

UNDERSEA WARFARE

U. S. S U B M A R I N E S... B E C A U S E S T E A L T H M A T T E R S

1000

The Submarine Force celebrates its 1,000th TRIDENT Strategic Deterrent Patrol



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UNDERSEAWARFARE

THE OFFICIAL MAGAZINE OF THE U.S. SUBMARINE FORCE

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The Submarine Force celebrates its 1,000th TRIDENT Strategic Deterrent Patrol

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On The Cover



The *Ohio*-class ballistic-missile submarine USS *Wyoming* (SSBN-742) approaches Naval Submarine Base Kings Bay, Ga. *Wyoming* is the 17th submarine in the *Ohio*-class and the fourth U.S. Naval ship to be named after the 44th state of the Union.

Photo by Lt. Rebecca Rebarich



“While much of our energy is spent on current challenges and looking ahead at the bright future of the submarine community, it is important to occasionally reflect upon and recognize the major milestones our Force has accomplished along the way.”

VADM Jay Donnelly, USN, Commander, Submarine Force

While much of our energy is spent on current challenges and looking ahead at the bright future of the submarine community, it is important to occasionally reflect upon and recognize the major milestones our Force has accomplished along the way.

The past six months have highlighted some of the incredible work being done community-wide to make the Submarine Force stand out as a leader in our nation’s defense.

When it comes to operational excellence in the Submarine Force, our Ballistic Missile Submarines (SSBN) achieved a significant milestone in February when we celebrated the accomplishment of our SSBN Force during ceremonies held in Kings Bay, Ga. and Bangor, Wash. These events marked the 1,000th successful TRIDENT strategic deterrent patrol since the first patrol of USS *Ohio* (SSBN-726) in 1982. At the Kings Bay ceremony, the then-Secretary of the Navy, the Honorable Donald C. Winter; the Vice Chairman of the Joint Chiefs of Staff, Gen. James Cartwright; the Commander, U.S. Strategic Command, Gen. Kevin Chilton; and the Chief of Naval Operations, Adm. Gary Roughead, all stressed the continued importance of strategic deterrence in today’s world and how our 14 *Ohio*-class SSBNs support that crucial tenant of the Maritime Strategy.

In January, a Secretary of Defense Task Force on DoD [Department of Defense] Nuclear Weapons Management provided a detailed assessment of how our nation’s nuclear forces train, perform maintenance and operate our strategic systems. This Task Force came out with a list of recommendations that we are working on today that continues our strong commitment to the nuclear mission. Notably, the report concluded that the SSBN Sailor has remained committed to the strategic defense mission and has remained highly motivated to perform these critical tasks. It is this kind of commitment to the high standards of the Submarine Force that has allowed us to achieve the success which makes our Navy, and our nation, stronger.

It is important to remember that as long as other countries possess nuclear weapons, there will be a need for a sea-based strategic deterrent, ready and vigilant in a secure and survivable posture, to rapidly respond to national tasking.

While the SSBNs are continuing to perform their mission

exceptionally, the new Virginia-class submarines continue to make advancements in technology and capability to accomplish submarine non-strategic missions. With the newly commissioned USS *New Hampshire* (SSN-778), beginning to add to this class’s legacy, I remain confident that the *Virginia*-class will continue to grow and succeed.

In December, the Navy signed a five-year, \$14 billion Multi-Year Procurement contract for eight additional *Virginia*-class submarines. This is the third contract, or Block III, for the *Virginia*-class, and it calls for one ship per year in fiscal years (FY) 2009 and 2010 and two per year in FY 2011, 2012, and 2013. The contract also meets the CNO and *Virginia*-class program’s mandate to reduce acquisition costs by approximately 20 percent for the 2012 ships.

In an effort to reach cost reduction goals, more than 100 discrete design changes were made, the most extensive of which involves the replacement of the traditional sonar sphere with a Large Aperture Bow Array and the 12 vertical launch tubes with two large diameter *Virginia*-class payload tubes. These two changes, along with more than two-dozen associated modifications will save millions of dollars per submarine.

Even with all of the new technology, it is the people in the Submarine Force who continue to make us so successful. In February, nine of our submariner officers were honored with the prestigious Black Engineer of the Year Award. This included a special distinction for Cmdr. Roger Isom, Commanding Officer of USS *Wyoming* (SSBN-742), as he was recognized for career achievement in government.

Awards like these promote awareness of the opportunities in our Force and expose other communities and organizations to the remarkable people who man our submarines. I am extraordinarily proud that these men have represented themselves and the Submarine Force so well.

As a community, we must continue to inspire and empower our Sailors to realize their full potential and recognize the value that each individual brings to the Force as we continue our legacy as submariners.



“The submarine’s attributes of stealth, persistence, flexibility, endurance, responsiveness, and firepower translate into an enormously valuable and versatile asset for the Combatant Commander. Our submarines are useful not only to our Fleets, but also to national security decision makers who routinely see the results of our submarine deployments.”



RADM Cecil Haney, USN, Director, Submarine Warfare

Greetings from our Nation’s Capital! These are unique and busy times here in Washington, D.C. as we prepare the first budget for our new president. As expected, resource sponsors across the military are experiencing an increased examination of their portfolios. My observation is that this sort of scrutiny clearly distills the attributes that distinguish our most valuable military resources and clarifies the debate over which programs provide the best return for our taxpayer dollars. The submarine’s attributes of stealth, persistence, flexibility, endurance, responsiveness, and firepower translate into an enormously valuable and versatile asset for the Combatant Commander. Our submarines are useful not only to our Fleets, but also to national security decision makers who routinely see the results of our submarine deployments. I thank each of you that sail in our submarines or support these dedicated efforts.

Over the past few months I have been able to leave the beltway to visit several of our bases. From east to west and north to south, our all volunteer Submarine Force is doing a phenomenal job. Let there be no doubt, people are the lifeblood of our success. My perch here in D.C. allows me to uniquely observe the journey of the products from our submarines to the highest levels of government. The Commanding Officers of USS *Ohio* (SSGN-726), USS *Philadelphia* (SSN-690), USS *Jacksonville* (SSN-699), USS *Asheville* (SSN-758), USS *Jefferson City* (SSN-759), USS *Montpelier* (SSN-765), and USS *Connecticut* (SSN-22) have all come to Washington D.C. to deliver valuable information from their respective deployments. These products make it easy for me to talk about the unique value of submarines to non-submariners inside the beltway.

Two of my most valuable recent visits were to our ballistic missile submarine bases in Bangor, Wash., and Kings Bay, Ga. This issue’s coverage of the 1,000th TRIDENT patrol celebrations provides a snapshot of what I was able to witness first-hand. The training and weapons facilities at both these bases maintain impeccably high standards and form a critical component of our overall TRIDENT program success. I would like to thank the crew and wardroom of USS *Wyoming* (SSBN-742) (GOLD) for briefing me on their recent patrol, the crew and wardroom of USS *West Virginia* (SSBN-736) (BLUE) for a great meal and detailed tour of their fine warship, and all of the outstanding members of Team Bangor and Team Kings Bay that took the time to share their expertise during my visits. As many of you know, the process for determining the requirements for the replacement to *Ohio*-class SSBNs are in full swing. The insights gained during my visits to Kings Bay and Bangor are proving invaluable as we continue working hard to define the requirements to replace *Ohio*-class, gear up for the Nuclear Posture Review, and support the Quadrennial Defense Review this year.

The *Virginia*-class continues on its steady course for success. In addition to USS *New Hampshire*’s (SSN-778) commissioning last October, PCU *New Mexico* (SSN-779) was christened on Dec. 13, 2008. We also signed the *Virginia* Block III contract on Dec. 22, 2008. The contract purchases eight submarines between 2009-2013 and ramps up

to two per year production in 2011. Major waypoints in 2009 include *California* (SSN-781) keel laying in May, *New Mexico* (SSN-779) commissioning in November, and *Missouri* (SSN-780) christening in December.

USS *Ohio* (SSGN-726) (BLUE) completed the maiden deployment for the SSGN class last December. UNDERSEA WARFARE has chronicled the SSGN’s exciting story of transitioning from program idea to on-time, on-cost delivery of warfighting capability to the combatant commander. The success of *Ohio*’s operations and the capabilities the SSGN class offers is recognized beyond the submarine, special operations, and joint warfighting community. Navy, Defense and Congressional Leaders are excited about the options SSGN brings to the table, and we are developing new ways to employ her impressive capabilities every day. USS *Florida* (SSGN-728) and USS *Michigan* (SSGN-727) are deployed and continue to provide value to our nation. Later this year USS *Georgia* (SSGN-729) will make her maiden deployment as an SSGN.

In mid-March, I had the good fortune of hosting the Submarine Force’s Junior Officers of the Year and their spouses here in D.C. I was invigorated by the opportunity to spend time with these very impressive folks and obtain a fix on what is on the minds of these future leaders of the force. All of this year’s Junior Officers of the Year are in the Downlink section of this issue and I urge you to congratulate them on their accomplishments.

On Nov. 21, 2008 we said good-bye to our oldest and most unique submarine at the *NR-1* deactivation ceremony in Groton, Conn. *NR-1* claims an impressive alumni of distinguished crews and a legacy of accomplishments that no platform may ever again be able to match. We also said good-bye to another of our platforms at the inactivation ceremony for the Deep Submergence Recovery Vehicle *Mystic* (DSRV-1) on Feb. 13, 2009.

The dawn of spring always signals the approach of another birthday for our Submarine Force. I hope that everyone takes time to participate in one of the many 109th Submarine Birthday Ball celebrations, you have certainly earned it!

For our N87 staff, I wish farewell to the following officers: RDML Pat Brady, CAPT Lorin Selby, CAPT James Stevens, CAPT John Cottingham, LCDR Robert Haldeman, LT Jon Ahlstrom, and LT Jared Smith.

I would like to welcome aboard CDR Woods Brown, CDR Paul Spear, LT Pat McDonnell, LT Jamie Cook, YN1 Christopher Church, Mr. Bob Parent, Mr. Steve Schreppler, and Mr. Seth Rubin. Finally, I want to thank all those in and out of uniform that support the Submarine Warfare Directorate. I know I can continue to count on your support.

Vice Adm. John J. Donnelly

Commander, Submarine Force
Commander, Submarine Force, Atlantic

Rear Adm. Douglas McAneny

Deputy Commander, Submarine Force
Commander, Submarine Force, U.S. Pacific Fleet

Rear Adm. Cecil D. Haney

Director, Submarine Warfare

Master Chief Petty Officer Jeff Garrison

COMSUBFOR Force Master Chief

Master Chief Petty Officer Mo Pollard

COMSUBPAC Force Master Chief

Cmdr. Patrick McNally

COMSUBFOR Public Affairs Officer

Lt. Cmdr. David Benham

COMSUBPAC Public Affairs Officer

Military Editor: **Lt. Cmdr. Brett Levander**

Senior Editor: **Mike Smith**

Managing Editor: **Molly Little**

Design & Layout: **Jeff Kendrick,**
Alion Science and Technology

Web Site Design: **Deepa Shukla**
Alion Science and Technology

Charter

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

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

Contributions and Feedback Welcome

Send articles, photographs (min. 300 dpi electronic), and feedback to:

Military Editor Undersea Warfare CNO N87
2000 Navy Pentagon, Washington, DC 20350-2000
E-Mail: underseawarfare@navy.mil
Phone: (703) 614-9372 Fax: (703) 695-9247

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CHINFO Merit Award Winner



Silver Inkwell Award Winner



Send submissions to:

Military Editor
Undersea Warfare CNO N87
2000 Navy Pentagon
Washington, DC 20350-2000
or underseawarfare@navy.mil

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

UNDERSEA WARFARE Magazine reserves the right to edit submissions for length, clarity, and accuracy. All submissions become the property of UNDERSEA WARFARE Magazine and may be published in all media. Please include pertinent contact information with submissions.

from the EDITOR,

On March 9, 2009, the United States Senate passed a resolution congratulating the Sailors and members of the SSBN community. The staff at UNDERSEA WARFARE Magazine echoes the praise given to the SSBN community and adds our own congratulations and thanks for all of their hard work, dedication, and service to our country. The Senate Resolution states:

"Congratulating the Sailors of the United States Submarine Force upon completion of 1,000 Ohio-class ballistic missile submarine (SSBN) deterrent patrols.

Whereas the Sailors of the United States Submarine Force recently completed the 1,000th deterrent patrol of the Ohio-class ballistic missile submarine (SSBN);

Whereas this milestone is significant for the Submarine Force, its crews and their families, the United States Navy, and the entire community;

Whereas this milestone was reached through the combined efforts and impressive achievements of all the submariners who have participated in such patrols since the first patrol of USS Ohio (SSBN-726) in 1982;

Whereas, as a result of the dedication and commitment to excellence of the Sailors of the United States Submarine Force, ballistic missile submarines have always been ready and vigilant, reassuring United States allies and deterring anyone who might seek to do harm to the United States or United States allies;

Whereas the national maritime strategy of the United States recognizes the critical need for strategic deterrence in today's uncertain world;

Whereas the true strength of the ballistic missile submarine lies in the extremely talented and motivated Sailors who have voluntarily chosen to serve in the submarine community; and

Whereas the inherent stealth, unparalleled firepower, and nearly limitless endurance of the ballistic missile submarine provide a credible deterrence for any enemies that would seek to use force against the United States or United States allies: Now, therefore, be it Resolved by the Senate (the House of Representatives concurring), That Congress —

- (1) congratulates the Sailors of the United States Submarine Force upon the completion of 1,000 Ohio-class ballistic missile submarine (SSBN) deterrent patrols; and*
- (2) honors and thanks the crews of ballistic missile submarines and their devoted families for their continued dedication and sacrifice."*

sailorsFIRST



Photo by Petty Officer 1st Class Brian G. Attaway

Cmdr. Scott Pappano, commanding officer of the attack submarine USS *Buffalo* (SSN-715), is welcomed to the Republic of Korea. *Buffalo*, homeported in Guam, was conducting a routine port visit in conjunction with the International Fleet Review hosted by the Republic of Korea Navy.



Photo by Lt. Karen Eifert

Members of the Navy's Centennial Seven, a term used to denote the first seven African-American officers to command submarines in the 20th Century, pose with U.S. Naval Academy midshipmen during the 2009 Black Engineer of the Year Award Conference in Baltimore. (Front row, left to right) Capt. Pete Tzomes, Rear Adm. Tony Watson, Capt. Will Bundy, Vice Adm. Mel Williams, Capt. Joe Peterson, Rear Adm. Cecil Haney, Rear Adm. Bruce Grooms, the Centennial Seven, with Cmdr. Rich Bryant and Cmdr. Roger Isom.



Photo by Petty Officer 1st Class Todd Schaffer



Photo by Molly Little

Submariners Receive Black Engineer of the Year Award

Global Competitiveness Conference Recognizes Submariners

Four U.S. Navy submariners attached to Submarine Group TWO received Black Engineer of the Year Awards (BEYA) at the banquet during the Science, Technology, Engineering and Mathematics (STEM) Global Competitiveness Conference in Baltimore, Md., Feb. 19-22, 2009.

The BEYA award recognizes individuals who have achieved exceptional career gains in government, industry, lifetime achievement and pioneering feats.

The four Group TWO submariners receiving recognition at the banquet were: Lt. Jonathan Hines, USS *North Carolina* (SSN-777); Lt. Vance Scott, USS *Albany* (SSN-753); Lt. Arprel Walker, USS *Louisville* (SSN-724); and, Lt. j.g. Jason Brownlee, USS *Scranton* (SSN-756).

They are among nine U.S. Navy submariners receiving BEYA Awards this year.

"I salute the achievements of these men from Group TWO," said Rear Adm. Bruce E. Grooms, Commander, Submarine Group TWO. "This is an outstanding accomplishment and a testament to their

individual hard work, which moves the Force forward as a whole."

Five other Naval officers also receiving recognition at the banquet include: Cmdr. Roger Isom, commanding officer of the *Ohio*-class ballistic missile submarine USS *Wyoming* (SSBN-742)(GOLD), who received the Career Achievement Award, the highest Navy honor; Lt. j.g. Jermaine Bailey, USS *Florida* (SSGN-728)(BLUE); Lt. j.g. Alfred Williams, USS *Wyoming* (SSBN-742)(BLUE); Lt. j.g. Juan Hines, USS *Louisiana* (SSBN-743)(GOLD); and Lt. Cmdr. Djamal Pullom, USS *Ohio* (SSGN-726)(BLUE). All were selected to be recognized with the Modern Day Technology award.

"I'm extraordinarily proud of everything these men have achieved for themselves and the Submarine Force," said Vice Adm. John J. Donnelly, Commander, Submarine Force. "They are inspiring and empowering our Sailors to realize their full potential and to recognize the value that each individual brings to the Force."

Cmdr. Isom, recipient of the prestigious Career Achievement Award, spoke with UNDERSEA WARFARE Magazine about his achievement, his career with the Navy and some advice for submariners hoping to follow in his footsteps.

"First, I want to reiterate that I am deeply honored and thankful to receive the prestigious Black Engineer of the Year Award for Career Achievement in Government. I graciously accept this award on the behalf of my family, the Submarine Force, the Navy, and everyone who has supported and encouraged me throughout my 25 years of naval service. My naval career has been and remains a remarkable journey.

I am one of nine siblings who grew up on a farm in Monticello, Fla., a rural town outside of Tallahassee. My father was a carpenter and a minister. My mother worked part time as a maid to support the family. They are my heroes. Six of my siblings enlisted in the Army, and I decided to enlist in the Navy with the hope of getting a NROTC [Naval Reserve Officer Training Corp] scholarship via the Broadened Opportunity for Officer Selection and Training (BOOST) Program and I wanted to be different from my three older brothers who joined the Army.

I was persuaded to join the Navy because two of my high school classmates enlisted into the Submarine Force. However, I wanted to be a pilot and an astronaut, but realized that I needed to be a commissioned officer

(Opposite, top) Lt. j.g. Brownlee onboard USS *Scranton* (SSN-756). (Opposite, bottom) Lt. Jonathan Hines keeps a close eye on the photonics mast display onboard USS *North Carolina* (SSN-777).

to achieve that dream. Fortunately, a Navy recruiter steered me towards the BOOST Program with my goal of getting accepted into NROTC or the Naval Academy. Boot Camp in San Diego, Calif., and my one year of enlisted service were invaluable. I subsequently received a SECNAV [Secretary of the Navy] appointment to the Naval Academy. During my four years at Annapolis, I did some soul searching and finally decided that being a pilot was not the career path for me. Consequently, by my senior year at the academy, I began to consider other options for service selection. Several submariners at the Naval Academy impressed me so much that I chose submarines in 1988. Almost 25 years later, I have no regrets and I'm proud to be a submariner.

I've served on seven submarines (six of the seven boats I served aboard were operational with some amount of deployment time at sea). My numerous submarine tours resulted in PCS [permanent change of station] moves to homeports in Norfolk, Va., Bremerton, Wash., Pearl Harbor, Hawaii, and my current stop Kings Bay, Ga.

My shore tour assignments also provided great opportunities for personal/professional growth and impact. I was an NROTC instructor for three universities in Virginia. My second shore tour was at the Naval Academy as a company officer. Both of these tours provided me with opportunities to teach and inspire future officers. The tours also provided me with opportunities to interact with students, faculty and administrators at the universities and surrounding communities. My last shore tour was at the Pentagon as a Submarine Operations Officer. Each shore tour was challenging yet satisfying.

My tour as executive officer on USS *Cheyenne* (SSN-773) was awesome and highlighted by a nine-month extended deployment in support of GWOT [Global War on Terror].

My journey continued to bring me here, where I am completing my 30th month as commanding officer of USS *Wyoming* (SSBN-742)(GOLD). Every day of this tour I am thankful for this opportunity to lead and serve on one of the most powerful warships and with one of the most motivated crews in the Navy. Command truly is the best job in the Navy!

As I look back over my career, I feel extremely blessed because there are so many

fulfilling moments throughout it. My journey to command has been as fulfilling as actually being in command of a submarine. Therefore, I consider Aug. 3, 2006, as the most fulfilling moment of my career in submarines thus far. This was the day I assumed command of *Wyoming* with my family, friends, community and crew present. I was humbled, thankful, and ready to take advantage of my turn and my time to be in command.

My command philosophy is simple yet sacred: 'Accomplish our Mission Safely, Pursue Excellence in all we do with Integrity and Unity, and Treat Everyone with Dignity and Respect.' I continue to learn much in command and feel blessed to have this awesome opportunity.

Here are some 'Isomisms' of advice, primarily for junior submarine officers (JOs), to those who want to be placed in command of a submarine one day:

1) **Maximize Opportunities.** Seek and make the most of the opportunities that will come your way as a submarine officer in the most powerful Navy that has ever existed. The best way to predict your future is by creating your future with preparation, effort, and maximizing opportunities.

2) **Strive for Job Satisfaction.** The quality of your challenges, your training, your legacy, your service to country, your fun times, and your opportunity to lead Sailors can make your tour one of the most satisfying accomplishments of your life.

3) **Make a Difference Early.** Take pride in what you do and pursue excellence in your profession. Whether you choose to stay five years or 20 years in the Submarine Force, make the journey and your service count. Develop life skills. Don't underestimate your importance and how much the captain, wardroom, and crew depend on you for the success of your submarine. Get qualified and keep charging. You can make your submarine, shipmates, and self stronger smarter and better.

4) **Be the Quarterback.** Don't believe the hype and get caught up in negativity. Aspire to be one of the captain's 'go-to' JOs. Be the JO that he can trust to lead a watch team, conn the ship, safely operate the engineering plant, manage a division, and keep the wardroom motivated. Have a goal of becoming a complete submarine officer (technically, tactically, and operationally proficient).

Remember, you're one of the "quarterbacks" of your watch teams. Make it a winning team.

5) **To be the best, learn early and often.** I challenged myself and my crew to "learn something new or learn something better" daily. Commit to studying your profession so that you attain competence and proficiency early. Build your professional vocabulary (e.g., naval terminology, litany, communications, correspondence, etc.) so that you sound like a competent naval officer. It will help you gain credibility and respect (even from more senior officers).

6) **Take Pride in our Profession of Submarining.** I was amazed and inspired during my tour at the Pentagon by the high degree of respect other communities have for submariners. Their respect for what we do and who we are as fellow service members is remarkable. In my opinion, their respect for us is well deserved and has been earned by past and present submariners. Don't be ashamed to share submariner pride with your shipmates and friends. Regardless of your length of service, treasure being part of the submariner brotherhood.

7) **Volunteering is OK.** The best way to learn is by doing or teaching. Don't adhere to the saying 'never volunteer.' You could miss an opportunity to gain more responsibility, respect, and a sense of accomplishment.

8) **Always treat enlist Sailors with dignity and respect.** Chiefs are the backbone of the submarine, the crew is its lifeblood, and the wardroom should be its heart and soul.

Everyone has an important and necessary function, but the crew expects you to learn how to lead them. Allow them to help you learn how to lead and manage your division. Never take your leadership responsibilities for granted.

9) **Enjoy the Journey.** Learn to laugh at yourself and with your friends. Cherish the sea stories that you'll create and share. Cherish being OOD [officer of the deck] of a multi-billion dollar warship. Cherish the missions you'll plan and execute. Cherish our submarine legacy and the friends you'll make. Most of all make a difference along the way.

Best wishes to all of you for much success."

Interview conducted by Molly Little. Ms. Little is the managing editor of UNDERSEA WARFARE Magazine.

Q & A

Question and Answer



Vice Adm. Mauney in his office at USSTRATCOM in Nebraska.

The Importance of Strategic Deterrence

with Vice Adm. Carl "Van" Mauney,
Deputy Commander, United States Strategic Command

A native of Jackson, Miss., Vice Adm. Carl V. Mauney graduated with honors from the Georgia Institute of Technology in 1975. He earned a bachelor of Electrical Engineering degree while participating in the NROTC (Naval Reserve Officer Training Corps) program. Over the course of his naval career, Mauney completed submarine sea assignments aboard USS *Tunny* (SSN-682), USS *James Madison* (SSBN-627)(BLUE), and USS *Los Angeles* (SSN-688). He also served as commanding officer USS *L. Mendel Rivers* (SSN-686) and Commander, Submarine Squadron FOUR in Groton, Conn. Mauney went on to receive a Master of Business Administration from Chaminade University of Honolulu, Hawaii, in 1990. He served as a Federal Executive Fellow at the U.S. Department of State in 1996-1997 and is also a graduate of the Navy Executive Business Program at the University of North Carolina at Chapel Hill.

Following promotion to flag rank in July 2003, Mauney served on the Navy staff as Director, Strategy, Policy and Anti-Terrorism/Force Protection (OPNAV N34/N5). He was then assigned as Deputy Commander, U.S. SIXTH Fleet, as Director of Plans and Operations for U.S. Naval Forces Europe/U.S. SIXTH Fleet, Commander, Submarine Group EIGHT/Task Force 69 and in NATO as Commander, Allied Submarines Naval Forces South. His most recent assignment was as Director, Submarine Warfare (OPNAV N87). Mauney has been awarded the Defense Superior Service Medal, Legion of Merit, Meritorious Service Medal, and various other unit and service awards.

Vice Adm. Mauney took some time to answer questions about his current duties as Deputy Commander, United States Strategic Command (USSTRATCOM) and the missions of his command.

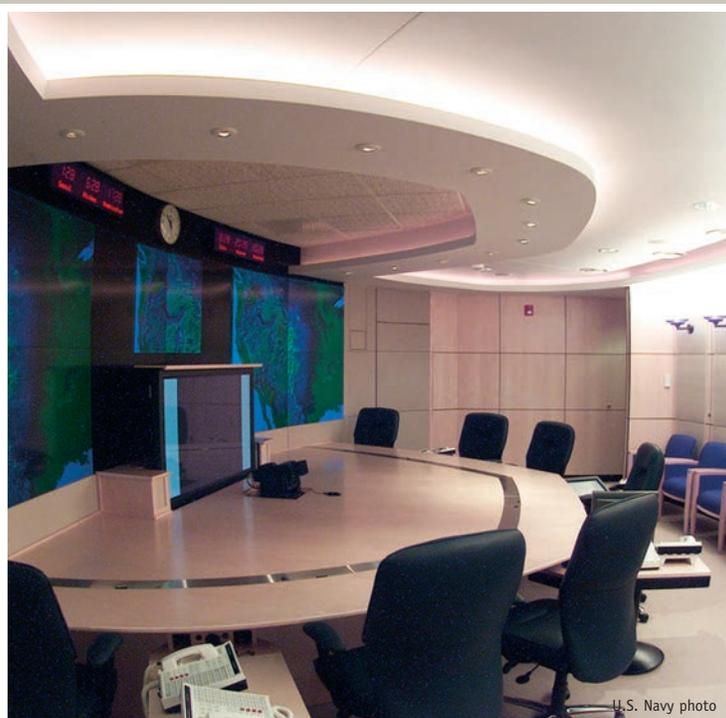
U.S. Strategic Command has several mission areas including strategic deterrence and directing the day-to-day posture of our nuclear forces. Can you describe how you approach accomplishing your assigned missions?

USSTRATCOM missions are described in the Unified Command Plan in which all combatant commanders' missions are included. USSTRATCOM has service forces assigned and directs day-to-day operations in the missions of deterrence, space, and cyberspace operations. In these areas, our focus is on activities with a global perspective, operating across regional boundaries. Many of these operations directly support missions assigned to one or more combatant commanders and multiple Joint Task Forces.

USSTRATCOM is also assigned missions in missile defense; intelligence, surveillance and reconnaissance (ISR); information operations; and combating weapons of mass destruction (CWMD). We have assigned commands and centers of expertise that support USSTRATCOM and other combatant commander activities in these areas.

We have aligned all of our mission areas to enable integrated direct or indirect operational or planning support to the strategic deterrence mission when needed, or individually to other combatant commanders as directed.

Many readers of this magazine equate strategic deterrence to nuclear deterrence. Can you explain how the military supports the overall mission of strategic deterrence and how nuclear is just one piece of that strategy?



Members of the senior staff operate as a battle staff from the Commander's Situation Room, also known as the CSR or SitRoom. Each battle staff member has access to information essential to decision-making and management of the command's forces.

During the Cold War, deterrence centered on the threat of mutually assured destruction (MAD) wrought by large stockpiles of nuclear weapons maintained by the U.S. and Soviet Union. Nuclear weapons served as a deterrent to either party initiating major conflict, including conventional and nuclear conflict. Thus, many historians conclude that nuclear deterrence worked well to influence rational leadership on both sides of an essentially bi-polar world order.

Today's concept of strategic deterrence seeks to deter attacks on the U.S. or allies, dissuade adversaries from actions counter to stability and peace, and to assure allies of United States commitment to their security. This concept of strategic deterrence

calls for a whole of government approach in order to support national objectives.

Military power is only one means of achieving the broader strategic deterrence desired end state, that the adversary does not threaten the U.S. or our allies' interests. Nuclear weapons continue to provide a strong foundation for deterrence and, in the event deterrence fails, they ensure our ability to strike an adversary in a devastating way for which there is no counter.

Adm. Michael Mullen (JFQ 4th qtr 2008) recently espoused the need for a

new model for deterrence theory that must possess at least three particular attributes:

i. the highest standards of nuclear preparedness;

There is no doubt there has been a loss of emphasis on the role of nuclear deterrence that has raised concerns regarding our nuclear preparedness. In the past year, this command has implemented organizational and oversight measures to raise USSTRATCOM focus on our nuclear mission. Perfection is the standard, and we have focused more resources and rigor on this mission—we must maintain the highest standards of nuclear surety. A visible, credible deterrent is essential to our national security.

The U.S. nuclear deterrent remains safe, secure and reliable. We need to continue to properly steward this impor-

tant mission but no one should doubt our resolve and capability to defend U.S. and allies' interests.

ii. the model must be credible;

Credible deterrence still relies on a combination of having the capability and will to act. This holds true for diplomatic and economic deterrent actions as well as military actions. Credibility is in the eyes of the adversary. Potential adversaries must perceive the U.S. is capable and willing to take actions to impose costs, deny benefits and encourage adversary restraint. Thus credibility depends on deterrent activities being planned and coordinated, to include diplomatic, military, informational and other means, and clearly communicated to the intended audience.



A single modified tactical Standard Missile-3 (SM-3) launches from the *Ticonderoga*-class Aegis guided missile cruiser USS *Lake Erie* (CG-70) successfully impacting a non-functioning National Reconnaissance Office satellite as it traveled in space.

iii. it needs to address the challenges posed by extremists and ideologues.

A practical means of deterring this type of threat is by denying the benefits they seek. This is achieved through strong and vigilant defenses that prevent them from attacking. We must engage violent extremists on every battle field, including cyberspace, where they communicate, plot and attempt to promote violent extremism and recruit new members for their causes. This does not imply there are no means to impose costs on these types of organizations. We impose costs by continuously tracking down and eliminating their leaders and foot soldiers and by exposing and debunking their ideology of hatred and death. As we've seen in Iraq, when the extremists' senseless brutality is exposed, they lose their base of support in the communities they try to infest.

Additionally, we can identify those who provide financial or material support to extremists. Then, using all tools at our disposal, work to deter this support and expose their activities to responsible nations for actions.

Can you discuss the efforts we are planning or currently pursuing to bridge today's strategy to the new model attributes that Adm. Mullen talks about? What other considerations or attributes

are paramount as we prepare for the upcoming Nuclear Posture Review?

The 2001 Nuclear Posture Review (NPR) brought forth the concept of a triad that emphasized integration of offensive capabilities (nuclear, conventional and non-kinetic) with defensive capabilities and a responsive infrastructure, all linked by synchronized intelligence, planning and command and control.

The Deterrence Operations Joint Operating Concept was published in the fall of 2006 and framed a new approach to strategic deterrence. This document recognized that military power is only one aspect of deterrence, and supports the concept that deterrence must bring to bear all elements of our national power to assure our allies and deter and, if necessary, defeat our adversaries. This concept of strategic deterrence is a national level effort that integrates deterrence operations and activities to address specific national security objectives. It possesses the breadth of scope and flexibility to link the strategy with America's future.

As we prepare for the next NPR, nuclear weapons will remain a central component of our strategic deterrence capabilities. America's nuclear weapons and the infrastructure that supports them provide prompt response, at intercontinental rang-

es, with devastating results. This is a deterrent effect that conventional forces cannot duplicate.

Can you talk about nuclear non-proliferation and efforts to combat the nuclear ambition of state and non-state actors?

Nuclear non-proliferation is one of the three pillars of our combating weapons of mass destruction (CWMD) strategy and is a significant element included in our deterrence strategy. Non-state actors and rogue nation states are pursuing nuclear weapons technology and delivery capabilities which could threaten U.S. and allied interests. The 2008 Unified Command Plan charges USSTRATCOM with synchronizing Department of Defense (DoD) CWMD planning efforts, advocating for CWMD capabilities, and integrating security cooperation activities with other nations to support campaigns to combat weapons of mass destruction.

USSTRATCOM executes the CWMD mission through one of our components, the USSTRATCOM Center for CWMD (SCC-WMD). Recently SCC-WMD hosted its first CWMD Global Synchronization Conference and initiated actions across all DoD and in other U.S. Government departments to enhance cooperation and progress in this vital mission area.

As we prepare for the next Nuclear Posture Review, nuclear weapons will remain a central component of our strategic deterrence capabilities. America's nuclear weapons and the infrastructure that supports them provide prompt response, at intercontinental ranges, with devastating results. This is a deterrent effect that conventional forces cannot duplicate.

USSTRATCOM developed and maintains the DoD CWMD Global Campaign Plan, which provides the framework and guidance for geographic combatant commanders' regional CWMD plans. It also closely aligns CWMD objectives and effects with SOCOM's counterterrorism plans. Through collaboration with U.S. and allied organizations, there is around the clock awareness of worldwide WMD (weapons of mass destruction) threats and activities, as well as providing day-to-day WMD crisis support.

USSTRATCOM supports geographic combatant commanders in Proliferation Security Initiative (PSI) exercise planning and execution with functional expertise and funding. PSI exercises enhance our efforts to build capabilities and capacity in partner nations, and help allied nations improve information sharing and interdiction capabilities. To date, more than 35 exercises have been conducted worldwide involving more than 70 countries.

The United States will soon have about



A convoy deploys from Malmstrom Air Force Base en route to a launch facility for maintenance.

75 percent fewer nuclear weapons than at the end of the Cold War. What barriers exist to enabling further reductions?

The U.S. can take great pride in the reductions we have made in our nuclear weapons over the last 15 to 20 years. We have made a dramatic reduction in the number of

deployed nuclear weapons, from over 10,000 deployed weapons at the end of the Cold War heading toward 1,700 to 2,200 by the Moscow Treaty in 2012. At the same time we have, in a parallel fashion, reduced our nuclear capable forces.

President [Barack] Obama has stated an intent to move toward a world without nuclear weapons. He has also said that as long as there are other nations who possess nuclear weapons that can threaten the U.S., we will need sufficient nuclear capabilities to deter their use on the U.S. or on our allies. Because no one can predict the future there will always be a risk of a future threat to our security. This risk can be expressed as uncertainty in what other nations might do that might threaten the U.S.; uncertainty in how long our present weapons will remain effective; and uncertainty in our understanding of the global security environment.

As we look to the future and to the number of nuclear weapons required, we need to consider at least the following:

- Our present nuclear weapons were built prior to 1990. They are aging and will require replacement at some point. We presently do not have the capability to

replace our weapons.

- Deterrence only works when the capability being used to deter an action is credible in the mind of an adversary. Our government is beginning a Nuclear Posture Review which will consider the many factors involved in having a credible deterrent and recommend to our leaders a weapons inventory strategy.

A few recent events forced a close look at how nuclear weapons and related material are handled. What changes have been implemented as a result of these close looks and are there any future organizational changes planned?

At USSTRATCOM we reviewed our organization, relationships with the Navy and Air Force, and how the nuclear task forces are directed and operate. As a result of this review and the other reviews, we have made changes to increase focus and better accomplish the nuclear deterrent mission.

Specifically, we added manpower and new leadership (U.S. Air Force brigadier general) with a single job to oversee day-to-day operations of our nuclear forces. We issued new orders to our nuclear task forces, clarifying and streamlining how our nuclear forces operate. We also instituted a Nuclear Enterprise Council and a working level Nuclear Enterprise Board to identify and solve problems across the enterprise. Finally, the USSTRATCOM Inspector General observes inspections on all nuclear forces, assessing the inspection process and looking to identify cross cutting or chronic problems among the forces.

Let me close by saying how proud I am of our Sailors, Airmen, Soldiers, and Marines who execute the nation's Nuclear Deterrence mission. This challenging mission demands our best in terms of standards, focus and teamwork. We will continue to depend on each one of you to continue your effort in this mission, vital to our nation's security.

Lt. Cmdr. Levander serves as the military editor of UNDERSEA WARFARE Magazine.



USSTRATCOM offices on Offutt Air Force Base, Nebraska.

Pride Runs Deep in the Heartland Submarine "Joint Warriors" at USSTRATCOM

by Capt. David Fry

"What is a submariner doing in Nebraska?"

is a question frequently asked by local residents to any one of the 43 submarine officers stationed at the United States Strategic Command located on Offutt Air Force Base (AFB) in Omaha, Neb. While duty in Nebraska seems to be far from the "typical" shore duty assignments, submariners actually have a long-standing presence at Offutt Air Force Base. Our presence dates back to the 1960s when the Joint Strategic Target Planning Staff was formed to be the general nuclear war planner for all U.S. Forces. While reporting directly to the Chairman of the Joint Chiefs of Staff, the Director of the Joint Strategic Target Planning Staff was dual hatted as the Commander in Chief of the Air Force Strategic Air Command. Thus started a tradition of submariners serving in the Heartland of America, a tradition that continues nearly 50 years later.

Submariners became "plankowners" in the new joint United States Strategic Command (USSTRATCOM) when it was created in 1992 as part of the Goldwater-Nichols Act that directed establishment of the unified command structure. While initially focused solely on nuclear deterrence, USSTRATCOM's responsibilities greatly expanded with the issuance of the 2002 Unified Command Plan. Today, USSTRATCOM's operational missions are to deter attacks on U.S. vital interests, to ensure U.S. freedom of action in space and cyberspace, and to deliver integrated kinetic and non-kinetic effects to include nuclear and information operations in support of U.S. Joint Force Commander operations. In addition, USSTRATCOM supports Department of Defense (DoD) and other combatant commanders to synchronize global missile defense plans and operations, to synchronize regional combating of weapons of mass destruction plans, to provide integrated

surveillance and reconnaissance allocation recommendations to the Secretary of Defense, and to advocate for joint capabilities in all mission areas.

With 1120 [submarine officer] billets in both the USSTRATCOM Headquarters and the co-located Joint Functional Component Command for Global Strike (JFCC GS), there are opportunities for submariners to serve at any point in their career path—from their first post junior officer sea tour all the way through flag officer. In the past, submariners have served as Commander, USSTRATCOM and currently, Vice Adm. Van Mauney, a submariner, is the Deputy Commander. Also located in Offutt, Rear Adm. Frank Caldwell serves as the Deputy for JFCC Global Strike. Nearly all submariners receive joint duty credit and have the opportunity to complete Joint Professional Military Education (JPME). The submariners at Offutt AFB proudly serve as joint warfighters, applying their professional expertise toward the accomplishment of the entire range of USSTRATCOM's missions.

The JFCC GS "Air Room" under Capt. Mark VanYe, who reported to USSTRATCOM from his tour as commanding officer of USS *Maryland*, is responsible for supporting the nation's strategic deterrence and the operations of our nuclear capable forces. Of the 41 military officers assigned to the Air Room, approximately one third are submariners. For Lt. Tom Rubenstein, who served as a junior officer on the USS *Pennsylvania* (SSBN-735), duty in the Air Room has been particularly rewarding. According to Rubenstein, "As a submariner, it's been a great experience working closely with so many people from other branches of service, as well as from other communities within the Navy. I now have a better realization of how our unique background positions us to be incredibly competent in a joint environment. Even as a lieutenant, I have a job that makes a material difference to the nation's strategic plan, while still having enough free time to pursue graduate education or JPME. As a former SSBN junior officer, working on the creation of the strategic plan has really helped to give me a better appreciation of how SSBN deterrent patrols fit into the strategic puzzle."

Submariners at USSTRATCOM not only support our nuclear deterrent forces, but also serve in critical nuclear command and control positions. Some submariners stand watch in the USSTRATCOM Global Operations Center as Strike Advisors, responsible for providing timely advice to senior leadership in time of national crisis. Four submariners are currently assigned to the National Airborne Operations Center (NAOC). Lt. Cmdr. Andy Clark found the transition from Strategic Weapons Officer on USS *Wyoming* (SSBN-742) to flying as a NAOC team member to be both challenging and rewarding. According to him, "after some initial culture shock in seeing how the other services operate, I found that my background in submarines prepared me for the fast pace of operations

so I wasn't overwhelmed. On 20 or 30 hour flights, it also helped that as submariners we're used to fairly tight spaces. It was very interesting to go from one end of the nuclear command and control spectrum to the other, and routinely interacting with general and flag officers has helped develop my confidence in dealing with senior leaders."

When USSTRATCOM's mission broadened beyond nuclear deterrence, so did the roles of submariners at USSTRATCOM. Capt. Brian Humm, former commanding officer of USS *Buffalo* (SSN-715), is the Capability Resource Analysis Division Chief. In this billet he supervises a team of more than 50 officers and civilians who analyze the entire range of USSTRATCOM's mission set to determine future requirements. He says, "You would think that the space mission set would be completely different than operating a submarine, but, similar to submarines and nuclear power, the first question you have to ask is 'What is the technically correct answer?' That perspective is an advantage that our experience and training provides us. Plus, it's fun."

Lt. Matt Powell, who served as a junior officer on USS *Rhode Island* (SSBN-740), finds, "the work that I do here at USSTRATCOM is just as interesting as the work submariners do out in the Fleet. I plan Information Operations options against a variety of adversaries and I am routinely afforded the opportunity to input my thoughts and ideas at a strategic level that I was rarely exposed to while underway. Working at USSTRATCOM has broadened my understanding of the 'bigger mission,' and has shown me the important role that submarines play in that mission."

In addition to the professional rewards of duty at USSTRATCOM, Nebraska is a great place for shore duty. According to Lt. Dave Ruth, who came to Omaha from *Rhode Island*, "The Omaha area is a wonderful place for families. We live within 15 minutes of all the major attractions and about 20 minutes from the base. We are members of the world class Henry Doorly Zoo and the Omaha Children's Museum which are great family activities. Last year we attended the College World Series which was an amazing experience. During the summer and fall my wife enjoys shopping at the Farmers Market in the historic Old Market area. I love the almost endless paved trails perfect for running and biking. Overall we love the Omaha area. I am extremely fortunate to have spent my shore duty in the Heartland."

While the specifics of an answer to the question, "What is a submariner doing in Nebraska?" may vary widely depending on the duties of which submariner you happen to ask, as a whole, you can say that they are serving their country in a challenging and rewarding manner.

Capt. Fry is the Operations Plans Division Chief, Joint Functional Component Command Global Strike at Offutt Air Force Base, Nebraska.



SSBNs: Ready and Vigilant Through 1,000 TRIDENT Patrols

The Honorable Donald Winter, then-Secretary of the Navy, acknowledged the Sailors and support community of the *Ohio*-class ballistic missile submarines (SSBN) during the 1,000th TRIDENT Patrol ceremony, held on Feb. 19, 2009, at Naval Submarine Base Kings Bay, Ga.

The commemorative ceremony marked the milestone of *Ohio*-class ballistic missile submarines, also known as “TRIDENT” submarines, conducting 1,000 successful patrol periods since USS *Ohio* (SSBN-726) completed its first strategic deterrent patrol in 1982.

The milestone “represents the great contributions our Navy has been able to make to our Nation and I think it is the type of opportunity that we need to seize upon to celebrate and thank both those that were directly involved as well as the broader community that has provided the support,” said Winter. “When I say broader support community, I mean everything from the industrial base that provides this but also the communities that we live in and work in that provide such expansive support to the families as well as the individual Sailors.”

For over 27 years, the *Ohio*-class ballistic missile submarine has remained the most survivable form of deterrence. This milestone highlights the importance of strategic deterrence in today’s world and the Navy’s 14 *Ohio*-class SSBNs that support this crucial tenant of the Maritime Strategy.

Winter and several senior leaders delivered the ceremony’s addresses to mark the momentous occasion. Gen. Kevin Chilton, Commander, U.S. Strategic Command; Adm. Gary Roughead, Chief of Naval Operations; Gen. James Cartwright, Vice Chairman of the Joint Chiefs of Staff; Vice Adm. John Donnelly, Commander, Submarine Force; and Congressman Jack Kingston expressed their appreciation to the submariners, families, and supporters of the SSBN throughout its lifetime.

“As your Submarine Force Commander, I am extraordinarily proud of our men in the SSBN Force and all those who support them. The true strength of the ballistic missile submarine lies in the extremely talented and motivated Sailors who have voluntarily chosen to serve in the submarine community,” Donnelly said.

USS *Rhode Island* (SSBN-740)(BLUE) hosted the ceremony and served as the ceremonial representative of the original 18 *Ohio*-class submarines and crews who contributed to the 1,000 patrol milestone.

“Today you will hear several of our nation’s top military leaders talk about this legacy of excellence, the great people involved in maintaining this capability, and the continued importance of our Strategic Mission,” said Donnelly. “It is these Forces, represented here by *Rhode Island*, who have been a cornerstone in the security of the United States for more than 50 years... and no one should doubt our capabilities or our resolve to defend the U.S. and our allies’ interests by deterring aggression.”

Strategic deterrence has been the sole mission of the fleet ballistic missile submarine (SSBN) since its inception in 1960. The SSBN provides the Nation’s most survivable and enduring nuclear strike capability. Virtually undetectable, the *Ohio*-class SSBN can maneuver with impunity through the world’s oceans. As the sea-based leg of U.S. strategic deterrent forces, the current 14 TRIDENT SSBNs (each capable

(Opposite) A Sailor assigned to the *Ohio*-class ballistic missile submarine USS *Rhode Island* (SSBN-740) stands at attention while top military leaders board the submarine during a ceremony marking the 1,000th TRIDENT submarine patrol. (Below) Dignitaries and guests stand during the national anthem at the start of the 1,000th TRIDENT Patrol Commemoration Ceremony at Naval Submarine Base, Kings Bay.

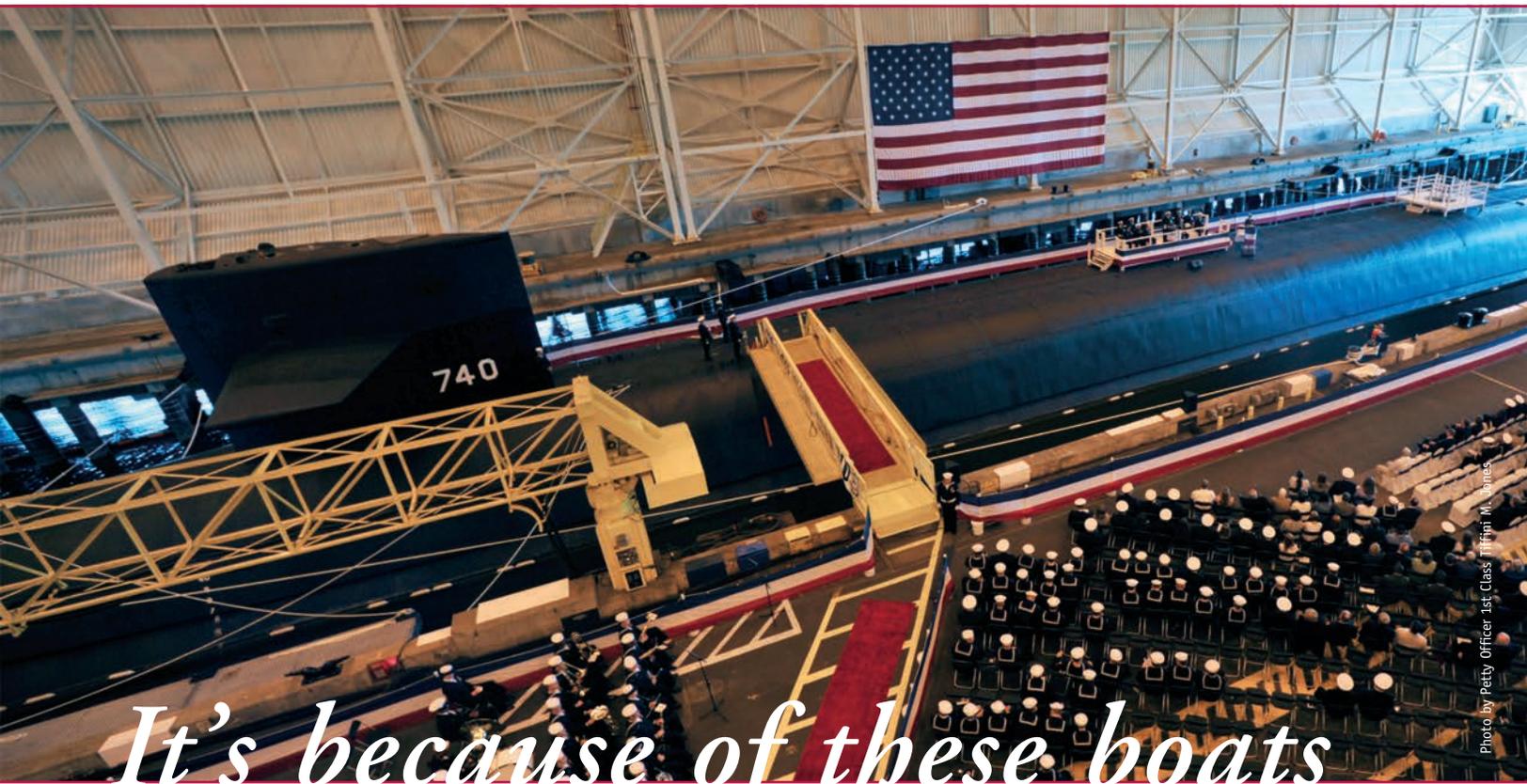


Photo by Petty Officer 1st Class Jeffrey M. Jones

*It's because of these boats
that you and I can
enjoy the freedoms
we enjoy.*

—Congressman Jack Kingston

of carrying up to 24 TRIDENT missiles) carry more than 50 percent of the total U.S. strategic warheads.

“America’s leaders place special trust and confidence in members of the Submarine Force. You go to sea entrusted with weapons of incredible destructive power, propelled by power plants of unbelievable sophistication,” Chilton said. “You go to sea armed for Armageddon, while charged with the solemn responsibility of preventing it.”

Congressman Jack Kingston described the submarines at Kings Bay as “one of the strongest weapons systems the world has ever seen. The destructive power carried onboard TRIDENT submarines has been faithfully safeguarded without incident for almost 50 years by our Sailors.”

“It’s because of these boats that you and I can enjoy the freedoms we enjoy, The rest of us can go to work every day, take our kids to baseball practice after school, shop at the grocery store and go fishing in Crooked River without fear because they have kept the watch. For this we thank these Sailors today.” Kingston said.¹

Maritime dominance will remain vital to U.S. national security. In order to respond to nuclear aggression or threats, the sea-leg of the triad is ready and vigilant, in a secure and survivable posture, able to respond rapidly to national tasking. “These are your dispensable contributions to the joint warfighting capability of the Nation,” said Chilton.

To commemorate the 1,000th milestone, the Chairman of the Joint Chiefs of Staff, Adm. Michael Mullen, sent a congratulatory letter to Commander Submarine Group TRIDENT. “From the Cold War to the Global War on Terrorism, our Sailors

completed the strategic deterrent mission with courage and commitment, consistently setting the standard—not just among the Submarine Force but across the Fleet,” wrote Mullen.

On Feb. 11, 2009 USS *Wyoming* (SSBN-742)(BLUE) successfully completed the 1,000th TRIDENT patrol and returned to its homeport of Naval Submarine Base Kings Bay, Ga. The crew members were recognized at the ceremony and served as honored guests of Group TRIDENT.

“I am proud that our Sailors are here today. Sailors who for decades have sailed on the open waters, those who have enabled



U.S. Navy photo

The platform guests at the ceremony were (front row, left to right) Gen. Kevin Chilton, Commander, U.S. Strategic Command; Gen. James Cartwright, Vice Chairman, Joint Chiefs of Staff; Congressman Jack Kingston; the Honorable Donald Winter, then-Secretary of the Navy; Adm. Gary Roughead, Chief of Naval Operations; Vice Adm. John Donnelly, Commander, Submarine Force; (back row, left to right) Rear Adm. Stephen Johnson, Commander, Strategic Systems Programs; Rear Adm. Timothy Giardina, Commander Group TRIDENT; Cmdr. Donald Troast, Submarine Force Chaplain; Cmdr. Bob Clark, Commanding Officer USS *Rhode Island* (SSBN-740) (BLUE); and Cmdr. William Combes, Commanding Officer USS *Wyoming* (SSBN-742)(BLUE).

The 1,000th TRIDENT Patrol is obviously much bigger than my 172 Sailors—all those that have patrolled before, all the support the Wyoming receives here in Kings Bay, and the trust and support of the people of this great nation. Yet, it is their accomplishment, and the recognition thereof, that made the ceremony so special to me.

—Cmdr. William Combes

those Sailors to do their job and especially their families who stand by and support and encourage and enable the Sailors so that we continue to be able to uphold those high standards. They have never let us down, they never will let us down because the culture that they foster and the culture that they pass on to the next generation is what really makes a difference,” Roughead said.

Wyoming, whose motto “Cowboy Up,” was the 17th *Ohio*-class ballistic missile submarine authorized by Congress to be built and the fourth ship to bear the name *Wyoming*. Christened on July 15, 1995, *Wyoming* began its first patrol on August 19, 1997 and has completed 38 patrols to date.

Wyoming Chief of the Boat, Master Chief Petty Officer(SS) Sean Landry, referred to the honor of conducting the

1,000th Strategic Patrol as “icing on the cake for my dedicated Sailors.”

Platform participants met with SSBN Sailors throughout the day to extend appreciation for their contributions to the milestone.

According to Landry, “The post ceremony all hands call with the Secretary of the Navy and my crew was such an awesome privilege that my guys will cherish forever and definitely made a lasting impression on the both the young and seasoned crewmembers.”

“I am very proud of my men. It was so professionally rewarding to see them honored in person by such an impressive collection of their senior leaders,” said Cmdr. William Combes, commanding officer, *Wyoming*. “The 1,000th TRIDENT

Patrol is obviously much bigger than my 172 Sailors—all those that have patrolled before, all the support the *Wyoming* receives here in Kings Bay, and the trust and support of the people of this great nation. Yet, it is their accomplishment, and the recognition thereof, that made the ceremony so special to me.”

¹ A portion of Rep. Kingston’s comments are quotes from *The Florida Time Union* article published Feb. 20, 2009.



Photo by Petty Officer 2nd Class Gretchen Albrecht

(left) Chief of Naval Operations (CNO) Adm. Gary Roughead, left, presents a Meritorious Unit Commendation flag to ballistic missile submarine USS *Louisiana* (SSBN-743) BLUE crew commanding officer Cmdr. Blake Converse and GOLD crew commanding officer Capt. Shannon Kawane.

(below) Chief of Naval Operations (CNO) Adm. Gary Roughead speaks to Sailors assigned to the ballistic missile submarine USS *Louisiana* (SSBN-743) after presenting both BLUE and GOLD crews with the Meritorious Unit Commendation Medal.

CNO Presents Meritorious Unit Commendation to USS *Louisiana* (SSBN-743)

The Chief of Naval Operations, Adm. Gary Roughead, presented USS *Louisiana* (SSBN-743) crew members the Meritorious Unit Commendation Feb. 17, 2009, while visiting Sailors and installations in the Pacific northwest.

Adm. Roughead expressed his gratitude and congratulated the submarine's BLUE and GOLD crews.

"It is a great pleasure and privilege for me to present this award," said Roughead. "The pennant and citation do not say enough about the great work you have done or about the standards that you as professionals, as Sailors, as submariners uphold."

Louisiana was acknowledged for meritorious service and superior performance across the spectrum of strategic submarine operations setting fleet standards of excellence for administration, engineering, supply, personnel programs and community support.

"There was a significant amount of time underway conducting the strategic deterrent mission, with very little maintenance opportunities. That is probably what set us apart," said Cmdr. Blake Converse, commanding officer *Louisiana* (BLUE). "I have always been in awe and impressed by the crews' hard work, discipline and dedication."

Crew members assigned to *Louisiana* were called upon for numerous strategic deterrent patrols between January 2007 and February 2008. Both crews were at sea

for a combined total of 252 days, and spent their off time keeping their skills sharp and helping out in the community.

"The fact that we were able to step up when needed, maintaining morale and performance, is a tribute to our Sailors' character and the support they are getting from the home front," said Converse. "I am pretty impressed and thankful the families were there to support the guys through everything because it was challenging."

Both crews assembled on the pier to watch Roughead present Capt. Shannon Kawane, commanding officer *Louisiana* (GOLD) and Converse with the official citation

and pennant. *Louisiana* is the first ballistic missile submarine (SSBN) to be awarded the Meritorious Unit Commendation in eight years.

"It was a big honor to have the CNO present this award," said Petty Officer 1st Class(SS) Justin Carr, leading petty officer of Reactor Controls Division (BLUE). "We feel like the people in Washington D.C. know and appreciate how much the crew did and how much blood, sweat and tears went into getting this award."

Petty Officer 2nd Class Gretchen M. Albrecht is a member of Commander, Submarine Group NINE Public Affairs Office.



Photo by Petty Officer 2nd Class Gretchen Albrecht

The Navy's Strategic Systems Programs

Over 50 Years of Providing

Personnel aboard the *Ohio*-class strategic missile submarine USS *Kentucky* (SSBN-737) await a transport boat while transiting the Strait of Juan De Fuca.

For more than fifty years, the Strategic Systems Programs (SSP) command has contributed to our nation's defense by providing the nation's only survivable strategic nuclear deterrent. SSP's deterrent missile systems remain a key factor in the prevention of nuclear war and the preservation of global stability. SSP's long, proud history is noteworthy, as it is a history of continual evolution to meet a world of uncertainty.

SSP's origins date back to November, 1955 when Charles Thomas, Secretary of the Navy under President Dwight D. Eisenhower, directed the formation of a Special Project Office for the development of the Army-Navy Jupiter intermediate range ballistic missile system. That office evolved into the SSP organization which is now responsible for the Strategic Weapons System aboard the Fleet Ballistic Missile (FBM) submarines that patrol the world's international waters to protect the U.S. and its allies.

In 1956, the Navy began development of the Polaris solid-fueled missile, the world's first submarine underwater launched ballistic missile. Since the program's inception, the FBM team has produced more than 3,600 missiles in six generations, each more capable than its predecessor: Polaris A1, A2, A3; Poseidon C3; TRIDENT I C4; and TRIDENT II D5. With six generations of missiles over more than five decades, the FBM system remains, to this day, the largest critical component in the nation's strategic defense forces.

Thawing Cold War tensions coupled with emerging new threats to global peace have yielded today's strategic defense policy. This policy maintains an effective deterrent with a reduced reliance on nuclear weap-

ons while increasing overall conventional and defensive capabilities to thwart rogue nations and terrorist threats.

As a result, SSP's mission to provide credible and affordable strategic solutions to the warfighter now means continuing to perform the traditional mission of sea-based deterrence while undertaking work in new, complimentary fields. The responsibility for maintaining the sea-based strategic deterrent also includes the associated security for this national asset as well as arms control implementation and compliance responsibilities. In order to meet changing needs, SSP's additional responsibilities include the attack weapons systems for guided-missile submarines (SSGNs), large diameter submarine tube payload integration, and other emerging missions.

World events continue to influence SSP. The organization's ability to adapt to the changing world environment provides a strong foundation to support the needs of the nation's defense policy now and in the future.

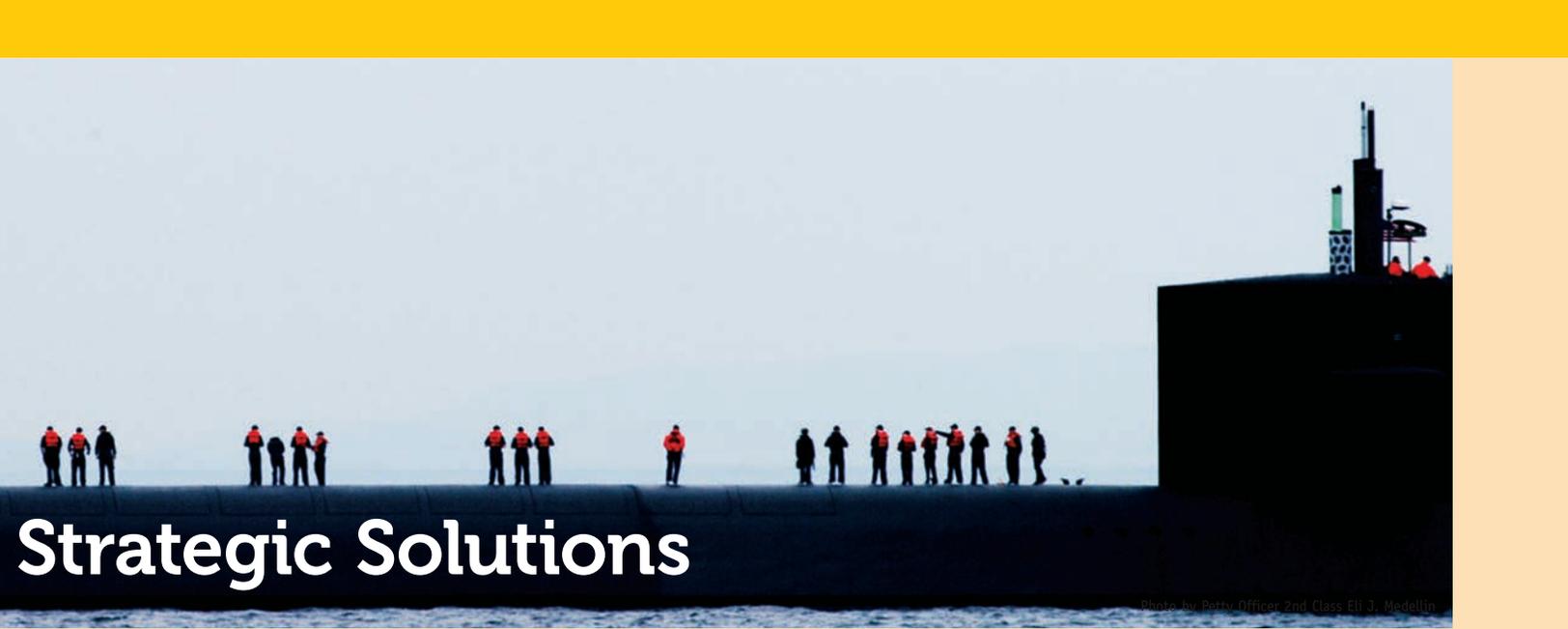
Continuing the Success of the TRIDENT Strategic Weapon System

The TRIDENT II, D5 Strategic Weapon System has been providing a reliable deterrent for nearly 20 years onboard the *Ohio*-class ballistic missile submarines (SSBNs). The Navy first deployed the TRIDENT II D5 missile, the longest range and most accurate of the six generations of the FBM, in 1990. SSBN patrol operations — survivable and undetected — provide continuous strategic deterrence capability to national leadership.

The entire TRIDENT II D5 weapon system has a demonstrated reliability that is second-to-none as evidenced by two decades of annual, operationally representative flight testing. The most recent test on Feb. 13, 2009 represented the 126th consecutive successful missile flight test since 1989. This is not only the result of a sound engineering design based on proven technologies and lessons learned from previous weapons system generations, but more importantly it is a reflection of the dedicated people — military and civilian, government and contractor who work to serve this program. Just as this weapon system provides constant and credible vigilance, it demands of its personnel an unwavering support to safety of operations and high performance — and they have delivered.

Long-term government and contractor partnerships contribute to the performance of the Navy's Strategic Weapon System, which takes a special brand of collaboration. Each contractor facility is teamed with a Program Management Office headed by a naval officer and a staff of military/government civilians, forming a synergy through close working relationships that has become instrumental to the success of this program.

SSP's partnerships within the Department of Defense (DoD) span other services and organizations. Commander, U.S. Strategic Command is the commander for the nation's strategic forces, determining the requirements across all strategic forces and SSP delivers products to support these requirements. Within the Navy, SSP works with Commander,



Strategic Solutions

Photo by Petty Officer 2nd Class J. Medellín

Submarine Force; Commander, Submarine Force, U.S. Pacific Fleet; and Commander Submarine Group TRIDENT to ensure that the needs of the 14 strategic *Ohio*-class submarines — and their BLUE and GOLD crews — are always met.

SSP maintains a close working relationship with the submarine base commanders for the home ports of the SSBNs, which also are home to the “factories in the field”: the Strategic Weapons Facility Atlantic (SWFLANT) at Naval Submarine Base Kings Bay, Ga., and the Strategic Weapons Facility Pacific (SWFPAC) at Naval Submarine Base Bangor, Wash. SSP’s Naval Ordnance Test Unit (NOTU) Command at Cape Canaveral Air Force Station, Fla., provides an important role as the Test Director for all test launches on both the Air Force Eastern Test Range, as well as West Coast flight test operations conducted from Naval Air Station Pt. Mugu, Calif.

One of SSP’s most important relationships is its longstanding international partnership with the United Kingdom. The signing of the Polaris Sales Agreement in April 1963 provided the Royal Navy with the Polaris Weapons System, providing the United Kingdom an independent sea-based strategic capability. This agreement was amended in 1982, allowing the United Kingdom to deploy the TRIDENT II D5 Weapons System. Since the first deployment of HMS *Resolution* (S22), the U.S. Navy and the Royal Navy have maintained this relationship, under the leadership of its two project officers, Director, Strategic Systems Programs for the United States and Chief, Strategic Systems Executive for the United Kingdom. The U.S. and U.K.

share assets from a common inventory and deploy identical systems with the exception of the warheads. For four decades the Royal Navy’s strategic submarines have maintained a continuous at-sea deterrent force for the United Kingdom.

Taking the System into the Future

The TRIDENT II D5 Life Extension program is SSP’s footprint for the next 35 years. New missile and guidance electronics will replace legacy components and meet long-term inventory requirements. The Life Extension program also allows for the continuation of weapon system test launches for the life of the *Ohio*-class SSBNs to maintain the safety, reliability, readiness and performance of the operational systems. The first Life Extension missile will be delivered to the Navy in Fiscal Year 2013. In addition, SSP systematically conducts technology refresh of the shipboard subsystems; fire control, navigation and launcher; to ensure long term continued supportability and to reduce costs by leveraging Commercial Off The Shelf (COTS) technologies and components. SSP is also leading the initial efforts to develop concepts for the replacement of the *Ohio*-class SSBNs. These efforts are being closely coordinated with United Kingdom efforts to replace the *Vanguard*-class SSBNs, providing the opportunity for both countries to continue to benefit from the joint strategic program elements afforded under the Polaris Sales Agreement.

Providing Nuclear Weapons Security

Equaling the importance of providing a credible sea-based strategic deterrent is that of maintaining the security of Navy’s strate-

gic assets. SSP is responsible for the security and safety of these strategic weapons.

The emergence of new threats has prompted an increase of the Navy’s posture to guarantee security of Navy nuclear weapons. SSP has developed a robust, system-wide approach — the Integrated Nuclear Weapons Security System (INWSS) — linking landside and water-side security measures. Under INWSS, a set of new security projects form a balanced, in-depth system sufficient to protect against the potential threats at the Strategic Weapon Facilities. SSP continues to implement and evolve this comprehensive system, which includes the necessary personnel, equipment and processes.

Assuring Treaty Compliance

SSP serves as the executive agent for all arms control implementation and compliance functions within the Navy and Marine Corps. The Naval Treaty Implementation Program (NTIP), an office within SSP, is responsible for these functions. NTIP provides comprehensive arms control treaty support to Navy and Marine Corps commanding officers, program managers, senior leadership and decision makers. All Navy and Marine Corps programs and activities must be compliant with all international arms control treaties and agreements to which the U.S. is a signatory. This applies to every stage of the system acquisition life cycle, from research, development and acquisition to deployment. To ensure compliance, NTIP conducts arms control assessments of all programs and activities to address and resolve any issue that could reasonably raise an arms control compli-

ance concern.

For the Strategic Arms Reduction Treaty (START), SSP is the Navy's executive agent responsible for the formulation of implementation and compliance plans and the execution of all START requirements for the chief of naval operations. SSP provides START verification data to the Russian Federation via the State Department for the TRIDENT II D5 submarine-launched ballistic missile system, including inventory levels, basing locations, certain technical information and missile flight test telemetry data tapes. SSP ensures successful execution of short-notice on-site inspections at declared Navy facilities by signatory nation inspectors, who are escorted by U.S. Defense Threat Reduction Agency personnel. These inspections confirm reported missile inventory levels and deployed missile configurations meet all treaty requirements.

Integrating the SSGN Attack Weapon System and Other Large-diameter Tube Payloads

When the 1994 Nuclear Posture Review prompted the decision to convert four SSBNs into SSGNs, SSP developed the tactical SSGN Attack Weapons System (AWS), heavily leveraging the experience and technologies from the Strategic Weapons Systems SSP supported on *Ohio*-class submarines.

SSP integrated the AWS into the existing *Ohio*-class submarines, providing very large volume of fire, TOMAHAWK conventional land-attack missile delivery from a large stealthy platform. Concurrently, these platforms also support Special Operation Forces (SOF) missions along coastal areas anywhere in the world. This effort included providing the fire control and launcher subsystems, as well as establishing shore support capabilities for the SSGN payloads.

Meeting the needs of combatant commanders, each SSGN can carry up to 154 TOMAHAWK land attack missiles, loaded in 22 of the 24 missile tubes. Dozens of SOFs can be deployed on each SSGN, with some missile tubes serving as stowage canisters for equipment and food to extend the forward-deployed time for on-board SOF personnel.

Repurposing the *Ohio*-class missile tubes for the attack weapon system for the converted SSGNs gave rise to new ideas. At seven feet in diameter, the missile tubes can potentially accommodate a wide variety of



(Top) A TRIDENT missile clears the water during launch from USS *Mariano G. Vallejo* (SSBN-658). (Bottom) USS *Henry Clay* (SSBN-625) launches a Polaris A-2 missile off Cape Kennedy, Fla.

payloads including munitions and various craft. This vast mission flexibility support to the warfighter can be executed with the added benefit of stealth to get payloads close to shore for rapid response.

A variety of potential payloads could be considered for large-diameter tubes to include: naval surface fire support missiles, conventional global strike missiles, and ballistic missile defense interceptors; manned vehicles, such as small submersibles, as well as unmanned aerial vehicles and unmanned undersea vehicles; sensors; and satellites to restore communications systems in an emergency.

As the Navy's payload integrator for the missile tubes on the SSGNs and SSBNs, SSP leverages proven system-engineering processes that retain the fidelity of legacy methodologies, while allowing for rapid

and seamless end-to-end integration of alternate payloads.

Supporting Emerging Missions

Beyond the integration of alternate large-diameter payloads into the *Ohio*-class submarines, SSP continues to move into the future by preparing for other emerging missions. SSP leverages successful systems engineering processes and long standing industry partnerships to deliver ongoing science, technology, research, and development projects and programs. Some of these efforts include the Defense Technology Objectives projects and Propulsion, Reentry and Guidance Applications Programs.

In collaboration with other services, the Navy is also participating in defense-wide Conventional Prompt Global Strike research to investigate new strike options. SSP continues to investigate technologies for possible use on Conventional Prompt Global Strike weapons systems that could be tailored and adapted to support several platforms across the Department of Defense. These technologies include reentry thermal protection systems, navigation, guidance and control systems, and advanced weapons fusing systems.

Summary

SSP continually strives to support the Navy's and the Nation's defense policies and to adapt to changing world environments. SSP is continuously improving upon its traditional strategic deterrence mission while meeting new and complimentary missions. Unequalled teamwork underpins all of these efforts as SSP continues to work shoulder-to-shoulder with dedicated military, government, industry and international partners to continue the long tradition of providing high performance, cost effective products to the war fighter.

Capt. Lewia is the Technical Director with Strategic Systems Programs.

Q & A

Question and Answer



Photo courtesy of NASA

Astronaut Capt. Bowen, STS-126 mission specialist, participates in the mission's third scheduled session of extravehicular activity (EVA) as construction and maintenance continue on the International Space Station. During the six-hour, 57-minute spacewalk, Bowen and astronaut Heidemarie Stefanyshyn-Piper (out of frame), mission specialist, focused their efforts on the continued external cleaning of the space station.

A Submariner in Space

Capt. Stephen Bowen, former executive officer of USS *Virginia* (SSN-774), recently had the experience of a lifetime. After graduating from the United States Naval Academy in 1986, Capt. Bowen joined the Submarine Force. He spent three years on USS *Parche* (SSN-683) and completed his submarine qualifications on USS *Pogy* (SSN-647). Capt. Bowen then attended Massachusetts Institute of Technology [MIT] and received a master's degree in Ocean Engineering before serving on USS *Augusta* (SSN-710) as the engineering officer. During this tour, he qualified for command of nuclear powered submarines. In 1997, he reported to the United States Special Operations Command (USSOCOM) where he served until May 2000. He was then assigned to be the first executive officer of *Virginia*. In July 2000, he was chosen by NASA [National Aeronautics and Space Administration] to be the first submarine officer accepted into the space program. He reported to NASA in August 2000. After years of intense training to make the transition from submarines to space, Capt. Bowen was assigned to be a mission specialist on a two-week mission in late 2008. UNDERSEA WARFARE Magazine had the privilege of talking to Capt. Bowen on his return from the mission.

How does spending time in space compare to spending time underwater on a submarine?

Actually, it was very similar in a lot of ways. Particularly, the living conditions on the space shuttle are very similar. There are seven people living in a small room, so you are literally on top of each other. Your living area is the mid-deck of the shuttle and the flight deck is where you do your work. It is very similar to living on a fast-attack submarine, kind of all on top of each other. Just to get to something you are bumping into other people. On the space shuttle and on a submarine, everybody has their own little space where they work and sleep.

When I arrived at the space station, the first thing I noticed when I came through the hatch was the odor. The space station odor was very similar to the odor of the submarine. It was surprising at first, but as with a submarine, you get used to it pretty quickly.

Describe how your submarine experience helped prepare you for your mission in space?

A lot of submarine training and operations are created assuming an intelligent operator. You learn how the equipment should operate, how to operate the equipment in many conditions and situations, how the submarine should behave, and how to operate the submarine as the operator first. If something goes wrong or if something should change, you have the ability to understand, adjust, and get the job accomplished and continue to operate. That concept, the idea of understanding how to function on a very highly technical vehicle helped from the very beginning. That intense level of training is how you train on a submarine and that is how you train for space flight as well.

What was the most dif-



(Above) The STS-126 patch represents Space Shuttle Endeavour on its mission to help complete the assembly of the International Space Station.

(Below) Capt. Bowen is submerged in the waters of the Neutral Buoyancy Laboratory (NBL) near Johnson Space Center. Bowen is attired in a training version of the Extravehicular Mobility Unit (EMU) spacesuit.



What is the most difficult aspect of transitioning from submariner to astronaut?

I think the most difficult thing to adjust to was the culture. The culture here is different from the culture of the Submarine Force. Like the Sub Force, it is its own culture in a sense. Some of the aspects of what you learn in the Submarine Force carry over well when you transition into the space program. Others tend to get misunderstood. I'm sure that is what someone making the opposing transition would say as well. The cultural transition was definitely the biggest challenge.

How did the astronaut training pipeline compare to the nuclear power training pipeline?

For your first two years of nuclear power

training, you go to school, then you go to prototype, then you go to sub school. In comparison, for the first two years you are here at NASA, you do all your systems level training for the Space Shuttle and the International Space Station (ISS). Then you build up to actually being a participant in some simulations. Additionally you receive T-38 Talon [supersonic jet trainer] training and learn how to be a back seater in the T-38 Talon. Finally, you get acquainted with the culture of NASA. The level and intensity of training for those first couple of years is very similar. After that it becomes a little different for an astronaut because you start working on "technical jobs." This means that you are representing the astronaut office in meetings and spending time working with hardware to ensure that the opinion of the office is recognized. There isn't a direct equivalent in the Submarine Force, unless you work shore duty in a new program office. At NASA, once you're assigned to a mission,



Photo courtesy of NASA

The STS-126 crewmembers take a break during a training session for a portrait with their crew logo in the Space Vehicle Mock-up Facility at NASA's Johnson Space Center. From the left are astronauts Heidemarie Stefanyshyn-Piper, Shane Kimbrough, both mission specialists; Eric Boe, pilot; Chris Ferguson, commander; Steve Bowen, Sandra Magnus and Donald Pettit, all mission specialists.

you start a training flow working towards a specific goal and mission. For a Space Shuttle mission this takes about one year, for a Space Station mission it takes about two years. My wife compared it to a deployment workup with a submarine mission. In that year of preparation, you are working up continuously and in the last few months it gets a little more vigorous. Then you are on your way.

If you had to go back to a submarine after your experiences as an astronaut, would you approach the job differently than when you were an executive officer (XO) on *Virginia*?

I had some very different commanding officers (CO) and the range of what they focused on sort of covered the gamut of things you can think about and focus on while commanding a submarine. One of the best things that one of my COs focused on was small group training within the submarine itself. You had your watch teams, your maneuvering and engi-

neering teams, your fire control teams, etc. So those small group dynamics were a big part of how you accomplished your mission. Looking back, I see how that helped us improve how we accomplished missions on the submarine. The NASA experience, which is almost all small group operations, continued to show me the importance of small group performance and operation. I would focus on that again.

One other thing, as XO on *Virginia*, we had the opportunity to meet the people that had built their lives around making the submarine work to its fullest capability. When I arrived at NASA, I interacted with the people who build their lives around making the space shuttle or space station work to their full capability. Both experiences made it apparent to me that the one guy standing watch at sea on a submarine is supported back through SUBLANT and all the way back to the shipyards and the contractors. There are a lot of people behind you who are depending on you to do your job. Understanding that gives you

a slightly different perspective on your job and your mission. That perspective is something that can get lost in the day-to-day operations. That was something that was eye-opening when I was XO and as an astronaut, and it is something I would want to impart back to the crew.

What was your favorite aspect about your time in space?

Every part of it was a different and new experience, so trying to pin it down to a single experience is very hard. I had the great fortune of being part of a great crew and working with great people on the space station. People are what make or break any experience in life, including going to space or being on a submarine. You get to share really cool experiences with these other people who have been through the training and appreciate it as well. Overall, having great people to work with in space and on the ground was probably the best part of it.

As for my trip, each part of it had its own special flavor; whether it be the launch—

which is hard to describe to anybody; the first few minutes in zero gravity; just living up there; being in the space station; watching a sun-rise or sun-set; being outside during an EVA [extra vehicular activity] watching the world pass below your feet as you are trying to do work — it is all pretty amazing. Pictures and videos don't do it justice. It is all just unbelievable.

What advice would you give others hoping to follow in your shoes?

You know, people often ask, "How did you become an astronaut?" I just say that I applied. I never planned it as a career path. I had another officer back when I was at prototype that was talking about applying, so I guess he kind of planted the seed that this was a possibility someday. I had no idea if it would ever be a possibility for me. I always tried to do the best I could with any job that was given to me. If I had not been accepted as an astronaut, I would have been plugging away, hopefully still doing my job as a submarine officer. So it was

(Below) Following the docking of Space Shuttle Endeavour and the International Space Station, the Expedition 18 crew welcomes the STS-126 crewmembers aboard the orbital outpost. Pictured (counter-clockwise) from the right are astronauts Michael Fincke, Expedition 18 commander; Chris Ferguson, Heidemarie Stefanyshyn-Piper, Donald Pettit, Eric Boe, Shane Kimbrough, Steve Bowen, Sandra Magnus, and cosmonaut Yuri Lonchakov, Expedition 18 flight engineer.

(Bottom) Backdropped by a cloud-covered part of Earth, Space Shuttle Endeavour is featured in this image photographed by an Expedition 18 crewmember after the shuttle undocked from the International Space Station. Earlier the STS-126 and Expedition 18 crews concluded 11 days, 16 hours and 46 minutes of cooperative work onboard the shuttle and station. Undocking of the two spacecraft occurred at 8:47 a.m. (CST) on Nov. 28, 2008. A partial view of a Russian spacecraft docked with the station is at right.



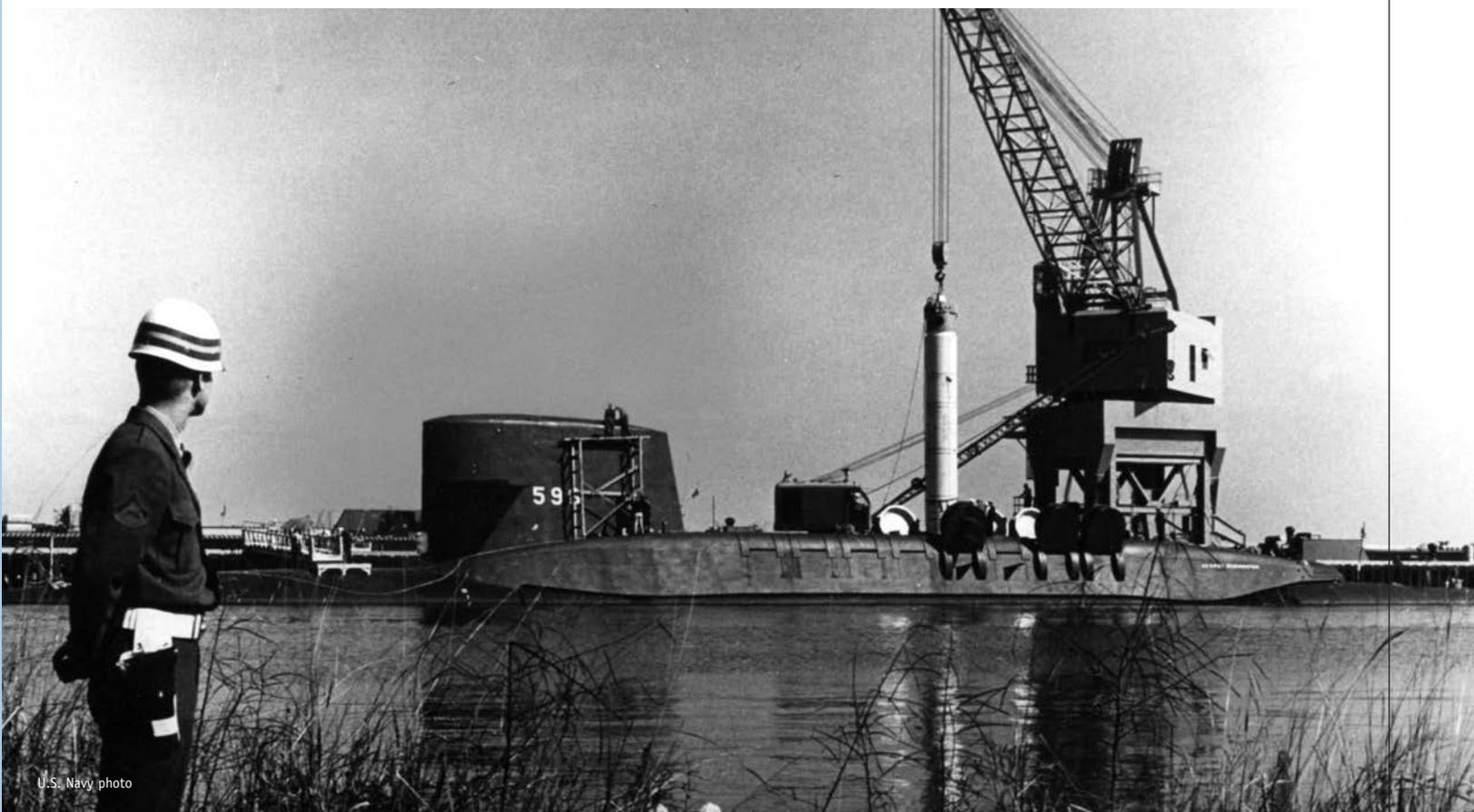
Photo courtesy of NASA

never a career path, never something I thought about ahead of time. I saw the message in 1998 that NASA was accepting applications and it seemed like such a logical thing to apply as a submarine officer. You go from living in one metal hull in an uninhabitable environment to another metal hull in an uninhabitable environment. So, I just tell people to do that best that you can at what you are doing, apply when you can and see what happens. I will be the first to tell you that I am not the most qualified submarine officer to be doing this job, but I happened to be the one that was lucky enough to apply at the right time and to be selected.

Ms. Little is the managing editor of UNDERSEA WARFARE Magazine.



USS *George Washington* (SSBN-598) The Nation's First Boomer



U.S. Navy photo

During the 1950s, the tensions of the Cold War forced the United States to adopt a foreign policy of deterrence as the ultimate strategy to prevent nuclear war with the former Soviet Union. To execute this policy, the U.S. Armed Forces pursued a revolutionary strategy that relied on three elements: manned bombers, land based intercontinental ballistic missiles, and nuclear powered ballistic missile (SSBN) submarines — led by USS *George Washington* (SSBN-598).



Photo by General Dynamics Electric Boat

(Previous page) A missile canister is lowered into place over the hull of USS *George Washington* (SSBN-598) at a pier in Charleston, S.C. (Above) the first U.S. ballistic missile submarine, USS *George Washington* (SSBN-598) was converted to a missile submarine with the insertion of a 130-foot section.

George Washington was the U.S. Navy's first SSBN and, with her inception, submarines became a vital linchpin in the nuclear triad. Ballistic missile submarines' groundbreaking capabilities would forever transform the U.S.'s land, air, and maritime forces. With *George Washington's* entry into service in December 1959, the U.S. Navy instantly gained a powerful deterrence weapon—a stealth platform with enormous nuclear firepower.

As the first SSBN, *George Washington's* innovative concept and capabilities advanced U.S. Navy ballistic missile systems, paved the way for the rotating two-crew concept, foreshadowed the model of forward presence as a key part of U.S. maritime strategy, and laid the ground work for our present day SSBN to guided missile submarine (SSGN) conversions.

The third ship named after the first U.S. president and commander-in-chief of the Continental Army embodied the ideals put forth by her namesake. George Washington believed as early as the Revolutionary War that, "In any operations, and under all circumstances a decisive Naval superiority is to be considered as a fundamental principle upon which every hope of success must ultimately depend." The words of General Washington remain true for today's maritime strategy and were perhaps

Her crew consisted of 12 officers and 128 enlisted men, whose experience with her new capabilities at the depths of the sea would assert America's strategic mission of nuclear deterrence.

most realized in the capabilities of his third namesake vessel.

Electric Boat Co., in Groton, Conn., began construction on *George Washington*—originally an attack submarine named *Scorpion*—in 1957. However, the name changed when the Navy inserted a 130-foot missile section aft of the bow and finished *George Washington* as the lead ship in the class of SSBNs. Mrs. Robert B. Anderson helped commission the boat on Dec. 30, 1959. In total, *George Washington* had a length of 381.6 feet, beam of 33.1 feet, draft of 28.9 feet and a displacement of approximately 6,700 tons submerged. She carried 16 vertical tubes for Polaris A-1 missiles and six 21 inch torpedo tubes. Her crew of 12 officers and 128 enlisted men would assert the U.S.'s new strategic mission of nuclear deterrence from under the sea.

Missile System Advancement

Nearly two decades before *George Washington's* conception the English author, Herbert George (H.G.) Wells, predicted the development of "long-range air torpedoes with directional apparatus" that would forever change the shape of conventional warfare. The first successful tests of a submarine-based launch platform for guided missiles occurred in Germany on U-boats during World War

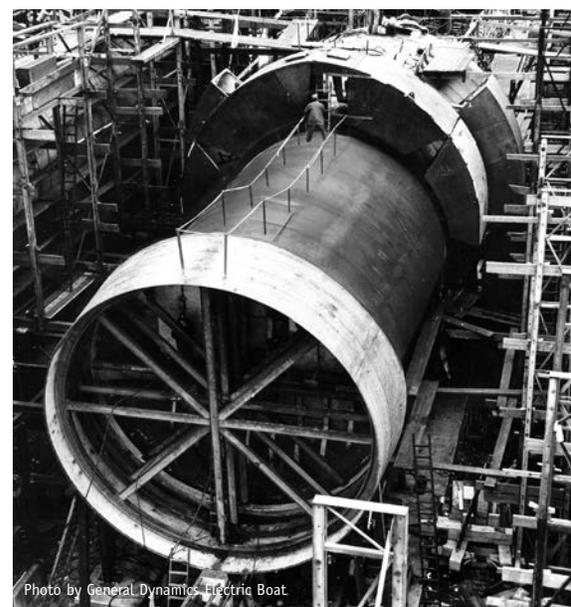


Photo by General Dynamics Electric Boat

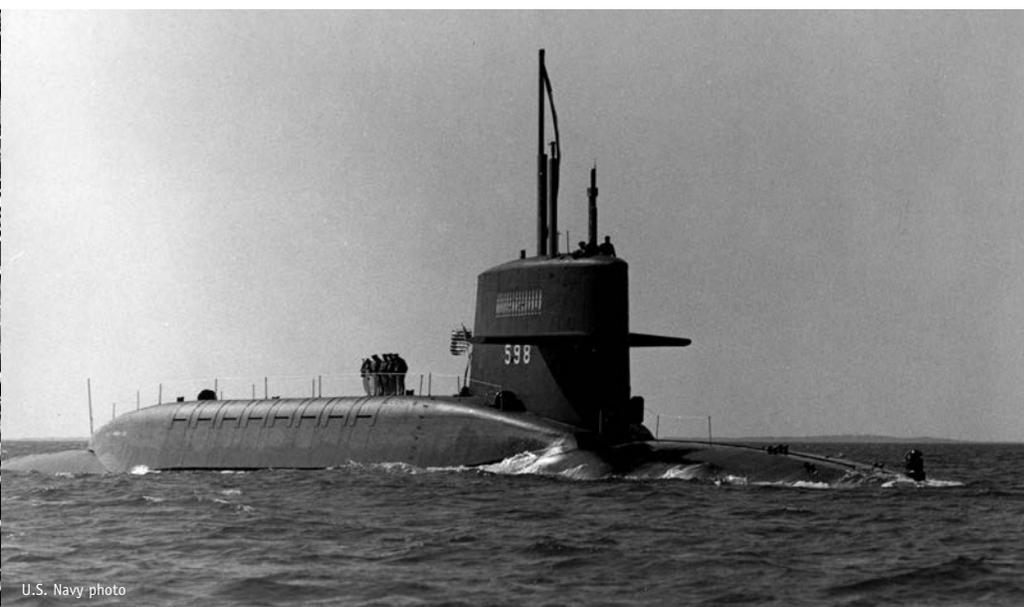
USS *George Washington* (SSBN-598) under construction.

II with German V1 rockets. This new era of guided missiles encouraged the U.S. Navy to develop the Regulus guided cruise missile program.

The Regulus program was initially successful. However, after its implementation, the Navy quickly discovered a major drawback of the missile launch system. In order to launch a Regulus missile, the submarine needed to surface and remain surfaced during the launch. Unfortunately, submarines were very vulnerable to attacks during surface launches, and could not launch a fully or partially fueled missile on deck without serious hazards to the safety of the crew and the boat. Therefore, in 1959 the U.S. Navy asked Lockheed (currently Lockheed Martin) to begin developing the Polaris—two-stage solid-fuel nuclear-armed, a submarine-launched ballistic missile (SLBM)—that would replace the Regulus missile on Navy submarines.

George Washington and her Polaris missiles provided a novel stealth capability. She was the first submarine that could remain submerged and safely hidden from reconnaissance satellites during launch. At the time, this nearly guaranteed her immunity from a first or retaliatory strike.

George Washington was equipped with the first version of the Polaris A-1 missiles. Polaris A-1s were two-stage solid propellant missiles developed years ahead of schedule under



U.S. Navy photo

USS *George Washington* (SSBN-598) was the Navy's first ballistic missile submarine.

the leadership of Rear Adm. W. F. Raborn ("Red"—who would later become the seventh director of the Central Intelligence Agency). A-1s had a length of 28.5 feet, a body diameter of 54 in., and a launch weight of 28,800 lbs. A-1s had a range of 1,200 nautical miles, a Mk 1 re-entry vehicle, and carried a single W-47-Y1 600kT nuclear warhead with an inertial guidance system that provided a circular error probability of 6000 ft.

On July 20, 1960, *George Washington* conducted the first submerged launch of the Polaris A-1 missile system at the Atlantic Missile Test Range in Cape Canaveral, Fla., with Rear Adm. Raborn on board as an observer. Following the successful launch, at 12:39 p.m., *George Washington's* commanding officer sent U.S. President Dwight D. Eisenhower notification of this historic achievement. Less than two hours later, another missile from the submerged submarine successfully launched on another impact area 1,100 miles down range. *George Washington* helped to forever tilt the scales of nuclear strike capability in America's favor.

Development of a Two-Crew Concept

In addition to her innovative missile power, *George Washington* paved the way for the SSBN rotating two-crew concept. On July 1, 1958, Submarine Squadron FOURTEEN (SUBRON-14)

was established under the command of Capt. Norvell G. Ward to develop operational doctrine before the commissioning of *George Washington* and future SSBNs. SUBRON-14 originally consisted of a submarine tender, a floating dry dock, and one or two work space and berthing barges. SUBRON-14 was located at U.S. Naval Base, Holy Loch, Scotland.

SUBRON-14 was responsible for the training, equipping and administering of the first SSBNs. One of the squadron's earliest and most notable achievements was its landmark development of the two-crew concept. This unique system provided two crews on a single SSBN, a BLUE and a GOLD crew, which would take alternate turns on patrols. Each crew deployed for 180 days per year. While one crew was on patrol, the other would take its leave before deploying on its subsequent patrol. The deployment schedule for both crews proved to be highly conducive for training during off time and allowed crewmembers to spend more time with family before deployment.

Following successful launch of the Polaris missiles, *George Washington* and her BLUE crew returned to Cape Canaveral to pick up her GOLD crew under the command of Cmdr. John L. From, Jr. Next, she duplicated her earlier successes by launching two more missiles while submerged. On Aug. 30, 1960,

shakedown for the GOLD crew ended and the boomer went underway from Groton, Conn., on Oct. 28, 1960, for Charleston, S.C. to load her 16 Polaris missiles. In Charleston, *George Washington* and her GOLD crew were awarded the Navy Unit Commendation. After which, her BLUE crew, under the command of Cmdr. James B. Osborn, took her on her first deterrent patrol.

On Jan. 21, 1961, *George Washington* completed her first patrol at New London, Conn., after 66 days of submerged running. The GOLD crew then took over and she departed on her second patrol on Feb. 14, 1961. *George Washington* returned to Holy Loch on April 25, 1961 after her second patrol. She remained forward deployed through 1964, alternating between her BLUE and GOLD crews. In 1965 she returned stateside for overhaul and refueling by Electric Boat Co., in Groton, Conn., before resuming deterrent patrols out of Holy Loch.

Model of Forward Presence

Although it was a successful system, the Polaris A-1 missile had one limit: distance. With a range limit of 1,200 nautical miles, it was necessary to develop forward deployed submarine bases. Holy Loch served as a prime example of a forward deployed base because its strategic geography reduced transit times to and from SSBN submerged patrol areas. Holy Loch enabled SSBNs to achieve greater operational efficiencies and resulted in SUBRON-14 rapidly expanding during the 1960s.

SUBRON-14's success demonstrated proof of the concept of a forward deployed strategic deterrent. *George Washington* proved that ballistic missile technology was mature and reliable. Combined, they paved the way for the U.S. Navy to launch forty additional SSBNs from 1960 to 1966. Dubbed the "41 for Freedom," these submarines included the *George Washington*, USS *Ethan Allen* (SSBN-608)-, USS *Lafayette* (SSBN-616)-, USS *James Madison* (SSBN-627)-, and USS *Benjamin Franklin* (SSBN-640)-classes. By actively promoting a policy of deterrence, these boats were instrumental in making sure that the relationship between the U.S. and the Soviet Union did not end in a nuclear catastrophe.

The First SSBN Conversion

The evolution of nuclear arms control forced the U.S. to make decisions about what

to do with strategic platforms that were no longer needed in their primary mission, yet had not reached the end of their designed hull life. As the first SSBN to undergo a complete conversion to an attack submarine, *George Washington* was a pioneer to another class of submarines, the guided missile submarine (SSGN), that is just completing its initial deployments today.

After the inauguration of President Richard M. Nixon on Jan. 20, 1969, the Soviet Union offered to negotiate their nuclear arms control position. The U.S. accepted and together both nations implemented the Strategic Arms Limitation Talks (SALT I) from 1969 to 1972, which froze the number of inter-continental ballistic missiles and replaced older missiles with newer ones. The reduction in missiles was part of a larger post-Cold War nuclear disarmament that continued through 1982, when U.S. President Ronald Reagan abandoned SALT I and implemented the Strategic Arms Reduction Treaty (START). START put a further reduction on nuclear weapons by placing a cap on 1,600 strategic nuclear delivery vehicles and permitting only 6,000 accountable warheads for each country.

To stay within the limitations imposed by START and to prevent unnecessary decommissionings, *George Washington* and two others in her class, USS Patrick Henry (SSBN-599) and USS Robert E. Lee (SSBN-601), had their missiles removed and were reclassified as attack submarines, allowing each to serve for several additional years. The redesign and reclassification of these three submarines to extend their service life and contribute to changing naval warfighting missions pioneered the conversion years later of *Ohio*-class SSBNs to SSGNs.

In 1994, under the administration of President William J. Clinton, the Nuclear Posture Review recommended a two-ocean based TRIDENT SSBN force—fourteen vessels in all—to carry TRIDENT II (D-5) missiles. TRIDENT II (D-5) missiles, first deployed in 1990, were the sixth and latest version of ballistic missiles. They were a modern improvement to the dated Polaris A-1 missiles carried by *George Washington*. The two-ocean based force met U.S. national security requirements under SORT (Strategic Offensive Reductions Treaty)—which in 2004 was the latest of mutual nuclear disarmament



U.S. Navy photo

A topside direct stern view of USS *George Washington* (SSBN-598).

agreements between the U.S. and Russia. One of the provisions in SORT required the U.S. Navy to remove four TRIDENT *Ohio*-class submarines from strategic service. Following *George Washington's* example, four *Ohio*-class SSBNs underwent conversions to extend their service life and

add valuable special operations and strike capability.

In 2002, Electric Boat received a contract to convert the first four *Ohio*-class submarines, USS *Ohio* (SSBN-726), USS *Michigan* (SSBN-727), USS *Florida* (SSBN-728), and USS *Georgia* (SSBN-729), into conventional land attack and special forces (SOF) platforms, also known as guided missile submarines or SSGNs. The conversion process, ending successfully in 2008, allowed the *Ohio*-class submarines to succeed in their new form, and illustrated the U.S. Navy's resourcefulness in maximizing submarine platforms throughout available hull life. Just as *George Washington* dominated U.S. maritime strategy in 1960, today's *Ohio*-class SSGNs provide an unprecedented combination of Strike and SOF mission capability within a stealthy platform. The Navy's adaptability and ingenuity in redesigning SSBNs—starting with *George Washington*—continues to influence and support America's powerful presence at sea.

Conclusion

George Washington was a submarine of firsts. Her unique conception and innovative capabilities provided the Navy with a new missile system to promote nuclear deterrence, fostered the creation of the two-crew concept, promoted the model of forward presence, and paved the way for recent SSBN to SSGN conversions.

George Washington's historic patrols were a principle element that helped deter nuclear war between the U.S. and the Soviet Union. Her legacy continues; the U.S. Navy's SSBN force is the survivable element of the U.S. nuclear triad. At present, there are 14 ballistic missile submarines in the fleet providing the U.S. with a decisive nuclear deterrent—an accomplishment that would have made her namesake proud.

Jessica Taylor is a contributing editor for UNDERSEA WARFARE Magazine and an analyst at Alion Science and Technology.



Submarine Snapshot



Photo by Petty Officer 2nd Class Mark A. Leonesio



Photo by Jeremy Lambert

(Left) USS *San Francisco* (SSN-711) is escorted by two harbor tugs to Apra Harbor, Guam, prior to her extensive maintenance period. (Right) Crewmembers of USS *New Hampshire* (SSN-778) line the boat during the commissioning ceremony at Portsmouth Naval Shipyard.

The past few months have seen many milestones for the U.S. Submarine Force—from christenings to retirements and many things in between.

In early October, USS *San Francisco* (SSN-711) successfully returned to the water after spending a little over two years in dry dock at Puget Sound Naval Shipyard and Intermediate Maintenance Facility, Bremerton, Wash. This marked the first time *San Francisco* was waterborne since entering drydock for repair following her 2005 grounding. She is scheduled to report to her new homeport of San Diego, Calif., in late Spring 2009.

On Oct. 25, 2008, USS *New Hampshire* (SSN-778) was commissioned at Portsmouth Naval Shipyard, Kittery, Maine. *New Hampshire* is the fifth *Virginia*-class submarine. A special group of students from Garrison Elementary, in Dover, N.H., who began a letter writing campaign in 2004 to have the submarine named after their state, were in attendance for the event. Cheryl McGuinness served as the ship's sponsor, and gave the order to man the ship, "Officers and crew of USS *New Hampshire*, come aboard our ship,

and bring her to life." McGuinness is the widow of Lt. Cmdr. Thomas McGuinness, a veteran Navy pilot and a co-pilot on American Airlines Flight 11 that was flown into the North Tower of the World Trade Center by terrorists on Sept. 11, 2001.

The *NR-1* inactivation ceremony was held on Nov. 21, 2008, at Naval Submarine Base New London. *NR-1* was the oldest nuclear-powered submarine in the U.S. Navy and was inactivated after nearly 40 years of service. Her missions mainly included search, object recovery, geological survey, oceanographic research, and installation and maintenance of underwater equipment. The keynote speaker was retired Adm. Edmund P. Giambastiani, the officer in charge of *NR-1* from May 1982 to April 1985. "*NR-1* provided a tremendous scope for innovation and invention," said Giambastiani, "She was truly a window to the world under the sea." *NR-1*'s unique ability to remain at one site and completely map or search an area with a high degree of accuracy has been a valuable asset to the Navy over the years.

The Navy's newest *Virginia*-class attack submarine *New Mexico*

(Left) *NR-1* travels up the Thames River in Groton, Conn., for the final time. (Right) The *Virginia*-class attack submarine *New Mexico* (SSN-779) is christened in front of nearly 1,700 guests and crewmembers.



Photo by John Narewski



Photo by Petty Officer 1st Class Todd A. Schaffer



Submarine Snapshot (continued)



Photo by Julius Tolentino



Photo by Petty Officer 3rd Class Wes Eplen

(Left) Rear Adm. William Hilarides, Program Executive Officer for Submarines observes the signing of the *Virginia*-class Block III contract. (Right) *USS La Jolla* (SSN-701) with the deep submergence rescue vehicle *Mystic* (DSRV-1) attached.

(SSN-779) was christened Dec. 13, 2008, during a ceremony at Northrop Grumman Newport News Shipbuilding in Newport News, Va. Cmdr. Mark Prokopius, the ship's first commanding officer, stood by with his crew of 120 officers and sailors as Mrs. Cynthia "Cindy" Giambastiani, the ship's sponsor and wife of former-Vice Chairman of the Joint Chiefs of Staff Adm. Edmund P. Giambastiani, christened the submarine, bringing the Navy's next *Virginia*-class submarine one step closer to life.

The Submarine Force finalized a critical piece for *Virginia*-class cost savings on Dec. 22, 2008, when the *Virginia*-class Block III contract was signed. It is a five-year, \$14 billion Multi-Year Procurement (MYP) contract for eight *Virginia*-class submarines. The contract, the third, or Block III, for the *Virginia*-class, calls for one ship per year in Fiscal Year (FY) 2009 and FY 2010 and two per year in FY 2011, FY 2012, and FY 2013. The contract also meets the *Virginia*-class Program's mandate to reduce acquisition costs by approximately 20 percent for the FY 2012 ships.

On Sept. 30, 2008, the Submarine Rescue Diving and

Recompression System's (SRDRS) Rescue Capable System (RCS) replaced the Deep Submergence Rescue Vehicle *Mystic* (DSRV-1) as the U.S. Navy's deep-submergence submarine rescue asset. *Mystic* and the DSRV program began deactivation on Oct. 1. The formal retirement ceremony for the DSRV program was held on Feb. 13, 2009.

USS Ohio (SSGN-726)(BLUE) completed the first SSGN deployment and returned home to Bangor, Wash., last December. *Ohio* (GOLD) departed Naval Base Kitsap Oct. 14, 2007, for its maiden deployment, which began a month ahead of schedule. In 2008, *Ohio* (BLUE) traveled to Guam to perform the first in theater crew swap in over 20 years. Her return home marks the completion of a historic first deployment as an SSGN and leaves the Navy with high expectations for future SSGN deployments. *USS Michigan* (SSGN-727) and *USS Florida* (SSGN-728) are on their maiden SSGN deployments, while *USS Georgia* (SSGN-729) will begin her first deployment later this year.

(Left) The guided-missile submarine *USS Ohio* (SSGN-726) visits Naval Station Pearl Harbor on the return leg of its historic first deployment as a guided-missile submarine. (Right) Capt. Charles Doty, commanding officer of *USS Michigan* (SSGN-727)(GOLD), escorts Rear Adm. Nora Tyson, Commander, Logistics Group, Western Pacific, and Rear Adm. Ng Chee Peng of the Singaporean Navy, on a tour of the submarine during a recent port visit to Singapore.



Photo by Lt. Cmdr. David Benham



U.S. Navy photo

Change of Command

Submarine Learning Center
Capt. Kenneth A. Swan relieved
Capt. Richard H. Moyer

Naval Submarine Support
Command, Bangor
Cmdr. James L. Christie relieved
Cmdr. Vernon P. Kemper

USS City of Corpus Christi (SSN-705)
Cmdr. Robert M. Gaucher relieved
Cmdr. Scott Minium

USS Connecticut (SSN-22)
Cmdr. Michal Varney relieved
Cmdr. Daniel Christofferson

USS Nebraska (SSBN-739)(BLUE)
Cmdr. Gerhard Somlai relieved
Cmdr. Matthew Colburn

USS Pasadena (SSN-752)
Cmdr. Drew St. John relieved
Cmdr. Doug Perry

USS Tucson (SSN-770)
Cmdr. Gary Pinkerton relieved
Cmdr. Paul Spear

USS Ohio (SSGN-726)(BLUE)
Capt. Murray Gero relieved
Capt. Christopher Ratliff

Qualified for Command

Lt. Cmdr. Kurt Balagna
COMSUBRON-20

Lt. Cmdr. Michael Brons
U.S. Fleet Forces Command

Lt. Cmdr. Timothy Clark
USS Montpelier (SSN-765)

Lt. Cmdr. Theron Davis
USS Seawolf (SSN-21)

Lt. Cmdr. David Edgerton
USS Ohio (SSGN-726)(B)

Lt. Cmdr. Michael Fanning
USS Rhode Island (SSBN-740)(B)

Lt. Cmdr. Matthew Freniere
USS Columbia (SSN-771)

Lt. Cmdr. Brian Haggerty
USS Georgia (SSGN-729)(G)

Lt. Cmdr. Craig Hempeck
USS Tennessee (SSBN-734)(G)

Lt. Cmdr. James Jones
USS Wyoming (SSBN-742)(B)

Lt. Cmdr. Howard Jones
USS Hampton (SSN-767)

Lt. Cmdr. Dale Klein
USS Seawolf (SSN-21)

Lt. Cmdr. David Lammers
COMSUBRON-7

Lt. Cmdr. James Morton
USS Connecticut (SSN-22)

Lt. Cmdr. Christopher Polk
COMSUBRON-6

Lt. Cmdr. Benjamin Selph
USS Nebraska (SSBN-739)(G)

Lt. Cmdr. Kevin Shilling
USS Louisiana (SSBN-743)(G)

Lt. Cmdr. Albert Smith
USS Maryland (SSBN-738)(B)

Lt. Cmdr. Michael Stinson
PCU New Mexico (SSN-779)

Lt. Cmdr. Hernesto Tellez
USS West Virginia (SSBN-736)(B)

Lt. John Adkisson
COMSUBRON-1

Lt. Michael Darby
USS Cheyenne (SSN-773)

Qualified Nuclear Engineer Officer

Lt. David Beam
USS Connecticut (SSN-22)

Lt. Charles Blackledge
USS Alabama (SSBN-741)(B)

Lt. John Crumpacker
USS Jefferson City (SSN-759)

Lt. Michael Graham
USS Columbus (SSN-762)

Lt. Rodney Grogan
USS Ohio (SSGN-726)(B)

Lt. Douglas Hagenbuch
USS Santa Fe (SSN-763)

Lt. Lance Heyen
USS Connecticut (SSN-22)

Lt. Kenneth Ingle
USS Jimmy Carter (SSN-23)

Lt. Derek Jennings
USS Pasadena (SSN-752)

Lt. Jonathan Parker
USS Pennsylvania (SSBN-735)(B)

Lt. Jeremy Searock
USS Nevada (SSBN-739)(B)

Lt. Jimmy Suh
USS Columbus (SSN-762)

Lt. Tyson Van
USS Buffalo (SSN-715)

Lt.j.g. Gieorag Andrews
USS Henry M. Jackson (SSBN-730)(B)

Lt.j.g. John Blomeke
USS Charlotte (SSN-766)

Lt.j.g. James Bucklin
USS Cheyenne (SSN-773)

Lt.j.g. Benjamin Cordray
USS Alabama (SSBN-731)(B)

Lt.j.g. John Dambrosio
USS Jimmy Carter (SSN-23)

Lt.j.g. Lucas Dennison
USS Olympia (SSN-717)

Lt.j.g. Daniel Doughty
USS Cheyenne (SSN-772)

Lt.j.g. Regis Dowd
USS Los Angeles (SSN-688)

Lt.j.g. Douglas Durham
USS Maine (SSBN-742)(B)

Lt.j.g. William Fowler
USS Seawolf (SSN-21)

Lt.j.g. Alexander Franz
USS Ohio (SSGN-726)(B)

Lt.j.g. Aaron Gall
USS Jimmy Carter (SSN-23)

Lt.j.g. Shafer Gaston
USS Hampton (SSN-767)

Lt.j.g. Joshua Gavrich
USS Alabama (SSBN-731)(B)

Lt.j.g. Jonathan Goerk
USS Greenville (SSN-772)

Lt.j.g. Logan Goheen
USS Kentucky (SSBN-737)(B)

World War II Veteran Tour USS New Hampshire (SSN-778)



Photo by Petty Officer 1st Class Leah Stiles

World War II submarine veterans David Dickey and Bill Tebo tour the control room of the *Virginia*-class fast-attack submarine USS *New Hampshire* (SSN-778) prior to her commissioning in October. *New Hampshire* is the fifth *Virginia*-class submarine to join the Fleet.

Secretary of Defense Speaks at Naval Submarine Base Kings Bay



On Oct. 21, 2008, Secretary of Defense, the Honorable Robert Gates, spoke in front of the ballistic-missile submarine *USS Rhode Island* (SSBN-740) at Naval Submarine Base Kings Bay. In February 2009, *Rhode Island* participated in the 1,000th Parol ceremony which honored all the of the ballistic missile submarines (SSBN) that completed patrols to reach the 1,000 mark.

Lt.j.g. Shawn Gorman
USS City of Corpus Christi (SSN-705)

Lt.j.g. James Grose
USS Charlotte (SSN-766)

Lt.j.g. Brian Hackney
USS Ohio (SSGN-726)(G)

Lt.j.g. Isaac Hartsell
USS Houston (SSN-713)

Lt.j.g. Scott Harvey
USS Kentucky (SSBN-737)(B)

Lt.j.g. Michael Huber
USS Michigan (SSGN-727)(B)

Lt.j.g. Stephen Iezzatti
USS Nebraska (SSBN-739)(B)

Lt.j.g. Justin Ivancic
USS Olympia (SSN-717)

Lt.j.g. Alec Johnston
USS Topeka (SSN-754)

Lt.j.g. Russell Jones
USS Topeka (SSN-754)

Lt.j.g. Christopher Keithley
USS Michigan (SSGN-727)(G)

Lt.j.g. James Kepper
USS Charlotte (SSN-766)

Lt.j.g. Gabriel Kimich
USS Seawolf (SSN-21)

Lt.j.g. Keith Labbe
USS Maine (SSBN-741)(G)

Lt.j.g. Nickolas Lancaster
USS Pennsylvania (SSBN-735)(B)

Lt.j.g. David Livermore
USS Olympia (SSN-717)

Lt.j.g. Robert Low
USS Key West (SSN-722)

Lt.j.g. Matthew Maples
USS Alabama (SSBN-731)(B)

Lt.j.g. Ross McGarvery
USS Jimmy Carter (SSN-23)

Lt.j.g. Scott McReynolds
USS Chicago (SSN-721)

Lt.j.g. Zachary Merritt
USS Michigan (SSGN-727)(G)

Lt.j.g. Brandon Monaghan
USS Olympia (SSN-717)

Lt.j.g. Christian Olsen
USS Maine (SSBN-741)(G)

Lt.j.g. Adam Obsorn
USS Hampton (SSN-767)

Lt.j.g. Kenneth Packard
USS Ohio (SSGN-726)(B)

Lt.j.g. Oliver Paul
USS Houston (SSN-713)

Lt.j.g. Michael Petrides
USS Seawolf (SSN-21)

Lt.j.g. Javan Rhinehart
USS Columbia (SSN-771)

Lt.j.g. Nicholas Roa
USS San Francisco (SSN-711)

Lt.j.g. Shawn Roderick
USS Charlotte (SSN-766)

Lt.j.g. Seth Rosenberry
USS Pasadena (SSN-725)

Lt.j.g. Karl Royston
USS Nebraska (SSBN-739)(G)

Lt.j.g. Andrew Rucker
USS San Francisco (SSN-711)

Lt.j.g. Brent Schneider
USS Chicago (SSN-721)

Lt.j.g. Robert Sellin
USS Chicago (SSN-721)

Lt.j.g. Santhosh Shivashankar
USS Columbia (SSN-771)

Lt.j.g. Damian Smith
USS Helena (SSN-725)

Lt.j.g. Matthew Soto
USS Louisiana (SSBN-743)(B)

Lt.j.g. Charles Southard
USS Henry M. Jackson (SSBN-730)(B)

Lt.j.g. Jason Spray
USS Louisiana (SSBN-743)(G)

Lt.j.g. Gilbert Viera
USS Greenville (SSN-772)

Lt.j.g. Robert Villarreal
USS Columbus (SSN-762)

Lt.j.g. Nicholas Wagner
USS Michigan (SSGN-727)(B)

Lt.j.g. George Watkins
USS City of Corpus Christi (SSN-705)

Lt.j.g. James Wren
USS Kentucky (SSBN-737)(B)

Line Officer Qualified in Submarines

Lt. Brendan Gotowka
USS Santa Fe (SSN-763)

Lt. Michael Kendel
USS Toledo (SSN-769)

Lt. Phillip Simmons
USS Toledo (SSN-769)

Lt.j.g. Temple Albert
USS Los Angeles (SSN-688)

Lt.j.g. John Appelbaum
USS Jacksonville (SSN-699)

Lt.j.g. Stephen Benz
USS Pennsylvania (SSBN-735)(B)

Lt.j.g. Thomas Brown
USS Kentucky (SSBN-737)(G)

Lt.j.g. Robert Buckles
USS Miami (SSN-755)

Lt.j.g. Paul Carman
USS San Francisco (SSN-711)

Lt.j.g. Philip Connor
USS Santa Fe (SSN-763)



Lt.j.g. David Chaney
USS Kentucky (SSBN-737)(G)

Lt.j.g. Benjamin Cordary
USS Alabama (SSBN-731)

Lt.j.g. Alexander Emmert
USS Montpelier (SSN-765)

Lt.j.g. Kenneth Frauenthal
USS Nebraska (SSBN-739)(G)

Lt.j.g. Dana P. Gilmour
USS Albuquerque (SSN-706)

Lt.j.g. Matthew Gore
USS Helena (SSN-725)

Lt.j.g. Gregory Grubb
USS Toledo (SSN-769)

Lt.j.g. Derek Hensley
USS Virginia (SSN-774)

Lt.j.g. Jonathan Hines
USS North Carolina (SSN-777)

Lt.j.g. Jeremy Huls
USS Tennessee (SSBN-734)

Lt.j.g. Mark Jacobbi
USS Texas (SSN-775)

Lt.j.g. Andrew Jones
USS Connecticut (SSN-22)

Lt.j.g. Daniel Jones
USS Chicago (SSN-721)

Lt.j.g. Christopher Keithley
USS Michigan (SSGN-727)(G)

Lt.j.g. Patrick Kelly
USS La Jolla (SSN-701)

Lt.j.g. Jason Kim
USS Key West (SSN-722)

Lt.j.g. Simon Lee
USS Hampton (SSN-767)

Lt.j.g. Joseph LoPiccolo
USS Louisville (SSN-724)

Lt.j.g. Marcus Machart
USS North Carolina (SSN-777)

Lt.j.g. Gregory Marvinsmith
USS Maine (SSBN-742)(B)

Lt.j.g. Brent Mazurek
USS La Jolla (SSN-701)

Lt.j.g. Michael McCormick
USS Hawaii (SSN-776)

Lt.j.g. Michael McGehee
USS Miami (SSN-755)

Lt.j.g. Alan Montera
USS Seawolf (SSN-21)

Lt.j.g. Robert Moreno
USS North Carolina (SSN-777)

Lt.j.g. Ian Moulton
USS Hampton (SSN-767)

Lt.j.g. Daniel Patrick
USS Kentucky (SSBN-737)(G)

Lt.j.g. Timothy Perkins
USS City of Corpus Christi (SSN-705)

Lt.j.g. Joshua Peters
USS Nebraska (SSBN-739)(G)

Lt.j.g. Jarrad Pilgrim
USS Los Angeles (SSN-688)

Lt.j.g. Christopher Prescott
USS Norfolk (SSN-714)

Lt.j.g. Randall K. Riewerts
USS North Carolina (SSN-777)

Lt.j.g. Michael Rodriguez
USS Chicago (SSN-721)

Lt.j.g. Andrew Rucker
USS San Francisco (SSN-711)

Lt.j.g. Robert Ryan, III
USS Jacksonville (SSN-699)

Lt.j.g. Jaoshua Sanborn
USS Tennessee (SSBN-734)

Lt.j.g. Jeffery Schwamb
USS Connecticut (SSN-22)

Lt.j.g. Kai Seglem
USS Ohio (SSGN-726)(G)

Lt.j.g. Thaddeus Spann
USS Seawolf (SSN-21)

Lt.j.g. Eric Spurling
USS Maryland (SSBN-738)(G)

Lt.j.g. Jeremy Sylvester
USS Nebraska (SSBN-739)

Lt.j.g. David Tiffin
USS Hampton (SSN-767)

Lt.j.g. Daniel Whitworth
USS Norfolk (SSN-714)

Lt.j.g. Michael Wickman
USS Newport News (SSN-750)

Ens. Alan Jones
USS Charlotte (SSN-766)

Supply Officer Qualified in Submarines

Lt. Jesse Hubbard
USS Florida (SSGN-728)(B)

Lt.j.g. Christopher Allen
USS Jimmy Carter (SSN-23)

Lt.j.g. Austin Boatwright
USS Toledo (SSN-769)

Lt.j.g. Randal Bradum
USS North Carolina (SSN-777)

Lt.j.g. Jason Buonvino
USS Ohio (SSGN-726)(B)

Lt.j.g. Jacob Whiteley
USS Kentucky (SSBN-737)(B)

Lt.j.g. Mark Wilson
USS Nebraska (SSBN-739)(G)

Ens. Stephen Blonski
USS Norfolk (SSN-714)

Ens. Shannon Dempsey
USS Tennessee (SSBN-734)

Ens. Jesse Petty
USS Oklahoma City (SSN-723)

Ens. Tyheem Sweat
USS Michigan (SSGN-727)(G)

Limited Duty Officer Qualified in Submarines

Lt.j.g. Stephen Sampica
USS Maine (SSBN-741)(B)

Qualified Undersea Medical Officer, Qualified in Submarines

Lt. Cmdr. Marilisa Elrod
NSSC Pearl Harbor

Medical Officers Qualified as Surface Warfare Medical Department Officer

Lt. Peter Cole
USS Frank Cable (AS-40)

Lt. Benjamin Gray
USS Frank Cable (AS-40)

Special Recognition— Battle “E” Winners

USS Los Angeles (SSN-688)

USS Providence (SSN-719)

USS Chicago (SSN-721)

USS Virginia (SSN-774)

USS Connecticut (SSN-22)

USS Montpelier (SSN-765)

USS Columbus (SSN-762)

USS Oklahoma City (SSN-723)

USS Topeka (SSN-754)

USS Alexandria (SSN-757)

USS Buffalo (SSN-715)

USS Florida (SSGN-728)

USS Pennsylvania (SSBN 735)

USS Ohio (SSBN 726)

USS Maryland (SSBN 738)

Junior Officers of the Year

Lt. Rowdy A. Garcia
USS Norfolk (SSN-714)

Lt. William J. Howey III
USS San Juan (SSN-751)

Lt. James E. Lysinger
USS Maryland (SSBN-738)(GOLD)

Lt. Patrick M. McDonnell
USS Springfield (SSN 761)

Lt. Sean M. Meredith
New Mexico (SSN-779)

Lt. Jeffrey J. Morrison
USS Helena (SSN-725)

Lt. Sidney W. Morrison
USS Los Angeles (SSN-688)

Lt. Douglas W. Rosaaen
USS Columbus (SSN-762)

Lt. Matthew W. Smith
USS Newport News (SSN-750)

Lt. Matthew C. White
USS Houston (SSN-713)

Lt. Jason C. Crews
USS Georgia (SSGN-729)(BLUE)

Lt. William R. Fowler
USS Seawolf (SSN-21)

Lt. Alexander J. Franz
USS Ohio (SSGN-726) (BLUE)

Lt. Joshua A. Hausback
USS Miami (SSN-755)

Lt. Nickolas Lancaster
USS Pennsylvania (SSBN 735) (BLUE)

Lt. j. g. Michael M. Newby
USS Emory S. Land (AS-39)

Lt. Kyle L. Woerner
USS Chicago (SSN-721)

Ensign Jason S. Kneeland
USS Frank Cable (AS-40)

Furthering Your Education While Serving the Navy

by Bureau of Naval Personnel (PERS-42)

The division officer shore tour is historically the best time to obtain a master's degree. There are a wide range of options available to accomplish this career milestone.

Preparations for graduate education should begin before an officer detaches from his division officer sea tour. Studying for and taking prerequisite standardized examinations, such as the graduate record examinations (GRE) or the law school admission test (LSAT), are the first steps to apply for almost any program. While negotiating for division officer shore duty orders, officers should commence the application process for programs they are interested in and communicate those interests with their detailer.

Being assigned as a NROTC [Naval reserve officer training corps] Instructor may not always be the best answer to getting your graduate education. While many colleges and universities offer reduced/free tuition, and some even give credit for Navy Nuclear Propulsion Program (NNPP) training, a few schools do not allow their instructors to take classes on campus. Research these details before assuming that all NROTC jobs are equal.

The most popular program that offers credit for NNPP training is the Master of Science in Engineering Management from Old Dominion University (ODU). The real benefit of ODU's program is that it offers 12 credits for completing NNPP toward this degree, allowing nuclear trained officers to complete the program with as few as seven courses. Course work can be completed via distance education (CDs), and local learning sites in most fleet concentration areas through the Navy College program. More information is available at <http://www.eng.odu.edu/enma/>.

For officers on shore duty in the Washington, D.C., area, Catholic University also awards 12 credits for NNPP training, allowing nuclear trained officers to complete their Engineering Management program with six courses. Classes are offered on campus with a schedule that supports the working professional. Visit the Catholic University Engineering Management website for more information: <http://engineering.cua.edu/engrmtgmt>.

Graduate education can be expensive. However, for those officers planning to return for another sea tour, other options exist. For attendance at private institutions such as the two described above, the Tuition Assistance (TA) and Graduate Education Voucher (GEV) programs can offset the majority of tuition and fees. For complete descriptions of the TA and GEV programs,



Then-Secretary of the Navy, the Honorable Donald C. Winter was the keynote speaker for the Spring Quarter commencement program at the Naval Postgraduate School.

visit the Navy College website at the following links: <https://www.navycollege.navy.mil/ta1.html> and <https://www.navycollege.navy.mil/gev/policy.html>

The most popular, fully funded graduate education option is provided by the Naval Postgraduate School (NPS). Degrees are available in a wide range of disciplines with the Navy awarding credit for critical occupational specialties upon successful completion of the program. These subspecialties could significant-

ly enhance professional opportunities later in an officer's career. Curriculum information is available on the NPS website (<http://www.nps.edu>). PERS-421C can provide the most recent information on program quotas for the Submarine Force. In general, a division officer who desires a NPS degree and is committed to a follow on sea tour will be competitive for one of the assigned quotas. The service obligation for attending NPS can be served concurrently with the nuclear officer incentive pay program and Joint Professional Military Education (JPME) phase one can be completed during a tour at NPS.

Another highly popular, but extremely competitive, program is the resident Master of Business Administration (MBA) from University of Pennsylvania's Wharton School of Business. The Submarine Force has one quota to fill for this program annually. Selectees are assigned a two-year tour to the school, and GEV is used to pay the first \$20,000 of fees and tuition. Program charges above this amount must be covered by the service member. Applicants must be able to meet the eligibility requirements of the GEV program. Wharton also offers an Executive MBA program in the Washington, D.C., area that starts each year in May. Applications for this program are accepted each year through February 1. Additional information for the program can be obtained through the Wharton EMBA website: <http://www.wharton.upenn.edu/mbaexecutive/>.

To complete graduate education during the challenging submarine officer career path, officers should consider all options early in their careers. Delaying completion of this critical career milestone to later in your career has proven to be significantly more challenging for most officers due to other competing factors, including job demands, family considerations, etc.

We're Looking for this Year's Photo Contest WINNERS!



UNDERSEA WARFARE Magazine is looking for this year's top submarine related photos for the 11th Annual Photo Contest, sponsored by the Naval Submarine League.

The best of the best will be published in the Summer 2009 issue.

Note: Entries must be received by July 10, 2009. However, time permitting, photos received shortly after the deadline will be considered. Photos must be at least 5" by 7", at least 300 dots-per-inch (dpi) and previously unpublished in printed media. Each person is limited to five submissions, which can be sent as JPGs or other digital photo formats to the e-mail address below. Printed photos can also be mailed to the following address:

Military Editor
Undersea Warfare CNO
2000 Navy Pentagon
Washington, D.C. 20350-2000

or email underseawarfare@navy.mil

CASH PRIZES for the TOP 4 PHOTOS

1ST Place \$500

2ND Place \$250

3RD Place \$200

Honorable Mention \$50



Submarine Museums and Memorials



USS *Bowfin* (SS-287)

Pearl Harbor, Hi.

In late 1941, shortly after the infamous attack on Pearl Harbor, Hawaii, construction began on the third *Balao*-class submarine, USS *Bowfin* (SS-297). *Bowfin* was launched on Dec. 7, 1942, one year to the day of the attack. This coincidence was the foundation for her nickname “The Pearl Harbor Avenger,” but no one realized how fitting her nickname would become.

Bowfin successfully completed nine patrols during her commissioned service to the U.S. Navy. Her most notable patrol was her ninth. During this patrol, she and eight other submarines were chosen for a top secret mission, codenamed “Operation Barney.” This mission, like most submarine missions of World War II, was near-suicidal. The group of submarines traveled into the Sea of Japan, an area they had not previously ventured into during World War II. To reach the Sea of Japan, they had to travel through the perilous Tsushima Strait. The strait was heavily mined and the submarines used new FM sonar to navigate through it. Once they arrived at the Sea of Japan, the submarines were to disrupt the shipping and hit Japan where it would hurt most and where they would not expect it. After successfully hunting and sinking at least two ships, *Bowfin* and the other submarines escaped through the heavily patrolled La Perouse Strait. Sadly, USS *Bonefish* (SS-223) and her crew were lost during the mission.

After returning from her ninth and final patrol, Japan surrendered and *Bowfin* did not return to sea for any more battles. She emerged from the war as one of the most decorated and successful submarines of World War II. Her battle record stands as a testament to the hard work and dedication of the men who served their country in the harrowing battles they faced during the war.

In early 1972, World War II submariner and Pearl Harbor survivor Adm. Bernard A. “Chick” Clarey and Rear Adm. Paul L. Lacy approached the Secretary of the Navy about acquiring *Bowfin* as a memorial to the U.S. Submarine Force. However, it wasn’t until April 1, 1981 that *Bowfin* officially opened as a museum ship. In 1986, *Bowfin* was named a National Historic Landmark by the U.S. Department of the Interior.

Bowfin currently sits in Pearl Harbor, next to the USS *Arizona* (BB-39) Memorial, as part of *Bowfin* Park. She stands not only as a memorial to the men who served on her, but also to all of the submariners who bravely served during World War II. It was a time when being on a submarine was compared to signing your death wish, with 3,505 of 14,750 World War II submariners paying the ultimate sacrifice while defending their nation. Thousands of visitors travel every year to Hawaii to *Bowfin* to pay tribute to the men lost at sea.

www.bowfin.org