

**THE
SUBMARINE
REVIEW**



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FROM THE PRESIDENT

The 2018 NSL Annual Symposium and Industry Update was held in Arlington, Virginia on November 7 and 8, and by all metrics was a big success. Many thanks go to our small NSL Staff for expertly planning and executing the symposium. The event was sponsored by 24 of our Corporate Members. Over 650 people attended, almost 100 more than in 2017. Last year, we moved to a hotel with larger meeting and exhibit space, so we could easily accommodate 34 exhibitors, compared to the 24 exhibitors we had in 2017.

There have been some significant changes at the headquarters of our growing organization. In particular, the move from an office condominium complex in Annandale to an office building in Old Town Alexandria has provided a modern office space with more room for offices, storage and meetings. The increased number and size of meeting rooms is especially promising. As part of our efforts to attract more small businesses to join the NSL, we will launch the “NSL Breakfast Business Exchange” in January. The BBE (yes, another new acronym) will offer topical presentations of interest to businesses of all sizes who are investing in submarines and the undersea domain. We hope to host several of these events at the headquarters each year, with the possibility of making them available across the country electronically.

Our first BBE will be on 24 January 2019, and will feature NSL life member Mr. Dick McNamara, who will provide an “Overview of the Policy Directives for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) and Current Plans.” When Dick was the Deputy Program Executive Officer (Submarines), he promoted the use of SBIRs to provide \$2 billion in funding to augment the submarine acquisition budget. Dick is now a consultant to NAVSEA on small business development. The focus areas for SBIR/STTRs have recently shifted, and Dick’s presentation will answer questions about what this could mean for our corporate members. This session is being sponsored by L3 Technologies. Registration for the BBE will be available on the NSL website on the Events Page.

Finally, we continue to strive to boost the League’s individual membership. If you know someone who might be interested in joining the

Submarine League, please encourage him or her to visit our web site at www.navalsubleague.org. Membership fees start at as little as \$30 for a three-year electronic membership. Students are eligible for a free one-year membership. Active duty submariners, both enlisted and officers, and their parents or other extended family members are especially welcome.

John Jay Donnelly
President

President@navalsubleague.org

NOTES FROM NSL HEADQUARTERS

Happy Holidays from the Naval Submarine League Headquarters!

NSL ELECTION RESULTS

This year, more than 751 ballots were received for Board of Director Elections – more than double previous years. Elected for a second 4-year term: VADM John Bird, USN, Ret. Elected for a first 4-year term: VADM Rick Breckenridge, USN, Ret.; Bob Hogue [former STS1 (SS)]; and CAPT Brad Kratovil, USN, Ret. There were several write-in candidates, whose names will be considered by the Nominating Committee next year. Many thanks to ADM Skip Bowman, USN, Ret.; CAPT Kevin Peppe, USN, Ret.; and Carlo Zaffanella, who rotated off the Board and whose service has been greatly appreciated.

BREAKFAST BUSINESS EXCHANGE MEETINGS

The first “NSL Breakfast Business Exchange” will take place January 24, 2019. The morning meeting is a new opportunity designed to bring practical information to help businesses in the submarine and undersea communities. This will be the first of four sessions presented by Mr. Dick McNamara, former Deputy PEO Submarines and SIBR expert. The title is “Policy Directions for SBIR/STTR and Current Plans.” The event is being sponsored by L3 Technologies.

Corporate members: if your company would be interested in sponsoring sessions 2, 3 or 4, or if there is a topic or speaker your company would like to propose, please contact corpmem@navalsubleague.org.

2019 CORPORATE MEMBER DAYS

Corporate Member Days are fast-approaching. This Corporate Members-only event will be 7-8 March (Thursday and Friday) at the Westin Washington DC City Center.

Corporate Members are invited to sponsor the event. See the benefits of Corporate Membership on our website: www.navalsubleague.org.



EDITOR'S NOTES

Greetings to you all this holiday season. Our Annual Symposium was a success, we plan on sending you the transcripts of the presentations in our next issue for your perusal. This issue has a cross-section of current issues and past historical food-for-thought.

Before we go further, in light of the passing of President George H.W. Bush, we are pleased to have a description of his rescue by the World War II submarine *Finback*. Dick Brown, a regular contributor living in New Mexico, researched this event upon hearing of President Bush's death and wrote this article for us. We thank him and are pleased to provide it for you. President Bush was an Honorary Member of the Naval Submarine League and a copy of his note thanking Vice Admiral Chuck Griffiths is printed along with the article.

Major power peer competition and national strategy are on the minds of all of us. Major Michael Chan, of the Republic of Singapore Navy, has written an excellent essay on *China's Rising Challenge*. The article published in this issue is a later version of the essay he wrote while studying at the U.S. Naval War College and was selected as the winner of the Naval Submarine League literary award. We are fortunate to have an officer from the Western Pacific share his perspectives with us. Major Chan is currently back at sea with the Singapore Navy.

Along the lines of where our Navy stands with respect to peer competitors, LCDR Ryan Hilger gives us a poke in the eye with his essay on where we stand in development of artificial intelligence, weapons and strategy. Ryan has recently been assigned to Strategic Systems Programs (SSP) and we expect to continue to hear from him in the future. Next, we have LT Bryan Lowry who has submitted a paper he wrote for his coursework at the Naval Post Graduate School in Monterey. Bryan's essay looks at the two occasions in which submarines engaged in submarine warfare since World War II and draws some lessons from these experiences.

Then we switch to recent history accounts from three senior submariners. RADM Al Kelln, who was one of the founders of the Naval Submarine League, has written his recollections of the events, actions and efforts of those people directly involved with the advent of the League. His account is insightful and provides those of us who follow in his

footsteps, a clear sense of the original mission of the leadership at that time. The next two articles are interview transcripts. RADM Jim Murray, another founding member, recalls his career experiences which also include interesting sequences when he was directly involved in laying the foundation for this journal, *The Submarine Review*. Thirdly is an interview with VADM John Nicholson. Admiral Nicholson's interview begins during World War II and chronicles his experiences from the very early days of Admiral Rickover's Nuclear Program through to his senior flag experiences. History is a good teacher and we can benefit from their experiences.

To continue with the theme of sharing experiences, we have two articles that provide widely different views. The first, from a former shipmate of mine, CAPT Al Lawver, provides an intriguing view of two ships that shared their name, and the connection runs much deeper. The next article was submitted by a retired Army officer. The connection happens to be that he had a career working in the Navy Motion Picture Service. LTCOL Northacker relates the evolution of motion picture entertainment aboard ships and specifically submarines over the course of his career, interesting!

The Naval Submarine League honored two distinguished submariners at the Annual Symposium, Admiral Hank Chiles and Rear Admiral Jerry Holland. These officers need no introduction, but we have included the reflections of some of our fellow submariners to help express our admiration of these men.

In the relatively short time that I have been Editor, two years now, I have encouraged our readers to share their ideas by submitting them for publication. I would like to be a little more specific now and ask those of you who, like LCDR Hilger in this issue, have suggestions or ideas as to technological advances that our Submarine Force should take, to submit your thoughts in the form of an essay for publication in the *Review*. We plan to dedicate our September 2019 issue, following the 2019 Submarine Technology Symposium, to future submarine technology and we would appreciate your support.

That's it for 2018, Good Hunting!

Mike Hewitt

Editor@navalsubleague.org



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**The Undersea Cauldron:
China's Rising Challenge to U.S.
Undersea Dominance
By Major Michael Seng Chan,
Republic Of Singapore Navy**

An earlier edition of this article was selected as the Naval Submarine League award-winning paper from the Naval War College. —Ed.

INTRODUCTION

Since the 20th century, the undersea has become an increasingly contested and strategically important domain, fueled by the exponential advancement of undersea technology. This domain first became a key area of contention with the advent of large-scale submarine operations over the two World Wars, where Allied forces employed anti-submarine convoys to counter German U-boats in Europe and the Atlantic, and turned the tables to engage in unrestricted submarine warfare to cripple the Japanese war effort in the Pacific.¹ The devastating effect of adversarial submarine fleets against surface ships during both wars provided stark evidence that undersea superiority had become critical in ensuring the freedom of movement on the sea, and a lack thereof, particularly when facing a formidable adversary, could ultimately pose an existential threat for maritime nations. Therefore, the undersea continued to be highly contested during the Cold War where the United States developed an array of anti-submarine forces to mitigate the Soviet submarine threat. Beyond the security realm, this domain has also surged in economic importance. As land resources grow scarce and deep-sea exploration technology continues to advance, countries are turning towards undersea resources to meet rising energy and rare mineral demands.² More crucially, the ocean floor is presently home to about 300 transoceanic submarine cables through which more than \$4 trillion worth of financial transactions and 95 percent of the world's voice and internet traffic flow.³ Hence, while the undersea today is not as fiercely contested as in the 20th century, the strategic importance of achieving and maintaining undersea superiority has indeed burgeoned with potential adversaries being better equipped to exploit the domain for one's security and economy.



Having built significant submarine forces and anti-submarine capabilities to counter the Soviet submarine fleet during the Cold War, the United States eventually gained dominance of the undersea following the Soviet Union's dissolution in 1991. To find, track, and hold-at-risk Soviet submarines around the globe, the United States deployed 184 ASW-capable destroyers and frigates, 102 nuclear attack submarines, and 450 P-3C maritime patrol aircraft by the 1980s.⁴ The United States also developed passive and active sonar systems, including the Sound Surveillance System (SOSUS) which was established at strategic undersea locations worldwide as well as the Surveillance Towed Array Sensor System (SURTASS) which enabled the U.S. Navy to track Soviet nuclear submarines.⁵ Thus, after the Soviet Union's demise, the United States became the sole proprietor of undersea supremacy and has hitherto been able to operate with "near-impunity throughout the world's oceans and littoral waters" and maintain awareness of submarine activities along strategically important waterways.⁶ There is, however, an emerging challenge to U.S. undersea dominance particularly in the Indo-Pacific region with China rapidly building up its submarine forces, ASW capabilities, and naval logistics support in order to strengthen its maritime defenses and influence within its "near" and "far" seas, which portends far-reaching implications for U.S. regional influence and position.¹

CHINA'S GROWING UNDERSEA WARFARE CAPABILITIES

China's Naval Objectives: "Near Seas" Defense & "Far Seas" Protection

Since 2013, China's naval objectives have primarily become two-fold – "*near seas*" defense and "*far seas*" protection. Severely scarred from its century of humiliation during which Western powers and Imperial Japan mounted numerous invasions from the South and East China Seas, the People's Republic of China, following its founding in 1949, charged its navy to strengthen its coastal defenses to prevent further sea-borne infiltrations.⁷ Yet, China lacked a robust overarching naval strategy until it finally adopted then-Commander of the PLA Navy (PLAN) Admiral Liu Huaqing's "offshore waters defense" strategy in 1987 which premised on *exerting control and defending China's near seas to protect its territorial sovereignty, safeguard its immediate sea lines*

¹ China's "near seas" refers to the waters within its first island chain which includes the Yellow Sea, and South and East China Seas, while the "far seas" refers to the waters beyond East Asia.

of communications, and facilitate a forceful reunification with Taiwan through military means if required.⁸ Given China's longstanding perception of U.S. regional presence as a key security threat, China has continued to pursue the strengthening of its near sea defenses with Chinese President Xi Jinping reasserting in 2014 the need for "an impregnable wall for border and ocean defense."⁹

With growing overseas maritime interests where more than 60 percent of its trade and 80 percent of its oil imports travels by sea, China has since 2013 stressed the need to become a maritime power to ensure its economic prosperity and national development.¹⁰ At the 18th Chinese Communist Party Congress, outgoing President Hu Jintao declared that "China should enhance its capacity for exploiting marine resources... resolutely safeguard its maritime rights and interests, and build China into a maritime power."¹¹ President Xi has expectedly continued to champion the cause, stating in a subsequent party meeting that "China should do more to promote its efforts to become a maritime power."¹² In accordance with China's 2015 defense white paper which stated the need to *protect China's maritime interests and sea lines of communications in the far seas*, the PLAN intends to shift its objectives from "offshore waters defense" to the "combination of offshore waters defense with open seas protection," and enhance its strategic deterrence, counterattack, and maritime maneuver capabilities.¹³

China's Courses of Action: Anti-Access/Area Denial and Power Projection

To achieve its near- and far sea objectives, China turned towards active strategic counterattacks on exterior lines (ASCEL), analogous to the Western concept of anti-access/area denial (A2/AD), and blue-water power-projection respectively. Through the establishment of A2/AD defenses in its near seas, China could deny potential adversaries the freedom of maneuver within the first island chain and prevent them from intervening in a potential China-Taiwan conflict or attacking the Chinese mainland.¹⁴ China could thereby preclude a repeat of the 1995-96 Taiwan Straits crisis where the United States deployed two U.S. carriers off China's coasts to deter Chinese aggression against Taiwan. In addition, to enable the protection of its growing maritime interests in



the far seas, China could strengthen its blue-water power-projection capabilities in order to sustain naval missions for prolonged periods and at greater distances from Chinese shores. Such missions could include collecting intelligence, protecting sea lines of communications, and providing support to combat missions, which allow China to exert greater regional influence and better safeguard its maritime assets, rights, and interests.¹⁵

However, U.S. dominance of the undersea could turn this domain to be a critical vulnerability and weakness in China's A2/AD and power-projection ambitions. Nevertheless, recent developments in undersea technology, coupled with the unique characteristics of the undersea domain, have presented opportunities for China to mitigate its comparative disadvantages. For instance, the development of Air-Independent Propulsion (AIP) capability which increases diesel submarines' submerged endurance as well as new noise-cancelling technology could enable Chinese attack submarines to narrow their capability gap vis-à-vis U.S. Virginia-class submarines. With littoral waters creating challenges for both submarine detection and submarine operations, China could also establish advanced sensor networks to seize the advantage in its near seas. Furthermore, the recent emergence of unmanned underwater vehicles could yet provide another avenue for China to mitigate its undersea weaknesses. Hence, buttressed by strategic imperatives and significant economic resources, China is developing several undersea warfare capabilities to challenge U.S. undersea dominance and fortify its A2/AD defenses and blue-water power-projection capabilities.

China's Means to Grow its Undersea Warfare Capabilities

First, China is rapidly building and modernizing its submarine force. The PLAN currently operates more than 60 submarines, including 4 new Jin-class nuclear ballistic missile submarines (SSBNs), 5 Shang-class nuclear attack submarines (SSNs), 12 new Yuan-class AIP-equipped diesel submarines (SSPs), and 12 Russian-built Kilo-class diesel submarines (SSKs).¹⁶ In particular, the Kilo- and Yuan-class submarines are widely-recognized as two of the world's premier diesel attack submarines due to their quieting and AIP technologies respectively, and both classes can be equipped with Chinese anti-ship cruise missiles which

have effective ranges of about 290 nautical miles.¹⁷ With China indig-enously building about two new submarines each year, its submarine force is expected to reach 74 boats by 2020, and 100 by 2030. This would include the new Type-095 SSNs that are currently under devel-opment as well as the potentially quieter SSPs given China’s forays into electric-driven propulsion systems and electrically-powered, rim-driven propellers which would further reduce the acoustic signature of their submarines.¹⁸ Besides capability development, the PLAN has also sought to expand the operational reach of its submarines by deploying them to the Indian Ocean region regularly, extending beyond their tradi-tional operating areas within China’s near seas.¹⁹

Given their aggressive buildup, China’s attack submarines would severely outnumber that of the United States within a decade and could pose a credible threat to U.S. maritime interests in the event of a Si-no-American conflict. Despite raising the production rates of Virgini-a-class submarines, the U.S. Navy is facing a dearth of attack subma-rines with its inventory projected to fall to just 41 boats in 2029 following the decommissioning of the aging Los Angeles-class submarines.²⁰ Fur-thermore, unlike China, the United States would need to divide its forces between the Pacific and Atlantic theaters, portending that there would only be 25 U.S. attack submarines deployed to the Indo-Pacific which – according to Commander U.S. Pacific Command Admiral Harry Harris – would only meet half of the region’s peacetime requirements.²¹ While analysts have argued that U.S. submarines could leverage their highly superior ASW capabilities to mitigate their numerical disadvantage, the PLAN submarines’ progressive quieting technology could allow them to evade U.S. submarine detection as well as submarine-on-submarine confrontation completely.²² Indeed, with the PLAN submarines likely to be augmented with land attack capabilities, they would then be able to exploit their stealth and numerical advantage to project operational fires effectively against U.S. seaborne assets and land-based interests. Therefore, while PLAN submarines might not threaten U.S. submarines directly on a technological level, they could nevertheless affect decisive strategic and operational outcomes.

Second, having recognized ASW to be a longstanding critical weak-ness, the PLAN is making significant investments to strengthen its *ASW*



capabilities. The PLAN's newer surface combatants such as the Jiang-kai-II-class destroyers have been augmented with a variable depth sonar, a hangar to embark a Z-9 or Z-18 ASW helicopter equipped with a dipping sonar and ASW torpedoes, as well as the newly developed Yu-8 ASW missile which has a flight range of 40 nautical miles.²³ The PLAN has also built 26 ASW-capable Jiangdao-class corvettes, with 60 more currently in production.²⁴ Equipped with a towed array sonar, these corvettes are able to conduct ASW operations in littoral waters and provide limited ASW protection to the PLAN carriers. For ASW aircraft, the PLAN has sought to replicate the U.S. *P-3 Orion* maritime patrol aircraft and SH-60 helicopters through their *Gaoxin-6s* and *Z-20s* respectively. In particular, the *Gaoxin-6* maritime patrol aircraft would house an array of ASW sensors and weapons including a maritime search radar, a magnetic anomaly detector (MAD), sonobuoys, and air-launched torpedoes.²⁵ Thus, through these acquisitions, the PLAN is developing a nascent "distributed ASW lethality" capability where it could deploy a preponderance of airborne and surface assets to conduct ASW operations within its littoral waters.

Like the United States, China is also investing extensive resources into developing *unmanned underwater vehicle (UUV)* technology, which is widely perceived to be a potential gamechanger and key force multiplier in undersea warfare. Yet, in recent years, China has surged ahead in the UUV race by setting the record for the deepest and longest dives as well as achieving significant technological breakthroughs with its state-of-the-art "*Haiyi*" unmanned underwater gliders.²⁶ More importantly, in July 2017, a swarm of 12 *Haiyi* gliders was deployed to collect and relay underwater data instantaneously to a land-based laboratory – a command and control feat yet to be achieved even by the United States.²⁷ With China expected to eventually employ UUVs for military purposes, this successfully demonstrates that it could soon develop the ability to remotely direct and control a swarm of underwater drones to execute undersea missions. These could include ASW operations and disruption of dual-use undersea infrastructure, which would provide the PLAN with an asymmetric tool to contest undersea dominance.²⁸ As accentuated by its seizure of a U.S. underwater glider in December 2016, China values UUV technology highly and is willing to bear significant

risk to seize the advantage in this potentially disruptive capability.

Beyond hardware development, the PLAN is also strengthening its operational ASW proficiencies. To this end, the PLAN has conducted increasingly advanced ASW drills and has participated in bilateral ASW exercises with the Russian and Pakistani navies.²⁹ Particularly, the PLAN conducted an internal two-sided ASW exercise in 2016 which persisted without interruption for 24 hours under “actual combat conditions” and saw highly coordinated ship-aircraft maneuvers and aggressive submarine prosecutions.³⁰ The evident advances in realism and complexity of PLAN’s exercises suggest that its ASW capabilities are improving, prompting analysts to predict that the PLAN would be able to conduct effective ASW operations within its littoral waters by 2020.³¹ This has significant implications for the U.S. Navy as they have identified the PLAN’s traditionally weak ASW capabilities to be the proverbial Achilles heel of China’s A2/AD defenses which U.S. submarines could exploit. With the PLAN ostensibly gaining headway in mitigating its ASW weakness, the United States could soon be divested of an important silver bullet against China’s A2/AD strategy. Moreover, by its improving ASW competencies, the PLAN could also provide increasingly robust operational ASW protection to its carriers, thereby enhancing its overall blue-water power-projection capability.

Third, China is establishing *an underwater surveillance network* in the South China Sea to improve its ability to detect and monitor submarine operations within its near seas. Aptly named the ‘Underwater Great Wall,’ the network involves a web of surface ships, sonar systems, underwater security equipment, and unmanned submersibles to gather, process, and transmit precise and real-time information regarding underwater targets and the maritime environment.³² The ‘Underwater Great Wall’ – with its incorporation of supercomputers – would be a highly upgraded version of the SOSUS network which the United States employed extensively during the Cold War to counter Soviet submarines. Then, SOSUS was reportedly able to track a U.S. Navy SSBN continuously across the Atlantic Ocean and detect Soviet nuclear submarines entering the Greenland-Iceland-U.K gap.³³ Given its strategic utility, China is likely to eventually deploy its ‘Underwater Great Wall’ in all areas of interest including “the depths of the far seas, around islands



bordering the far seas, as well as in strategic passages.”³⁴ Indeed, China has already trialed the network around its own submarine bases since 2010 and has, in the meantime, deployed two independent cutting-edge acoustic sensor systems in the international waters off Guam.³⁵ In particular, the latter allows the localization of submarines by detecting and intercepting their acoustic communications with undersea cables and sonobuoys.³⁶ With these two technologies, China possesses the ability to monitor submarine activities and operations in strategic locations.

With China expected to undertake a large-scale implementation of its ‘Underwater Great Wall’ in the near future, the PLAN is set to gain a significant boost in its undersea capabilities while mitigating its traditional ASW weakness. By monitoring and analyzing foreign submarine activities over time, the PLAN would be able to ascertain the operational and deployment profiles of potentially adversarial submarine fleets including the U.S. Pacific Fleet Submarine Force. This information could then be exploited as operational and tactical intelligence in the event of a Sino-American conflict. Moreover, there is a possibility that the PLAN could “weaponize” its ‘Underwater Great Wall’ following its procurement of the ‘Reef Defense’ system which aims to incorporate anti-frogman sonar and interception systems as well as short-range air defenses into the surveillance infrastructure.³⁷ Should this upgrade materialize, the PLAN could potentially locate, track, and prosecute underwater threats remotely, further tilting the balance of undersea warfare capabilities vis-à-vis the U.S. Navy.

IMPLICATIONS OF CHINA’S GROWING UNDERSEA WARFARE CAPABILITIES

With its growing undersea warfare capabilities, China could pose a credible challenge to the U.S. undersea dominance in the near future. Following the demise of the Soviet Union, the United States has maintained dominance of the undersea with no other country able to rival its submarine force and undersea capabilities. The U.S. Navy could thereby deploy its submarines around the world largely unopposed, whilst leveraging its undersea surveillance systems to maintain awareness of undersea activities along strategic waterways. Moving forward, this status quo is set to change with the PLAN projected to operate a stronger subma-

rine fleet and establish its ‘Undersea Great Wall’ surveillance network within its near seas. Although the U.S. Navy need not regard the PLAN as a threat to its submarines in this current environment, it could avoid deploying them to China’s near seas to prevent compromising their operational and deployment profiles. In other words, with its submarines and surveillance systems, PLAN could potentially restrict the freedom of maneuver of U.S. submarines through deterrence, thereby eroding U.S. undersea dominance.

On a separate note, China’s advancing undersea warfare capabilities would also buttress its A2/AD defenses and blue-water power projection capabilities. With its expanding submarine force and improving ASW capabilities, the PLAN would be able to strengthen the undersea component of China’s A2/AD, first deterring entry of adversarial submarine and if this fails, bringing to bear substantial firepower against the enemy. These capabilities could also contribute towards PLAN efforts to achieve sea control, for instance, along the Taiwan Straits in order to facilitate a hostile reunification with Taiwan if required. Further afield, China’s undersea growing warfare capabilities would strengthen the PLAN’s blue-water power-projection by conducting submarine operations and supporting carrier operations in the far seas. This could therefore bring about a shift in balance of maritime power in the Western Pacific with China able to exert effective deterrence and defense against the United States.

Beyond kinetic implications, China’s growing undersea warfare capabilities could also portend implications in the non-kinetic realm. Today, more than 95% of the world’s voice and data traffic, including telephone calls, financial transactions, social media posts, and military and diplomatic transmissions, flow through transoceanic undersea fiber-optic cables. Countries therefore have a growing dependency on undersea connectivity for their economic output and health, as well as to execute military operations and coordinate diplomatic missions. Recognizing the increasing value of undersea cables, China has in recent years drastically increased its market share of cable construction projects. Between 2012 and 2015, Chinese companies were only involved in 7 percent of global undersea cable projects and dealt exclusively with projects related to China and Taiwan. Between 2016 and 2019, however, Chinese



companies surged its market share to 20 percent of global undersea cable construction projects, with over half taking place outside the South China Sea. China's increasing submarine cable ownership and construction and its growing undersea warfare capabilities therefore make for an ominous combination.

Despite the importance of undersea cables, they are only protected by a rubber sheath and can be tapped into and disrupted. Indeed, improvements to undersea exploration equipment and UUVs have made the finding of particular undersea cables even easier and faster. Realizing the vulnerability of the undersea cables, China imposed undersea cable protection measures during key events such as the Belt and Road Summit in May 2017 to prevent the disruption of live telecasts and international communications. With its growing undersea capabilities, China would be able to better protect and maintain its undersea cables. On the other hand, these same capabilities could also enable China to disrupt a potential adversary's economy and diplomatic and military missions where a loss of communications for even seconds could have disastrous effects. As Sun Tzu asserted, "to subdue the enemy without fighting is the acme of skill." Given its overall technical knowledge and undersea capabilities, undersea cables could potentially be an area China could exploit in the event of a conflict.

Despite its growing undersea warfare capabilities, critics have asserted that China would not be able to mount a sustained challenge nor eventually seize dominance of the undersea from the United States due to the PLA's systemic challenges and lack of operational experience, as well as other strategic issues. The PLA continues to be riddled with corruption and prioritizes the learning of communist dogma over more important keys such as military training due to its main objective of sustaining the political power of the Chinese Communist Party. Moreover, the PLA lacks modern combat experience with its experience in armed conflicts limited to the Korean War in the 1950s and border scuffles with India and Vietnam in the 1960s and 1970s respectively. Despite its progress in submarine technology, China's submarine capability remains about two decades behind the United States, by which time the U.S. Navy would have recovered its submarine capacity. Most of its attack submarines in its inventory are also excessively noisy, with China

still lacking the necessary quieting and propulsion technologies to build submarines which can challenge U.S. or even Russian submarines. Its Jin-class SSBNs are reportedly noisier than the Russian Delta III SSBNs built in the 1970s, while the forthcoming Type-095 SSBNs are expected to only be comparable with the Russian Akula submarines made in the 1980s. Additionally, China's UUVs are still in their nascent developmental stages and are yet to be proven in military operations.

At the strategic-level, given its slowing economy and other social issues, China may need to re-prioritize and re-allocate its resources away from the PLA going forward. Moreover, with its economy fundamentally dependent on international and the existing world order, China is unlikely to risk escalating tensions or conflict with the United States. Indeed, China is reportedly refraining from surging its SSBN inventory in order not to unnecessarily antagonize the United States. China also lacks the network of allies and partners of the United States and is becoming increasingly isolated in the region due to its maritime assertions in the South and East China Seas. Given this host of issues at the strategic and operational levels, it is unlikely that its challenge to U.S. undersea dominance would come to fruition.

Nevertheless, while China remains to be plagued by organizational structure and cultural challenges, China has managed to address other key issues in the PLA. In *China's Military Power: Assessing Current and Future Capabilities*, Roger Cliff asserts that "by 2020, the quality of China's military doctrine, equipment, personnel, and training will likely be approaching, to varying degrees, those of the United States and other western militaries." Cliff also adds that "the 2020s are likely to be a time of power transition in Asia where China would have the capability to, at a minimum, contest control of the seas and airspace and where an attempt to oppose a Chinese use of force will be dangerous and costly for any country, including the United States." RAND's recent 'The US China Military Scorecard' supports Cliff's assertions, stating that China is catching up to the United States, has geography on its side, and 'is narrowing the military gap in almost every area and even move ahead in some' due to the speed of change in the PLA. Moreover, despite China's slowing economy, its defense budgets have continued to increase over the years and, unlike the United States, are not undermined by grow-



ing sovereignty debt, destructive political partisanship, or an inefficient military industrial complex. In fact, investments into the PLA's abilities could set to grow even further given the strategic priority of the Chinese leadership.

Since coming to power in 2012, President Xi has made the 'Chinese Dream' – which involves “restoring China to its historical position of global preeminence” – emblematic to his leadership. The Chinese leadership is therefore driven to develop its various instruments of national power on the domestic front, whilst resolving its sovereignty issues with regard to Taiwan and in the South and East China Seas on the external front. In all of these cases, a stronger, more capable, and better equipped military would contribute towards achieving China's strategic objectives. With regard to the strategic isolation of China, its massive 'Belt and Road Initiative' will certainly promote interdependency between China and countries stretching across Europe, Asia, and Africa. Moreover, China's seemingly 'no-strings-attached' investments into its developing neighbors are likely to influence their strategic calculus. Indeed, in the coming years, we could even see countries which are keen to ensure China's continued largesse choose to leave the U.S. strategic orbit to join China's, buttressing China's ability to reshape the regional political, economic, and security order at the U.S. expense. Taking account of these strategic and operational potentialities, it is clear that China remains in good stead to challenge U.S. undersea dominance in the near future.

RECOMMENDATIONS FOR THE UNITED STATES

To ensure that it can maintain its dominance of the undersea domain, the United States should certainly follow through with President Trump's proposal to build a 350-ship Navy. A 350-ship Navy would not only increase the strategic depth but also the surge capacity of the U.S. Navy to generate an incremental increase in forward-deployed capacity in the Indo-Pacific Region. However, further measures are required to mitigate the capacity shortfall within the next decade.

First, the United States should seek to build an Indo-Asia-Pacific Region coalition of submarine forces. The United States maintains treaty alliances with Japan, South Korea, Australia, and New Zealand and

has worked with them to develop undersea information-sharing mechanisms and common training and operating relationships. It should therefore continue to develop this working relationship and cooperation to institute a coalition USW charter to have its allies commit more resources and capacity to mitigate the rising Chinese influence in the region.

Second, the United States should work with its allies and partners to foster coalition research, development, and acquisition of affordable technologies to increase coalition USW capacity. The United States is investing in the research and development of numerous technologies such as USVs, UUVs, and distributed, network undersea surveillance technologies that may present low cost solutions for coalition partners to strengthen their distributed undersea awareness capacity. The United States should invite coalition partners to participate in the development and research strategies to increase the economies of scale and improve their affordability for partners.

Last, the United States should demonstrate conventional deterrence in the undersea domain through hold at risk USW operations. This would cast doubts in the minds of PLAN naval commanders that their submarine force would survive in the event of conflict and could subsequently question their utility.

CONCLUSIONS

After the demise of the Soviet Union, the United States became the sole proprietor of undersea supremacy and has been able to operate with near-impunity throughout the world's oceans and littoral waters and maintain awareness of submarine activities along strategically important waterways. However, with a rapid buildup of its submarine forces, ASW capabilities, and naval logistics support, China is posing a strong challenge to U.S. undersea dominance. The United States needs to ensure it resists the Chinese challenge and retains dominance of the undersea domain, because as seen during the two World Wars, succumbing control of the undersea to the adversary would lead to disastrous results. This is pertinent for the United States going forward, given that one cannot preclude a Sino-American conflict from taking place. Moreover, should China succeed in seizing dominance of a domain which has hitherto been a traditional U.S. stronghold, China could be emboldened to chal-



lenge U.S. leadership in other arenas such as in the international order, which could portend a highly uncertain and volatile world.

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Part the Seas!
by LCDR Ryan Hilger, USN

ISI [Redacted]: The first Chinese missiles fell short of the mainland and exploded harmlessly in the Pacific Ocean. They didn't even hit Hawaii. Not even close. It was bizarre. All of our intelligence reports indicated that they had a very reliable ballistic missile system. At least the blasts weren't nuclear. I'm so confused. Something just doesn't add up.

ETR3 [Redacted]: The war was barely an hour old and none of our submarines had checked into the command net after the flash message we sent out. Not even a slot buoy. Not that we expected them to, given the lack of reliable satellite communications, but no one had come up on any net. After a few hours, a weak "beast" buoy signal started coming across, but it was too weak to localize because we had too many satellites down.

LTJG [Redacted]: I don't know how the surface fleet escaped damage from this attack. The carnage in Pearl Harbor was appalling. After things calmed down a bit from the initial hysteria of the attack, reports started trickling in from the west coast that numerous tankers had run aground or were sinking in the shipping channels at Long Beach, San Francisco, and the Strait of Juan de Fuca. The Coast Guard sectors had declared those ports closed indefinitely until the wrecks could be moved.

The Board of Inquiry into the opening salvos of the Sino-American War would take more than a year to complete. The data was flung across many organizations, difficult to transfer, sometimes corrupted or unreadable, and many of the key pieces of information that would have indicated impending maritime hostilities were missed. Many of the officers and Sailors said that the volume of data coming into the Maritime Intelligence Operations Centers was more than they could cope with most days, especially when there were a lot of signals or alerts that needed further investigation.

The undersea surveillance sites were hit particularly hard. The Chinese maritime militia, fishing fleets, and some Chinese Coast Guard

units moved further east than they ever had before. Many ships even pushed well east of Guam. Sailors at the Naval Ocean Processing Facility (NOPF) on Whidbey Island, Washington, told investigators that in many cases they simply couldn't separate all of the contacts out to determine what was going on. Despite augmenting their watch bills as the activity picked up in the week before the war broke out, the leadership stated flat out that they could not cope with the deluge and that many sectors not looking to the west were simply not searched. Arrays started going down sporadically, taking more sailors off the search to troubleshoot. The Sailors managed to track a few submarines, but it would be another year or two before post-event analysis figured out that the autonomous underwater vehicles (AUV) that had played a crucial role in the attacks on commercial shipping had preceded even the submarine surge by more than a week.

The missile boats that managed to evade detection reached launch positions near Hawaii and the west coast before the intelligence community had realized that they were missing. Strangely, none of our ships were directly targeted in the opening attacks. Waves of hypersonic weapons slammed into dry dock caissons, fuel depots, and graving docks.

The Chinese submarines had learned the art of steganography: hiding in plain sight, in the noise. The Board of Inquiry, similar to the reckoning after Pearl Harbor, went further than most to look at not just how American forces responded to the attacks or what was missed in the tactical signals, but where the Navy veered off course in the years leading up to the war in failing to develop the systems necessary to prevent such wholesale surprise. The President of the Board found, in light of the pronouncements of renewed great power competition almost a decade before, that the Navy had not sufficiently prioritized recapitalization and improvements of the undersea surveillance systems, specifically in the areas of expanding research into oceanography to better exploit the environment for both offense and defense, expanding the coverage of the system, leveraging industry gains in artificial intelligence and machine learning to improve accuracy, and developing better technologies to sense and track both submarines and AUVs. Had we kept pace or overtaken Chinese investments in these areas, the President of the Board stated, we might have prevented this devastating attack.

Before the War

Both China and Russia have made tremendous gains in recent years in the areas of submarine operations, artificial intelligence, and hypersonic weapons. Both powers appear to be dedicated to overthrowing the current world order by out-running the United States technologically. China, in particular, has a penchant for taking a much longer and more strategic view of events than the myopic United States. Their stated developments, if left unchecked, will topple the international order by *fait accompli*—armed hostilities with the United States only if necessary. Preserving the position as a world leader since World War II will require the United States to be able to credibly deter Chinese or Russian designs. Strategic developments, particularly in the Western Pacific, have left the undersea as the last domain where we enjoy an advantage. Widening that advantage through the use of better intelligence and exploitation of the environment will keep that credibility intact and forestall the war of which the Secretary of Defense, Chief of Naval Operations, and other senior leaders speak today.

The Cruel Sea

Traditionally, unlike war on land, the sea is utterly barren, neutral terrain. It is the great equalizer between enemies. It used to provide little additional value to those on the attack or defense. But as science advanced, we learned more about the oceans and slowly learned that we can exploit them for tactical advantage. Starting early in the Cold War, the United States started conducting more research and installed the Sound Surveillance System (SOSUS) to provide broad ocean coverage. Intelligence collection in this domain evolved to not just knowing the enemy, his operating patterns, technology, and capabilities, but understanding how the environment connects them and us. That connection, observed by SOSUS, is how we held a decisive advantage over the Soviet Union during the Cold War, an advantage that continues to this day, albeit one that is deteriorating steadily.

Getting information from this environment and exploiting the ocean in real time continues to be challenging at best. Low bandwidth, asynchronous communications are the norm. Classifying detections proves equally difficult and is more reliant on corporate knowledge from pre-

vious encounters than well-encoded processes to identify what a Sailor is looking at. Maintaining an acoustic contact can be as frustrating as the environment changes from moment to moment, region to region, or as other noises interfere. The availability of detailed, real time acoustic modeling at the tactical edge is virtually non-existent. The shore-based SOSUS monitoring stations, like NOPF Whidbey Island, have evolved technologically, but are still heavily reliant on trained Sailors to detect, track, and classify signals across the expanse of an entire ocean. They do an exceptional job, but the maritime environment is slowly overwhelming their capacity.

The Growing Threats

Russia and China continue to present an evolving threat to the stability of the international political and economic order. Submarine activity from both countries has now returned to Cold War levels.¹ Both countries have announced programs to field hypersonic weapons, unmanned underwater systems, new sensors, and artificial intelligence to augment military forces.² Russia continues to show intense interest in the undersea cables that carry 97 percent of global communications and more than \$10 trillion in daily financial transactions. Satellites cannot reconstitute even a fraction of this capability.³ Russian submarines have been found by other nations near these cables—their locations are publicly available online.⁴ Russian submarine operations in 2017 prompted the Navy to re-establish the U.S. Second Fleet in May 2018 to respond to their resurgence in the Atlantic.⁵ The Cold War has started anew.

China stated openly their desire to augment submarine commanders with artificial intelligence. They are investing heavily in quantum technologies and are rumored to have made a breakthrough in a quantum detector that can be used to detect submarines.⁶ If true and deployed, it could effectively shut out the United States from the undersea, the last domain where we still enjoy the advantage. Chinese hypersonic technology appears to be well ahead of the Russians.

The development of submarine launched hypersonic weapons coupled with disruptions to the global communications and financial networks presents a near-existential threat for the United States. Admiral James Foggo's postulation that the Fourth Battle of the Atlantic is begin-



ning should be broadened to encompass the Chinese and Russian threat in the Pacific as well.⁷ The Cold War has expanded to a second front. Unlike the last Battle of the Atlantic, the United States may be unable to carry the war to the enemy if we cannot retain the advantage in operating without detection underwater and have exceptional abilities to detect and track adversary forces. We must part the seas.

Despite the meteoric rise of China and their philosophy on research, development, and theft as a means to innovate, the United States still retains the advantage in science and technology. To keep our advantage undersea, the intelligence community in particular must double down on investments in advanced sensors, artificial intelligence, and developing the human-machine team at all levels—from tactical to strategic. The costs will be high, but they must be paid.

Data as a Strategic Asset

We must recapitalize the existing infrastructure and networks with new sensors, cables, systems, and platforms designed to produce quality data that supports the training and development of artificial intelligence and machine learning algorithms. Without properly curated data, the algorithms become only as good as our human operators, or worse. While many senior leaders, especially in the intelligence community, will state emphatically that the United States has mountains of data, the vast majority of that data is not in the correct format or quality for use in machine learning applications, nor could it be made readily available for algorithmic training. The intelligence community must work to pay down the organizational debt of data that has accumulated over the decades, but in parallel, the community must also partner with other communities to field the new physical systems that will produce the data necessary to do our jobs better in the future. Artificial intelligence will not reinvent naval intelligence overnight but laying the foundations correctly now for future applications will ensure that the United States remains supreme in the undersea domain.

The artificial intelligence community is remarkably open source. Few algorithms or research are behind even something as simple as a pay wall, much less branded as intellectual property and sealed from public view. The performance of the algorithm thus is tied to the qual-

ity of data used to train it. Data makes the capabilities emerge. Naval intelligence must make data a core business function of the community, strengthen relationships with the ‘collection’ communities, and realign investments and programs to ensure that the data produced will not just feed the analytical products crafted for decision makers, but improve algorithmic performance and support the warfighter better at the leading edge on a daily basis.

Human-Machine Team

Many fear that artificial intelligence will result in entire industries shedding their workforces; that machines will replace human minds. Recent advances in artificial intelligence and machine learning have shown that, in fact, the human-machine team is far superior to the machine or the human alone. Leveraging the unique abilities that artificial intelligence and machine learning algorithms bring to the functions of the intelligence community will result in non-linear gains in intelligence and warfighting capabilities as a result.

At the most basic level, artificial intelligence and machine learning algorithms excel at unburdening human operators from repetitive tasks, such as conducting a sonar search for hours on end. Human operators fatigue, miss signals, cannot discern the signal from the display-ready data, or misclassify the contact. The challenge to our Sailors will only continue to grow as the seas become more congested with commercial traffic, China and Russia continue to deploy quieter submarines, and more AUVs, which are significantly quieter, roam the oceans. Algorithms, on the other hand, require no sleep and constantly search every azimuth with higher accuracy rates than their human operators. The human-machine team, in this case, would allow the human operator to use the advantage human intelligence brings in analyzing and higher cognitive functions to bear on signals the machine has identified for follow up. More advanced applications at the source of the data—the hydrophone—may reveal new information that was previously filtered out through signal processing, furthering our advantage in the undersea domain.

Many applications of machine learning, specifically deep learning algorithms, show incredible promise to draw out connections from seem-



ingly disparate data. Fusing open source intelligence with the acoustic collection systems will provide a significantly greater ability to detect, track, and classify contacts of interest and inform human operators when Russian submarines, for example, appear to be heading toward undersea cables. Similar algorithms can be used to explore historical intelligence data and look for new information, operating patterns, and previously undiscovered connections as well.

As computational hardware gets smaller, it enables greater processing of data and information into refined products closer to the source. This creates the opportunity for greater synergy between the intelligence community, the meteorology and oceanography community, naval research enterprise, and the warfare communities, which exploit their products for maximum advantage. Fostering closer relationships will allow the intelligence community to undertake collection and exploitation initiatives more rapidly, leveraging the latest gains in science and oceanography to give warfighters the greatest offensive and defensive advantage possible.

The fielding of hypersonic weapons and increased submarine activity from both Russia and China makes it imperative that the Navy takes substantial steps to maintain and grow our undersea advantage. The intelligence community should prioritize investments in new and advanced sensors to recapitalize the undersea networks and generate exponential gains by applying artificial intelligence and machine learning algorithms to the data outputs. Rapid development and fielding of these algorithms, coupled with underpinning data as a core element of the broader naval intelligence community, from analysts to operators, will allow the United States to remain ahead of our peer competitors in the undersea domain. Our security as a nation depends on it.

Sino-American War—Redux

Let's look at an alternate view of that future Sino-American War, depicted in the first segment of this article with the investments specified in the paragraph above initiated in 2018.

The United States had called the Chinese out for their aggressive approach to American targets. The undersea surveillance systems, enhanced with artificial intelligence and machine learning algorithms, au-

tomatically detected the AUVs and submarines, notifying the operators that the Chinese had moved further east than ever before. American submarines took up the trail, ready to deploy non-lethal means to deter and disrupt the Chinese undersea forces if they approached within missile range of Hawaii or the west coast. The first few missile submarines were forced to the surface and American cryptanalysts smiled at hearing the submarine commanders radio Beijing for a tug after their submarines were disabled. The AUVs, slow and unable to evade pursuers, were captured wholesale by American warships, broadcast on television in real time for the world to see. Meanwhile, other American submarines, exploiting the smallest margins in the environment, slipped undetected into the East and South China Seas to begin non-kinetic operations against the installations in the Paracel and Spratly Islands. New technologies to exploit the environment had allowed the American submarines to perfect steganography and hide within the background clutter. The Chinese backed down, recalled their forces, and accepted the American offer to negotiate. The advances in the American naval intelligence systems had allowed the United States and China to escape Thucydides' trap.⁸

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Submarine Warfare in the 1971 Indo-Pakistani War and the Falklands War and the Implications for the U.S. Navy Today by LT Bryan R Lowry, USN

Since the end of the Second World War, there have been countless wars and conflicts of varying size and scope around the globe. Very few of them have involved significant naval action, and only two have resulted in submarine warfare to any degree deserving of the name. Those two conflicts provide important insights and lessons into the nature of submarine warfare in the modern world. The 1971 Indo-Pakistani War, although not primarily a naval war, saw the first use of submarines in combat since WWII. The presence of just one conventionally powered Pakistani submarine was enough to influence how the Indians employed their aircraft carrier. Additionally, in the only Pakistani naval success of the war, the submarine PNS *Hangor* attacked and sank an Indian frigate and then kept numerous surface combatants engaged for days in the search for her. The 1982 Falklands War saw the first use of modern nuclear-powered attack submarines (SSNs), and they were decisive. Their speed and mobility allowed Britain to project power half a world away, and HMS *Conqueror*'s sinking of the Argentine cruiser *General Belgrano* dealt a crippling blow to the Argentine Navy, whose surface forces afterward remained in their own territorial waters for the duration of the war. Conversely, the presence of one modern conventionally powered Argentine submarine forced the British to expend an excessive amount of time, energy, and ordnance in unsuccessful searching for her. Gathering these lessons and applying them to the submarine force today is an important exercise in preparing for any future conflict in which the U.S. may be involved. These wars show us that submarines punch well above their weight in both kinetic power and deterrence and stress the difficulty and importance of effective coordinated anti-submarine warfare (ASW). Applying these lessons correctly and effectively could be the deciding factor in the next war.

The 1971 Indo-Pakistani War

While submarines played many important roles in the post-WWII era, the first conflict to see kinetic action in the undersea domain was the



short-lived 1971 Indo-Pakistani War. The war's causes were many, including the historic enmity between India and Pakistan and widespread civil unrest in East Pakistan, or Bangladesh as it would shortly become known. When Pakistan's ruling military junta violently suppressed the rebellion, the resulting flood of refugees into India further deteriorated relations between the two nations. From the breakout of war on December 3rd to its conclusion less than two weeks later, several naval engagements would reveal the relevance and utility of conventionally powered submarines.

Prior to the opening of hostilities on December 3rd, PNS *Ghazi* (ex-USS *Diablo*, a Tench-class WWII submarine)¹ was dispatched from Pakistan to the Bay of Bengal. The nature of her mission is disputed, but it seems likely she was sent to either mine the harbor at Visakhapatnam naval base on the eastern coast of India, search for the Indian Navy's sole aircraft carrier INS *Vikrant*, or both.² Despite her age, with a longer range than Pakistan's three modern French-built Daphne-class submarines, the *Ghazi* was the only choice for the Pakistan Navy given the distance to the Bay of Bengal.³ On the night of December 3rd, several explosions were heard off the coast of Visakhapatnam, and subsequent investigation by Indian divers revealed the wrecked hull of the *Ghazi*. Interestingly, *Ghazi* had made no contact after November 26th, and nothing further was announced by either side until December 9th, when the Indians announced the sinking.⁴ The cause of the sinking is disputed, with Indian sources often claiming she was sunk after a depth charge attack by the INS *Rajput*.^{5,6} The Pakistanis refute this claim, and attribute the loss to an accidental mine detonation during laying operations, a cause supported by western observers.⁷

Whatever the reason for the loss, the result for the Indians was the removal of the chief threat to their one and only carrier.⁸ Fear of Pakistan's submarines, the only asset able to project power at a distance against a superior Indian surface force, was one of the reasons the In-

1 (Harry 2001)

2 (Hiranandani 2000, 140)

3 (Cardozo 2006, Ch 2)

4 (Hiranandani 2000, 141)

5 (Hiranandani 2000, 143)

6 (Kaul May 1973, 190)

7 (Goldrick 1997, 83)

8 (Goldrick 1997, 83)

dians chose to keep the *Vikrant* in the Bay of Bengal where she would require fewer escorts. These fears were well founded. On December 4th, a submarine (likely the Daphne-class PNS *Mangro* out of Chittagong, East Pakistan) was sighted off the bow of *Vikrant* but was chased away by her escorts before firing a shot.⁹

The Arabian Sea, the other theater of naval engagement, saw significant sparring between Pakistan's two other Daphne-class submarines and Indian surface forces. Over several days, Indian surface combatants chased the PNS *Hangor*, carrying out several unsuccessful attacks. On the night of December 9th, *Hangor* located the frigate INS *Khukri*. According to the Indians, three of nine homing torpedoes from *Hangor* struck *Khukri* in rapid succession, tearing her apart in three minutes.¹⁰

Alternatively, in a later interview, *Hangor's* Commanding Officer at the time stated that one of only two torpedoes fired struck the magazine, sending *Khukri* to the bottom in minutes. Indian ASW assets spent several days extensively searching for the sub, but after enduring over 150 reported depth charge attacks, *Hangor* safely returned to port.¹¹

The fighting ended on December 16th, when Pakistani forces in East Pakistan surrendered. The naval conflict was not decisive, and neither side suffered major losses. However, the presence of Pakistan's conventionally powered submarines was a serious obstacle for the more powerful Indian Navy, and the only serviceable tool for the Pakistanis. While the majority of the Pakistani surface fleet stayed in Karachi for the duration of the conflict, its submarines were aggressively employed.¹² Despite her age, the range and independence of the *Ghazi* allowed her to operate far from Pakistan and close to Indian bases in the Bay of Bengal, where her presence was highly influential. The mere possibility of a torpedo attack on the *Vikrant* caused the Indians to employ her in a more conservative manner.¹³ Furthermore, the only Pakistani naval success of the war came from the *Hangor's* sinking of the *Khukri*. The episode demonstrates not only the outsized power of any well-employed submarine, but also the difficulty of ASW prosecution and the large numbers of assets and ordnance that must be used to counter them.

9 (Kaul May 1973, 188-191)

10 (Kaul May 1973, 191)

11 (Tasneem 2001)

12 (Kaul May 1973, 193)

13 (Till 2009, 125)



The Falklands War

The second major conflict to see extensive submarine employment in the post-WWII era was the Falklands War. This two-month war pitted the armed forces of the ruling Argentine military junta against the naval, land, and air forces of the United Kingdom. Hostilities commenced early in the morning on April 2nd, 1982 when Argentine marines, some deploying from an Argentine submarine, landed on the small island of East Falkland. Thus began a major conflict between two nations over a few small islands inhabited by less than two thousand people and countless sheep, based on competing centuries-old claims of sovereignty.¹⁴ While this short, limited conflict did not alter the strategic picture in the South Atlantic, it offers the best example of modern submarine and anti-submarine warfare. It also provides important lessons about the challenges of employment and prosecution of modern diesel submarines and reaffirms the vital role that modern SSNs play for nations that must protect interests and fight wars thousands of miles from the homeland.

The Falkland Islands, or “Malvinas” to the Argentines, are a small group of rugged and windswept islands in the South Atlantic, roughly 300 miles east of Patagonia. The date of their original discovery is disputed but starting from the late 17th century ships from various nations landed to plant the flag for king and country, take on water, hunt for seals, or establish short-lived colonies. The Argentine claim to the Malvinas is based on previous Spanish claims to the islands, which were overseen by a Spanish military governor beginning in 1767. When Spanish rule in much of South America was later overthrown, a newly-independent Argentina claimed all former Spanish possessions in the region in 1816.¹⁵ British rule in the islands dates to the 1833 expulsion of the Argentine military governor of the Malvinas by Captain John Onslow of the H.M.S. *Clio*. The British, in addition to their claim based on an earlier settlement in the 1760s that lasted five years before being evicted by the Spanish, also cite their continuous settlement since 1833.¹⁶ After multiple failed efforts in the middle of the 20th century to press their case through the United Nations, in 1982 the Argentine ruling junta saw in the claim to the Malvinas an avenue to wrap themselves in the flag of

14 (Middlebrook 1985, 16)

15 (Middlebrook 1985, 23-24)

16 (Middlebrook 1985, 21-25)

nationalism. By attempting to assert their ownership of the islands, they sought to distract the country from numerous problems at home. The British, on the other hand, were defending their claims to both the Falklands and to other important islands in the South Atlantic, as well as the right of self-determination for the Falkland Islanders, who repeatedly had voiced their desire to remain under British rule.¹⁷

Submarines first entered the picture in late March of 1982, prior to the Argentine invasion. With tensions building, the Royal Navy dispatched three of its modern nuclear-powered attack submarines towards the Falklands. The new Swiftsure-class boats *Splendid* and *Spartan* and the older Churchill-class *Conqueror* steamed at best speed towards the South Atlantic. With their speed and endurance, the SSNs were able to arrive in the conflict zone well before the rest of Britain's conventionally powered forces.¹⁸ When the British declared a 200-mile naval exclusion zone around the islands on April 12th to prevent the Argentines from resupplying the invasion force by sea, the presence of these submarines was the only means the Royal Navy had to enforce it.¹⁹ The rest of the British task force would not reach the area for several weeks. Prior to declaring the blockade, the British had revealed the presence of their submarines in the area, effectively stopping Argentine reinforcement of the islands after April 12th.²⁰

On May 2nd, the Argentine cruiser *General Belgrano*, the second-largest ship in the Argentine Navy,²¹ was operating with two destroyer escorts to the southwest of the islands, just outside the exclusion zone. Determining that the *Belgrano*'s six-inch guns and armor and her escorts' Exocet missiles were a threat to the British aircraft carriers operating in the area, the *Conqueror*, having shadowed the *Belgrano* and her escorts for several days, requested and received permission to attack. At periscope depth and from a range of 1400 yards, *Conqueror* fired three pre-WWII Mark-8 straight-running torpedoes in a spread fashion to account for solution inaccuracy. Two hit, and within 45 minutes the crew abandoned ship and the *Belgrano* sank with 368 hands lost, roughly a

17 (Middlebrook 1985, 29)

18 (Ruhe 1984, 8)

19(The Falklands Campaign: The Lessons, Report to Parliament by the Secretary of State for Defence 1982, 17)

20 (Ruhe 1984, 8)

21 (Middlebrook 1985, 143)



third of the ship's complement.²² After the torpedoes hit home, *Conqueror* cleared the area, evading depth charge attacks from the destroyer escorts.

There were voices in the international community that condemned the sinking of the *Belgrano*, but for the British the chance that the Argentine warship could escape over shallow water and attack their vulnerable aircraft carriers was too great. After the war, the British concluded that the sinking of the *Belgrano* effectively knocked the Argentine Navy out of the war.²³ For the rest of the conflict, the Argentine surface forces stayed within their 12-nautical-mile territorial waters. As concluded in a summary of the war from the American perspective, *Conqueror's* attack on *Belgrano* was "such a clear demonstration of nuclear submarine capability that no further attempt was made to risk any major Argentine warship outside of coastal waters."²⁴ British submarines continued to patrol the area and provide valuable intelligence but took no further kinetic action for the duration of the campaign.

British submarines were not the only ones to play a role in the South Atlantic in 1982. The Argentine Navy had four conventionally powered diesel-electric submarines: two WWII-era *Balao*-class boats, and two modern Type-209s built by Germany.²⁵ The first *Balao*-class boat, *Santiago del Estero* (ex-USS *Chivo*), did not see action, but the *Santa Fe* (ex-USS *Catfish*) participated in the initial invasion of the Falklands on April 2nd. While *Santa Fe* was submerged, 10 Argentine commandos were dispatched from the submarine to a beach to check it clear before amphibious assault forces landed on the island.^{26,27} Three weeks later, on April 25th, *Santa Fe* was located on the surface by British helicopters operating with the task force off South Georgia Island, several hundred miles away. After multiple depth-charge and torpedo attacks, *Santa Fe* reversed course and proceeded back to Grytviken Harbor on South Georgia Island.²⁸ Badly damaged, the submarine was unable to return to sea and was captured by the British when they retook the island. She was

22 (Middlebrook 1985, 148-150)

23 (The Falklands Campaign: The Lessons, Report to Parliament by the Secretary of State for Defence 1982, 17)

24 (Ruhe 1984, 9)

25 (Ruhe 1984, 9-10)

26 (Middlebrook 1985, 48-49)

27 (Harper 1994, 10)

28 (Middlebrook 1985, 108-111)

eventually scuttled after the war.²⁹

Less is known about the activities of the Type-209s. A key lesson, though, is that these submarines, along with the *Santa Fe* prior to her removal from action, succeeded in tying up a large portion of the British air and surface assets in the search for them. The presence of these submarines also caused the British Task Force commander to forbid the British submarines from attacking submerged targets, in an effort to prevent blue-on-blue attacks. The unsuccessful prosecution of these submarines highlighted the difficulties of shallow-water ASW and required sustained and extensive operations by both air and surface assets.³⁰ Additionally, a large amount of ASW ordnance was expended, contributing to the overall cost of prosecution. The British were forced into this disproportionate response because the stakes were so high. The threat of an Argentine submarine sinking an aircraft carrier was unacceptable to them, and in their mind would have resulted in Britain losing the war.³¹

Lessons for Today

Submarines have been and continue to be force multipliers. Since the majority of foreseeable opponents in any war scenario possess some submarine capability, the submarine presence is both a threat to mitigate and an opportunity to exploit. The ability of the U.S. Navy to put submarines anywhere in the world in a short amount of time is a huge advantage over all other nations, and one that should be maintained at all costs. The mobility and endurance of nuclear power coupled with the stealth of a modern submarine allows for the prepositioning of assets before hostilities begin, and their real or suspected presence can act as a deterrent to such hostilities. And if hostilities do break out, the disproportionate power and stealth of a modern SSN can quickly deliver a knockout punch to an enemy's navy, raising the cost of deploying their naval forces to an unacceptably high level. Additionally, effective counters to enemy submarines must be readily available. Despite all efforts by the British, at least one Argentine Type 209 submarine was able to operate freely in the area, although the Argentine submarines nev-

29 (Brown 1987, 343)

30 (The Falklands Campaign: The Lessons, Report to Parliament by the Secretary of State for Defence 1982, 23)

31 (Harper 1994, 23)



er engaged the British task force. Given a more capable opponent and modern cueing data, the results could have been drastically different. Using modern nuclear-powered attack submarines to sanitize the area and screen for high-value units like aircraft carriers is the best way to prevent a crippling loss that the British so feared. Short of this, costly and time-consuming ASW prosecution must be carried out by surface and air assets, with the possibility of limited success.

Studying the past is not the only way to prepare for the future, but it is one way. The lessons learned and relearned in 1971 and 1982 are applicable today and have important implications for the United States in any future conflict. There are four main takeaways that should be gleaned from these wars. First, heavyweight torpedoes are a potent weapon, and submarines are the only U.S. platform capable of delivering them. As demonstrated by the *Hangor* and the *Conqueror*, surface ships remain vulnerable to torpedo attack. Submarines provide the means to deliver decisive blows that can knock out important enemy combatants, deter the deployment of naval forces, or bring adversaries to the negotiating table. Second, submarines do not have to go kinetic to have an outsized impact on the strategic or operational picture. The mere presence, suspected or otherwise, of U.S. submarines in a theater of conflict will cause an adversary to behave differently. The current advantages in stealth that the U.S. submarine force enjoys means the adversary will have to employ large numbers of ASW assets to counter a potentially small, unknown number of submarines, all the while protecting their high-value units from attack. Every ship that is engaged in ASW is one less ship with their full attention on any blue-force surface or air assets in the area. Third, speed and mobility matter. The ability to rapidly position a large number of submarines in an area is a key ability the U.S. possesses. In an era of constrained budgets and the current downtrend in submarine numbers, we must remember that the key aspect of that ability is “a large number.” Carrier strike groups are important tools of diplomacy and power projection, but submarines will enable the U.S. to control the seas on the other side of the globe. Last, what goes around comes around. It is all too easy to imagine ourselves as the *Conqueror* and the enemy as the *Belgrano*, but every conceivable adversary nation possesses some submarine warfare capability. We must

maintain an edge in ASW so that adversaries cannot exploit the same weaknesses in us that we seek to exploit in them. There are no instances of submarine-on-submarine warfare in the two conflicts considered above, but they do provide shining examples of the difficulties of conducting ASW with only surface and air assets. Effective, coordinated ASW between surface, air, and most importantly, subsurface assets will be vital to locating and neutralizing enemy submarines in the beginning stages of any conflict.

There are precious few examples of what modern undersea warfare looks like in practice. Studying those we do have, learning and applying their lessons, and proactively preparing for the next conflict will go a long way towards ensuring our edge when war comes. We should not go searching for conflict, but when it comes the U.S. Navy and the submarine force need to be ready to provide overwhelming and decisive action. Success on that front could mean the difference between a quick, limited war or a long, bruising one. It could also mean the difference between victory and defeat.



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Submarine Rescues Future President
— A Tribute to George H. W. Bush —
by Dick Brown

“I’m floating around in this raft, paddling, and then all of a sudden I saw this conning tower come up and saw this submarine surface.”

These are the words of George Herbert Walker Bush, many years after his rescue by USS *Finback* (SS-230) on September 2, 1944. On that day, LTJG Bush, USNR, future United States President, led a flight of four Avenger torpedo bombers. Their assigned target for the day was a radio communication site on Chichi Jima, a remote, but heavily fortified island 150 miles north of Iwo Jima and 620 miles south of Tokyo. The young lieutenant’s flight crew included LTJG William “Ted” White, USNR, substituting for his regular gunner, and radio operator ARM2/c John “Del” Delaney, all attached to Torpedo Squadron 51(VT-51) of USS *San Jacinto* (CVL-30).

There were over 20,000 Japanese soldiers and sailors garrisoned on Chichi Jima. It had a harbor that once served as a 3-day anchorage for U.S. Navy Commodore Matthew Perry’s flagship in June 1853. A Japanese midget submarine base had been established in the same harbor a week before Bush and his Avengers attacked the island. Six midget submarines left Yokosuka under tow. Only three made it to Chichi Jima and one of those was later sunk by one of our Navy bombers.

Six months after the Japanese attack on Pearl Harbor, in fact the day after his 18th birthday, Bush enlisted in the Navy Reserve. He became an aviation cadet and underwent preflight training. By June 1943, he had been commissioned an ensign. At the time, at age 19, he became the youngest naval aviator in U.S. history. After flight training, Ensign Bush was assigned to VT-51. He was promoted to LTJG on August 1, 1944. During the war, he flew 58 combat missions and made 126 carrier landings.

As the sun climbed higher over the eastern horizon, Bush’s Avenger sprang from *San Jacinto*’s flight deck and headed straight for Chichi Jima, with Ted as his gunner and Del as his radioman, and with four 500-pound bombs. Meantime, *Finback*, a Gato-class fleet boat, on lifeguard duty, monitored anti-aircraft fire and listened for radio reports



about downed pilots. *Finback*, under the command of LCDR Robert Williams, was two weeks into her tenth war patrol.

Just before reaching his target, Bush's Avenger came under intense anti-aircraft fire. His engine was hit and caught afire. Years later Bush said, "*We were trained to complete our runs no matter what the obstacle.*" He continued his dive-bomb attack, opened his bomb bay doors, dropped his payload, inflicted serious damage to the radio station and tower, and then headed for the open sea. "*It was when I saw the flame along the wing there that I said, 'I better get out of here'. I told the crew to get out. I dove out onto the wing. I hit my head on the tail, a glancing blow, and bleeding like a stuck pig.*" Many years later he talked about bailing out of that Avenger at 1,500 feet and often celebrated his birthday with parachute jumps. His dedication to completing his bombing mission at Chichi Jima earned him the Distinguished Flying Cross.

Unfortunately, his crew did not survive; one went down with the plane, the other's parachute failed to open. Bush hit the water about seven miles off Chichi Jima. He inflated his life-raft, crawled in and began paddling to keep from drifting back to the island. A Japanese boat was sent out to capture him but was strafed by one of the other VT-51 pilots. With friendly aircraft circling overhead, guarding him, Bush spent four hours in enemy waters awaiting rescue. It was then when he realized Ted and Del were gone. In fact, of the nine other crewmen of those four Avengers, he was the only survivor.

Later Bush recalled, "*I was sick to my stomach. I was scared. If somebody didn't pick me up, I would have been captured and killed. They were very brutal on Chichi Jima.*"

At 0933, *Finback* received a radio message about a downed plane. With two Hellcat fighters as escorts, *Finback* closed within nine miles of the southern coast of Chichi Jima. At 1156, the skipper spotted Bush's bright yellow raft through the periscope. What happened next is described in Bush's own words, "*I saw this thing coming out of the water and I said to myself 'Jeez, I hope it's one of ours'.*"

Five submariners stood ready for action on *Finback's* forward deck. Bush saw their friendly faces as the submarine slowly approached his raft just off the starboard bow. One of the men, TM1/c Donnet Kohler, reached down and grabbed Bush's hand as the others held Kohler. Upon

being yanked topside, the exhausted, bedraggled 20-year-old aviator uttered, “*Happy to be aboard.*” As he made his way aft, his raft was destroyed by *Finback* gunfire.

At 1236, *Finback* received word of another downed pilot being shelled about two miles off nearby Haha Jima. The spirits of all hands sunk to 300 feet. At 1505, with aircraft zooming in on a spot in the water, *Finback* dived to 55 feet. Twenty-five minutes later, a rubber life-raft was sighted. As the boat roared past, the skipper ordered “All Back Full” and *Finback* twisted around to the raft. The pilot hooked one arm around the periscope, the other around his raft, with his bailing bucket trailing behind. The captain ordered “All Stop” to allow the pilot to climb into his raft. They started to tow him but at two-thirds speed he was swamped again. *Finback* came up to 38 feet to get him out of the water. Once five miles away from shore, the boat planed up, opened the hatch and Ensign James Beckman was finally rescued. Beckman reported that he saw only one-man parachute from Bush’s Avenger. A search for the missing crew was unsuccessful. Their bodies were never recovered.

LTJG Bush, along with four other rescued aviators, remained on-board *Finback* for a month as part of the crew, assisting with rescue missions and standing watches as they searched for enemy ships and submarines. During their time onboard, the boat sank two small freighters and endured depth charges and bomb attacks. At the end of *Finback*’s patrol, the aviators disembarked at Midway. Following some rest and relaxation in Hawaii, Bush returned to USS *San Jacinto* in the Philippines. While on leave, he married Barbara Pierce on January 6, 1945. He spent the balance of the war training pilots at Norfolk. At the end of the war he was released from active duty. In November 1948 he was promoted to Lieutenant and in October 1955 he resigned his commission.

On October 7, 2006, the last Nimitz-class carrier was christened USS *George H.W. Bush* by his daughter Dorothy in honor of our 41st president and his service to the nation. The ship’s call-sign is Avenger. George died on November 30, 2018 at age 94. He was preceded in death by Barbara, his beloved wife of 73 years. In war, in peace, in office and in life, George was a true American hero, and an honorary submariner.

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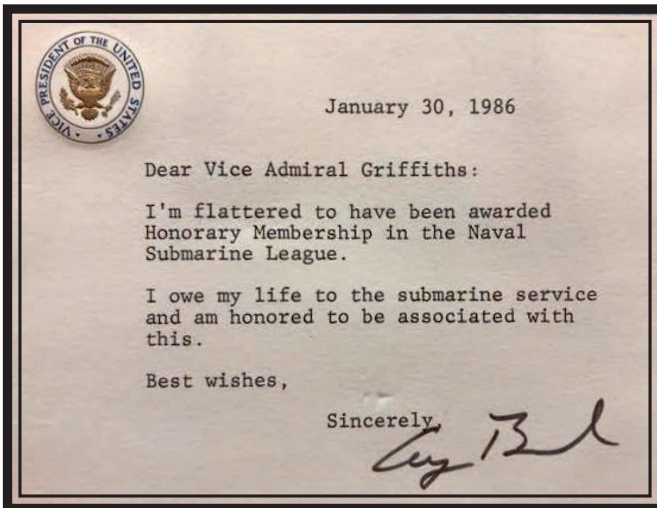
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Former Vice President George H.W. Bush's response to the Naval Submarine League Honorary Membership, framed and on display in the Alexandria, Virginia office

Birth of Naval Submarine League by RADM Al Kelln, USN, Ret.

In the mid-1970s, I was assigned under VADM Chuck Griffiths (OP 02) as Trident Program Coordinator and Director Strategic Submarine Division (OP 21). Later, I also assumed the Deputy (OP 02B) billet. The pace of operations was normal, just a few eye-openers each day.

On one of those days, we received a call from Bill Wegner, the Naval Reactors Deputy (NAVSEA 08B) in Admiral Rickover's headquarters. The purpose of the call was to inform Admiral Griffiths and me that he was requesting our attendance at a special "non-conference" at the Washington Navy Yard for a few days. He also informed us that the conference agenda would be offered at the initial meeting. Our concern factor peaked, so, with much anticipation, we awaited the two- possibly three-day meeting. Our worry was what possible topic could Bill Wegner have in mind for this non-attributable gathering.

The meeting opened with no written agenda nor guidance statement from Admiral Rickover. In fact, Rickover's name was never mentioned. Bill Wegner introduced the meeting with a several hour examination of the current role of the Navy Public Relations branch in OPNAV. Several case histories of their products and mission were mentioned and examined. Later, we discussed how they were often not organizationally aware of newly discussed or planned new Navy products or capabilities. All public relations aspects or needs of Navy developments were discussed and examined for awareness, security, and other potential factors. Day one was completed. Where to the next day?

Day two! Bill Wegner reviewed our progress from the previous day's format and proceeded to discuss in detail the many needs for information within the Navy, which included contractors, voters, recruitment, political, and short- and long-term security aspects. And last, but not least, he brought up the Congress, which was the final money source. With this stimulation, we entered into heated discussions, albeit with many facts but little experience. We obviously did not discuss nor reach any factual conclusions.

Day three! After a very thorough review of the first two days' progress, Bill Wegner discussed SEA 08's past and future efforts; their reas-



sonable and current attempts to selectively inform the various mentioned recipients with just the right amount of information, at the right level, content, audience, timing, and with the right authority. Many ideas, approaches, and questions were explored. And quite suddenly, the meeting was ended. Admiral Griffiths and I were thanked for our ideas, thoughts, and spontaneity.

I continued to get short three-hour notice invitations to accompany Admiral Rickover on his airline travels in the United States, until I retired from the Navy in September 1980. These became interesting. I always waited for the subject of Public Relations to surface, but they never did. If the Kind Old Gentleman, i.e. Rickover, only knew how much and how often I remembered the Wegner meetings and contemplated the right solutions. I knew there was a solution and I started a systematic search for it. First, I would investigate the roles and missions of various Washington-based organizations and analyze their *modus operandi*. I started my Consulting Business to give me income and time to assimilate the information that I was collecting.

After a few months and many visits, the answer came to me during one of my normal 3:30 am inspirational awakenings. I decided the skeleton for structure of the submarine organization was to use the *modus operandi* of the Naval Aviation community—just eliminate their weak factors and document Submarine Force needs. Now, I needed to assimilate a group to give me flexibility both with time and income. God provided me both.

I met with Woody Ramsey, a Naval Academy Class of '52 classmate, and Jim Austin, who headed the APL Submarine Division. Both strongly encouraged me to GO FOR BROKE. Now to assimilate the solutions that Bill Wegner identified five years before. My first step was to brief Admirals Al Whittle and Jack Williams and get them onboard. Both were completely supportive and agreed to step in whenever it was appropriate.

Now it was time to originate the organizational paper work. But first, I destroyed my many Wegner non-conference notes as they were no longer pertinent, except to jig the need for all submariners to produce a national coordinated publicity and informational effort. I felt that I was destined to help accomplish this end. So be it.

Next, I met with Vice Admirals Shannon Cramer and Chuck Griffiths, where I proposed the setup of the Naval Submarine League. I received their positive support. I proceeded to draft the necessary organizational documents. At that time, I was a consultant at American Systems Corporation, and Woody Ramsey gave me the leeway to proceed at his expense. So, I continued to gather relevant documents from similar groups and began to cut and paste.

From the start, we always kept the Symposium content unclassified and open to all. We held our classified NSL briefings for contractors at Applied Physics Laboratory to protect the level of national operations and equipment. Admiral Whittle and I knew that there would be some individuals who would like to keep all submarine matters and support submerged.

As an OBTW, we later found out that the Air Force leaders were always looking for means to counter our growing Navy FBM program. They later acknowledged that our "*Submarine Review*" publication and its openness countered many of their concerns that the Submariners were hiding and lying about submarine invulnerabilities. Telling the truth works.

One of the early concepts that was proposed was that the NSL should be able to do short notice and independent research on matters of submarine warfare and capabilities. What Al Whittle wanted, and Jack Williams endorsed, was an ability for NSL to take on studies or paper research of matters that the Navy, as a corporate group, may not do, as it may affect budget or other issues or issues not endorsed by the highest levels. Admiral Bob Long, as Whittle's successor, also strongly endorsed the concept.

The plan was to have a Secure Study Space area as part of the NSL, so it could provide functional support, typing, paper, computers, and so on. These elemental studies were done for Admiral Steve White as COMSUBLANT on Robotic Vessels, and then for Admiral Bud Kauderer, also at SUBLANT, on Over-The-Horizon targeting for the employment of Anti-ship Cruise Missiles.

The idea was similar to Rickover's having OP02 convene a Submarine Characteristic Board to which he assigned experienced nuclear submariners like Don Hall, Guy Shaffer, Al Kelln, and several more,



for six weeks of digging, thinking, and researching new ideas, and interviewing thinkers and industry to postulate the characteristics of next SSN and Trident Classes. With this data, Rickover had the initiative on a new design and the Congress appreciated it.

Admiral Long's favorite task for this capability was that he needed valid and timely talking points for his quarterly meetings with SEC-DEF. He especially liked the idea of adding the evolving cruise missiles launch capability to the attack submarine inventory. History proves that Long's vision was valid and necessary. Other senior officers also welcomed a first iteration in-house study of characteristics in their hands before NAVSEA gave millions to a shipyard to do the same thing. This becomes a great proof of principle, and check and agreement document for our seniors to use before they make large commitments.

Let there be no thoughts that my effort alone was key to the success of the Naval Submarine League. First off, I need to give my highest accolades to Pat Lewis. She was involved from the very beginning. Pat had lost her husband, Rear Admiral Dick Lewis, and needed a mission to focus upon. Since NSL had no significant income for the first years, Pat provided her large basement pro bono for a decade to be the offices of the NSL. In addition, she typed every page of the "*Submarine Review*" that editor Bill Ruhe provided her. The "*Submarine Review*" publication became the voice of the NSL and was part of the effort that Bill Wegner had asked for seven years before. This involved typing for hours most every night after office hours. Her dedication to the success of NSL will forever be honored. And in addition to her official efforts as Office Manager, Pat will also be remembered for her delightful voice as she sang God Bless America at the opening of every Symposium for at least ten years.

Also noteworthy is the effort of VADM Phil Beshany in naming the League. Several titles were suggested, but Phil, in a moment of clarity, suggested the descriptive title "Naval Submarine League" to be short and dead on for our mission. Another critical contributor in charge of our efforts to have a clear and comprehensive charter was Lou Urbanczyk. The effort to establish the NSL was started in October 1980. There was one general meeting held at the Navy Yard that year. Another series of general meetings were held in 1981 in Woody Ramsey's conference

room at ASC. The initial Board of Directors were A.J. Whittle, Shannon Cramer, Charles Griffiths, Lawson Ramage, James Keane, Sanford Levey, Forrest Ramsey and Albert Kelln. I also served as League Secretary with the help of Jason Law and Jim Murray.

As the Founder of the Naval Submarine League, I always prayed for its success and wisdom for its leaders. I purposely wrote the NSL By-Laws to limit any individual to a total of eight years on the Board of Directors or Leadership to keep our ideas fresh. I applaud Earl Griggs for his continued legal advice and oversight for the NSL. GOD BLESS ALL THE NSL LEADERS.

In summary, I fully agreed then, and I do now, on the direction of NSL Leadership. I also agree with Admiral Richardson (CNO) with his 2018 comments about the Navy's lack of success in telling the general public why our nation needs a powerful Navy. My prayer is that the NSL continues as one vehicle to do just that, over and over again.



Naval Submarine League

First Board of Directors August 1982-May 1984

Jim Murray (Publisher), Bill Ruhe (Editor), Al Kelln, Jim Keane, Sandy Levey, Forrest Ramsey, Jason Law
Red Ramage, Chuck Griffiths, Al Whittle, Shannon Cramer, Pat Lewis (Office Manager)
(Not present- Bill Pugh)



**Interview with RADM James Murray, USN, Ret.
June 4, 2015
by Naval Submarine League Executive Director
CAPT Tim Oliver, USN, Ret.**

This transcript has been edited for clarity and readability. The original is available upon request. —Ed.

Tim: A little bit of your thoughts as to why you came into the Navy and your life story.

Jim Murray: WWII was raging when I graduated from high school in 1944. All my classmates wanted to go into military service upon graduating and most of us did. Graduating from high school in June 1944, by July, I was in the Navy's V-12 program at Wesleyan. I had wanted to go to the Naval Academy but had not scored high enough to qualify. My father was a graduate of the Academy which made me eligible for a Presidential appointment.

I tried for a Presidential appointment again while at Wesleyan [Wesleyan University on the Connecticut River in Connecticut]. I made the list and entered the Academy in August 1945, graduating in 1949. Upon graduation I went to a destroyer named USS *Mansfield* on the West Coast. On the *Mansfield*, my skipper had formerly been a submarine CO. I decided I wanted to apply for submarines. My CO gave me a strong recommendation and I submitted an application. I was a qualified OOD as you had to be back in those days to apply for SUBSCOL. I was accepted for submarine school, but the *Mansfield* was sailing for WESTPAC at the time. I left the ship two months before the convening of SUBSCOL. It was probably lucky I did, because I probably would have ended up living in the bow of the destroyer, which was blown off by a mine shortly after arriving off Korea. I never heard whether anyone was hurt.

Tim: Wow.

Jim Murray: I went to submarine school in July 1950. Because I arrived

two months prior to start, I served two months in training on *Sablefish*. After SUBSCOL I went to *Threadfin* for six months then *Irex* all in New London. From *Irex* in 1945 I went to post graduate school in Monterey. I graduated from the post graduate school after three years, in 1948, with a master's degree in Engineering Electronics with a specialty in acoustics having majored in Physics and Acoustics, although the degree did not reflect the acoustics study. From PG School I went to SUBPAC's staff as electronics officer. Finally, in 1959, back to sea on *Wahoo*. On *Wahoo*, I was the 3rd officer, XO and then CO.

And from there, I went into nuclear power training. I graduated from there and did my last six months of nuclear training in Admiral Rickover's office in the old Navy World War I buildings on Constitution Avenue.

Tim: They were still there when I interviewed with the Admiral.

Jim Murray: Prior to the Admiral's office I did six months at the nuclear school in Mare Island. After six months in Washington I spent six months at the Polaris missile training facility in Dam Neck, training in the Polaris system. From there on to command the USS *Robert E. Lee*. I spent a little over four years on the *Robert E. Lee* as the CO of both the Blue Crew and Gold Crew and took *Lee* through overhaul as it was converted from Polaris A1 to Polaris A3 missile system. - I mean from let's see. What was the first missile at this time?

Tim: Polaris?

Jim Murray: Polaris. Polaris A1 to Polaris A3, those two systems had been on the *Lee*. Speaking of the *Robert E Lee* I saw in the paper a few days ago the obituary of Joe Williams the first Gold skipper of *Lee*. He had been a good friend of mine. I had relieved him as Gold CO of the *Robert E. Lee* in June 1964.

Tim: Admiral Joe Williams?

Jim Murray: Yes, Joe passed away. As I said, I relieved him as the second Gold skipper on the *Robert E. Lee* in Holy Loch. At the time



I relieved Joe we took a famous picture with all four skippers of the *Lee*, present, Joe Williams and me (Gold), Chuck Griffith and Ralph Carnahan (Blue). In that picture, you had Chuck Griffiths who had just come off patrol, about to be relieved by Joe Williams then relieved by me and Ralph Carnahan about to relieve Chuck when the Blue crew returned to the states. Ralph was in Holy Loch to become oriented on *Lee* and after relieving Chuck, be my counterpart on the Blue *Lee* crew. There's a picture of the four of us on *Lee's* deck moored next to *Proteus*, which was the tender in Holy Loch at that time. It is seldom that you would have four COs two in command and two relieving at an SSBN at the same time. So, I go back quite a way in the Polaris program.

And from the *Robert E Lee*, I came to Washington and SP. I was head of SP's Training System Branch. That branch developed and installed all the SSBN missile training systems. At that time, we were developing Training systems for Poseidon. We moved on from Polaris into Poseidon. After SP, I went to command of the SSBN tender *Simon Lake*. After command of the *Simon Lake*, I went to the CNO's staff as the deputy of the Strategic Submarine Division OP21. I was Joe William's deputy in OP21. I was his deputy for a short period of time until he was relieved by Jack Nicholson. I had known all these submariners throughout my career since the submarine force was pretty small in those times.

I was selected for flag while OP21B and ordered as Commandant of the 13th Naval District in Seattle because of my knowledge of the Trident System. I was there for about a year-a-half when Chuck Griffiths called me back to his staff in OPNAV. I came back here as the Director of the Strategic Submarine Division (OP21) (We should note that all these numbers have now changed.)

OP21 was the Strategic Submarine Division. OP22 was the attack division. I spent about a year as 21. Don Hall was PM2 (which was the Trident Program Manager), a program manager in the Navy Material Command. They wanted him to go to - I don't remember where he went - he went to Norfolk, whatever the flag is down there, or Charleston. I don't remember where he went. but they wanted me to relieve him and I ended up as PM2 and that's where I retired. Let's get into what you're really interested in - which is how did I became involved with the Submarine League?

Tim: Absolutely.

Jim Murray: I retired in 1981. Al Kelln retired about that time also. He was working for ASC, as I remember. Al called me up one day and said he had a project he wanted to talk to me about. I went to his office at ASC, and we kicked around forming the Submarine League for a large part of an afternoon. Al presented his ideas about getting together with all the flags and creating a new group called the Submarine League. Members of the League would be retired submarine officers and other submarine-oriented people interested in the future of the submarine force. I thought it was a great idea as has anyone who has ever heard about it. Al was the impetus for the League and can give you all the startup history.

At the time, he talked Al Whittle into becoming the chairman of the board. Al called me up one day and said, "Hey, Jim, I got a project I want you to take care of for me. I would like you to be the publisher of the *Submarine Review*." I said, "Okay. I don't know anything about publishing a magazine or a review." "But you'll work with Bill Ruhe and go out and set up the magazine." Bill and I worked closely to set up all aspects of the *Review*. At the time, I looked around at many printers in the area. And of course, we also worried about cost in those days, as we always do. I went around the neighborhoods, to various printers in the shopping centers, to find a printer. I found a printer in the Pan Am Shopping Center, which is on Lee Highway. It was called "We Print". I discussed the format of the magazine, the number of copies, the quarterly time frame and the cost with the printer. He seemed fully capable of printing the magazine to our specifications and I chose him as our initial printer.

Bill Ruhe and I had a long discussion about what the format of the *Submarine Review* should be. We decided it should be a small magazine about the size of the *Reader's Digest*. As a result, we formatted the magazine with a format similar to *Reader's Digest* with a comparable type cover and a similar workup of colors and format - well, not colors but typing. I tried to price this out with the various printers; although most of the layout work was being done by Pat Lewis. She did the work in the office at the time and out of her house. It was after her husband Dick had passes away. Pat was invaluable in the assistance she provided us.



We worked very closely with Pat in putting together the first magazine. We considered having advertisers, but decided it was an unnecessary complication. We did not initially take advertisements. A few years later, we decided that a good way to make money was to add advertisements to the magazine. So, we initiated suitable advertisements.

All articles were funneled through Bill Ruhe who was a very prolific writer and editor on submarine matters. I don't know what you found out about Bill. But Bill, I think, was working for General Dynamics. He had written many articles on the submarine force and submarines. As I said he was a very good and prolific editor. I worked very closely with Bill as he set up the articles and put the magazine together. I don't remember where the typesetting was done. I think it was done by Pat, but I'm not sure.

Tim: Sure, sure.

Jim Murray: I remained as a publisher of the *Review* until I'm not sure of the year. I think it was about 1988. It was about five years of time that I was with it. I think this summarizes about everything I remember, but my memory is poor. It is just not very good anymore, Tim.

Tim: I'm impressed.

Jim Murray: It used to be a lot better.

Tim: Well, you said several things that really sparked interest. I'll just share with you that we are trying to digitize all the *Submarine Reviews* much like the Naval Institute has done with the *Proceedings* in their history of the magazine. We've been talking with them for ideas and guidance. But we think it's a real treasure trove of history and a researcher would love to have all that.

Jim Murray: Probably, I have every copy that was written except there was one time where something happened with my membership. Either they didn't renew my membership, or something happened to it, but I lost a few months or a year. I'm missing a few magazines. But I have

practically the entire *Submarine Review*.

Tim: Well, I had a member who said, “My wife says if I don’t get rid of this, I’m going out with them. So, can you guys take a full set?” And of course, we’ve said absolutely - because we wanted to have that.

Jim Murray: Yeah. Well, as I say, I have just about every copy. I probably have extra copies of the first edition back when we were putting it together making corrections.

Tim: You worked at SP?

Jim Murray: When I worked in SP-15, the training division, Levering Smith had retired, and Bob Wertheim was the Director of SP. Bus Cobean was back there at that time as Deputy Director. And who relieved Bus? I don’t remember who relieved Bus. I guess Bus was still there, as the deputy director, and as the senior submarine guy. I don’t know how it’s run now, but that’s how it was run when I was in SP. Usually, a very senior submariner was the deputy.

Tim: It’s an amazing history. The American public just can’t imagine what a technological achievement that was.

Jim Murray: Well, that’s right.

Tim: So, tell me about your early days of submarines.

Jim Murray: Well before I went to submarine school, I went to *Sablefish* in training. Julian Burke, a former war prisoner, was skipper of *Sablefish*. Chuck Griffiths was on *Sablefish* as the 5th officer at that time, and I was in training. One day, they were training me on becoming a diving officer. I suddenly ordered too large an up angle on the bow planes creating a large up angle on the boat putting the Captain’s lunch in his lap, since the CO sat at the rear end of the wardroom table.

Tim: Great. Great.



Jim Murray: For a little while after that, I was not very popular. But I had a good learning experience on *Sablefish* before going to submarine school. Submarine school was still six months at that time. We did all our training in Long Island Sound, as did all the boats that were in New London. Those were the school boats used for training.

Tim: Sure. So, your induction into the nuclear power training program, what was that process?

Jim Murray: Well. I was the CO of the *Wahoo* when Rickover selected me after putting me through the study program - I think he put me on the study program because we were having so many delays in new construction ships. - I shouldn't guess why, but anyway. And so, I took the study course. I went back and passed the test on the study program a year later. I was then ordered to nuclear school at Mare Island. I started that in January of 1963. I spent six months in the school. After that I went back to NR for six months - where I was to qualify on a prototype with three of those months at a prototype and three of those months at NR qualifying by taking the engineer's exam. You've never heard of this or maybe you have.

Tim: No. I mean when I went through it, it was six months in prototype just for the initial training. Now, the three months at NR stayed pretty consistent before going to command.

Jim Murray: Okay. Well, I was six months at NR as the base, but I had a three month period to qualify on the prototype. As they say, I was heads up and tail down to qualify.

Tim: So which prototype was this?

Jim Murray: I went to the West Milton prototype. I would go to classes and lectures in the school house during the day. Then at night qualify on systems and stand watch in hull. We split our time by being in hull at night and go into the school house during the day. And so, each day I was working about 16 hours to qualify and did.

Tim: Sure, sure.

Jim Murray: Now, most of the COs that came into the nuclear program as I did, were trained similarly, and went to new construction. I was different. I went to an operating ship. I went to the *Robert E. Lee*. And I did my first two patrols on *the Robert E. Lee* before taking it into overhaul.

Tim: So what kind of training in missiles did you have enroute to the *Robert E. Lee*?

Jim Murray: We were sent down to Dam Neck. I went through Polaris navigation and missile training including the fire control system, it was training set up for the initial Polaris SSBN submarines and I've forgotten how long we were there. But there were submariners more senior than I was going to new construction SSBNs. We lived together in a house on the ocean in Virginia Beach and went to the school during the day. We drove up here to Washington where our families were on weekends. The other two COs that trained with me were Don Miller and Ernie Barrett.

Tim: Well, you spent so much time at sea in that period.

Jim Murray: Oh, I did, yes.

Tim: Yes. It really was such a demanding time for submariners to man up the submarines and be underway.

Jim Murray: Yes.

Tim: Did you get to see the documentary that was recently done? They have Rickover starting the program.

Jim Murray: Yes. On PBS, I did see that. I saw most of it. I don't think I saw the whole thing.

Tim: I think for people to realize we built 41 ships - and those are just



the SSBNS - in what, seven years?

Jim Murray: Well, that is what caused a manning problem for the submarine force and the Navy. Of course, finding people to man those 41 submarines with two crews - and particularly senior people. That's why I had the *Robert E. Lee* for so long. Who has a ship for four years? There, but for the grace of God go I, as you know.

Tim: Right, right. And the overhaul is no piece of cake.

Jim Murray: Yeah. Well, what else can I tell you? Is there anything?

Tim: I think we're good for today and I so appreciate you being willing to sit down.

Jim Murray: Very happy to.

**Interview with VADM John Nicholson, USN, Ret.
September 11, 2015
by CAPT Bill Hughes, USN, Ret.
and CAPT Jeff Fischbeck, USN, Ret.**

Interviewers: Okay. We'll start from the beginning. Where'd you grow up?

VADM Nicholson (hereafter VADM): Well, I was born in Salt Lake City, but I don't remember much of that. Then when the Depression hit, my dad's business went to hell, and so we moved out to Nevada, in a little town of a hundred people. They had 18 kids in the school of eight grades, three of whom were Nicholsons. We then eventually wound up going to Elko, Nevada and then to Winnemucca, where I graduated before going to the University of Nevada. I joined V-5 and then wound up getting an invitation to go to the Naval Academy.

It was during the war, in '42, when my dad got a job to go down and build the ships in Oakland, and I was left without a place to live. So, I joined a fraternity two doors down. Immediately, the big brother they assigned me came back from the Naval Academy where he had an interview. He didn't make it. So, I said, "Oh, you should be proud to even have the opportunity." I'd never been anywhere. I'd never seen the sea or anything or heard about the Naval Academy.

He said, "I'll get you an invitation with Senator McCarran's secretary." So, the next day, I wound up with an interview and the gal said, "I can give you a third alternate appointment."

And I said, "A third alternate would never make it. I'll just go ahead and continue college. I expect to get called up in the V-5."

Out of the blue, just before I was to be called, I got something from McCarran, "Are you still interested?" I wound up going and being accepted. I'd never seen the ocean. I'd never heard of the Navy. It was just a fluke, but it was –

Interviewers: Turned out to be a pretty good fluke.



VADM: - a pretty good start.

Interviewers: So, how did you enjoy the Naval Academy?

VADM: Very much. I really did enjoy it. It was only three years then, so that was good.

Interviewers: You were the class of?

VADM: Class of '47. I graduated in 1946. It was difficult, but not too difficult.

Interviewers: Well, you've covered my first five questions very well. Thank you. So, what made you decide to go submarines?

VADM: I graduated and, of course, had to do two years before I could wind up in submarines, but I had never thought about it. I didn't even know what a submarine was. I was assigned to a minesweeper tied up at that island off of San Francisco ... Treasure Island. We never got underway. There were two classmates. One of them was made Communicator as the ship is tied up doing nothing, and they assigned me as Engineer. They assigned me a boatswain mate, and I was told, "You've got to inventory every spare part there is on this ship."

So, I went down there every day. I was so miserable. No help, no seamen there. Then, fortunately, they sent me to Mine Warfare School. So, I went there for four months, and that went pretty good; but then I got orders to a DMS and went out to the Pacific. I was in New Guinea. Our job was to inventory (I was big into inventories those days!). I ran across this mail coming through, and it said something about volunteers for the Submarine Force. I thought, "You know, I've been in for two years now, and nobody knows where I am or gives a damn. That'll be a small ship, a small force, so I'll put in for it."

So, I was in the next class of Submarine School, and the rest just picked up from there.

Interviewers: When did you qualify in subs and which boat?

VADM: 1950, on *Tiru*.

Interviewers: You were on there with Dean Axene, right?

VADM: Yes, Dean Axene was Exec at that time.

Interviewers: All right. Great guy, as we discussed on the way down here.

VADM: Yes.

Interviewers: Did you get any special training on your way to the submarine? Did you go to Submarine School, or —?

VADM: I went to Submarine School. Funny you mention that. When I qualified for submarines in 1950, a secret message came out right after I got qualified, asking for volunteers for the nuclear navy that was going to be happening. They put a team together in the Atlantic and one in the Pacific, and I wound up being one of the two in the Pacific. As a matter of fact, Jimmy Carter was one of the ones in the Atlantic.

So, they sent us to an interview with this Captain Rickover, who nobody had ever heard of – not a soul. I went up to COMSUBPAC and all around, and nobody knew him. They said, “All we know is he’s in the Bureau of Ships, and down in the bowels of the Bureau of Ships.” I walked in there, and I was really feeling pretty good about being selected. And Rickover said, “Did you study any nuclear physics to prepare for this interview?”

And I said, “I just got qualified. But I did go to a radiological safety school two days.”

And Rickover’s face went like that, and he said, “Did you read any nuclear physics books?”

And I said, “No, I didn’t. I had just qualified.”

“Well,” he said, “what books do you read?”

And I said, “I read a lot of Mickey Spillane.”

[Laughter]



His face just went like that, and he said, “How are the submarines operating out there now? You’re in the Pacific?”

I said, “Well, we get underway about 8 o’clock, and then we do exercises, and then the skippers all race at 1 o’clock to get to the buoy, because the first one there gets to the bar first.”

Rickover just said, “This is terrible!” He said, “Have you been studying since?”

And I said, “Well, my wife and I went to movies quite frequently, because they’re only 10 cents out there.” And with that, he said, “You’re out of here.” He said, “You’re wasting your goddamn life. Get out! I don’t want to ever see you again!”

So, I thought I was really done and couldn’t believe it when I got orders (again, with Les Kelly, the other one from the Pacific) to go to Westinghouse.

Interviewers: So you didn’t go back for re-interview? You just got orders?

VADM: Just got orders out of the blue.

Interviewers: That’s fascinating.

VADM: The only reason I could think now, looking back and knowing how his interviews went and all, I think he thought, “He’s naive and lazy, but at least he’s honest.” [Laughs] I don’t know. Anyway – it was almost a miracle.

Interviewers: I think you’re right about he was looking for honesty. At a lot of those interviews - he didn’t want to be BS’d, I guess. That’s the bottom line.

VADM: That’s right.

Interviewers: Now, you’re selected to be a nuke. What happened then?

VADM: We went to Westinghouse, and there were two officers and ten

men, and –

Interviewers: Ten men being –

VADM: Enlisted. Chiefs and First-Class. One of them was Third-Class, as a matter of fact. Anyway, Westinghouse's job was to train us. So, Les and I worked with PhD's, and they'd tell us what to read. We went to some courses at the university there in Pittsburgh. Then we helped the enlisted kids, because they were in over their head completely. We thought we'd be there just six months, but it turned out to be 18 months. Then we got ordered out to the *Nautilus* prototype in Idaho.

Interviewers: During those 18 months, what were they teaching you?

VADM: Well, it was primarily basic physics, and nothing tied to a submarine. In fact, thinking about it, there was not that much nuclear. It was primarily basic physics and math.

Once that six months was over, Les and I worked on the staff with the Westinghouse people, it turned out, for another year.

Interviewers: What kind of work were you doing with the staff?

VADM: I don't remember too much. They'd send us from one of the experts to another, both Navy people and Westinghouse people. It was helpful. At night we'd go to courses at the universities there. I forget which one. And finally, we went out to the prototype, and it was an identical engine room to what we see now.

Interviewers: What year did you go to the prototype?

VADM: Let's see. Well, January of '51 was when we went to Westinghouse, and it was 18 months, so '52 or '53. Our job then was to train the crew. We didn't have any procedures at all. We got a steam plant and no diesel and –

Interviewer: No procedures whatsoever.



VADM: No, none whatsoever. That was my job. Because Les Kelly was senior, he made me MPA. So, I was sort of in charge of getting the procedures. That was the biggest job we had, and then training, learning about the plant and getting it all ready to go critical.

Interviewers: How many men were there?

VADM: I meant to mention. After our 10 and 2, there was Bus Cobean, who was a classmate, and 40 other enlisted. So, we had like 60 people - something like that.

Interviewers: And three officers?

VADM: Well, there were more officers. There were a couple of others, Bill Lehman, Bud Wood. He was, I guess, a warrant officer or something. I'm not positive. But I was responsible then for the Primary System, so I really had to know that thing. Later on, Rickover wanted to see me, and I thought, "Oh, he's going to congratulate me for doing such a great job."

I never change, I guess. He said, "Do you know that Primary System well?"

And I said, "I know every weld in that whole system, yes," because we had to test them.

And he said, "Why didn't you tell me that some of the pipe was a quarter of an inch and is liable to break?"

And I said, "Well, I just thought you guys, you were in charge," and one thing or another.

Rickover says, "You're supposed to tell me anything that's going wrong, and you'd better not ever do that again. That's what I want. I want all of your people to tell me what's going wrong."

And the crew did quite a bit of that. Some things were automatically started. You push a button, and the pump for the oil would go, then the sea water. The troops said, "This is ridiculous. That's not going to be a positive. That's liable to be a problem," and they actually made changes. But that's what he wanted to know ... what the hell needed to be done. We finally got the crew trained and got the procedures going. I don't

remember the date now when we went critical. We're getting ready to go critical, and one of the electricians, Wes Heddington, said, "I haven't understood anything that's gone on in the last two years, but, boy, can I do field day. I'll take care of that."

[Laughter]

VADM: So, we did bring the reactor critical.

Interviewers: Was Rickover there for that?

VADM: Yes. And it actually worked well and actually provided power to Idaho Falls just to show that we could do it. Of course, that was the first reactor that had actually provided any power to anything. Most of us who had been there the longest went right to the *Nautilus* to be the commissioning crew.

Interviewers: How long did you stay at the prototype, just operating it? Very long?

VADM: I think - let's see. Well, we went to *Nautilus* in January of '54, I think. I'm not positive. I think we were there about two years. I was on *Nautilus* through Operations Officer and XO, when I got orders off of there. I was the EOOW when we got underway the first time.

Interviewers: Tell me about that, the first underway.

VADM: The first underway, Rickover is aboard, of course. So, they ring up, "All back one third," and suddenly we hear a hell of a lot of noise coming out of the engine room. So, I rang up, "All stop," and reported. Rickover was in the engine room himself, fortunately. It was coming out of the reduction gear, and he said, "Well, just use the one screw until we finish getting out of here. I don't think it's really serious." So, we backed on out and got out alright on one screw. That was when Wilkinson, who was the skipper, sent the famous message "Underway on Nuclear Power." So, that was really something.



Interviewers: What did you find out? What was the problem with the reduction gear?

VADM: I forgot the exact thing. It was very repairable. It was nothing really serious.

Interviewers: So, you eventually went and got the two screws for sea trials.

VADM: Yes, we got the two screws and went on and did the initial trials.

Interviewers: Did you do an emergency backing during the initial sea trials?

VADM: I'm not sure whether we did that the very first time, but Wilkinson was gung-ho. "How fast can you go?" "How deep can you go?" "All ahead flank." "All back emergency." ... all of that stuff.

Interviewers: All right. It was Wilkinson, not Rickover, who was doing that.

VADM: Yeah, that's right.

Interviewers: [Laughs] I guess maybe Rickover learned something during that time. That's great. What other submarines did you serve in besides *Nautilus*?

VADM: I was moved up to XO of *Nautilus*.

Interviewers: So, you relieved Dean Axene as XO?

VADM: Let's see. I'm not sure. We went up, one after the other. First, I went to Operations Officer. Kelly may have [relieved Axene as XO]. I'm not sure. At any rate, we went up as Operations Officer and then XO, and then go off to another boat. I went to *Skate*, which was - isn't that terrible? I'm forgetting skipper's name.

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Interviewers: That's all right.

VADM: That's awful.

Interviewers: Were you XO of *Skate* as well?

VADM: Yes, I was XO of *Skate*. I'll have to fill this in later. He was a terrific guy.

We then were training to go to the North Pole. We had the equipment put on there from Dr. Waldo Lyon. We had the same things that *Nautilus* had, and I was a Navigator as well as XO. So, we were up off Norway and ready to go under and be the first ones at the North Pole, and suddenly we got orders, "Do not go under the ice until further notice." Over the BBC radio, we heard the *Nautilus* had just done that. That was kept so secret, that - Jim Calvert was the skipper - he was the only one who knew that that was the situation.

Interviewers: So, you guys were the backup?

VADM: We were the backup. They then let us go, and we went right to the Pole. We couldn't surface right at the Pole. The ice was just too thick then. We then started surfacing through polynyas and letting the crew out and so forth. So, we learned how to do that ... get in the middle of a polynya and then pump water out and surface.

Interviewers: Polynya being a place where the ice was very thin.

VADM: Yes. In fact, there was no ice. It was in the summer.

And so, we decided we'd go - they authorized us to go try to find Ice Station Alpha, which was manned by the Air Force. It was quite a long way away, but we managed to contact them. Then we rigged a thing to sort of get a direction where this island was, then contacted a Major in the Air Force. He said, "There is a big polynya right next to us today. I'll get a motorboat to get close enough, so you can track it by sonar." So, we did that. We got right in the middle of there and surfaced. That Major said he'd never seen anything so weird in his life as a periscope



suddenly sticking up right next to his little boat.

[Laughter]

VADM: But at any rate, we wound up surfacing ten times, and we were the first to be able to go up in those polynyas. So that was a really good experience.

Interviewers: So, you were the first submarine to ever surface in the High Arctic.

VADM: Yes, that's right.

Interviewers: *Nautilus* was the first to go under the North Pole -

VADM: That's right.

Interviewers: - but you were the first to surface.

VADM: We were the first ones actually doing that. I'm glad I remembered Jim Calvert. How could you not remember Jim Calvert? [Laughs]

Oh, the other boats. I wound up going to *Pickrel* as skipper. I was on there about, I think, ten months, which was great. Oh, we had a ball. Finally, a fun submarine. [Laughs]

Interviewers: What kind of fun things did you do?

VADM: Oh, I don't know.

Interviewers: Or, maybe that's classified. [Laughs]

VADM: Well, no. They decided - the crew was a big party thing, and one thing they liked to do was hold up a pole and then go under. You know how you go backwards like that?

Interviewer: Oh, yeah, the Limbo.

VADM: They were just wound up. All sorts of fun things, lots of parties. Then, suddenly, I got orders to *Sargo*. It turned out there were some problems with the previous skipper and, again, we were equipped with under-ice sonar. We tested all this out. There had been other submarines that had gone to the Arctic through the Atlantic. However, this would be in the winter with *Sargo* through the Bering Strait. That was an interesting thing. Very difficult.

Interviewers: Where was *Sargo* home-ported at that time?

VADM: Pearl Harbor.

We got through all right with this mine detector that had been rigged so you could tell whether you'd be able to go under the ice ridges that were ahead and a fairly good picture of where you could go between them.

Interviewers: How much room was there between the bottom of the ice, on average, right there in the strait?

VADM: In the Bering Strait at that time, we'd be eight feet off the bottom, if we were lucky. We wound up – I think it was eight days or so of this - going through.

Interviewers: Must've been a lot of tension.

VADM: Yes. We did rotate the XO and another officer with me. We finally got into the deep water. Then the sonar that we had been using failed. So, we are now in the deep Arctic Ocean, but how are we going to get out? Are we going around through the Panama Canal? The engineer who was responsible for the sonar suggested, "Maybe we can connect this up to the regular sonar to get back out."

And so, we assigned our guys to it, and they did manage to get it to work. We went under another ice island to make sure that we could do that. Then, we're ready to go out through the Bering Strait, and we hadn't gone very far when suddenly there is ice on both sides. So, I



picked one and picked the wrong one. We hit the ice and it drove us down, six feet off the bottom. Bent the scope over, but we were okay as far as watertight integrity was concerned. As soon as we could, we surfaced. The scope was bent, and the sail was smashed in. So, we got together with the sonar engineer, and asked, “What the hell happened?” It was determined that the fixes that he had made on the sonar had gotten rid of its side lobes. So, what we decided is, “Don’t go into 200 or 500 yards. Just get the picture out at a thousand yards and then just wing it. Time it.”

Interviewers: Dead reckon your way in.

VADM: Yeah, but then we made it out. It was a very significant accomplishment, really, that hadn’t been done before.

Interviewers: That was the very first winter transit from the Pacific into the Arctic and back. No one had ever proved it could be done until you did it.

VADM: Right.

Then I had command of the *Stonewall Jackson*, so we finally thought, “Boy, we’re going to get some off-crew time. It’s about time.” We were going to go load up missiles for the first time up ...

Interviewers: You went to the *Jackson* when she was still under construction?

VADM: Yes. I was Blue Crew and put her in commission. Then we went through initial sea trials.

Interviewers: Was Rickover onboard for those sea trials?

VADM: Yes. He rode when we were first going out. Being a Mare Island boat, we were going under the Golden Gate Bridge when Rickover sent word, “Send Nicholson here.” And he said, “I understand that you’ve got a rider on here that is telling you he’s going to be responsible for

typing your letters.” Rickover told the rider, “That’s why you’re on here? Is to type the letters? You’re getting off of this ship immediately.” Fortunately, we were able to offload the rider. We got in touch with him after we finally got back and apologized.

Interviewers: Your yeoman had to do all the letters?

VADM: That’s right.

Interviewers: That’s great. So, from there, did you actually do patrols on *Stonewall Jackson*?

VADM: Oh, yes. We got one patrol. When the ship was in Bangor after leaving Mare Island, we took leave and went out to rent a place in Pearl Harbor with a wonderful view and everything. We were going to have an off crew there. Just before getting back to Bangor to start our patrol, Les Kelly, who was now in charge of personnel, calls and says, “Congratulations.”

And I said, “Uh-oh,”

Then he said, “You’re going to relieve Yogi Kaufman out in Idaho.” [Laughs] My wife was from Boise, Idaho. That’s where we got married, and she couldn’t stand Idaho Falls at all. It was pretty bad. She was really mad. Of course, we had to cancel everything because we weren’t going out to Pearl anymore. It was the only time I ever remember Pat was so mad. I never got a letter. I never got a word from her on patrol.

[Laughter]

Interviewers: Remind me when this is over to tell you about my orders-to-Idaho story. Same problem. [Laughs]

All right. Who are the most memorable people - besides, obviously, Admiral Rickover - that you served with on submarines?

VADM: Well, Wilkinson has got to be one. I mean, he was one of a kind, and he was fun. It was just a really, really good, fun ship with him.



Interviewers: Did you and Admiral Wilkinson pal around together out here before he passed away?

VADM: Oh, yes. I also went to his memorial service, which was memorable. And then there was Jim Calvert. He was one of those who let the XO pretty much run the ship on a day-to-day basis, and he was very, very good. Those two stick out more than anybody.

Interviewers: They were two of the best that we had, along with yourself and couple of others. Based on your experience on submarines, what are the most important things you took away that you applied later on in life through your other senior billets and as a civilian?

VADM: Well, I guess the most memorable was COMSUBGRU 8 in the Med, where I was responsible for all of the NATO submarines at that time. That was a delightful tour, especially for Pat, who had not been happy with some of the others. She became essentially an Italian, with the gestures and everything else. So, that was very enjoyable. And we had a real interesting time when Sixth Fleet came down and said, "The surface ships here in the Med have got towed arrays, and they are not testing that equipment." So, he said, "I'm going to make you in charge of a division that is responsible for making the surface ships successful." And then the admiral who was responsible for the P-3's - he and I were to tie these together. We wound up with a submarine tracking a submarine coming in past Gibraltar. We wanted to track him all the way in. We got the surface commodore together with us and said, "We've got to set up a barrier here, as they come into the bigger part of the Med."

Unfortunately, the first time we tried that, his ships go to refuel, so we lost contact. The submarine had to get contact again. Then we got into the major part of the Med and got the surface guys connected. Every time this submarine came up to look, why, he had a destroyer on his tail. So, one Sunday, he was tracking the *VOGE* ... one of our surface ships. He suddenly headed full bore with his submarine out of the water, with all the people on the ship watching, when he decided, "I'm going to cut that [towed array] sonar."

Meanwhile, the *VOGE* skipper for some reason slowed a bit, and the

submarine roared right in and hit the *VOGE*, smashing into him. And, of course, we reported that to Sixth Fleet. It made Sixth Fleet a big success, because the towed array sonar had done the job. Harry Train was Sixth Fleet, and he wrote up this success. I'm sure that's one of the things that was helpful for me. I was hoping to be SUBLANT or SUBPAC. But at any rate, I got sent to be Al Haig's deputy. He was the head of SHAPE in Belgium, so we went over there for two years. And, incidentally, he was one of the best officers I ever served with. He told you what he wanted for the year. I mean, "I want to cut the amount of time it takes to get supplies to NATO from the U.S.," and things like that. So, that's all he'd tell you. You had to pull together a program and, of course, report it to him and all. He never once checked on the whole thing. You're suddenly up, giving a presentation to all the NATO people. He never even reviewed it, but it was apparently alright, because he was one of those responsible for me getting third star, I'm sure; and so was Harry Train.

Interviewers: So, between *Jackson* and Group 8, what did you do then?

VADM: Well, I was COMSUBRON 15 out in Guam.

Interviewers: Your wife probably didn't like Guam either, did she?

VADM: She liked it. I wound up with a tour in the Pentagon when I made admiral. I was the deputy commander of BuShips and, in fact, it was the last time it was BuShips instead of NAVSEA.

Then I was in the Pentagon, responsible for reporting to SP [as the Director of Strategic Submarine Division and TRIDENT Program Coordinator in the Office of the CNO].

Interviewers: What accomplishment or assignment in your submarine career are you most proud of? And why?

VADM: I guess the one that has gotten very little publicity or anything, was when I was a Lieutenant Commander in the CNO's office. Dean Axene, who was on *Tiru* and now the skipper of the *Thresher*, contacted me for some reason. He said, "There's all sorts of things wrong with the



Thresher. I think you ought to come aboard and ride and see if we can't get this thing fixed."

So, I went out and rode, and he pointed out everything that was wrong. So, I came back and went to my boss.

At any rate, what we did was we managed, with a lieutenant commander and then a commander whose boss was important, responsible for all the ShipAlts and things like that. With my boss we told the head of BuShips, Admiral James, "This is the problem. You've got a ship that has got all sorts of problems, and we need to get this thing fixed."

And he said, "I'll not only sign this and get you some money, but I'm going to assign Jack Wakefield, an engineer, and he'll honcho it."

So, he came up with a modification to the *Thresher*, adding some 15 feet and – a major thing - and it wound up being the *Sturgeon* class sub.

Interviewers: You kind of initiated design of the *Sturgeon* class, and unfortunately, they didn't get it retro fit into the *Thresher* in time.

VADM: Right.

Interviewer: That's amazing. Speaking of *Thresher*, what do you think were the most important practices that you saw and in the Submarine Force that led to safe and successful operations of the submarines? ... the most important practices that you learned, or practices that kept your submarines safe and made your operations successful, that you learned from someone else, or you did yourself.

VADM: I don't know. It just seemed to me the lessons that were learned from *Thresher* were about the most important. They were felt on the *Stonewall Jackson*, where we had to change all of the welding and so forth.

Interviewers: So, *Jackson* actually fell under SUBSAFE?

VADM: Yes, exactly, and that was vital. It turns out there were some submarines that had experienced leaks in those systems and really hadn't gotten the word to Admiral Rickover. And it's a shame that it hadn't, but

once he grabbed a hold of that, it certainly made a big difference in safety of the submarines.

Interviewers: Right. What advice would you give to a young midshipman, based on your experience?

VADM: Get into submarines as soon as you can, of course.

Interviewer: Why did you decide to get involved with the Naval Submarine League, and how did that come about?

VADM: I used to go to the annual meetings whenever we could, and my wife would go with me. A lot of times, many of our old bosses were there. So, I always looked forward to it. And then, of course, I was president of the chapter in San Diego early on, when we got that started. I was the chapter's second president. And then, as far as the League was concerned, it would primarily be going back east to give the President's Report, such as recommendations for how to get more people coming in to the League and so forth.

Interviewers: Nothing has changed. [Laughs]

VADM: But the most significant thing is my wife and I would go to submarine reunions on the various submarines that I had served in. It was always such a treat to see the crews over almost each of the submarines that we'd had. But as we got older, there were fewer and fewer of those. And then when my wife - this is several years ago - came down with dementia and was unable to travel, we were unable to go to those reunions. So, what's taken its place for me has been the Southwest Chapter of the Submarine League. The combination of that and the squadron commodores has been a godsend. It's not only to meet and see old friends. It's also like going back to submarine gatherings. Submariners have been a huge help to me. The combination of the League and the commodores has been a really terrific thing. The Commodores have come up with some great ideas, and the Submarine League works hard to have the best speakers. I'm able to sort of keep up with things. It's like a replacement



for reunions. That's what it amounts to.

Interviewers: What do you see as the greatest challenge facing submarines today that maybe the Submarine League could help with?

VADM: Well, I don't know how the League is going to be able to help with the biggest problem, and that's what's happening to the whole Navy - cutting back on the Navy - the amount of submarines and the number of other ships. I'm not sure how anybody can ever turn this around, so I honestly don't know.

I think there has been some real improvements in the Submarine League in the last two or three years ... a lot of attention to trying to get more people to join the League and have them contact people who might be able to help.

Interviewers: Admiral, we appreciate your time. Have you got anything else you'd like to add?

VADM: It seemed to me I forgot more than I remembered. [Laughs]

Interviewers: Well, I think it was good. I can see you've had a wonderful career.

Black Cat, Halsey's Goal Keeper in the Pacific by CAPT Allen Lawver, USN, Ret.

It was January 1984, and I had just relieved CDR Ken Lee as Commanding Officer of USS *Gato* (SSN 615). Tradition held that each Commanding Officer of *Gato* passed on to his relief a small 5 x 7 green wheel book that was kept in the CO's stateroom safe, along with the classified material also held there. It looked just like any common green ledger ordered from the Navy supply system, but it was much more than that. It happened to be the Captain's *Night Order Book* written during one of LCDR Robert Foley's six war patrols in the Pacific aboard USS *Gato* (SS 212). Although separated by 27 years in commissioning dates, my SSN was somehow tied to SS 212 more closely in tradition, operations success, and meaning than I knew at the time I relieved but came to realize more fully just how much over my four years in command.

The United States Ship *Gato* (SS 212), the first ship to bear that name, was designed and built by the Electric Boat Company, Groton, CT. Commissioned in Groton on 31 December 1941, *Gato* was the first ship of her class and prototype for the major portion of the submarines constructed by the United States for service in World War II. Once the *Gato* Class submarines began to arrive in theater in large numbers in mid-to-late 1942, they were in the thick of the fight against the Japanese. Many of these boats racked up impressive war records: *Flasher*, *Asher*, and *Barb* were the top three boats based on tonnage sunk by US submarines. *Silversides*, *Flasher*, and *Wahoo* were 3rd, 4th, and 7th place on the list for the number of ships sunk. *GATO* Class boats also sank four Japanese submarines: I-29, I-168, I-351, and I-42, while only losing one in exchange, *CORVINA* to I-176.¹

From 1942 until September 1945, USS *Gato* (SS 212) saw nearly continuous service in the Pacific; operations were interrupted twice for overhaul periods at Mare Island in 1943 and 1944. During this period, she conducted 13 war patrols ranging in operations from the Kurile and Aleutian Islands in the Northern Pacific to patrols around Truk and Sol-

¹ Roscoe, Theodore (1949). *United States Submarine Operations in World War II*. Naval Institute Press. pp. 525. ISBN 0-87021-731-3.



omon Islands in the Southern Pacific to the Western Pacific for patrols in the Yellow Sea off the coast of Japan. On 15 August 1945 while on her last war patrol, she received word of “Cease Fire” while making an attack approach on a Japanese sea truck. *Gato* steamed into Tokyo Bay on the 31st; remained for the signing of surrender documents on board USS *Missouri* on 2 September; and then departed the following day via Pearl Harbor and the Panama Canal to the New York Naval Shipyard, where she was decommissioned 16 March 1946.

RADM Robert Joseph Foley (Ret), *Gato*’s CO for patrols four through eight, grew up in Long Island and was appointed to the Naval Academy from New York, graduating in 1927. He was a nephew of John Holland, inventor of the modern submarine. While a midshipman at Navy, he was a member of the varsity boxing and track teams and set a college record for the high jump. He reported for duty on the battleship Florida before being assigned submarine duty. He was Flag Secretary for RADM D.W. Bagley, Commander Battleship Division 2 on USS *Tennessee* when the Japanese attacked Pearl Harbor in December 1941.

After Pearl Harbor, he served briefly on the Submarine Squadron 4 staff before reporting to USS *Greenling* (SS 213), which earned the Presidential Unit Commendation for the ship’s performance during three war patrols early in the war. In the fall of 1942, Foley took command of USS *Gato* (SS 212), which he led on war patrols three through eight from 1942 to 1944. Foley continued to serve in the Navy following command; his post war assignments included Commander Submarine Squadron 1 and command of USS *Wisconsin*. He left the service as a Rear Admiral, worked for Raytheon for several years, and moved to Richmond, VA in 1970 when he retired.

For his performance during operations in the Pacific, LCDR Foley was awarded the Navy Cross three times. Foley was cited for extraordinary heroism on multiple occasions. Portions of his citations read:

“...with bold skill and daring, maneuvered his ship into position to strike the enemy and launched a vigorous attack.” ...”Encountering strong hostile opposition and repeated depth charge attacks throughout this hazardous period, ... daringly and aggressively fought his ship at every opportunity, ... skillfully evading the enemy and returning safe to base. When his craft was severely depth charged during one action

resulting in extensive hull damage and loss of power, he valiantly kept his crippled ship under control and brought her back for repairs without loss of personnel, ... delivered smashing torpedo attacks against escorted hostile shipping and, ... [made] bold and effective use of his deck guns, ... Employing skillful evasive maneuvers while under depth charge and aerial bombing attacks, he brought his ship through the furious engagement without damage and returned his ship safely to port.”²

On her fifth war patrol (19 March-6 June 1943), *Gato* landed Australian commando coast watchers at Bougainville in the Solomon Islands on several occasions. In one special operation, the crew evacuated 27 children, 9 mothers, and 3 Nuns. During a submerged radar attack approach 4 April 1943, in the same area of operations, she was shaken so violently by exploding depth charges that she returned to Brisbane for temporary repairs until she could return to Mare Island for overhaul via Pearl Harbor late that year. The depth charges were so strong that the torpedo tubes were bent.³

Gato's seventh war patrol (18 November 1943 10 January 1944) took her north of the Bismarck Archipelago. She rescued a Japanese soldier from a life-raft on 16 December; then attacked a convoy in the Saipan-Massau traffic lanes four days later to sink a cargo ship and scored damaging hits on another freighter. After two hours of dodging depth charges, she finally evaded her attackers; surfaced at dusk in a heavy rain squall and while headed in the most likely direction of the damaged freighter, recharged batteries and reloaded torpedoes.

Upon surfacing Foley discovered two escort vessels at close range and an unexploded depth charge lodged on his ship's topside. The two enemy escorts headed in her direction. *Gato* turned away at flank speed as the escorts opened fire. Afraid to submerge with the depth charge topside, nonetheless, Foley attempted simultaneously to find and reengage the freighter, reload his torpedo tubes, and escape the escorts firing shells at him. Having put sufficient distance between himself and the enemy escorts, Foley put the Japanese prisoner, picked up two weeks earlier, and the ship's Gunnery Officer on deck where they dislodged

2 Navy Cross citations. The Hall of Valor Project. Accessed 16 Nov 2018. <https://valor.militarytimes.com/hero/20419#17701>

3 Mr. Tim Milas, crewmember USS *Gato* SS 212. Interview by Samuel A Mead. *Democratic*. Portsmouth, NH 23 Jan 1988.



the depth charge and loaded it on a rubber raft while the ship submerged from under it, all the while escaping the charging surface ships.⁴ This unbelievable interaction in *Gato's* history became an episode on the Ripley's Believe It or Not radio show.⁵

Seven days later, *Gato* established another first by conducting a surface battle with an enemy float plane called a JAKE, which attempted four bombing runs against the ship while on the surface. *Gato's* crew manned her two 20mm's and single 50-caliber gun to force the plane to abort each bombing run. This disturbed Vice Admiral Lockwood, commander of submarines in the Pacific fleet, because he didn't want his submarines engaging in air battles with planes.⁶

Gato's vigilance in patrolling the north entrance to Bougainville



Sound and her aggressive attacks during her Fourth through Eighth Patrols in the Solomon Islands, Bismarck, New Guinea and Truk areas earned the ship the sobriquet "the indestructible *Gato*" and the nickname "The Goalkeeper" from Admiral William F. Halsey, the area commander.⁷ *Gato* earned 13 Battle Stars during WW II and a Presidential Unit Citation for Patrols 4-8, during which she was credited with the destruction or sinking

of seven enemy ships totaling 22,960 tons.⁸

The nickname "The Goal Keeper" stuck and was used by the only other ship to bear the name *Gato*, my ship the nuclear submarine USS *Gato* (SSN615). But this name was not the only one to stick. As the old Navy SS 212 logo would indicate, the nickname "Black Cat" ("gato") is

⁴ Lockwood, Charles A. (1951). *Sink 'Em All: Submarine Warfare in the Pacific*. E.P Dutton & Company. pp 134

⁵ "The Bomb That bounced Back". *Ripley's Believe it or Not*. Vol 1. Sept 1953. <http://www.ussgato.org>. USS *Gato* (SS 212)

⁶ Lockwood (1951) pp 135

⁷ Roscoe (1949). pp. 203.

⁸ Roscoe (1949) pp. 535

cat in Spanish) and the submarines *Gato* have been linked together since WW II. But it was not until recent history on the eve of a departure to a Mediterranean deployment did the names *Gato* and Black Cat become synonymous. “Med rats beware! The Black Cat is on the Prow!” became a permanent part of the ship’s history.⁹

SSN 615 maintained the tradition of exceptional service established by SS 212 and was as tough as her WW II diesel submarine sister ship. In 1969, *Gato* collided with the Hotel Class Soviet submarine K-19 in the Barents Sea at a depth of some 200 feet. The impact completely destroyed the K-19’s bow sonar systems and mangled the covers of its forward torpedo tubes. K-19 returned to port for repair but the *Gato* was relatively undamaged and continued her patrol.¹⁰

The Black Cat was the first nuclear-powered submarine to completely circumnavigate South America and the first nuclear-powered submarine to navigate the Strait of Magellan during its 1976 *Unitas* run. It was on this voyage that *Gato* became the first nuclear submarine to travel through the Panama Canal. The Black Cat and her crews completed numerous successful special operations in the Atlantic, Mediterranean, Caribbean, and South Atlantic, which I am unable to detail here, and earned many awards during more than 28 years of service, including five Meritorious Unit Commendations and multiple department efficiency and personnel awards.¹¹

In 1986 after participation in two highly successful Fleetex’s in the Atlantic, COMSECONDFLT commended *Gato*’s performance and endorsed *Gato*’s QUICKLOOK analysis of the ASW portion and the ship’s recommendations. Following the first exercise, he cited the ship’s recommendations as the “Most significant submarine force contributions to Battle Group ASW readiness in recent history.”¹² After the second FLEETEX, COMSECONDFLT concluded a message by saying, “When *Gato* speaks, I listen.”¹³

In May 1986, USS *Gato* crewmembers and families celebrated the

9 Decommissioning Departure Ceremony Pamphlet (April 1995). Accessed 16 Nov 2018. <http://www.ussgato.org>, pp. 8-9.

10 Drew, Christopher and Sontag, Sherry (1998). *Blind Man’s Bluff: the Untold Story of American Submarine Espionage*. New York, NY: PublicAffairs. pp. 140, 281. ISBN 1-891620-08-8

11 Decommissioning Departure Ceremony Pamphlet (April 1995), pp. 16-17.

12 Decommissioning Departure Ceremony Pamphlet (April 1995), pp. 18-19.

13 COMSECONDFLT 291944Z.



fortieth anniversary of the commissioning of their namesake submarine with an awards ceremony at the Nautilus Memorial in Groton, CT. In coordination with the unveiling of a new 52-foot-long scale class model of the diesel submarine *Gato* on display at the Naval Submarine Museum, I broke with the tradition of the previous *Gato* skippers and presented Foley's *Night Order Book* to the curator of the museum to complement other vintage displays there. Before the SSN 615 was decommissioned, USS *Gato* (SS 212)'s battle flag was also presented to the Museum.

Similar to today's submarines, the WW II *Night Order Book* was used by the ship's Captain to give instructions for operating the ship while he slept or was otherwise not present. The SS 212's *Night Order Book* was written by Captain Foley during the height of the submarine war against Japan in the Pacific and consequently contained many interesting accounts of *Gato*'s war time operating procedures, precautions, and adventures during wartime patrol. This book covered just a small portion of the six war patrols under command of then LCDR Robert Foley.

In January 1988, *Gato* (SSN 615) held a 20 year since commissioning birthday celebration for the crew and ship's friends. Invited and attending their second reunion since the war were 17 WW II veteran crew members from SS 212. For two eventful nights, the officers and enlisted men from the old and new *Gato* crews congregated in a celebration of submarine operations and traditions. The words on the pages of the *Night Order Book* became real as the crew traded sea stories with those sailors and officers who had experienced wartime submarine fighting.

The original plan was to have RADM Foley present his *Night Order Book* to the museum but Alzheimer's disease had taken its toll, and his wife Louise Foley sadly reported he had passed away shortly before the ceremony was to have taken place. But RADM Foley's grandson, Charles Foley of Washington Grove, MD made the trip to receive the *Night Order Book* from me on the pier at the Memorial. He in turn passed his grandfather's war time *Night Order Book* on to Senior Chief Zollars, the Museum curator and former *Gato* crewmember.

Eventually, USS *Gato* (SSN615) followed SS 212's path and was decommissioned and stricken from the fleet on 25 April 1996. But the stories of both submarines live on in the traditions of the submarine

force and in men like RADM Robert Foley and the crews of both Black Cats. I have always felt blessed to have commanded a ship with a great reputation like *Gato*, to have had the privilege of leading a very competent group of *Gato* officers, chiefs, and crew, and to have followed in the footsteps and traditions of men like Commanding Officer Robert Foley, USS *Gato* (SS 212).

Allen Lawver
Captain, USN (Retired)
CO, USS *Gato* (SSN 615)
January 1984 – February 1988



US Navy Motion Picture Service
by William H. Northacker
Lieutenant Colonel, Special Forces
US Army, Retired

During the early and mid-1950s two television shows captured my interest in the United States Navy (USN). First, the great chronicle of WW2, *Victory at Sea*, aired weekly on NBC. The other, *The Silent Service*, began a little later. In early 1957 my family vacationed on the island of Antigua, BWI. While playing on the beach one day two sailors from a Navy auxiliary ship moored just 100 yards away approached and asked my Mom if they could take me aboard for the nightly movie. For a boy who just turned 9 a couple weeks before it became the adventure of the year. That evening they took me aboard, grabbed a glass bottle of Coke from the vending machine, free thanks to the ship's recreation fund, and we watched the evening movie on the fantail. Little did I know that years later I'd be a Navy civilian working for the source of that movie, the US Navy Motion Picture Service (NMPS).

As I played on the beach, the SeaBees blasted coral and rock to make way for the new NAVFAC Antigua. After a short time-lapse from that vacation, but not much, I visited a local US Naval Academy (USNA) Midshipman, Denny Terry, who was home on leave. He told me about life as a Midshipman and handed me a pile of magazines published by the academy: USNA's version of the Navy pub, *All Hands*. Unfortunately, those pubs and my gigantic comic book collection were discarded as unnecessary ballast when we relocated to Germany. Dad flew for Pan Am and was being based there. My first experience with "operational loss."

How we began and why and where. Let's start with the address: US Navy Motion Picture Service, Building 311, Brooklyn Navy Yard, Brooklyn, NY, or the USN plain language address (PLA): NMPS BROOKLYN NY. Facing Flushing Avenue in the yard's southeast corner, this heavily compressed concrete and asbestos bunker had only a few windows and was constructed so that the film vaults had thick fast-close steel doors with pulleys and weights to quickly contain potentially dangerous fire hazardous materials (HAZMATs): nitrocellulose films.

Each vault had its own water sprinkler fire suppression system. Someone decided it would be a great location except it was yards away from the old Naval Hospital, Brooklyn. Considering what was stored there, maybe not the best site, but then the year was 1917 and the United States and its Navy had gone to war.

Traditional selectees for motion picture projectionists afloat were rated Electrician's Mates and later, Interior Communications personnel. At the Pearl Harbor museum, you can see a large model of the USS *Arizona* and just aft of the last of her superstructure, a projection booth. Just like any other organization we operated with our own Navy Regulations, Instructions, and manuals. I don't know what the original "regs" were, but the later ones were distributed to all commands, afloat and ashore. The oldest one I have seen was NAVPERS 15970, "Navy Fleet Motion Picture Service Manual" NAVPERS 15970, dated 26 March 1964. There were many others prior to that one dating back to 1917, when the program and organization began. The latest were BUPERSINST 1710.12, and the last one, prior to the disestablishment of the Navy Motion Picture Service (NMPS) 22 March 1996, NAVMILPERSINST 1710.1 dated 7 July 1988. This disestablishment eliminated the organization as a field instrumentality of Navy Morale Welfare and Recreation (MWR). The 55 civilians and 13 Navy sailors disappeared. A small contingent of civilians remained as an extended staff section of Navy MWR (NMPC-65) at NAS Memphis.

Navy projectionists trained in schools set up at NMPS Brooklyn as well as local courses at home ports. Sailors could also learn about the 16mm projectors aboard ship. The same was true for our many Navy Motion Picture Exchange personnel. Titles included, but were not limited to: Programmed Instruction Course for Navy Motion Picture Exchange Supervisor, Trainees Guide for 35mm Sound Motion Picture System Class C Volumes 1 and 2 (NAVPERS 93923-1/2), Trainees Guide for 16mm Sound Motion Picture System Class C Volumes 1 and 2 (NAVPERS 93051B-1 and 2), 16mm Projector Operator Volumes 1 and 2 (NAVEDTRA 5053-1/2), Technical Manual 16mm Sound Motion Picture Projection Equipment Types AQ-2A(3) and AQ-3(2) also named the I.C. Technical Manual No. 686 (NAVSHIPS No. 385-0232). For those who complained about the weight of the Bell and Howell blue pro-



jectors, let's look at the weights of the Joint Army/Navy (JAN) projector components. The projector net weight was 48 pounds. Its component speaker net weight was 27.5 pounds. Last, its amplifier net weight was 41 pounds. Anyone for DVD players vice JAN 16mm film projectors?

Film evolved from nitrocellulose to acetate. The fire hazard was gone but in base theatre projection booths the fire shutters still remained for the 35mm projectors. Then film changed. The 16mm so common in the fleet moved ashore and the large screen theatres were now projecting film using 300- and 350-Watt lamps with Bell and Howell projectors and 1600 foot film capacity reels. The average green fiber film shipping cases contained three reels and the standard weight, including the white Information and Exhibition Books (I&E Books), was 17 pounds. Some films were one reel in one-reel boxes others were four or even five reels. Anyone tasked with picking out movies in the local film exchange got a real workout carrying them back to the ship. One of the problems with acetate film was that it broke easily, so when Kodak introduced Mylar film base NMPS switched to that product to reduce the chances of film breakage. Feature films were kept for three years. The classics were originally kept for three as well. Classics were not just old-time favorites but contemporary favorites as well. Some were kept for the life of the print instead of specific years, so a new film protection process developed by 3M was used to coat those films to offer not only more physical protection but, by luck, increased the screen brightness. Classics proved so popular that during the 1980s NMPS negotiated five-year leases to give the fleet and shore theatres more opportunity to view the popular older movies.

NMPS did not censor or cut films in any way. Sailors were able to see the entire film just as it had been released to the public. On occasion films were screened for procurement that did not fit within the Navy motion picture procurement guidelines and such films were rejected. Controversial movies were sent to N-65 for viewing by senior naval officers including the Chief of Chaplains. Their decision might be to accept or reject the film since morale and for the good of the service were always the key objectives. Distribution each week included two new features, NFL Game of the Week and NFL shorts. Cartoons were attached at the head of the feature when they were available. Other films distributed,

in addition to the classics, were Kiddie Movies (old serials and special children's movies), some old TV shows like *High Chaparral* the original *Star Trek* episodes with Kirk and Spock. They looked much better on a movie screen than on TV.

During the peak of the Cold War 38 NMPS film exchanges (NMPXs) could be found around the world. NMPS operated fifty film circuits, grew the tape inventory to over 500,000 videocassettes, and had well over 35,000 films on shelves or in circulation. Ships porting in CONUS had a NMPX in their ports whether in Goose Creek, San Diego, or Norfolk. Exchanges could be aboard the closest tender or in a building. For example, NMPX Norfolk was in the Port Services building. For OCONUS the NMPX, like in CONUS, could be a shore installation location or a tender. At Holy Loch and San Stefano tenders (AS) maintained NMPX services. In some instances where massive fleet forward deployments were dictated by geo-political problems new prints were sent to ships on the front line that had sufficient storage space to become floating NMPXs. Two that come to mind are the incidents in Iran during the Carter administration and Lebanon during the Reagan administration. Typically, BBs, CV(N)s, and AORs took on these added duties to serve the fleet with its sailors and Marines.

So how did this 9-year-old boy on a beach in Antigua figure into NMPS and his intense interest in submarines? It started with *Victory at Sea* and *The Silent Service* and a very special larger than life green book which I still have titled *The Big Book of Real Submarines: The New Nautilus, Atomic Engine, History of Submarines* text and pictures by Jack McCoy (Grosset & Dunlap, NY 1955). Mom bought it for me at a school book fair when I was in the fourth grade. So, what happened after that? First, I understood my math and science skills would not get me into Annapolis. My mechanical skills were not good either so enlisting and striking for highly technical sub ratings wouldn't likely work out. So I decided Special Forces (SF) would be my calling and went the Army route instead. I joined college Army ROTC in 1966 and was commissioned in 1970, volunteering at a time when others were looking to avoid military service. Infantry, Airborne, Special Forces, triple volunteer. Special Forces suited me fine and I enjoyed 38 years, active and reserve, as a SF officer as well as four years with the 102nd Air Rescue and

Recovery Squadron (NYANG) attached as an intelligence and tactics officer, one tour with 18th Airborne Corps, and two tours at West Point. I retired from the US Special Operations Command (USSOCOM), still an operator, happy that I had hit every Army SF command from detachment commander to USSOCOM retiring Regular Army not USAR.

When the Vietnam War and military challenges slowed down for SF, I departed active duty in the 1970s. Once again a civilian, I was hired by the OIC NMPS as a management assistant for both him and the deputy director in January 1978. After a month in the headquarters the OIC sent me on the road to see how ships used the movie program, visit NMPXs, and to see how movies were shown ashore. For this I spent two weeks in California at NAVSTA Treasure Island, NAVSTA San Diego and another week at NAVSTA Norfolk. We had two branch offices NMPS Treasure Island and NMPS Norfolk. I understood the NMPX operations quickly and moved from there to shore theatres and ships.

Visiting as many different hulls as I could on that first Navy TAD many ideas sparked further research. First was the use of videocassettes aboard ship instead of 16mm film, especially for smaller vessels such as PHMs and submarines. Both hulls had limited storage space and for any underway periods that required one movie per day, film storage was a cumbersome problem. In shore theatres I found a range of speakers that either partially worked or had acoustic properties that made speech intelligibility difficult in Navy theatres. Many theatre screens were the originals from the 1940s-50s and in need of immediate replacement. A movie screen should be replaced if it is dirty, soiled by tossed candy and soda, cut, or when it is five years old. Clearly the light and picture resolution was not in accordance with the Society of Motion Picture and Television Engineers guidelines and specifications. Bell and Howell blue cased projectors and JANs could work on ship but not in large screen theatres. Their 300- and 350-Watt lamps did not provide a proper picture, had short lives, and were expensive to replace and ship by NMPS Brooklyn. Finally, the limited wattage projector amplifiers were not capable of adequately powering stage speakers. So, on one hand I began a program of replacing theatre equipment ashore with professional systems and looking at possible courses of action to improve the movie program afloat.

VHS had less weight and volume, easier storage, and the technology was already available. I began discussions with the Navy Broadcasting Service (NAVBCST SVC) and visited them in their Pentagon office to discuss their role, their existing shipboard systems, and their intent to integrate future technology. How could NMPS work with Navy Broadcasting to use their Ship's Information, Training and Education CCTV systems called SUBSITE-TV, SITE-TV, and SUPERSITE-TV, as the means of signal distribution to traditional venues such as the wardroom, warrant officers' (WO) mess, chief petty officers' (CPO) mess, and crew's mess decks?

As time progressed, but not much time, I visited every type of hull in the Navy and Coast Guard to learn as much as I could about movie exhibition afloat. For attack subs this ranged from *Tullibee* (597) to the Sturgeon (637) class, Los Angeles (688) class, and the Poseidon boomers. A while later I even visited a new OHIO hull at SUBASE Bangor. I don't remember other classes and specific boats other than being fortunate to visit *Nautilus* while she was still in commission. Clearly the SITE-TV monitors on ships visited were commonly only 13 inches in diagonal measurement although other ship exhibition locations may have had larger units. During this time frame of developing fleet conversion to videocassettes we outfitted NR-1 with VHS tapes for an Atlantic deployment.

Submarines had always held my heart, so I felt the best place to start would be on a deployment. COMSUBLANT arranged for me to go aboard for a deployment on a sub to get a better feel for movie exhibition, the officers, chiefs, crew's concerns about movies and the basis for our existence—the positive impact of movies on crew morale. Through COMSUBRON SIX it was arranged to go aboard USS *Silversides* (SSN-679). The CO was CDR Merrill H. Dorman and I could not ask for a more hospitable deployment or a more amenable skipper. *Silversides* executed an at-sea transfer from a Navy contract vessel to the boat. Determination beat the rocky waves which the inclinometer in the work vessel showed 35 degrees port and starboard with dishes and coffee pots crashing to the deck. With a hefty leap and caught by crew, I brought two brand new release films aboard—*Silversides* was our “Navy World Premier Venue” for the films—*Every Which Way But Loose* (Clint East-



wood) and *Raging Bull* (Robert DeNiro). The crew did not like the latter but echoed, “Left turn Clyde,” throughout the boat until we ported at NAVSTA Norfolk. Now that I knew the problem. I started to think how it could be solved. But, in the meantime, I was given full freedom (less reactor and engineering) to stand watch. I was in heaven: planes, helm, navigation, torpedo room, attack computer, and views from the periscope, which did not easily spin like in the WW2 movies. Years ago, I flew gliders, planes and helicopters. Operating the planes and helm felt like flying. If only that little elementary school child, who dreamed of the submarine service, could see into the future.

Just after returning from Norfolk I was flying to NAVSTA Treasure Island on TAD. During the flight a movie was exhibited. I usually watch the terrain below as we cross our great nation but diverted from that practice to look at the screen image on the cabin bulkhead. Asked myself how it is projected. Looked at the ceiling and followed it back to a video projector. Curiosity got to me and I looked at the name on the unit “V-STAR.” Asked the stewardess about the source of the movies and she replied, “IN FLIGHT Motion Pictures.” Then using paper worked out the distance, image size and tried to figure out how it was mounted to the overhead. When I reached TI, I knew we might have a new way to watch movies on vessels where space was at a premium such as the PHMs and submarines.

Our OIC, Captain W.C. “Chuck” Larry (car’s license plate from VA read NAVIATOR) and our executive director Joe Lance (USN CPO, Retired) were guardedly optimistic but interested. Chuck had been the executive officer of USS *John F. Kennedy* (CV-67). We contacted IN FLIGHT Motion Pictures and met in their New York City office and again at our NMPS HQ. The idea was to begin a test program using VHS tapes and a video projector to see how the crews would receive them versus the heavy green fiber boxes full of film reels. We could integrate a VHS player with the SITE-TV, add an amplifier, and some speakers for stereo. Next was to get the blessing from the Navy Broadcasting Service whose proprietorship held the key to the experiment.

IN FLIGHT agreed to fully fund their side. Then it was up to NMPS to acquire features on VHS. It was outside our appropriated fund contracts with the movie studios which specified 16mm film, period. So,

with some negotiations, they agreed, and we bought the tapes. Each test vessel would receive 75 tapes for which they were accountable. Our first ship, thanks to COMNAVAIRLANT, was USS *Independence* (CV-62). She was in the yards in Norfolk for some work and it gave IN FLIGHT and me a chance to go aboard and have the test locations designated by the command. Those selected were the warrant officers' (WO) mess and the chief petty officers' (CPO) mess. Everyone else would just have 16mm movies. So once *Independence* was pier-side at NAVSTA Norfolk we went to work installing the systems. For those who have served on a CV or CVN you know how confusing compartment access can be. So, our first course of action was to figure out where we had to go and how to get there. Next was clearance to bring the projection gear and tapes aboard. By luck all 75 tapes were able to fit into two 16mm Bell and Howell aluminum shipping cases. With three days of labor everything was in the warrant officers' mess. The chiefs elected to install their unit for reasons I can't remember. It could have been imminent deployment, or they just wanted to play with the system to figure out how it worked.

The success of USS *Independence* caught some attention and soon another company, also involved with airline movies, called on us. Trans Com Division was a subsidiary of Sundstrand Data Control and had a strong interest in placing their units aboard ships. Since none of this testing, except the VHS videocassettes, cost the Navy anything we were delighted to invite them to do USS *Milwaukee* (AOR-2), USS *Silver-sides* (SSN-679), and USS *Bremerton* (SSN-698). With COMNAV-SURFLANT's approval *Milwaukee* was done in Norfolk in August. The ship's air conditioning was non-functional, portholes were open and the smell and noise from deck sanding and resurfacing was barely tolerable. Days were required to get the job done and occasionally a neighboring tender's machine shop assisted as well with parts needed to complete the video projection units to be suspended from the steel above the overhead perforated sheeting. Both units were operational, and we moved on to the next ship, *Silver-sides*. Unlike *Independence* and *Milwaukee*, we needed to get through the SUBSAFE program before obtaining Naval Sea Systems Command (COMNAVSEASYS COM) approval.

Accordingly, Trans Com's applications engineer and I drove from LaGuardia Airport in New York City to Naval Undersea Warfare in



Groton to assemble their engineers and SUBSAFE specialists, review the blueprints and determine the best way to attach the video projectors and screens. I still have the actual blueprints. A few recommendations and changes were made, and they gave their blessing as long as the blueprints were correctly modified prior to submitting them to NAVSEA later that day. We drove to Bridgeport, CT, found a blueprint printing company, received the freshly generated plan, and caught a shuttle jet from LaGuardia to Washington National (Ronald Reagan) Airport. A quick taxi ride and around 1600 that same day we arrived at NAVSEA to submit the blueprints for approval. The next morning around 0800, back at the Navy Motion Picture Service in Brooklyn, I received a call from NAVSEA granting approval. The engineer said, "You have the fastest SUBSAFE approval on record."

We immediately coordinated installation aboard *Silversides* and ordered the feature movie VHS tapes. To make a long story short I carried, by hand, the two projector cases full of tapes along the entire length of the destroyer/submarine (DD/SSN) pier as torpedo loading by the sub tender (AS) was underway. No cars allowed. We had to work fast as *Silversides* was scheduled for a Mediterranean deployment the following Tuesday and I think we started work on a Wednesday. The crew's mess deck system took 32 agonizing hours to install with the first hours spent hacksawing a proper opening in the overhead perforated steel sheeting for the video projector mounting systems. We used tag team hacksawing as one pair of arms wore out another pair would step in until we all had plenty of experience and the opening was large enough to fit all the mounting and housing components. The wardroom was relatively faster, 17 hours. While we were doing the initial video imagery on the screen in the crew mess deck, the crew began to filter in as we were using the tape of "*The Empire Strikes Back*". Pretty soon the mess was packed with sailors crowding into passageways to get a look. In walked the executive officer who looked around and said, "Don't you people have something you should be doing?" Grinning crew faces were the answer and the exec continued on his way. No one moved. *Silversides* deployed on schedule with 75 VHS tapes and two new video projection systems. Upon return from their deployment one of the crew told me they had hosted a French admiral and demonstrated a movie on the wardroom

system. The admiral was impressed with the advancement of USN submarine morale technology. If you've got it, flaunt it.

Our next ship was USS *Bremerton* at Pearl Harbor. Just like USS *Silversides*, *Bremerton* received two systems, one in the crew mess and the other in the wardroom. The sailors enjoyed their new entertainment system. Just so it is clear, no matter the video installations on all the test platforms, all four of the ships were given the opportunity to draw their usual allocations of movies in 16mm. That included the usual sea prints as well as classic movies for the duration of the tests. We allowed film draws because we did not know how long the video projectors would last afloat. This was new territory and we had no ship-based mean time between failure (MTBF) historical data for a maritime salt water environment.

All systems worked well, and everyone was happy with the new concept. At the time it was the leading edge technology and we at NMPS Brooklyn were very pleased that the commands allowed us to do the test installations. Then came decision time. NMPS relied on the Navy Broadcasting Service for the use of their SITE systems aboard the ships except where direct input could be used. Since our area was 16mm exhibition ashore and afloat, the video side became an issue. Everyone associated with the video projectors agreed it was a great way to go. As is always the case, who would be the program manager and who would fund it. A meeting between NMPS and the Navy Broadcasting Service in Washington proved to be the fatal blow. Unfortunately, neither OIC would accept the challenge and the program died on the spot. It was a tough blow for me personally for in just a few comments from our OIC, the NAVBCSTSVC staff was stood up and marched out. Impasse. It never got resolved. The proof of concept succeeded. Implementation did not. After that, Sony's GSA Representative Rusty Vernon stepped in with some ideas and products, but the program was finished. Perhaps different OICs would have agreed and implemented the video projection program afloat. Just a word about Rusty. He was a great friend to both NMPS and NAVBCSTSVC and bears mention. His father, a naval aviator, flew Navy jets in Vietnam and was killed when he was shot down. Rusty and I were on the phone one day discussing video projectors. It was on the morning of 19 April 1995. Suddenly he said he had an

emergency call from the FBI for as many video cameras as he could get. The Alfred P. Murrah Federal Building in Oklahoma City had just been bombed. Rusty called back a short time later. If ever a vendor should have an award, Rusty Vernon should have it for outstanding, dedicated, and heartfelt service to the Navy and the FBI. He especially loved the Navy because of his family connection.

In a way some good grew out of it. The idea of NMPS procuring Beta II video for use aboard ship SITE systems was accepted by NAVBCSTSVC. By 1983 the new afloat videocassette program was in operation and every ship received 2 new movies per week. They could still draw 16mm sea prints from their NMPX or do transfers at sea as well as order the classic movies. Eventually NAVBCSTSVC switched to 8mm video and NMPS changed to that format as well, afloat. The goal of the video program was to place 500 video movies aboard every ship with two new films per week shipped FPO and the ships at a certain date of tape expiry had to return the tapes to NMPS for destruction or for NMPS to return the tapes to the movie companies, depending on the contract end state of life requirements.

On 22 March 1996 NMPS ceased to exist as a non-appropriated fund instrumentality of the Navy. Instead it relocated in a very small part to NAS Memphis where it became an extended staff element of N-65. The 55 civilians and 13 naval personnel were no longer the proud organization that formed in 1917. As for me, I had my orders to report to the US Special Operations Command in Tampa, my Army assignment as a Special Forces O-5. That last minute, 1630 on that Friday, I hung up the phone with some architects in Orlando who were working on a theatre for NAS Sigonella. I climbed into my van and a few hours later was on my way down I-95 for Tampa. Sunday morning, I arrived at MacDill AFB and the first stop was the BX barber shop, then the BOQ. Checked in Monday morning and Tuesday I was in Panama. A week later I was on my way into Bosnia via Rome on a TWA 747. Sitting next to me were two businessmen. They said they were architects from Orlando. I asked them if they happened to be on their way to Sigonella to work on the theatre plans. They were shocked. I introduced myself as the guy they were talking with on the afternoon of 22 March. That was neat. But the neater thing was that the CINC heard a motion picture guy from the Navy was

assigned to Bosnia as part of Special Operations Command Implementation Force (SOCIFOR). And, he had in mind a movie that he could show all the US European Command (USEUCOM) and NATO ministers of defense that demonstrated the ability of Special Operations Command Europe (SOCEUR), 352nd Special Operations Group (AFSOC), Naval Special Warfare Unit Two (NAVSPECWARCOM), and 1st Battalion of the 10th Special Forces Group (USASOC) to respond immediately. The SOCEUR chief of staff, a Navy SEAL captain welcomed me with orders to get a film done for the CINC, ASAP. Bear in mind my work with the Navy was acquiring, distributing and exhibiting movies. But who's going to tell the CINC? No one. The movie was produced, directed, and written by this author within two weeks. As submariners know, once the order is issued, you deliver. AHHHHOOOOOGA--Submarines.

William H. Northacker

Lieutenant Colonel, Special Forces

US Army, Retired

100% Disabled Veteran with VA Service Dog Iris

US Navy NAF Civilian, Retired



Sometimes It Requires a Man in the Loop **by CAPT Edward S. Little, USN, Ret.**

Hovering an SSBN (maintaining the ship in a neutral state of buoyancy at a specified depth at very low speed) is a challenge for the diving and ship control operators. Early SSBNs were not provided with effective hovering systems. Later classes of SSBNs were equipped with systems that incorporated larger tank volumes (depth control tanks) and were designed with control systems to automatically adjust buoyancy as necessary during hovering. There were some learning curves, however, in the development of these systems. My experience with one of these earlier systems provided a lesson in the adaptability and expertise of our sailors.

USS *Henry Clay* (SSBN 625) was equipped with an early designed automatic system for hovering. To successfully hover, it was necessary to get the ship in a close to neutral buoyancy state by normal means—using the trim system and then to put the hovering system in “automatic mode.” The system then should automatically maintain the ordered depth. As the Engineer Officer I was responsible for the hovering system. The system used pneumatic controls (low pressure air) and was unusually complex. It did not adequately compensate for changing pressure in the boat. Each sea trial period involved a test of the system, and the tests were usually unsatisfactory. This resulted in the Captain’s increasing frustrations and emphatic exertions to me to fix the system. This continued over several sea trial periods and patrols with the system not performing well. Continued extensive maintenance of the system was required. This maintenance was done by an experienced interior communications electrician first class petty officer (IC1). After several major attempts at correcting the system, we once again proceeded on sea trials and further testing. I was in the control room for this test and witnessed the most amazing performance. The system performed flawlessly. The hovering control panel in the control room was in full automatic and the system was functioning without error. I could not believe what I was witnessing. I sensed something was totally different from our past experience and sensed that some major success had been achieved and I wanted to know the reason. So I went to the hovering system equipment

area, which was in the missile compartment, to see for myself. When I got there, I found my first class petty officer at the cage enclosure for the pneumatic controls. The cage assembly was removed and the petty officer was manipulating the system by hand. He had conducted so much maintenance on the system that he knew all facets of its operation. He could control the system precisely by manipulating the various parts of the system by himself. I hesitated a moment. Should I tell the Captain? Or should I just ensure the petty officer was always at the cage area when we were attempting hovering operations?



**Warm Recollections: ADM Hank Chiles, USN, Ret.
by CAPT Butch Meier, USN, Ret., CAPT Tim Oliver, USN, Ret.,
and VADM Al Konetzni, USN, Ret.**

Butch and Tim served with Admiral Chiles at Naval Reactors. He was a Navy Captain at the time, and he was the person who interfaced between Admiral Rickover and the submarine force. As one of the two Navy Captains who worked at Naval Reactors, he was one of the role models for the way to deal with a demanding boss in the unforgiving environment of nuclear submarine maintenance and operations.

Whenever an issue with a submarine came to Admiral Rickover's attention, CAPT Chiles was the one who was called to Admiral Rickover's office. After his visits with Admiral Rickover, CAPT Chiles was always the picture of calm and professionalism. He would be the one who called the appropriate squadron commodore or the affected commanding officer to discuss the issue, determine the facts and close the loop with Admiral Rickover.

The thing that impressed us the most was the fact that CAPT Chiles always reacted with such a calm demeanor and respect for whomever he was dealing. He dealt from a strong position with a heavy hammer, but I always saw him respond with the velvet glove of respect and professionalism.

Ten years later, VADM Chiles was in charge of the submarine force. But his calm, professional persona had not changed. He dealt with the challenge of dealing with Pentagon and Fleet program offices, Naval Reactors, and the operating submarine forces with the same firm hand. He was always focused on the crews manning the submarines and auxiliaries, mindful that the force sailors and the staffs that supported them were what made the force what it was.

As COMSUBLANT, the Admiral also focused on his headquarters staff. His wit and humor were readily apparent to those having the privilege of working directly for him. Examples abound. After asking for several of his N Heads to come to his office, the Chief of Staff informed him they had all left to play nine holes of golf. The Admiral commented it was great to see the staff take a Ropeyarn Wednesday, where upon the Chief of Staff remarked, "Admiral, it's 6 PM!" The Chief of Staff and

N Heads prepared and served the food and drink for the annual Three Star Charity dinner for Dolphin Scholarship the Admiral hosted at his quarters. During the dinners, his brandy and liqueur provisions would disappear and the bed would be short sheeted – but Admiral Chiles never accused the staff! However, he always ensured the N Heads were winners of the staff fundraiser privilege of washing his prized vintage automobile.

Ed Note: These closing paragraphs have been contributed by VADM (then CAPT) Al Konetzni.

One day in the Summer of 1991 Admiral Chiles called me, his Chief of Staff, into his office to discuss Submarine Force camaraderie. He was a bit concerned that our monthly Norfolk Submarine Happy hours, which took place in the Bachelor Quarters North Carolina House, were not well attended and made our spouses work too hard preparing appetizers.

This was a difficult time for the US Navy and our Submarine Force as “tailhook,” the end of the “Cold War,” and discussions about the “peace dividend” and Force reductions were all on the table in Washington. As a result, morale was not where the Admiral wanted it to be.

I was most impressed with his focused thoughtfulness and concern for the spouses during our meeting. He made a point that although we work hard there must be time for celebrating each other. After some time, the Admiral recommended that we put some submarine memorabilia into the Breezy Point Officers’ Club and start monthly happy hours at the Club.

Through his intervention we restarted happy hours at the Club. His rules were that we start at 3 PM on Fridays and finish at 5:30 PM in order to allow folks to get home early before the weekend. Initially the Admiral and the SUBLANT Staff paid for the beverages at the Club. These events became so successful that the Squadron Staffs helped pick up the tab in time.

Later we provided prizes to the Submarine Wardroom with the most attendees and always honored the spouses of our deployed units. The Friday crowd of submariners became so great that the Club began to sponsor food for the happy hour period.

What always impressed me is that Admiral Chiles always attended the get togethers when in town and made it a point to speak to as many



of the young officers and their spouses as he could. He truly improved morale!

His personal intervention truly made a difference to the submariners in the Tidewater Area as they had many an opportunity to meet the “Boss.” Heck, even the Aviators and Surface Warriors started coming to meet with “Bubbleheads.”

The three authors all agree that it was an honor and a privilege to work for Admiral Hank Chiles!

**Introduction of RADM Jerry Holland
Naval Submarine League Annual Symposium
by ADM Kirk Donald**

Before I turn the podium over, I've got to tell a little story. You've got to get into the "Way Back Machine" for this one, because there's midshipman Donald, midshipman Donnelly, and midshipman Donaldson, all of us are here tonight, who were at the Naval Academy when Commander Holland was our battalion officer. We all knew him. He was the submarine guy in the battalion hierarchy.

He was a man of influence, as you may well imagine. Here we are in the beginning of our first semester of our first-class year, and it's time to do service selection. But prior to service selection you get your commissioning physicals and all of that. It turned out that I had, like the junior officer this afternoon and not unlike most midshipmen coming in, you all want to be aviators. That had sort of been my aspiration.

I go, and I take my commissioning physical, of which the last part of that was the flight physical, and I proceeded to flunk the eye exam. Needless to say, I was a bit disappointed in all of that, so I left with my head hanging down a little bit and started heading back to my room. Little did I know, and I don't have it straight from the horse's mouth that this was the case, but it was on pretty good intel, that there was an intelligence network in the clinic that for any engineering major with okay grades who flunked the eye exam, there was going to be a notification to said battalion officer and the network would go into effect. Sure enough, by the time I got back to my room, which was probably about a five-minute walk, I was met by a submarine lieutenant. He said, "I heard the bad news. Would you like to be a submarine officer?" As has been my career management planning before, then and after, the answer was sure, why not?

I give Admiral Holland the credit for getting me in the right place at the right time, because I'm sure I was a better submarine driver than I would have been a pilot, in spite of my best intentions. But that's just an example, and I suspect many of you have examples of that where you've interacted with Admiral Holland over the years, and examples of leadership, maybe a little chicanery on the side, but there's certainly



that leadership and good spirited submarine comradery. As much as anything, I think the thing that many people know him by is as a master of the written word, having mastered the craft of writing and expressing himself. He won an award today for an article that he has written for the Submarine Review, but encouraging others to do the same thing, but as a force in our Force and one of the people that we all owe a great debt of gratitude to, I recognize Admiral Jerry Holland as a Distinguished Submariner.

A “Holland” Travelogue by CAPT Jim Patton, USN, Ret.

As one of the first “direct inputs” to nuclear power training, when I reported on board *Scorpion* in the early Fall of 1961, the next junior officer in the Wardroom was LT Jerry Holland - five years senior to me.

Having been the junior officer on his previous destroyer and diesel submarine tours, Jerry was understandably glad to see me and became my mentor and good friend. We have since attended each other’s kids’ weddings and such, and I again served with him on my post-command tour when he was CO of Submarine School.

We have travelled with Jerry and Anne extensively, including two 3-week tours of Great Britain and Ireland, and as was his professional hallmark, Jerry proved to be the ultimate “planner” for these trips, and before we left, a complete itinerary of where we would stay and what we would do and see each day was completed. An important matter to point out here was that Jerry’s mantra was “plan in pencil, schedule in ink”, and if on a given day one of us wanted to do or see something different, the schedule was promptly changed.

Other “Hollandisms” which made travelling with him a pleasure were:

- Each night a different person would pick where to eat, with no suggestions to be asked for or given.
- A division of effort was established in that Jerry was the “tour-meister”, Anne the “shopping meister”, I the “load meister” for repacking the car each day, and as clearly the best and fastest driver on the wrong side of the roads, my wife Mary was the “meister-meister”.
- It was established that there were only four “times” in an hour - the 15-minute periods centered around noon, quarter after, half past and quarter of, so there was no anxiety about being some few minutes early or late for some scheduled event.

Both professionally and personally, Jerry Holland has been a pleasure to be with, and since I have no male siblings, I consider him my surrogate “big brother”.



Naval Submarine League Fleet Awards by Kris Korfonta

The Naval Submarine League's Annual Symposium and Industry Update typically serves as a venue for Submarine Force leadership, active duty, government, and industry to interact. It also serves as a platform to honor those in the Submarine Force who show exceptional performance. The Fleet Awards, which have been presented since 1986, are named for submariners who exemplified the principles of the award. You can read about these famous submariners on the NSL website under the "Awards" section.

The Awardees this year proved themselves to be incredibly humble. MTCS(SS) Reardon said it felt "odd" to be accepting this award because he "didn't do this by [him]self." Many of them were surprised to hear they had won an award, because they knew they were just doing their job and because they were functioning as a team without thinking of themselves.

The Fleet Awards have always been presented to individuals rather than groups to celebrate that without these individuals, the team would not function as well as it does. Each of the Fleet Award winners are hard-working, impressive submariners who have thoroughly earned our recognition. CAPT Ed Little, USN, Ret., who helped our Executive Director Tim Oliver present the awards, said, "We make sure people know when they do a good job."

The Rear Admiral Jack N. Darby Award was awarded to CDR David Edgerton, USN, for Inspirational Leadership and Excellence in Command as Commanding Officer of the USS *Columbia* (SSN 771). CDR Edgerton is currently assigned as Current Operations Director for SEVENTH Fleet in Yokosuka, Japan.

The Charles A. Lockwood Award was awarded to LCDR Alex Rinaldi, USN, for Submarine Professional Excellence. LCDR Rinaldi, while serving as Engineer Officer on USS *Albany*, improved qualifications, training, material condition, level of knowledge, and casualty response. He also promoted enlisted retention and assisted several candidates with preparations for officer selection.

The Chief Paul Golden Saunders Award was presented to ST-

SCS(SS) Edward Plew, IV, USN, for Submarine Professional Excellence. STSCS(SS) Plew, while serving on USS *Hartford* as Weapons Department Leading Chief Petty Officer, accomplished three Operation Reactor Safeguard Examinations, two Combat Readiness Evaluations, Submarine Command Course Operations, ICEX 2016 and 2018, one EUCOM deployment, and one surge deployment. The ship was awarded the Navy Unit Commendation for their 2017 EUCOM deployment and the Battenberg Cup.

The Torpedoman Second Class Henry Breault Award was presented to MMW1 (SS) Mark A. Hoel, USN, for Submarine Professional Excellence. MMW1(SS) Hoel served on the USS *John Warner* as Torpedo Division Leading Petty Officer. During their maiden deployment, the USS *John Warner* earned the distinction of becoming the first Virginia-Class Attack Submarine to launch Tomahawk missiles in combative action.

The Levering Smith Award, presented to MTCS (SS) Jeremy Reardon, USN, was for Submarine Support Achievement for his service as Chief Master at Arms for Naval Submarine Support Center, Bangor, Washington. MTCS(SS) Reardon has completed sea tours on board USS *Kentucky*, USS *Wyoming*, USS *West Virginia*, USS *Alaska*, USS *Kentucky*, and USS *Maine*.

CMDCM(SS) Steven Rauch, USN, earned the Master Chief Frank A. Lister Award for Exceptional Leadership and Motivation for his service as Chief of the Boat on USS *Alabama* (SSBN 731) (Gold). CMDCM(SS) Rauch has served on board USS *Portsmouth*, USS *Jefferson City*, USS *Kentucky*, USS *Alaska*, USS *Pennsylvania*, USS *Nevada*, and USS *Alabama*. He is a graduate of Senior Enlisted Academy and the Command Master Chief/ Chief of the Boat Leadership Course.

The VADM J. Guy Reynolds Award was awarded to CAPT Mark Matthews, USN. CAPT Matthews served as the Program Manager for the Advanced Undersea Systems Program (PMS 394) from August 2014 to June 2018. He currently serves as the Senior Military Assistant to the Undersecretary of Defense for Acquisition and Sustainment.

Lastly, HM2(SS) Prudencio Sy, USN, earned the Frederick B. Warder Award for Outstanding Achievement. HM2(SS) Sy is a Hospital Corpsman and an Advanced Laboratory Technician currently serving onboard the USS *Pennsylvania* as the Medical Department Representa-



tive.

Many of the awardees mentioned the “family atmosphere” they feel, being a submariner. MMW1(SS) Hoel, USN said that what the movies don’t get right, what they can’t show are the small moments, “how we interact, the day-to day.” They need to be able to get along for months at a time underwater without a break and that closeness breeds a community that makes all their hard work not just meaningful because of what it does for our country but also enjoyable to be a part of the team.

One of our awardees, who was overseas and was unable to accept the award in person, sent his parents in his stead. They came all the way from Houston. His mother, Missy Edgerton, said with the biggest smile on her face that she “couldn’t be more proud.” The Naval Submarine League is proud, as well, of each of these extraordinary submariners.

Following are the citations for each award.

**The Naval Submarine League
FREDERICK B. WARDER AWARD
For Outstanding Achievement
is presented to HM2 (SS) Prudencio C. Sy, USN
November 8, 2018
For Service as set forth in the following
CITATION:**

For outstanding meritorious service in the performance of duties as an Independent Duty Corpsman in USS PENNSYLVANIA (SSBN 735) (Blue).

As the Medical Department Head, Petty Officer Sy manages seven command critical programs, while providing emergency medical care, maintaining 100% record accountability, and ensuring a high state of medical/dental readiness. His ability to manage his programs to the highest standards assisted the command in attaining high marks during several recent NTPI, ORSE, and Medical Department Examinations. During a recent Industrial Hygiene Survey, he assisted in the evaluation of underway noise exposures aboard PACFLT submarines. His assessment resulted in evaluating and improving the medical surveillance of over 1400 personnel from 10 trident submarines. As a leader, Petty Officer Sy supervises and trains eight crew members of the Emergency Medical Assessment Team (EMAT), ensuring the best deployed care for the crew. He is an expert in the Radiation Health Program and provides mentorship and guidance to one Division Officer and five Engineering Laboratory Technicians. During the most recent patrol, he effectively administered emergency treatment to a crew member who suffered a brain seizure and kidney infection. Petty Officer Sy dispensed extensive medication to manage infection, pain, and fever and was able to stabilize the patient for 5 days before a MEDEVAC was available. He led a team of 5 EMAT members and established round the clock care. His swift action and medical treatment directly resulted in a successful MEDEVAC and overall recovery.

Petty Officer Sy's sustained superior performance and his significant contribution to the mission of the Submarine Force make him most deserving of the Naval Submarine League Frederick B. Warder award for outstanding achievement.



**The Naval Submarine League
REAR ADMIRAL JACK N. DARBY AWARD
For Inspirational Leadership and Excellence in Command
is presented to CDR David L. Edgerton, USN
November 8, 2018
For Service as set forth in the following
CITATION:**

For exceptionally meritorious service as Commanding Officer, USS COLUMBIA (SSN771).

Commander Edgerton has fostered a culture of high standards, individual ownership, and achievement among his crew. His consistently high level of performance resulted in a crew that was superbly prepared for all missions. COLUMBIA completed two recent Western Pacific deployments. During these deployments COLUMBIA excelled during several missions, accomplishing tasking in the most challenging littoral environment. CDR Edgerton brings out the best qualities of his crew. He educates, inspires, and empowers his subordinates, producing skilled leaders who employ keen decision-making habits. His strong mentorship and guidance have resulted in high officer and enlisted retention achievements. COLUMBIA was lauded by the Type Commander for his efforts to balance in-port work load with crew quality of life initiatives and was awarded the 2017 Retention Excellence Award. As a team player, he maintained close working relationships with the Fleet Maintenance Branch and Pearl Harbor Naval Shipyard, ensuring COLUMBIA completed all maintenance periods on-time or ahead of schedule. With strong standards for material readiness, he developed a team with a fix-it-now mentality that minimized equipment in reduced status or out of commission. As a result of CDR Edgerton's leadership and teamwork, COLUMBIA was awarded the 2017 CSS-7 Battle Efficiency "E." He clearly merits recognition by the Naval Submarine League Jack N. Darby Award for inspirational leadership and excellence in command.

**The Naval Submarine League
Torpedoman Second Class Henry Breault AWARD
For Submarine Professional Excellence
is presented to MMW1 (SS) Mark A. Hoel
November 8, 2018
For Service as set forth in the following
CITATION:**

For outstanding professional performance as Torpedo Division Leading Petty Officer on USS JOHN WARNER (SSN 787).

Petty Officer Hoel played a key role in the success of JOHN WARNER's pre-deployment preparations and successful deployment to the European Command Area of responsibility, as a Weapons Supervisor and qualified Virginia Class Pilot. Conducting the first ever expeditionary reload of a Virginia Payload System (VPT) deployed in theater in the midst of the ships deployment, he was the stabilizing force which led to a seamless transition from mission tasking at sea to safe operations in port. His leadership and management of his division resulted in the readiness demonstrated by JOHN WARNER executing the first ever tactical launch by a Virginia Class Submarine and the VPT System. In addition, the weapons team maintained the highest level of knowledge and operational expertise in all areas of theater operations and successfully launched 6 Tomahawk Land Attack Cruise missiles. His meticulous planning and foresight resulted in the completion of over 100 hours of corrective maintenance to maintain full weapons systems operational capability. His ability to train junior personnel provided watch bill flexibility to the ship. His direct supervision and ownership of force protection operations in foreign ports led to zero incidents, ensuring the safety of the ship and crew for the entire deployment. Petty Officer Hoel performs at a level well above his pay grade and embodies the characteristics of a Chief Petty Officer. He is most deserving of the recognition being awarded by the Naval Submarine League Torpedoman Second Class Henry Breault Award for submarine professional excellence.



**The Naval Submarine League
VADM J. GUY REYNOLDS AWARD
For Excellence in Submarine Acquisition
is presented to CAPT Mark Matthews, USN
November 8, 2018
For Service as set forth in the following
CITATION:**

For exceptionally meritorious service as Manager of the Advanced Undersea Systems Program Office (PMS 394).

Captain Matthews is responsible for the coordination of stakeholders across NAVSEA, Fleet, academia, and industry to turn our most complex and forward leaning ocean engineering requirements into capability for our Combatant Commanders. He led a highly performing team of scientists, engineers, support staff, and sailors in producing eye-watering maintenance availability results. The team under his leadership completed some of the most complex submarine maintenance on time to allow the Fleet to accomplish critical missions which ensure our national security. His contributions in the area of rapid acquisition, innovation, and ocean engineering were truly revolutionary. Particularly noteworthy was his work to deliver the submarine External Arrangeable Volume (EAV) which significantly enhanced the ability of submarines to support key ocean engineering research and development operations, expeditionary mine warfare, and special warfare operations. The significance of this accomplishment cannot be overstated, as it represents an extremely complex enhancement involving SUBSAFE, command and control, complex electronic interfaces, and understanding of the host platform to ensure safety, sound signature control, hydrodynamics, and mission flexibility. In addition, he worked side-by-side with submarine Type Commanders and Squadrons to take waterfront feedback and rapidly modify cutting-edge, undersea research and development systems to meet Fleet needs. As a testament to his leadership and performance, his team earned a Navy Unit Commendation for their work in advanced undersea research and development, unmanned undersea vehicles, and ocean engineering in support of critical Navy, Department of Defense, and National priorities. Captain Matthews exemplifies the finest attributes for an acquisition professional. He clearly merits recognition by the Naval Submarine League VADM J. Guy Reynolds Award for excellence in Submarine Acquisition.

**The Naval Submarine League
LEVERING SMITH AWARD
For Submarine Support Achievement
is presented to MTCS (SS) Jeremy Reardon, USN
November 8, 2018
For Service as set forth in the following
CITATION:**

For outstanding meritorious service as Chief Master at Arms for Naval Submarine Support Center, Bangor, Washington.

Senior Chief Reardon leads a team of one Master Chief, two Senior Chiefs, and eight Chief Petty Officers. This team provides oversight, management, and counseling to junior enlisted staff personnel who expertly manage over 80 transient personnel transferred to the Support Center for various legal, medical, psychological, administrative, and disciplinary reasons. Under his cognizance, these personnel have been separated, converted, or returned to the submarine fleet more resilient, and ready to do their duty. While under his care, he has personally mentored many of them, assisting them with diverse individual and family challenges. Other support provided by Senior Chief Reardon includes establishing an indoctrination program for all newly reported personnel to local submarines, providing for the setup of all local rating examinations, and providing ceremonial assistance for all change of command and retirement ceremonies. Senior Chief Reardon is on call 24/7. On numerous occasions he has personally intervened in cases involving attempted suicide, taking affected individuals on his own to medical/psychiatric facilities. In addition to all his assigned duties, he serves as a key command liaison effectively interfacing with multiple commands. He also serves as the building manager for facilities that house over 4000 personnel. He personally sought out to lead the CPO Phase II Legacy Academy for the Pacific Northwest Region. His efforts have had substantial impact across the entire submarine force. He is the very definition of a behind-the-scenes unsung hero, who simply makes things happen due to his dedication, exceptional integrity, leadership, and sense of ownership. He is most deserving of recognition by the Naval Submarine League Levering Smith Award for submarine support achievement.



**The Naval Submarine League
CHIEF PAUL GOLDEN SAUNDERS AWARD
For Submarine Professional Excellence
is presented to STSCS(SS) Edward J. Plew, IV
November 8, 2018
For Service as set forth in the following
CITATION:**

For superior professional excellence as Weapons Department Leading Chief Petty Officer on USS HARTFORD (SSN 768).

Senior Chief Plew has established a record of uncompromising performance and dedication to the crew of HARTFORD. His seasoned perspective is incorporated into all aspects of shipboard operational planning and mission execution. He significantly assisted in training eight junior officers and three department heads to stand Officer of the Deck and Contact Manager in support of missions throughout a multitude of diverse operations. His efforts directly contributed to the ship receiving the highest grade in a Combat Readiness Evaluation. Based on his previous experience in the European Command Area of Responsibility, he acted as an ambassador for the Force to the Royal Navy during Ice Exercise 2018. He provided best practices regarding navigation of seldom transited areas and procedures necessary to safely transit the Arctic Circle. His personal initiative facilitated the flawless execution of the first multi-national North Pole surfacing involving three nuclear submarines. Acting as a personal mentor to over 40 sailors, his guidance resulted in the ship never requiring non-crew support to get underway. He has produced one of the most cross-trained weapons departments in the submarine fleet. By assuring high personal standards and direct interactions with trainees, he improved the number of qualified Sonar Supervisors, Diving Officers, and Chiefs of the Watch. Senior Chief Plew's leadership and unrelenting dedication to the current and future leaders of our force have made significant contributions in assuring the readiness of the force. He is most deserving of the Naval Submarine League Chief Paul Golden Saunders Award for submarine professional excellence.

**The Naval Submarine League
MASTER CHIEF FRANK A. LISTER AWARD
For Exceptional Leadership and Motivation
is presented to CMDCM(SS) Steven Rauch, USN
November 8, 2018
For Service as set forth in the following
CITATION:**

For outstanding meritorious service as Chief of the Boat in USS ALABAMA (SSBN 731) (Gold).

Under the leadership of Master Chief Rauch, ALABAMA (Gold) enjoyed unparalleled success in every mission area over the last three years. His positive leadership, superb management skills, uncompromising standards, and outstanding foresight were the key ingredients behind the ship's sustained superior performance. His leadership through four deterrent patrols, three Operational Reactor Safeguards, two Tactical Readiness Evaluations, two Defense Nuclear Surety/Augmenting Technical Proficiency Inspections, and a Supply Management Inspection were key factors in assuring superior grades in all areas. ALABAMA (Gold) amassed a record number of awards during his tour. They included: two Battle Efficiency "E" awards, two Engineering red "E's," and two White "W" awards, two PACFLT Retention Excellence Awards, one Fleet Trident Outstanding Performance Award, and the Omaha trophy. During his tenure as Chief of the Boat, his steady and focused leadership led to improvements in every facet of the ship's operations while simultaneously improving retention, advancement, and crew morale. His aggressive and meticulous attention to the ship's manning ensured that ALABAMA (Gold) is one of the best manned submarines in the fleet. His mentoring of assigned personnel resulted in a 62% advancement in rate for E4-E6. Nine CPO selections and an LDO selection during his tour can also be attributed to his support and counseling. CMDCM Rauch was absolutely essential to ALABAMA's success and he is widely respected on the Bangor waterfront. His spirit, leadership, and zeal make the difference. He is truly deserving of recognition by the Naval Submarine League Master Chief Frank A. Lister Award for exceptional leadership and motivation.



**The Naval Submarine League
CHARLES A. LOCKWOOD AWARD
For Submarine Professional Excellence
is presented to LCDR Alex Rinaldi, USN
November 8, 2018
For Service as set forth in the following
CITATION:**

For outstanding performance as Engineer Officer in USS ALBANY (SSN 753).

Lieutenant Commander Rinaldi has, in his short time aboard, dedicated himself completely to the success of ALBANY. Following ALBANY's three consecutive failed engineering exams, as a newly reported Engineer he brought qualifications, training, material condition, level of knowledge, and casualty response back to standards. He prevailed through an uncommon work ethic and tremendous personal sacrifice. Most impressively, he did it with a positive attitude and all the while inspiring those around him. LCDR Rinaldi is not only a fantastic engineer, but also a brilliant teacher. Using his skills, he has trained and influenced every department on the ship. He prepared division officers for Officer of the Deck qualifications, and led tactical, ship handling, and navigational training sessions. He assisted in developing sea trials operational training plans in conjunction with preparing his department for the first critical reactor plant operations in five years. All examinations for these impending operations were completed with excellent results. LCDR Rinaldi has single handedly brought a new atmosphere on board which promotes all aspects of improving officer and enlisted retention. He personally assisted several candidates with preparations for officer selection. LCDR Rinaldi has improved the confidence and aptitude of the entire crew, ensuring ALBANY's future leaders will be prepared to lead our force in the future. He is truly deserving of the recognition by the Naval Submarine League Charles A. Lockwood Award for submarine professional excellence.

NROTC Award Winners by Michelle Ort Kroeger

The Naval Submarine League is proud to present the Rear Admiral Frederick B. Warder Outstanding Achievement Award to the top graduating midshipman selected for submarines at every NROTC unit in the country. Annually, about 40 graduating seniors with proven academic and leadership skills are recognized with the award named in honor of Rear Admiral Frederick B. Warder, a standout among the many World War II submarine heroes. Admiral Warder, who commanded USS *Seawolf*, was a courageous, aggressive, and innovative submariner. He was revered by his crew, who respectfully dubbed him “Fearless Freddie.”

As a part of an ongoing outreach effort, the NSL is continually looking for interesting programs and opportunities for our members to engage their communities while promoting the importance of submarines to the national defense. We also encourage young submariners to join the League; students can join for free on our website.

The NROTC award helps us achieve both objectives. With NROTC units all over the country, and because we have NSL members in every state and probably as graduates of many, if not all, of the NROTC units, this is an ideal opportunity for NSL members to support Active Duty even if they don’t live anywhere near a submarine base. The NSL Outstanding Achievement Award is presented by NSL members whenever possible and consists of a certificate, a letter, acknowledgment in *The Submarine Review* and on the NSL website, and a one-year membership in the Naval Submarine League.

As this NROTC program continues to grow, our goal is not only to have multiple volunteers available to present the award, but also to have members who can connect with local NROTC units and develop supportive relationships with the students and the Professor of Naval Science, who is not always a submariner. Keeping in mind that college undergraduates, even those enrolled in NROTC, may not know very much about submarines, the local liaison might be a great resource for an NROTC class and could make our Speaker’s Bureau presentation, which addresses the importance of submarines to the national defense. There is nothing better than our enthusiasm to inspire others.



The Naval Submarine would like to congratulate once again all of the awardees and to thank all of the members who volunteered their time to present the Freddie B. Warder Award.

Each of the following awardees has demonstrated superior, sustained performance in a difficult and challenging academic and operational environment and, as a result, has earned his or her Commanding Officer's nomination for this distinctive award:

NROTC Awards 2018

Auburn University

Midshipman John Samoluk

Presented by LT Derek R. Bailey

Boston University

Midshipman Garrett Gozdur

Presented by CAPT George Kent, USN, Ret.

Carnegie Mellon University

Midshipman Robert Hardy

Presented by CAPT Robert Conway, USN, Ret.

The Citadel

Officer Candidate Scott Sam

Presented by CAPT Dennis White, USN, Ret.

College of the Holy Cross

Midshipman Andersen Derosier

Presented by CDR Al Paquin, USN, Ret.

Duke University

Midshipman Anthony Schneider

Presented by CAPT Steve Gillespie, USN, Ret.

Embry-Riddle Aeronautical University

Midshipman Zachary Mertens

Presented by RADM Steve Maas, USN, Ret.

Hampton Roads – Hampton, ODU, Norfolk State

Midshipman Matthew Nilsen

Presented by CAPT Pete Flannery, USN, Ret.

The Illinois Institute of Technology

Midshipman Ethan Cernok

CAPT Daniel P. Farson, USN, Ret.

Iowa State University

Midshipman Nicholas Stenglein

Presented by CAPT Chester D. Ward, USN, Ret. and CAPT Timothy S. Wolters, USN, Ret.

George Washington University

Midshipman Thomas Adams

Presented by LT Chris Johnson, USN, Ret.

Georgia Institute of Technology

Midshipman Rafael Murphy

Presented by Mr. Richard Ector, Dr. John Wilcher

Jacksonville University

Midshipman Mishka Chalkley

Presented by CAPT Mark Kevan, USN, Ret.

Maine Maritime Academy

Midshipman Jared Hall

Presented by CAPT Richard I. Itkin, USN, Ret.

Massachusetts Institute of Technology

Midshipman Ellen Mule

Presented by CAPT George Kent, USN, Ret.



Miami University

Midshipman Timothy Gesel

Presented by CAPT Tim France, USN, Ret.

Northwestern University

Midshipman Matthew Chorvat

Norwich University

Midshipman Maxwell Landry

Presented by CDR David Beattie, USN, Ret.

The Ohio State University

Midshipman Ryan Buck

*Presented by CAPT Demetri C. Capetanopoulos, USNR
and CDR Russell Preble, USN, Ret.*

Oregon State University

Midshipman Elijah Mccarty

Presented by RDML Mike Sharp, USN, Ret.

Pennsylvania State University

Officer Candidate James Smith

Purdue University

Midshipman Andrew Campbell

Presented by CAPT Daniel P. Farson, USN, Ret.

Rensselaer Polytechnic Institute

Midshipman Abigail Agosto

Rutgers University

Midshipman Rachel Westerbeke

Presented by Basil D'Armiento

Savannah State University

Midshipman Abel Reyes

State University of New York Maritime College
Officer Candidate Gregory Underhill
Presented by Dr. George Billy

Texas A&M University
Midshipman Ryan Bindel
Presented by CDR Michael S. Hanley, USN, Ret.

The Tulane University of Louisiana
Midshipman Erin Chandler
Presented by LCDR R. George Rey, USN, Ret.

University of Idaho
Midshipman Matthew Cox

The University of Arizona
Midshipman Andrew Penn

The University of Michigan
Midshipman Teresa Tripodi
Presented by CAPT Philip Klintworth, USN, Ret.

University of Minnesota
Midshipman Christian Lasswell
Presented by CDR Ronald H Reimann, Sr., USN, Ret.

University of Missouri
Midshipman Chase Davis
Presented by CAPT Daniel P. Farson, USN, Ret.

University of Notre Dame
Midshipman Maloney Foster
Presented by Kevin Hall



University of Pennsylvania

Midshipman Colin Luzzi

Presented by CDR James Bradley, USN, Ret.

University of Rochester

Midshipman Robert Nicholas

University of San Diego

Midshipman Robert Jenkins

Presented by CAPT Sam Ward, USN, Ret., CAPT Steven Pelstring, USN, Ret., and CDR. Steve Cincotta, USN, Ret.

University of South Carolina

Midshipman Cameron Kunce

Presented by CDR Dennis Simon, USN, Ret.

The University of Texas at Austin

Midshipman Benjamin Summers

Presented by CAPT Mike Pestorius, USN, Ret.

University of Utah

Midshipman Connor Pearrow

Presented by CAPT Ralph H. Stoll, USN, Ret.

University of Virginia

Midshipman Kyle Mosman

Presented by LT Kenn McDermott, USN, Ret.

University of Washington

Midshipman Aaron Misola

Presented by LCDR Mike O'Byrne, USN, Ret.

University of Wisconsin

Officer Candidate Tyler Kirsch

Presented by LT John S. Lindstedt, USN, Ret., CAPT Allyn Bress, USN, Ret., and CDR Dean Hekel, USN, Ret.

Vanderbilt University
Midshipman Joshua Stafford

Villanova University
Midshipman Michael Ford
Presented by Mr. Tom Meaney

Virginia Military Institute
Midshipman David Wright
Presented by CAPT Dave Kirk, USN, Ret.

Virginia Polytechnic Institute and State University
Midshipman Bradley Polidoro
Presented by VADM Van Mauney, USN, Ret.

Yale University
Midshipman Riley Richmond
Presented by CAPT James Patton, USN, Ret.



FISCAL YEAR 2017-2018 DONORS

LEGACY SOCIETY

CAPT Max C. Duncan, USN, Ret.

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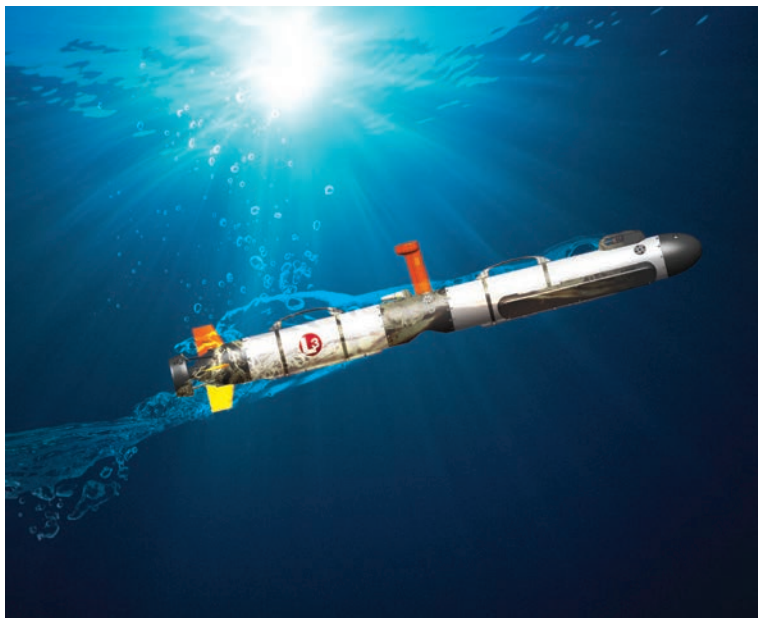
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