in overhaul. Foremost is a loss of the sense of mission accomplishment. When a submarine is operational, it finds itself at some point in the Fleet Response Training Plan cycle. This involves an intensive operational workup and certification of the crew followed by completing national tasking in oceans around the world. In this cycle, the mission is clear to the crew. This is not to say that the mission in the shipyard is any less important, but rather that the normal means of imbuing the crew with a sense of mission is different.

"The work for Submariners in the shipyard is never easy. Where Sailors normally stand watches related to their ratings, they are now involved in establishing work controls for systems being gutted in support of upgrades and repairs."

The second challenge is a general loss of ownership over the submarine. Seagoing Sailors spend significant parts of their careers maintaining and operating complex systems aboard the submarine. When the boat is submerged, the lives of their shipmates depend on that system functioning properly, and an incredible sense of ownership over every part of the boat develops. Sailors often cultivate a strong attachment

Asheville Schools Coordinator recognized by the commanding officer of Naval Submarine Training Center Pacific for achieving 100% schools readiness. From left to right are Lt. Cmdr. Jonathan Ahlstrom, LS2 Torey Walker, Capt. Michael Martin, Mrs. Myra Yamada, Cmdr. Paul Pampuro.

to their systems and equipment. While in drydock, control of these systems is turned over to the shipyard. Over time, that personal connection usually fades. As the remaining Sailors who last operated the submarine in the water transfer to follow-on commands and new personnel report to take their places, the sense that the equipment is actually theirs or the same level of ownership is difficult to attain.

The last challenge to address is personnel management. It is easiest to explain this from the perspective that each Sailor on the submarine is an investment. This investment involves training the Sailors to do their jobs both at sea and in the shipyard, ensuring that they acquire the experience they need to be successful, and ensuring that they remain competitive among their peers for advancements and promotions. All this must be done while managing each Sailor's Planned Rotation Date (PRD).

Every crewmember, enlisted or officer, reports to the submarine for a prescribed tour length projecting their rotation to a month and year in the future. The challenge is building a team of Sailors who are capable and experienced enough to bring the submarine through overhaul and to the next deployment. This process, better captured under the phrase crew stabilization, involves adjusting each crewmember's PRD to ensure success in both the accomplishment of the mission and their competitiveness for follow-on jobs.

While not a daunting task at first glance, the fluid schedule of the overhaul dictates otherwise. As is the case with *Asheville*, the 18-month delay to the schedule did not happen overnight but two or three months at a time, with each delay resulting in a new round of crew stabilization. Each cycle of stabilizing crew manning proves to be a significant time commitment from the submarine's leadership where the end product is a watch bill that has adequate depth and experience to bring the boat to sea.

These elements together present a dynamic leadership challenge for any leader. To lead effectively in any organization, one must find balance between people and the mission. Finding this balance while in the shipyard requires energy, creativity, and patience. While there is no one-size-fits-all solution for a submarine to navigate through an extended overhaul, the following captures some of the successes seen on *Asheville*.

Sense of mission

With what can one compare hanging more than 2,000 tag-outs (physical tags hung on mechanical valves and circuit breakers to ensure that the system or component being worked on is properly isolated) and opening 1,000 new work items in a year with a boat executing missions vital to national security? From a high level, it is easy to see how modernizing submarines is a vital mission and necessary for the Navy to remain at the highest level of operational and technological readiness. Translating this message to the Sailor spending hours reviewing shipyard-generated Task Group Instructions is another thing. Failure to imbue a sense of mission results in crew morale and cohesiveness suffering. As time progresses, retention statistics dip and Sailors choose to leave the Navy rather than sign up for a follow-on tour. This challenge must be met head-on by command leadership; they must apply a steady pressure to build a culture where the Sailor recognizes that, although the work is not glorious, it is of the utmost importance to the nation.

Recognizing people

Using awards to recognize performance has been practiced throughout history. The psychology behind the effectiveness of awards is so universally accepted that it would be hard to find a sector of society where awards were not used in some form or another. The military is no exception. Probing further into the underlying psychology, one of the most substantial benefits is the resulting bond established between the recipient and the giver that builds a stronger sense of loyalty to the overall organization. The physical awards themselves might have changed, a ceremonial spear presented to a soldier in a Roman legion to a commendation medal for a member of today's uniformed services; however, the psychology remains unchanged and effective.

Submariners today typically possess only a modest collection of ribbons and medals compared to other communities and services. When looked at by the experienced eye, they tell a simple story of the depth of experience, accomplishments, and seniority of the bearer. Receiving personal awards for either specific accomplishments or for determined periods of service are routine. Shipyard-bound boats are susceptible to inadequately awarding Sailors for the work they are doing. This can happen when the submarine does not find a pinnacle event to tie awards to. For example, an operational submarine will typically hold awards ceremonies following a deployment. In an extended overhaul, one might not find as defining a moment until it is too late.

Recognizing Sailors for the tough work they are doing in the shipyard is as important, if not more so, than on an operational submarine. This mentality starts from the command triad—Commanding Officer (CO), Executive Officer (XO), and Chief of the Boat (COB)—who must establish a culture where supervisors are encouraged and expected to recommend awards for deserving Sailors.

Adding spontaneity to the award process can go a long way. The submarine should have a flexible process that supports recognizing Sailors immediately following the event for which they are being rewarded. This not only has a positive effect on the Sailor being recognized but also sends an important message to the crew helping to solidify the overall theme that the work they are doing is important.

Recognizing Sailors is not just about personal awards. There are other ways to recognize them for their hard work. Since work in the shipyard can be long and inglorious, another form of reward is time. A simple special liberty pass can have a great impact. While having that Sailor away for 72 hours means less work is accomplished, the return on investment is seen when they come back recharged and motivated.

Sailors should not be considered ineligible for the recognition given by sea service awards. While a boat in drydock is not at sea, it is still an at-sea command, and the Sailors attached to the boat are serving their sea tour. There are numerous ways to recognize Sailors through various awards and competitions sponsored through military support organizations such as the Navy League and Naval Submarine League.

In 2015 the Commander Submarine Squadron 7 selected both the Sea Service Junior Sailor of the Year and Sea Service Sailor of the Year from *Asheville*, prevailing over candidates from 10 other submarines. That same year, an *Asheville* junior officer was selected by the Honolulu Navy League chapter as the Sea Service Officer of the Year. The list goes on, but in each of these cases, it was a matter of taking the time to write about the incredible work these Sailors do.

Staying relevant

An essential ingredient to success in the shipyard is staying current on submarine operations. There exist a variety of opportunities to accomplish this, including waterfront training and post-deployment debriefs. However, the heart of this initiative on *Asheville* is sending Sailors to deploy on operational submarines.

Running an aggressive ride program might sound simplistic, but in reality it requires significant effort to be put into motion. A balance must be struck between sending Sailors to sea and supporting required overhaul maintenance and watch standing. Submarines in overhaul can fall victim to thinking that there is no way they can function without a particular Sailor and limit rides as a result.

The long-term view reveals the necessity in deploying the Sailors and the skills they bring back to the team. On *Asheville*, an assigned ride coordinator in each department takes the lead on coordinating with the host submarine. This scheme applies to officers and enlisted alike. Newly reporting junior officers typically spend less than a few months aboard before they join a deploying submarine. Department heads and chiefs were also sent out to support submarines in need, for mission experience, and to refresh stagnant skills.

Create an environment that prizes learning

For an improved *Los Angeles*-class submarine, there are in excess of 500 required schools. Sailors attend these schools throughout their careers and carry the learned skills from submarine to submarine. While in extended overhaul, it is important to take advantage of the steady schedule and advance Sailors' education. This builds expertise among the crew and adds important skill sets to Sailor's portfolios. Few submarines ever achieve a 100% schools rating, but it is possible with foresight, planning, and of course an incredible Schools Coordinator.

There exist unique opportunities to expand the expertise of culinary specialists

CS2 Marlon Haughton displaying his medals after competing in the 41st Annual Military Culinary Arts Competitive Event in Fort Lee, Va.

Asheville Sailors volunteering to rebuild a rock wall surrounding a fish pond at He'eia State Park in Kaneohe, HI.

At right, ETNCS Burns being re-enlisted by Cmdr. Paul Pampuro at the Parche Memorial in Pearl Harbor.

At left, ETVCM Torres, COB, frocking ETR2 Manzella to Second Class Petty Officer.

while in overhaul. In addition to traditional culinary schools, multiple *Asheville* Sailors completed internships at the Hale Koa Hotel in Honolulu. In this environment they worked under a variety of master chefs refining their trade. One *Asheville* Sailor had the distinct privilege of being the only Submariner selected to participate in the 41st Annual Military Culinary Arts Competitive Event in Fort Lee, Va. He trained with 25 of the top culinary specialists in the Navy. Competing in three events, he was awarded two silver medals and one bronze medal and was selected as runner-up for Navy Chef of the Year.

Education clearly extends beyond Navy schools. If Sailors do not already have a degree, many often enlist with some college credits. Promoting a campus-like environment encourages the Sailors to enroll in the Navy College Program for Afloat College Education (NCPACE) where tuition-free college courses are provided.

Building the educational portfolio of each Sailor, whether through formal schools or college education, has an overall positive impact on both the Sailors' morale and sense of self worth. Through formal schools, Sailors find that they are given more responsibility, which in turn improves job satisfaction. A better-educated crew is a better-performing crew.

Build a connection with the community

Operational submarines typically find their schedule taking them in and out of port on a regular basis. A submarine in the shipyard can take advantage of not having routine underway periods by capitalizing on involving the crew with the community. Community outreach is a two-way street with benefits to both the community and the Sailors. Events that involve team-building exercises build comradery and break the shipyard routine. Outreach helps build positive relations between the surrounding community and the Navy and inspires new generations to serve. On *Asheville*, Sailors established links with Job Corps America, supported local wildlife restoration projects, and adopted a highway.

Shipyard or graveyard for submarine department heads?

First-term enlisted Sailors will report to a submarine for typically a 60-month tour. While not preferred, spending half of that time in the shipyard does not mean they will never experience sea time. However, the submarine department head's shorter tour presents a different challenge.

Each submarine has four department heads—an Engineer Officer (ENG), Combat Systems Officer (WEPS), Navigation/Operations Officer (NAV), and Supply Officer (SUPPO)—who report for an assigned 32-month tour. A department head is an officer who completed his first sea tour, typically spent two years on shore, passed five months at the Submarine Officer Advanced Course in Groton, Conn., and serves at the head of a department ranging from 30 to 60 personnel.

This is often a formidable, demanding tour that provides a large piece of one's tactical and leadership base. So what changes when a prospective department head is assigned to a submarine that will spend the majority, if not entirety, of the tour in the shipyard?

To start, it is important to note that department heads have a few specific objectives to achieve during their tours. In addition to taking on increased responsibility and serving a larger group of Sailors, they will now be ranked against their peers in their parent squadrons. Being ranked favorably makes the department head more competitive for being screened to advance to a submarine XO. In addition, each department head, with the exception of the SUPPO, should qualify for command, which entails a comprehensive qualification card and numerous required demonstrations of capabilities to the CO, served COs, or major commanders.

For the ENG, while there is a loss in operational experience from a perspective of ship driving, they have a demanding job in the shipyard as they run the engineered overhaul. Correspondingly, their ability to screen for XO coming out of these jobs is on par with, if not better than, their peers. SUPPOs will typically do well as they do not remain in the submarine community following this sea tour. However, the NAV and WEPS have challenges.

The NAV, as this billet name suggests, does not do any navigating while the boat is in the shipyard. As for the operations side of this billet, there is little along the lines of operational planning to oversee. Correspondingly, a WEPS does not have any weapons loaded aboard, nor does a WEPS have the ability to execute operations in a theatre where his skill sets are most needed. So is this the end? Absolutely not.

The path to success might not be easy, but *Asheville* is proof that this is by no means the end for department heads who have what it takes to move on. The simplified model below ensures that the WEPS/NAV are not at a disadvantage when being compared with their peers at the XO selection board.

- Peer Mentoring: Learn from submarine squadron counterparts. Remain visible by participating in routine training and updates. Stay involved in waterfront briefs and activities.

- Collateral Duties: There are typical collateral duties that come with each department head position; expand beyond this into areas considered outside the norm.

- Creative Trainer: Think outside the box as to how to train the department while in the shipyard. Use off-hull training facilities to execute the plan.

- Short Rides: These are short underway periods allowing involvement in high-profile examinations (TREs/ORSEs) or other exercises of opportunity.

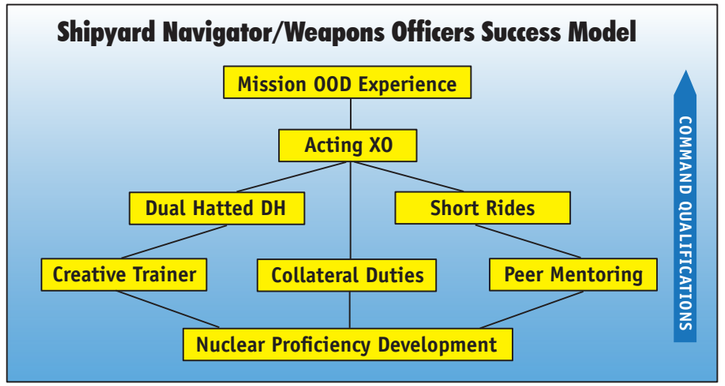
- Dual Hatted DH: Take advantage of another department head being deployed or away to step in and run the department.

- Acting XO: Take every opportunity to be the XO to run day-to-day operations on the boat and interact with squadron leadership.

- Mission OOD Experience: Find a window to deploy, requalify OOD, and gain invaluable tactical and leadership experience.

- Nuclear Proficiency Development: Get involved with the work in the engine room. Although the Engineer is running the infrequent maintenance; the planning, training, and execution of these complex evolutions is useful for all officers.

- Command Qualifications: An aggressive approach to command qualifications can have the department head finishing in the minimum required time of two years.



Following this model, *Asheville*'s previous NAV spent 16 months in drydock and screened for XO before transferring. *Asheville*'s currently assigned WEPS has spent 24 months in drydock and screened for XO below zone. While the department head must demonstrate the aptitude to move on, a careful combination of the above elements will allow a shipyard-bound WEPS or NAV to be on par with or ahead of their peers.

"Although there is no perfect road map for managing professional growth while landlocked during an extended overhaul, adopting a dynamic leadership method focused on fulfilling individual skills needed to be successful at sea will holistically improve the Submarine Force while boosting morale."

As many factors make each shipyard period unique, modernization and repairs are necessary to maintain our technological edge over our adversaries. Each leadership team strives to arrive back at sea with a healthy team ready to execute national tasking in the nominal workup time. While there will always be a need to knock the rust off and re-establish baseline proficiency, the Submarine Force as a whole will see its best return on investment from people-first organizational approaches. The reality is that, at some point in our Sailors' careers, they will probably serve on a submarine undergoing overhaul. Although there is no perfect road map for managing professional growth while landlocked during an extended overhaul, adopting a dynamic leadership method focused on fulfilling individual skills needed to be successful at sea will holistically improve the Submarine Force while boosting morale.

NPTU Graduates First Enlisted Female Sailors

The first female nuclear-trained Sailors from Naval Nuclear Power Training Unit (NPTU) Ballston Spa, N.Y. and NPTU Charleston S.C. were selected to serve as enlisted women in Submarines.

BALLSTON SPA

From left: Capt. David Fowler, Commanding Officer, PO2 (EMN) Whitney Bullock, PO2 (EMN) Stefani Piacquadio, and PO3 (EMN) Hunter McKinney. Not pictured: PO3 (ETN) Evelyn Auditor and PO3 (ETN) Tara Bone

"I became interested largely due to the unparalleled sense of pride that radiates from every Submariner I have met. The sense of camaraderie between Submariners is not what I observe from those not in the community that I really want to be a part of."

EMN Whitney Bullock,
Beaumont, Tex.

"Becoming one of the first female reactor operators on a submarine is a once-in-a-lifetime opportunity. Sure, there will be many more strong, intelligent women to follow, but this is the pinnacle point in which we get to make history. "

ETN3 Jazzmine Carroll
Pine Grove, Ill.

CHARLESTON

From left: Capt. David Lott, Commanding Officer, PO2 (MMN-ELT) Shelbie Gorton, PO3 (EMN) Valerie Redmon, PO3 (MMN) Jessica Jadallah, PO3 (ETN) Amber Culver, PO3 (ETN) Jazzmine Carroll, PO3 (MMN-ELT) Haley Rose, PO2 (MMN) Britany Strohl and MCPO(SS) Eric Riddle

Navy Announces Elimination of NWU Type 1

The Navy announced in NAVADMIN 174/16 that it will transition from the Navy Working Uniform (NWU) Type I to the NWU Type III as the service's primary shore working uniform beginning Oct. 1, 2016.

Over the next three years, Sailors may wear either the NWU Type I or III, but effective Oct. 1, 2019, all Sailors will be expected to wear the NWU Type III as their primary Working Uniform when ashore or in port.

While the Navy is developing an incremental regional fielding plan for the NWU Type III, this transition period will give Sailors time to prepare for the change and allow them to get maximum wear out of recently purchased NWU Type I uniforms.

This change is the first step in a multi-phased process that will streamline and consolidate the Navy's uniform requirements, and ultimately improve uniformity across the force. The Navy has listened to Sailors' feedback and is incorporating their desires to have a working uniform that is better fitting, more breathable and lighter weight.

NWU Type III will be issued to new accessions and recruits beginning Oct. 1, 2017.

Until further policy guidance is promulgated, black boots will be the standard boot worn in the United States and its territories with the NWU Type III. However, expeditionary forces in the United States or any forward deployed forces may wear the desert tan or coyote brown boots at the discretion of the unit commanding officer with the NWU Type III. Additionally, Sailors may wear the NWU Type I black fleece liner.

Sailors will be able to buy NWU Type III components for personal wear through Navy Exchange uniform stores and call centers once there is sufficient inventory on hand.

U.S. Fleet Forces Command (FFC) continues its multi-phase wear test of improved flame resistant variant (IFRV) working uniform components, for shipboard wear. FFC most recently conducted in-depth focus groups with fleet Sailors aimed at refining the design of the IFRV coverall. Additional feedback from the focus groups, subsequently validated by a senior level working group, resulted in the preliminary design of a more professional looking two-piece utility shipboard uniform that can be worn both at sea and operational support jobs ashore. Wear tests of the prototype two-piece variants are expected to occur in 2017.

SailorsFirst

2016 Ombudsman of the Year Recipients

The recipients of the 2016 Mrs. Sybil Stockdale Ombudsman of the Year Award were announced Sept. 29 during an ombudsman appreciation dinner at the Virginia Beach Convention Center.

The award, presented by Chief of Naval Operations Adm. John Richardson and his wife, Dana, recognized four of the Navy's top ombudsmen who served their command and families with selfless dedication and commitment to family readiness.

The following ombudsmen were nominated for the awards by their commanding officers:

Amy Anderson, ombudsman for Commander, Submarine Force, Atlantic, representing all naval shore activities in the Navy.

Julie Pratt, ombudsman for SEAL Team 1, representing sea commands under Commander, U.S. Pacific Fleet.

Elaine Allen, ombudsman for Navy Operational Support Center North Island, representing all Reserve commands under Commander, Navy Reserve Force.

Kelly Sperry, ombudsman for amphibious assault ship USS *Kearsarge* (LHD 3), representing sea commands under Commander, U.S. Fleet Forces Command.

Enlisted Applicants Being Accepted to 2017 Medical Program

The Navy is seeking five enlisted Sailors for its 2017 enlisted to medical degree preparatory program (EMDP2) cohort at the Uniformed Services University of the Health Science (USUHS) beginning September 2016.

EMDP2 is a two-year program for academically-promising enlisted service members to complete preparatory coursework making them competitive medical school applicants.

The program convened in 2014 with a class of five Soldiers and five Airmen. In 2016, the program welcomed its first cohort of Sailors and Marines.

The application deadline is Nov. 1 and the selection board will convene in December 2016.

EMDP2 is a partnership between USUHS and the armed services. It is a 24-month, full-time academic program that includes intensive coursework, preparation, and mentoring for the students' medical school application. Once students complete the program, they are eligible to compete for entrance into USUHS or any civilian medical school in the United States. Students are not guaranteed admission or commission upon successful completion of the program.

The program is open to all enlisted Sailors with less than 10 years of service. Applicants must have a bachelor's degree from an accredited four year university. International bachelor degrees are accepted only if the applicant has a master's degree obtained in the United States or Canada. Applicants must also be citizens and Sailors of good standing with no record of court-martial conviction, nonjudicial punishment, or civilian felony charges. For a full list of application requirements, reference NAVADMIN 202/16 at www.usuhs.edu/emdp2, www.med.navy.mil/

Welcome Home!

Machinist's Mate Weapons 2nd Class Jeramy Coleman, right, holds his daughter, Sage, and kisses his wife, Liz, on the pier during a homecoming ceremony for the *Los Angeles*-class attack submarine USS *Topeka* (SSN 754). *Topeka* arrived at Polaris Point for its first Guam homecoming following a two-month forward operating period to the Western Pacific.

Photo by Lt. Lauren Spaziano

SailorsFirst

Navy College Website Receives Major Upgrade

The Naval Education and Training Professional Development Center (NETPDC) launched a major redesign and upgrade of the Navy College Program (NCP) website Oct. 1.

Designed to complement and support the NCP's Virtual Education Center (VEC), the redesigned NCP website greatly improves the ability for Sailors, commands and academic institutions to access Voluntary Education (VOLED) information.

Sailors will notice several new tools designed specifically for the NCP website:

- Text and web-chat features available from 6 a.m. - 9 p.m. EST.
- A searchable knowledge database with Frequently Asked Questions.
- A "Call-Back" feature where Sailors can complete an online form requesting a representative from VOLED contact them about a question or concern.
- An E-Request/ticket system where Sailors can complete an online request to have an issue resolved and tracked.
- A self-scheduling tool for education counseling that will have separate calendars for the VEC and Navy College Offices in Kitsap, Wash., Jacksonville, Fla., Norfolk, Va., and San Diego.
- The "Wizard" tutorial, which takes Sailors step-by-step through the TA process with links to WebTA training and videos.
- A centralized e-mail system where Sailors can choose from a list of standard subjects and their e-mail will be directed to the appropriate counselor for reply.

The URL for the new Navy College Program website is: www.navycollege.navy.mil

USS *N. Carolina* Sailors Renovate Local School

Sailors assigned to the *Virginia*-class fast-attack submarine USS *North Carolina* (SSN 777) volunteered to help clean and renovate Navy Hale Keiki School.

Led by Chief Electronics Technician (Sel) (SS) Justin Brown and Yeoman 1st Class (SS) Kawon Harrington, Sailors from the *North Carolina* crew cleaned and painted the entire school over weekends in July and August.

Along with the glowing smiles of the kids and staff at the school, Sailors felt a sense of achievement after taking part in renovating the school.

The *North Carolina* recently entered an extended in-port period and its Sailors were looking for opportunities to help their communities.

The submarine crew will carry on their relationship with the school through future volunteer opportunities, including student tutoring, mentoring, and cosmetic improvements to the school.

***UNDERSEA WARFARE* Magazine has created this new section in recognition of the enlisted Submariner—but we want you to get involved in the success of this effort. We would like you to send us "Community Outreach," or "Liberty" photos, and/or "Homecoming" photos of families being re-united as the crews return.**

Send your submissions to the Military Editor via email to: underseawarfare@hotmail.com

Sailor students assigned to Naval Submarine School (SUBSCOL) on Naval Submarine Base New London (SUBASE) and representing team "Sardines" are awarded overall winner of Battle of the Commands by Capt. Paul Whitescarver, commanding officer of SUBASE at North Lake on SUBASE, Aug. 20. Battle of the Commands is an annual event hosted by SUBASE Morale, Welfare and Recreation.

New Retirement System Info Released

Signed into law in November 2015, the FY16 National Defense Authorization Act (NDAA) created a new military retirement system for service members. The new Blended Retirement System (BRS) goes into effect Jan. 1, 2018. However, Sailors who are currently serving in the Navy will be grandfathered into the current retirement system. Active Component Sailors with less than 12 years of service (as of Dec. 31, 2017) and Reserve Component Sailors with fewer than 4,320 retirement points (as of Dec. 31, 2017) will be able to opt-in to the new retirement plan if they choose to do so.

Unlike the current retirement system, which provides a retirement pension of 2.5 percent of base pay for every year of service (YOS), BRS provides automatic and government matching Thrift Savings Plan (TSP) contributions, a mid-career Continuation Pay, and a retirement pension of 2.0 percent of base pay for every YOS.

Under BRS, members that leave the military before earning a retirement pension take with them their TSP account including government contributions after completing two years of service. Additionally, members enrolled in BRS that earn a retirement pension can choose to receive a portion of their pension in a lump sum in exchange for a reduced retired pay until reaching full retirement age.

In an effort to facilitate a smooth transition to BRS, all Navy service members will be required to complete either the BRS Leader's Training course, which is now available on Joint Knowledge Online (JKO) and Navy E-learning or the BRS Opt-in Training course that will go live early in 2017 according to the NAVADMIN.

To ensure service members have the information they need to make informed choices on BRS, four targeted education courses are being developed and deployed including, the recently released training for leaders in October 2016, a course for financial and retirement counselors in early 2017, a course for Opt In Eligible members, and in January 2018 a course that is specific for new accessions. Training will be available on JKO, Navy E-Learning or via DVD's which can be ordered from Defense Imagery Management Operations Center (DIMOC).

Sailors can also find information on BRS at the Department of Defense BRS web page http://militarypay.defense.gov/blendedretirement. This page will be routinely updated with the most recent information and tools on the new retirement system.

Changes of Command

Naval Submarine Support Center, New London (NSSC NLON), Cmdr. Brian Nowak relieved Cmdr. Michael Burianek

COMSUBRON 7
Capt. Robert A. Roncska relieved Capt. Craig R. Blakely

COMSUBRON 15
Capt. David Schappert relieved Capt. Jeffrey Grimes

USS *Albany* (SSN 753)
Cmdr. Roy L. Wilson Jr. relieved Cmdr. Robert Landis

USS *Emory S. Land* (AS 39)
Capt. Douglas A. Bradley relieved Capt. Mark A. Prokopius

USS *Tucson* (SSN 770)
Cmdr. Chad Hardt relieved Cmdr. Michael Beckette

USS *Pennsylvania* Arrives in Guam

The ballistic missile submarine USS *Pennsylvania* (SSBN 735) arrived at Apra Harbor, Guam, for a scheduled port visit.

Photo by Seaman Daniel S. Willoughby

Qualified for Command

Lt. Brian Legare
USS *Florida* (SSGN 728) (G)

Lt. Robert Moreno
USS *Dallas* (SSN 700)

Qualified in Submarines

Lt. j.g. Christian Barresimercado
USS *Alaska* (SSBN 732) (G)

Lt. j.g. John Grant
USS *West Virginia* (SSBN 736) (B)

Qualified Nuclear Engineering Officer

Lt. j.g. Austin Anderson
USS *Springfield* (SSN 761)

Lt. j.g. Cooper Barth
USS *Tennessee* (SSBN 734) (G)

Lt. Jonathan Bottler
USS *San Francisco* (SSN 711)

Lt. Matthew Brooks
USS *Tucson* (SSN 770)

Lt. Zachary Bunting
USS *Kentucky* (SSBN 737) (B)

Lt. j.g. Clayton Callander
USS *Houston* (SSN 713)

Lt. George Campion
USS *Mississippi* (SSN 782)

Lt. j.g. Michael Canavaciol
USS *Maryland* (SSBN 738) (B)

Lt. j.g. Nicholas Castillo
USS *Michigan* (SSGN 727) (G)

Lt. Eric Chang
USS *West Virginia* (SSBN 736) (G)

Lt. j.g. Corey Cicio
USS *Houston* (SSN 713)

Lt. j.g. Thomas Collier
USS *Tucson* (SSN 770)

Lt. j.g. Mary Coyne
USS *Maine* (SSBN 741) (B)

Lt. j.g. Daniel David
USS *Topeka* (SSN 754)

Lt. Patrick Ehrlicher
USS *Hartford* (SSN 768)

Lt. j.g. John Gannon
USS *Nebraska* (SSBN 739)

Lt. j.g. Adam Goetz
USS *Henry M. Jackson* (SSBN 730) (B)

Lt. j.g. Andrew Haines
USS *Bremerton* (SSN 698)

Lt. Jonah Harris
USS *Albuquerque* (SSN 706)

Lt. j.g. Matthew Hartung
USS *New Hampshire* (SSN 778)

Lt. j.g. Matthew Hulst
USS *Tennessee* (SSBN 734) (G)

Lt. j.g. Samuel Jensen
USS *Hartford* (SSN 768)

Lt. Jeremy Kasik
USS *Missouri* (SSN 780)

Lt. Patrick Kelly
USS *Helena* (SSN 725)

Lt. j.g. Jonathan Madary
USS *Montpelier* (SSN 765)

Lt. Jesse Marder
USS *Maine* (SSBN 741) (G)

Lt. Brian McGarvey
USS *Henry M. Jackson* (SSBN 730) (B)

Lt. Grant Morgan
USS *Texas* (SSN 775)

Navy's 2016 Stockdale Award Recipients Announced

The Navy announced the two 2016 Vice Adm. James Bond Stockdale Leadership Award recipients Aug. 30 in NAVADMIN 194/16.

Cmdr. Gary G. Montalvo, commanding officer of USS *North Carolina* (SSN 777), is the Pacific Fleet recipient and Cmdr. Ken J. Kleinschnittger, former commanding officer of Explosive Ordnance Disposal Mobile Unit (EODMU) 12 and currently working with Navy Expeditionary Combat Command forces, is the Fleet Forces recipient.

The two recipients were nominated by their peers, who were also eligible for the award, and chosen from among eight finalists to receive the award.

Photo by Mass Communication Specialist 2nd Class M.J. Gonzalvo

Montalvo was nominated by the commanding officer of USS *Buffalo* (SSN 715), Cmdr. Micah Maxwell, who wrote the nomination was "in recognition of his outstanding performance and unquestionable leadership acumen while in command of a heavily decorated, deployed submarine crew."

Three commanding officers nominated Kleinschnittger for the award. In his nomination letter, Cmdr. Jeremy F. Thompson, commanding officer of EODMU 1, stated Kleinschnittger "is known throughout the EOD, SOF (Special Operation Forces), and joint communities for his strength of character, inspirational command presence, and humble approach to leading men and women."

Montalvo and Kleinschnittger are scheduled to receive their awards from Chief of Naval Operations Adm. John Richardson at a ceremony later this fall.

Lt. j.g. Tyler Nagel
USS *Nevada* (SSBN 733) (G)

Lt. j.g. Tyler Nichols
USS *Tennessee* (SSBN 734) (G)

Lt. j.g. Christopher Paulson
USS *Bremerton* (SSN 698)

Lt. j.g. Joseph Pottratz
USS *Charlotte* (SSN 766)

Lt. j.g. Allen Powell
USS *Nevada* (SSBN 733) (G)

Lt. j.g. Brian Roofner
USS *Cheyenne* (SSN 773)

Lt. Brent Shawcross
USS *Annapolis* (SSN 760)

Lt. j.g. Luke Talbot
USS *Newport News* (SSN 750)

Lt. j.g. Christopher Tomlinson
USS *New Mexico* (SSN 779)

Lt. j.g. Timothy Tyree
USS *Chicago* (SSN 721)

Lt. j.g. Jeanne Vangilder
USS *Florida* (SSGN 728) (G)

Lt. j.g. Joseph Walter
USS *Asheville* (SSN 758)

Lt. j.g. Glenn Walton
USS *Newport News* (SSN 750)

Lt. j.g. John Whitaker
USS *Hampton* (SSN 767)

Lt. Elliot White
USS *Michigan* (SSGN 727) (G)

Lt. Mackenzie Wilsey
USS *Springfield* (SSN 761)

Lt. j.g. Christopher Worosz
USS *Columbus* (SSN 762)

Lt. j.g. Dean Zettler
USS *Maryland* (SSBN 738) (G)

Rear Adm. William R. Merz and Rear Adm. Richard Correll exchange salutes during their change of command ceremony. Correll relieved Merz as the 45th commander of Submarine Group 7.

Photo by Mass Communication Specialist 2nd Class Brian G. Reynolds

USS *Illinois* (SSN 786) commissioned

The U.S. Navy with assistance from the First Lady Michelle Obama commissioned and brought to life the newest *Virginia* class submarine, USS *Illinois* (SSN 786), during a ceremony attended by more than 2,500 at Naval Submarine Base, New London on Oct. 29, 2016.

Illinois, named in honor of the 21st state, is the 13th *Virginia*-class, fast-attack submarine to join the Navy's operational fleet.

The first lady, who is the ship's sponsor, expressed how proud she was of the crew and their families.

"There are many out there who have been waiting a long time to address you—not as a PCU, but as a United States Ship—the USS *Illinois*-a warship," said key note speaker, Chief of Naval Operations, Adm. John Richardson.

Illinois is the third of eight Block III *Virginia*-class submarines to be built. The Block III submarines are built with new Virginia Payload Tubes designed to lower costs and increase missile-firing payload possibilities. The first 10 Block I and Block II *Virginia*-class submarines have 12 individual 21-inch diameter vertical launch tubes able to fire Tomahawk Land Attack Missiles (TLAMS). The Block III submarines are built with two-larger 87-inch diameter tubes able to house six TLAMS each.

USS *Illinois* Commanding Officer, Cmdr. Jessie Porter, highlighted the *Illinois*' capability to dominate the undersea domain and enable military success in any engagement.

"Over the coming years, this submarine—and others like her—will continue the impressive legacy that our submarine forbearers have established in making our country more secure," said Porter.

"The *Illinois* has joined the fleet," said Porter. "The crew of *Illinois* has assumed our watch, a watch that will continue for the next 30 years, always waiting for the call, always ready."

During the ceremony, Obama had the opportunity to announce *Illinois*' Sailor of the Year, Petty Officer First Class Ryan Mock.

Illinois is a flexible, multi-mission platform designed to carry out the seven core competencies of the Submarine Force: anti-submarine warfare; anti-surface warfare; delivery of special operations forces; strike warfare; irregular warfare; intelligence, surveillance and reconnaissance; and mine warfare.

Photos by Chief Petty Officer Darryl I. Wood

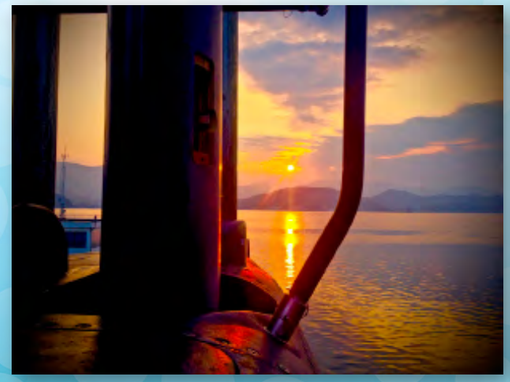
1st Place—"USS *Alexandria* Sunset in Bahamas"
By SCPO(SS) Greg Foerster, EDMC USS *Alexandria* (SSN 757)

The Naval Submarine League Presents

18th Annual Photo Contest Winners

2nd Place—"The Coming Storm"
By Mark Turney, CIV TRF Kings Bay, Georgia

Honorable Mention—
"Honoring Our Country Never Takes a Break"
By James R. Cleveland, CIV Portsmouth Naval Shipyard



3rd Place—"Korean Sunrise Over USS *Bremerton*"
By PO2/SS Rigo Baca

Photo by Fran Moff

USS *Lionfish* (SS 298)

Fall River, Mass.

The keel of the *Balao*-class submarine USS *Lionfish* was laid by Cramp Shipbuilding Corp. in Philadelphia on December 15, 1942. She was launched almost a year later on November 7, 1943, and was commissioned one year after that on November 1, 1944. She departed New England for the Panama Canal on January 8, 1945 and arrived at Saipan on March 30 ready for her first war patrol.

Lionfish left Saipan for enemy territory in the Yellow Sea on April 2, 1945. On April 11, the junior officer on deck "sighted a persistent white cap" heading toward them and got the boat turned away in time to watch two torpedo wakes run parallel to their new course. On May 1, she encountered a three-masted schooner carrying lumber, which she left "burning merrily" after attacking it with her deck guns. On May 9, she rendezvoused with USS *Ray* (SS 271) to take aboard 10 surviving crew members from a downed B-29 and, after a brief lifeguard duty, headed back for Saipan and then Midway.

On June 20, 1945, *Lionfish* got underway on her second and final war patrol, first to lifeguard duty and then to patrol west of the approach to Bungo Suido. Her crew spotted a Japanese *I*-class submarine on July 10 and fired torpedoes from tubes 1 through 5. One hit was heard followed by another, after which the target's propellers stopped. *Lionfish* surfaced to see smoke where the target had been and heard breaking up noises that "sounded like a tin can being crumpled up." The sinking could not be confirmed by post-war records, however. After two more attacks on enemy submarines, both unsuccessful, she patrolled off of Honshu on lifeguard duty until hostilities ended on August 15.

Lionfish returned to Mare Island in September 1945 and was decommissioned January 16, 1946. She was recommissioned in January 1951 to serve as a training vessel, first at Key West, Fla., and then at New London. During the latter half of 1952, she made cruises to the Bahamas and the Mediterranean and participated in four NATO exercises.

Decommissioned on December 15, 1953 at Boston Navy Yard, *Lionfish* joined the Atlantic Reserve Fleet. She served as a reserve training submarine in Providence, R.I., from March 1960 to December 1971. *Lionfish* received one battle star for her WWII service.

Since 1972, USS *Lionfish* has been on permanent display as a memorial and National Historic Landmark at Battleship Cove in Fall River, Mass. Visitors to Battleship Cove can also tour the battleship USS *Massachusetts* (BB 59), the destroyer USS *Joseph P. Kennedy, Jr.* (DD 850), a Soviet-built East German missile corvette, and two PT boats.