

# UNDERSEAWARFARE

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

## Rapid Strike

*SSGNs bring  
New Mission Platforms and  
New Capabilities to the Fleet*

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A Farewell to NSA La Maddalena  
Technical Conversion of the SSGNs  
Manage Your Career with BUPERS  
SSGN from the COs' Perspective

# Rapid Strike

*SSGNs bring  
New Mission Platforms and  
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## On The Cover



A Navy diver assists SOF personnel from SEAL Delivery Team (SDV) 2, with SDV operations from the nuclear-powered submarine USS Florida (SSGN-728) for material certification. Material certification allows operators to perform real-world operations anytime, anywhere.

Photo by Senior Chief Petty Officer Andrew McKaskle



“As I complete my first year as COMSUBFOR, I want to thank each of you for your efforts and successes in 2007. We continue to support our nation’s Combatant Commanders (COCOMS) with ready forces that provide effective undersea capability to support the war on terror and the maritime strategy.”

VADM Jay Donnelly, USN, Commander, Submarine Force

Two notable milestones occurred this year—our first SSGN, USS *Ohio* (SSGN-726), left on her maiden Pacific deployment and our third *Virginia*-class submarine, USS *Hawaii* (SSN-776), completed sea trials and was commissioned. Because of the overall success of the design and shipbuilding team effort, *Virginia*-class is well on the way to reaching our two per year build rate goal.

As articulated in the maritime strategy, our challenge as a nation is to apply seapower in a manner that protects U.S. vital interests even as it promotes greater international security, stability and trust. We have a head start in fostering these important international relationships through the Diesel-Electric Submarine Initiative (DESI) and the International Submarine Escape and Rescue Liaison Office (ISMERLO). Currently, we are working with the submarine forces of 27 different nations and have eight Sailors serving on Royal Australian Navy submarines.

An important tenet of the maritime strategy is Maritime Domain Awareness (MDA). MDA requires enhanced maritime information sharing and an unprecedented level of communication and integration among U.S. maritime forces and our international partners. The Submarine Force continues to develop and test systems to support communications at speed and depth. USS *Montpelier* (SSN-764) deployed in 2007 with the *Truman* Strike Group and a new communications system called high frequency internet protocol (HFIP). HFIP enables email and chat with the strike group while submerged below periscope depth using the floating wire antenna.

At the undersea enterprise level, my three priorities—ensuring operational excellence, developing our people, and maintaining and modernizing our future force—are focused on aligning our efforts with CNO and USFF for 2008. Specifically, we will;

- Meet COCOM SSN, SSGN, and SSBN demand with ships ready to execute national and operational level tasking.
- Increase readiness by eliminating non-productive work and removing unnecessary barriers in the execution of the Fleet Readiness Training Plan (FRTTP).
- Improve enterprise alignment: align priorities, common goals and expectations with key enterprise providers.

- Establish a POM 10 program of record for large diameter tube experimentation to advance *Virginia*-class and SSGN payload strategy.
- Develop the operational concepts for the Submarine Littoral Defense System (SLDS), the submarine force’s first anti-air and small boat weapon system.
- Achieve the maximum level of professional development and highest standards of behavior among our personnel.
- Mentor our Sailors to ensure that the best and brightest choose to stay Navy at retention levels that maintain a strong force.
- Strive for a diverse Submarine Force that reflects the diversity of our nation.
- Provide the opportunity for our Sailors to achieve a proper balance between their personal and professional lives.

We continue to hone our operational performance to meet the changing demands of a changing world. Our personnel are performing well, and we are building a strong force for the future. While the demands on the Submarine Force are great, we will continue to answer the call. We are incorporating the latest technologies to make our ships more affordable and more capable at the same time. More importantly, we continue to invest in our people, who make our Submarine Force the finest in the world.



“Greetings from our Nation’s Capital. The busiest time of year is upon us here in Washington as the three concurrent budget cycles progress at full speed. Additionally, “hearing” season on Capitol Hill is underway as we try to justify our budget to Congress. Finally, we are preparing for a leadership change here in the Submarine Warfare Division of the CNO’s staff.”



RDML Bruce Grooms, USN, Director, Submarine Warfare

Let me take a moment to describe the three concurrent budget cycles consuming our efforts. First, we are executing the Fiscal Year (FY) 2008 Budget that was approved by Congress last fall. The N87 team is ensuring the money programmed for this fiscal year (1 October to 30 September) is spent according to plan. The second budget cycle is the FY09 President’s Budget request that was submitted to Congress on 4 February and is slated to be approved this fall for the next fiscal year. The CNO, SecNav, and several others will testify this spring in support of the requests submitted in this budget. The third budget currently under development programs money for 2010 and beyond. While it may seem that planning budgets years in advance would alleviate most of the obstacles to approval well before the end game, the process can sometimes present its own unique challenges. Every decision along the way has consequences and outcomes that are inextricably interrelated across several budget cycles. However, at the end of the day, this complex process yields a budget driven by military requirements.

Arriving here as a RDML (sel) for this D.C. tour, I learned first hand just how foreign the budgetary lexicon and processes can be. As I look back on my 13 months here I will always remember the many achievements of the N87 staff and the D.C. submarine community. Throughout my time on the OPNAV staff, I learned the true rewards of a D.C. tour are working with some of the finest people in our Submarine Force, Navy, and military. Despite the fiscal challenges encountered inside the beltway, I am encouraged that our system ultimately provides awesome warfighting capabilities to our forces on the waterfront. As I leave my post here in D.C. and welcome RADM Cecil Haney to the job as Director, Submarine Warfare, I have the distinct privilege of fulfilling many a Pentagon daydream—to return to operational command. I look forward to seeing you back on the waterfront as I head to Groton in my new post as Commander, Submarine Group TWO.

This issue chronicles the life of the SSGN program, from idea inception to interviews with the individuals leading the first boats on their maiden deployments. USS *Ohio* (SSGN-726), which recently completed her second forward deployed SSGN crew-swap, continues to pioneer the validation of the dual-crew concept for SSGN. Re-delivery of the fourth and final SSGN, USS *Georgia* (SSGN-729), in December 2007 by no means signaled the end of interest in the platform as a

centerpiece of national defense. Rather, the program’s ‘on time, on budget’ mantra have kept it in the forefront with lawmakers and policymakers as *Ohio* continues on its maiden deployment.

Complementing the good news story of the SSGN program, we delivered the fourth *Virginia*-class SSN on 21 February 2008. USS *North Carolina* (SSN-777) successfully completed the first block of *Virginia*-class deliveries. All of the Block II ships are under construction, with the names of the 7th–9th ships recently announced; *Missouri* (SSN-780), *California* (SSN-781), and *Mississippi* (SSN-782). In February we also issued a request for proposals on the third block of *Virginia*, and expect to secure the contract for this 8-submarine, five-year procurement contract this fall for the 11th–18th ships of the *Virginia*-class.

As I close for the final time and reflect on my time as Director, Submarine Warfare, the job challenges faced during a Washington tour are always exceeded by the quality of the people with whom you serve. I encourage all officers to undertake such a D.C. assignment sometime during their careers. I look forward to serving with you in the future.

For our N87 staff, I wish farewell to the recently departed: LCDR Corey Thompson, YNC Mark Kroll, LT Jon Ahlstrom, CDR Dean Nilsen, LCDR Mike Nikolich, and Mrs. Ruth Holtzman, who served faithfully for over 15 years. Thank you for your tireless dedication and service. Fair winds and following seas.

Bruce E. Grooms

**Vice Adm. John J. Donnelly**

Commander, Submarine Force  
Commander, Submarine Force, Atlantic

**Rear Adm. Joseph A. Walsh**

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

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## Charter

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

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

## Contributions and Feedback Welcome

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## Subscriptions for sale by the Superintendent of Documents,

P.O. Box 371954, Pittsburgh, PA 15250-7954  
or call (866) 512-1800 or fax (202) 512-2104.  
<http://bookstore.gpo.gov>  
Annual cost: \$25 U.S.; \$35 Foreign

## Authorization

**UNDERSEA WARFARE** (ISSN 1554-0146) is published quarterly from appropriated funds by authority of the Chief of Naval Operations in accordance with NPPR P-35. The Secretary of the Navy has determined that this publication is necessary in the transaction of business required by law of the Department of the Navy. Use of funds for printing this publication has been approved by the Navy Publications and Printing Policy Committee. Reproductions are encouraged with proper citation. Controlled circulation.



CHINFO Merit Award Winner



Silver Inkwell Award Winner



Send submissions to:

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*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.*

## dear EDITOR,

I found an article from UNDERSEA WARFARE Magazine titled "The Bells Left Behind" by Col. Charles A. Jones, USMCR [UNDERSEA WARFARE, Winter 2001]. The article mentioned the bell from USS *Argonaut* (SS-166), now hanging in the Submarine Base Chapel in Pearl Harbor. When *Argonaut* was sunk, the commanding officer was my father, Lt. Cmdr. John R. Pierce. If you could please put me in contact with Col. Jones so I can tell him how much his article meant to me, I would greatly appreciate it. Thank you.

Capt. John T. Pierce, USN (Ret.)

*UNDERSEA WARFARE Magazine is pleased to say that we successfully put Mr. Pierce in contact with Col. Jones to further discuss the Argonaut, her bell and the late-Lt. Cmdr. Pierce. Here is an excerpt from Col. Jones' reply:*

*"An honor to correspond to you and to have written the article. Thank you for your service to your country. I am sure you kept the spirit of Argonaut and your father alive.*

*After joining the United States Marine Corps Reserve in 1993, I had three trips to Oahu, which is where I first saw USS Wahoo's (SS-238) bell at the USS Bowfin (SS-287) Museum.*

*So, it was by chance, after seeing Wahoo's bell, that I saw the sign on wall of beside the old Submarine Base Chapel at Pearl Harbor. It mentioned that the Argonaut's bell was in the belfry. Getting into that belfry was a nightmare and I must have taken a thousand slides of the bell since I knew I would never be getting up there again."*

Col. Charles A. Jones, USMCR

## sailorsFIRST



Photo by Petty Officer 2nd Class Roadell Hickman

## dear EDITOR,

I am a former sailor and a historian and currently work at the Wisconsin Maritime Museum on their WWII submarine, USS *Cobia* (SS-245). I am writing because I am conducting research to improve the programs we offer and am looking for a complete as possible supply list for a *Gato*-class boat during WWII. Specifically, I am looking for a list that would include foodstuff, medical supplies, small arms, etc. Any information or suggestions on where else I might be able to obtain this information would be most welcome.

Thank you for your time,

Doug Moore  
Wisconsin Maritime Museum

Mr. Moore,

*Thank you for contacting UNDERSEA WARFARE Magazine. Unfortunately, we do not have any of that information on hand but we would recommend contacting the Naval Historical Center. They are located in the Washington Navy Yard and their website is <http://www.history.navy.mil/>. Our other recommendation would be contacting other WWII submarine memorials, such as the Buffalo and Erie County Naval and Military Park, Buffalo, N.Y., home of USS Croaker (SSK-246), or Seawolf Park, Galveston, Texas, home of USS Cavalla (SS-244). Best of luck with your search!*

Jamie Farr, who played Klinger in the television show, "M\*A\*S\*H," meets members of the crew of attack submarine USS *Norfolk* (SSN-714).

# The Submarine Force Bids Farewell to NSA La Maddalena



Photo by Capt. J.M. Hughes



Photo by Seaman Soriantha Staff

After 36 years of U.S. Naval presence in La Maddalena, Italy, the naval base officially closed in January 2008. Capt. Gregory Billy, Commander, Submarine Squadron TWENTY TWO, closed the base with a few short words in a ceremony at the end of January. “NSA [Naval Support Activity] La Maddalena is disestablished,” he announced. Then, both the Italian and U.S. flags that flew above La Maddalena, prominent symbols of the relationship this port represented, were lowered.

U.S. Naval Support Activity (NSA) La Maddalena was established in January 1973. The United States had long desired a presence in La Maddalena because of its strategic location in the Mediterranean Sea. La Maddalena is located in the Strait of Bonifacio, north-east of the Italian island of Sardinia and south-east of the French island of Corsica. It is the largest island of the Archipelago of La Maddalena, which consists of seven islands and several inlets but does not include Sardinia. In 1822, the

United States sought to establish a port on La Maddalena to protect its shipping from the pirates active in the Mediterranean, but the local Sardinian government refused. It wasn't until 1972 that the Italian government stepped in and granted the U.S. a port. During the Cold War, it provided the Navy a homeport with access to the Soviet Union. The Mediterranean has also long been considered a key to Europe, North Africa, and the Middle East.

The U.S. Navy used La Maddalena and nearby Santo Stefano mainly as support for the Submarine Force, but also for occasionally maintenance assistance to surface ships. Beginning with the arrival of USS *Howard W. Gilmore* (AS-16) in 1973, the port was continually served by a submarine tender. In 1980, *Gilmore* departed La Maddalena for decommissioning and was replaced by USS *Orion* (AS-18) from 1980–1993, USS *Simon Lake* (AS-33) from 1993–1999, and finally, USS *Emory S. Land* (AS-39) from 1999–2007. The presence of these tenders

was vital to deployed submarines by providing refueling, restocking, and minor maintenance.

Despite the tensions that occasionally arose surrounding the base and the Navy's activities there, the Naval presence on La Maddalena was viewed as beneficial for both the Italians and the Americans. When NSA La Maddalena was first established, places to get supplies were limited and the island was mostly made up of small farms and fishing villages. Families had to take a “mike” boat ferry to Sardinia for school and most of their shopping needs. Ferry runs were scheduled throughout the day, but for families there was no convenient quick trip to the store. In the early 1980s, the community supporting NSA La Maddalena saw vast improvements to their way of living. New housing, a large exchange and commissary, and a large area for recreational activities were added. People could now do most of their shopping on the island instead of taking a ferry. The local economy

(Below) With the help of tugboats, the submarine tender, USS Emory S. Land (AS-39), is maneuvered into place alongside the command ship, USS La Salle (AGF-3), in preparation for a scheduled availability period. (Opposite, left to right) USS Newport News (SSN-750) approaching La Maddalena with Sardinia in the background. Sailors assigned to Emory S. Land await the arrival of guided-missile destroyer USS Roosevelt (DDG-80) for a voyage repair availability period.



**In 1822, the United States sought to establish a port on La Maddalena to protect its**

shipping from the pirates experienced huge growth with these additions as well. Restaurants and local markets already present on La Maddalena expanded and more were added. The addition of the Navy base also brought the area around La Maddalena into the focus of the tourist economy. A resort complex was also developed in the early 1980s on nearby Sardinia. Generally, the population on La Maddalena is estimated to be 15,000–17,000, but in the summer months, it can reach 75,000 due to the influx of tourists.

NSA La Maddalena has been a gem to the Submarine Force for the last 35 years. The beautiful scenery provided a respite and a distraction from the duties of deployment. It is a port call that will be missed.

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

**active in the Mediterranean, but the local Sardinian government refused. It wasn't until 1972 that the Italian government stepped in and granted the U.S. a port. During the Cold War, it provided the Navy a homeport with access to the Soviet Union.**

# Board Basics

*from the*



## Bureau of Personnel

Several promotion and screening boards are on the horizon. Do not put your promotion or screening selection at risk because your record is not correct or complete. In this article, we will cover the basics of record maintenance, methods to correct errors, and board cycles. Remember—the content of your service record is the primary method that the board will use to evaluate your performance relative to that of your peers.

### Board Basics

There are two types of boards: statutory promotion boards and submarine administrative selection boards. Statutory promotion boards include officer promotions and are governed by law. Administrative selection boards include submarine major command (MC) screening, submarine commanding officer (CO) screening, submarine executive officer (XO) screening, and submarine department head (DH)

screening. Administrative boards are run by the Submarine Officer Distribution Division (PERS-42) of Naval Personnel Command (NPC) under the direction of Submarine Force leadership.

### Board Eligibility

For Statutory Promotion Boards, eligibility by lineal number is promulgated by a NAVADMIN message that is released every December (at least 30 days prior to the first board) which sets the promotion “zones.” Your lineal number can be found on your Officer Data Card (ODC) at the Bureau of Naval Personnel (BUPERS) Online (BOL) or in the following link: [http://buperscd.technology.navy.mil/bup\\_updt/upd\\_CD/BUPERS/Register/RegOpenMenu.html](http://buperscd.technology.navy.mil/bup_updt/upd_CD/BUPERS/Register/RegOpenMenu.html)

The NPC website also maintains an eligibility list (<http://www.npc.navy.mil/Boards/ActiveDutyOfficer/>) for upcoming statutory boards. This list is continually updated until 3 weeks before the board

convenes.

Administrative Board eligibility is determined by your year group (YG). The YGs that are being considered for each board are listed above with the schedule. If you have any questions concerning eligibility, call PERS-421B at DSN 882-3932.

### Board Preparation

There are many tools available to help with your board preparation. They include:

#### *BUPERS Online*

BUPERS Online (BOL) is an essential tool that is always at your disposal and should be your primary resource for board preparation. Verifying fitness report (FITREP) continuity is the most important aspect of board preparation. Continuity can be verified in BOL and the CD-ROM copy of your record can be ordered from BOL, as well.

Although there is a considerable amount of specific information on BOL, ordering



Photo by [unreadable]

(Opposite) Chief Petty Officer (SS) Justin Smith during his promotion ceremony. (Above) Capt. Steve Perry educates Lt. Jon Ahlstrom on the new Performance Evaluation Continuity Report available through the BUPERS Online website.

your personal CD-ROM will allow you to look at what is scanned into your record. The scanning of FITREPs, awards, etc. is a manual process and mistakes can be made. There are over 700,000 FITREPs and evaluations per year that are processed by NPC, but most submariners will only have their own to ensure is entered and entered correctly!

### ***NPC Website***

The NPC website (<http://www.npc.navy.mil>) is another valuable source of information in preparing for both administrative and statutory boards. The “Boards” section describes the promotion zone procedures, selection status, approval status, phasing plans for promotion, board precepts, membership, and answers many other questions that you may have related to a particular statutory board. The administrative boards that PERS-42 runs for CO, XO, DH, MC, and Limited Duty Officers follow the same procedures.

### ***NPC Customer Service Center***

After you have determined that you

are eligible for a board and have reviewed your record, you may have discovered that you must provide missing, corrected, or additional information to the board in order to bring your record up to date. Such documentation should be sent directly to the NPC Customer Service Center (CSC) (<http://www.staynavy.navy.mil> or 1-866-U-ASK-NPC). The CSC will deliver letters and missing/corrected/additional information to the board you have specified, and confirm receipt. *Note:* Only you can provide information to the board for your record; information provided by a third party must be submitted by you for consideration by the board.

Correspondence for a board must arrive in the board spaces (not at the base mail facility) the day before the board convenes. Next Day or Express Mail does not guarantee that your package will make it to the board if you wait until the last minute to send it. You should ensure your package arrives at least one week prior to the board’s convening date. It will take approximately one to two days for correspondence to be

logged in, sorted, and forwarded by the CSC to the appropriate board. Certified and registered mail is also not recommended as this can add several days to the US Postal Service processing time.

### ***Permanently Updating your Record***

The CSC is the conduit for getting information to the board for consideration; however, information provided to CSC will not be updated in your permanent record. You must still use the records management section of the NPC website (<http://www.npc.navy.mil/CareerInfo/RecordsManagement/>) and the Navy awards website (<https://awards.navy.mil>) to actually update your record. This update of your permanent record does not need to be completed prior to the board provided you submitted your information to CSC. A detailer cannot enter or submit information to be updated in your official record.

### ***Board Lessons Learned***

The Captain (O-6) Promotion Board occurs in January each year. In the months preceding the board there is a progression



of forecasts of which officers will be “in zone;” however, the only official zone is announced by the NAVADMIN that fiscal year’s boards released in December. Each year, there is a scramble by some officers who are caught off guard because they are identified as “in zone” for the O-6 board by the NAVADMIN, but thought they would be “below zone” based on the forecasts. This issue is identified specifically because there is little time between publishing the “in zone” candidates in December and the board in January. There is more time available for record correction before the Commander (O-5) Board in February and Lieutenant Commander (O-4) Board in March or April.

The Lieutenant Commander (O-4) Promotion Board normally occurs in late March or early April. Lieutenant FITREPs are required to be completed Jan. 31. This is the shortest timeline between regular FITREP completion and promotion board convening. We recommend that each officer “in zone” for the lieutenant commander promotion board submit his Jan. 31 FITREP in a Letter to the Board to ensure the board is able to consider it.

In contrast to the lieutenant commander board, there are seven months between the Oct. 31 lieutenant commander FITREP for an XO and the CO/XO Screening Board in May. This creates a large gap of undocumented performance information relative to the XO tour length. A letter to the board by a CO or immediate superior-in-command (and forwarded in the proper format in accordance with <http://www.npc.navy.mil/NR/rdonlyres/79D-C7B44-4E5A-4FE4-BA44-3B1D81FEF-4DA/0/SampleLtrtoBrdActive.doc>) may be appropriate to document deployment, patrol, or other ship and officer specific accomplishments and is valuable information to assist the board in determining the best qualified XOs for screening as CO.

Lt. Cmdr. Tony Grayson holds the position of PERS-421B and coordinates board issues for submarine officers. If there are questions or feedback, contact him at (901) 874-3932 or DSN 882-3932. Or go to the PERS-42 section of the NPC website and send an e-mail.

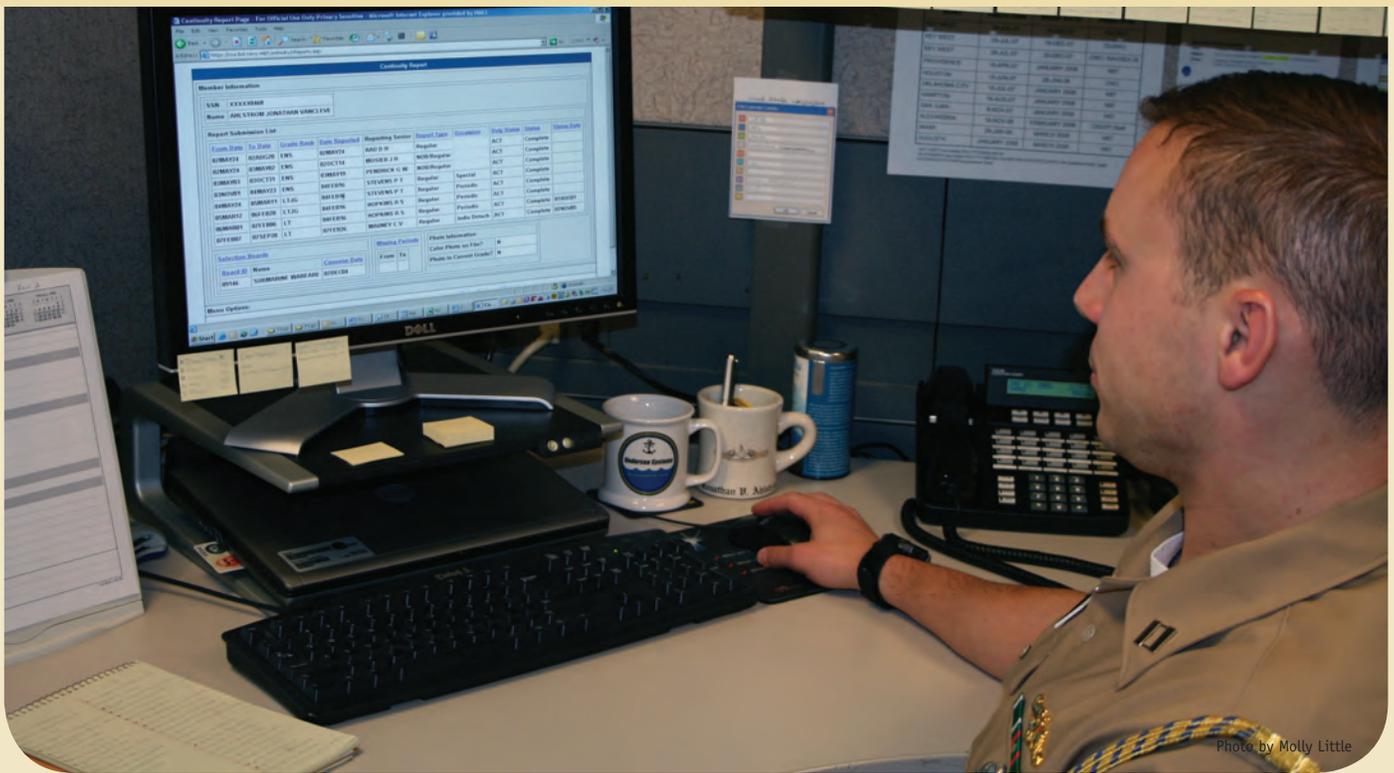


Photo by Molly Little

(Opposite) Chief Petty Officer Jeremy Farr during his chief petty officer pinning ceremony. (Above) Lt. Jon Ahlstrom views his Performance Evaluation Continuity Report on the BUPERS Online website.

## FY09 Board Schedule (conducted in FY08)

**Submarine Department Head (#146) and Major Command (#145) Board convened Dec. 4, 2007 and considered:**

- Department Head YG (year group) 02 (Last) and YG 03 (Early)
- Limited Duty Officer (LDO), Strategic Weapons Officer YG 01 (2<sup>nd</sup>) and YG 02 (1<sup>st</sup>)
- Major Command and Major Program Manager YG 83 through YG 86

**Active 0-6 (captain) Line (#160): Jan. 15, 2008**

**Active 0-5 (commander) Line (#230): Feb. 12, 2008**

**Active 0-4 (lieutenant commander) Line (#275): April 8, 2008**

**Submarine CO (commanding officer) and XO (executive officer) Board (#350): May 19, 2008**

- CO YG 92 (3<sup>rd</sup>), YG 93, (2<sup>nd</sup>), YG 94 (1<sup>st</sup>)
- LDO Drydock Commanding Officer YG 96
- XO YG 97 (3<sup>rd</sup>), YG 98 (2<sup>nd</sup>), YG 99 (1<sup>st</sup>)
- LDO Drydock Executive Officer YG 00

The successes of the SSGN conversion program have been well chronicled since the 2002 decision to convert the first four *Ohio*-class submarines from ballistic missile submarines (SSBN) to guided missile submarines (SSGN). Many factions of the government-contractor team have been lauded for their contributions to the overall achievements of the program. However, one group most have likely not heard about, even though they have made

significant contributions to the program for over three years, is the Naval Reserve.

The new SSGN platform and its weapon system have been actively supported by the Naval Reserve Forces since October 2004. At that time, three new SSGN reserve detachments were established to provide support to Commander, Submarine Force (CSF), Commander, Submarine Group NINE (CSG-9) and Commander, Submarine Group TEN (CSG-10).

“The Undersea Enterprise reserve component has successfully integrated their critical skills into all parts of the SSGN program,” said Rear Adm. Timothy Giardina, Commander, Submarine Group TRIDENT. “Their assistance in SSGN exercises, operations, planning and maintenance support have positively contributed to the highly successful SSGN program.”

Ten members of the SSGN reserve detachments provided two weeks of sup-



## Global Presence with Global Support

port to the Joint Command and Control for War on Terror Activities Joint Test and Evaluation (JC2WTA JT&E) team during exercise *Tailsman Saber* in Australia this past June. Their job was to evaluate the SSGN as a potential platform for the new mission of distributed command and control from a small forward clandestine command post. The exercise was used as a field test for the Tactics, Techniques and Procedures (TTPs) being developed to provide the joint war fighter the tools necessary to execute this mission.

Submarines, especially the SSGN outfitted with the Common Submarine Radio Room and the latest multifunction and high data-rate antennas, make an ideal platform for this new and critical mission. They offer inherent stealth, intelligence, surveillance and reconnaissance (ISR) capabilities, and longer station keeping time than other navy platforms. Each SSGN can deploy with up to 154 TOMAHAWK cruise missiles and are capable of sustaining 66 Special

Operations Force (SOF) personnel and associated equipment to perform a wide variety of missions.

*Ohio* was delivered back to the operational fleet in December 2005, followed by the USS *Florida* (SSGN-728) in April 2006, USS *Michigan* (SSGN-727) in November 2006, and finally USS *Georgia* (SSGN-729) in December 2007. The SSGN's deployment cycle leverages the two crew concept and will consist of four separate ten-week

operational periods, each one complimented by an overseas voyage repair period and crew exchange. This cycle results in 12 months of forward presence outside of the continental United States followed by a major maintenance period in Kings Bay, Ga. or Bremerton, Wash. The final result will be 2.4 years of annual forward deployed presence by SSGNs.

The following individual reservists on Active Duty Special Work (ADSW) have

provided tremendous support to the SSGN project:

- Capt. Kevin Doyle is the Deputy, Joint Test Director for the JC2WTA JT&E office.
- Cmdr. Rich Kondo serves as the COMSUBGRU-7 SSGN Development Officer responsible for coordinating and planning exercises and missions for *Ohio* and *Florida* while in CTF 54/74 area of responsibility during their first 12 month deployments.
- Cmdr. Walt Hockett, on ADSW at Special Operations Command Pacific, is representing the SSGN in their J5 shop and assisting in exercise and mission planning.
- Cmdr. John Olsen, as the Deputy for SSGN Operations for SUBRON-15 in Guam, is assisting with the preparations for the Voyage Repair periods in Guam.
- Cmdr. Bill Lear is dual-hatted as the SSGN Operations Officer and Operational Support Officer for COMSUBGRU-TRIDENT and oversees the support of the SSGN detachments, FP detachments and the NSSC detachments on both coasts.
- Lt. Jonathan King assists Cmdr. Lear as the SSGN Special Projects assistant at the SSGN Office at COMSUBGRU-9.

“The Undersea Enterprise reserve component has successfully integrated their critical skills into all parts of the SSGN program,” said Rear Adm. Timothy Giardina, Commander, Submarine Group Trident. “Their assistance in SSGN exercises, operations, planning and maintenance support have positively contributed to the highly successful SSGN program.”

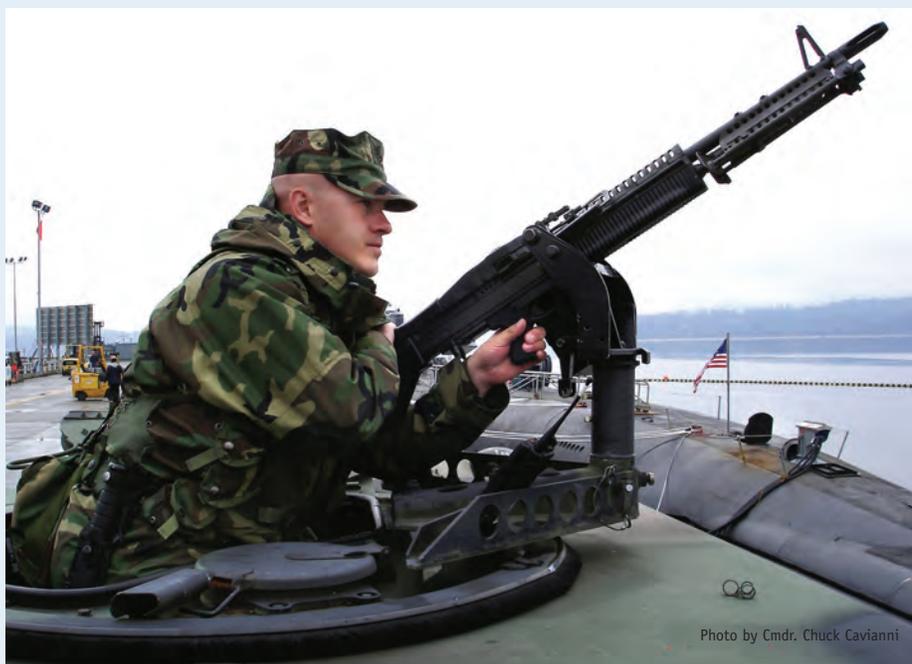


Photo by Cmdr. Chuck Cavianni

(Opposite) Members of the SSGN Reserve Office in front of *Ohio*. From front to back: Cmdr. Bill Lear, Lt. Jonathan King, Van Badzik, Capt. Bill Gieri and Cmdr. Tim Cockrel. (Above) Petty Officer Third Class James Hull of CSG-10 keeps a watchful eye on *Ohio*.

The mission of the SSGN Office is to oversee the transition of the SSGN program from a conversion effort to an operational system, serve as the focal point for socialization and feedback on all SSGN issues, and coordinate the follow-on readiness, maintenance, and experimentation for the SSGN program.

The guided missile submarine will be a dynamic, yet covert, asset in the global war on terrorism and requires a highly trained and skilled support network. Reservists have and will continue to provide valuable service to the nation and Navy.

Cmdr. Lear is the SSGN Operations Officer for COMSUBGRU-9.



# The SSGN

## Success Story

When the Navy decided to convert four older Trident ballistic missile submarines for conventional strike and Special Forces operations, the decision team was assembled that had to figure out how adjunct vehicles would take off and land from the superstructure of the converted ship. How would the fluid dynamics around the submarine change in response to a smaller vehicle approaching or being attached? How would the smaller vessel overcome turbulence and avoid being sucked into any other parts of the superstructure?

## Concept to Capability in 39 Months

“There was quite a bit of engineering and analysis that went into that problem,” said Kirk Daniels, who was supervisor of naval architecture at General Dynamics Electric Boat in Groton, Conn., during the SSGN program. “We not only had to design it so the adjunct vehicles could be held on properly, but so they could be released and landed safely as well, and we needed to understand how it might affect maneuvering for the ship and the smaller vessel through all those steps.”

“This was an opportunity to show [our] expertise in computational fluid dynamics and other areas that just doesn’t exist anywhere else,” said Peter D. Canning, a naval architecture engineering manager at Electric Boat.

But the SSGN conversion program was about real estate management issues as much as complex computer modeling. When one puts seven TOMAHAWK cruise missiles into a single D-5 tube, it’s not enough to know that you have the space for the hard-

ware. Seven times as many missiles means seven times as many cables to connect to a fire control system, which in turn requires significant changes to the missile tube itself.

In the past the penetration patches for that kind of a job would have been individually cut, drilled and then rolled into the desired shape, which would have been an enormous undertaking for the 88 tubes being reconfigured on the SSGN conversion program. Instead, designers came up with the idea of rolling out an entire D-5 tube, and cutting the patches out of that.

“It saved us an enormous amount of time and work over doing them individually,” said Dexter White, an SSGN Conversion Site Manager in Norfolk, Va. “Because we were cutting them from a D-5 tube, we knew they’d be the right shape on the first try. It was ingenious. And yet it was so simple.”

Countless innovations, large and small, in engineering, manufacturing, planning, and production helped the SSGN conversion

program become a model for Navy procurement, meeting or exceeding cost and schedule targets consistently. During the fall of 2007, the last submarine to be converted, USS *Georgia* (SSGN-729) was re-delivered and USS *Ohio* (SSGN-726) embarked on its first deployment.

“I’ve been involved with a lot of ‘firsts,’ but to be able to take something like the SSGN from a raw concept to delivery of the last boat was just incredibly rewarding,” White said.

The official timeline in the SSGN saga began Sept. 26, 2002, when the Navy contracted with Electric Boat for design and construction on the *Ohio*, USS *Michigan* (SSGN-727), USS *Florida* (SSGN-728) and *Georgia*. *Ohio* was re-delivered to the Navy just 39 months later, in December 2005, and commenced fleet operations in February 2006.

But the program had been in development much longer. In fact, Adm. Edmund P. Giambastiani, Vice Chairman of the Joint

Chiefs of Staff until his July 2007 retirement, was commodore of SUBDEVRON-TWELVE in Groton when he wrote a paper for Adm. Bruce DeMars—then the Director of Naval Nuclear Propulsion—on conventional uses for Trident submarines. This was two years before the 1994 Nuclear Posture Review recommended reducing the size of the strategic missile submarine fleet from 18 to 14.

The use of submarines in special operations dates back to Carlson's Raiders in World War II, but reached a new level with the conversion of two earlier *Benjamin Franklin*-class "boomer" submarines, USS *James K. Polk* (SSN-645) and USS *Kamehameha* (SSN-642), in the 1990s. *Polk* was decommissioned in 1999 and *Kamehameha*, which still holds the record as the longest-commissioned nuclear submarine in the U.S. fleet (37 years), was retired in 2002.

But those conversions involved removal of the missiles and re-configuration for Special Operations Forces (SOF) troops. The current Trident submarine conversions will accommodate up to 66 SOF personnel for long durations, but also has additional capabilities that go far beyond that. Two of the 24 D-5 missile tubes, rebuilt as SOF lockout chambers, are designed to support adjunct vehicles or a dry-deck shelter, and the remaining tubes can be filled with seven TOMAHAWK cruise missiles each, giving the submarine the ability to fire up to 154 missiles in rapid succession. In addition, some of the tubes can be configured to allow experimentation with offboard vehicles, sensors, weapons and other payloads that will lead to even greater Submarine Force flexibility in the future.

The conversion program required extensive coordination between the design team and the two shipyards where the work was accomplished, Puget Sound Naval Shipyard for *Ohio* and *Michigan*, Norfolk Naval Shipyard for *Florida* and *Georgia*. "We created new teams of people with the right skills to go off and do this, and a new paradigm for getting it done," said Tom Lyon, a

(Opposite) USS *Michigan* (SSGN-727) is shown in drydock during its conversion to an SSGN in 2006 at Puget Sound Naval Shipyard, Wash. *Michigan* was redelivered to the Navy on Nov. 22, 2006.

(Right) Electric Boat workers inside a missile tube of the *Ohio* as it is prepared for conversion to fire conventional missiles.

design program manager. "We didn't use the traditional overhaul model. Electric Boat did the conversion and the shipyards did the refuelings concurrently, and we operated as a team. There was no traditional lead maintenance activity."

Norfolk site manager, Dexter White, said given the short timeline for accomplishing the work, designers, shipbuilders and Navy personnel collaborated extensively on the design in order to make it easy to produce and to operate.

"We showed that the design-build process that pioneered with the *Virginia*-class program would save money and time, and in the end, we used a lot of the same methods

that we did on USS *Virginia* (SSN-774). There's no doubt in my mind that our experience on *Virginia* and our use of the design-build process were major factors in meeting the schedule, which was key to the success of the SSGN program," White said.

Even a cursory look inside the submarine shows the extent of changes that has taken place. One major change was converting the navigation center into a battle management center that will allow command and control of forces ashore. But there have been thousands of smaller changes as well, from installing racks, desks, chairs and showers for the SOF troops, said Lyon.

"The Navy wanted extra exercise equip-

"We created new teams of people with the right skills to go off and do this, and a new paradigm for getting it done," said Tom Lyon, a design program manager. "We didn't use the traditional overhaul model. Electric Boat did the conversion and the shipyards did the refuelings concurrently, and we operated as a team. There was no traditional lead maintenance activity."



Photo courtesy of General Dynamics Electric Boat



Photo courtesy of General Dynamics Electric Boat



Photo courtesy of General Dynamics Electric Boat

(Left) A lockout trunk is lowered into one of the missile tubes on *Ohio*. The lockout trunks will support covert deployment of Special Operations Forces from the submarines. (Right) *Ohio* conducted successful operational evaluation tests of the dry deck shelter, shown in this picture, and a swimmer delivery vehicle, which can be used to get Special Operations Forces on and off the ship in a covert fashion.

ment for the SOF personnel, so we had to make room for that, but we also had to go back and verify that the oxygen generators and carbon dioxide scrubbers had enough margin for the extra people, and even that the vents in the galley would be able to handle the extra cooking,” Lyon said.

In addition, new solid-state electronics replaced some of the older water-cooled computing equipment, which did not require as much ventilation. “Luckily, there was enough margin in the original design that we didn’t have to go back and change any of the legacy systems, but it got a very close look,” Lyon said.

A lot of the rules changed in the quarter-century since the four older Trident submarines were built, though, and the SSGN designers had to go back and certify that everything was safe and write new operating procedures where changes were made. If hangars were acceptable a foot apart when *Ohio* was commissioned in 1981 and new standards required them to be 8 inches apart, any modifications had to meet the new standards. In addition, Lyon said, there was an intensive survey of all four ships to make sure the construction crews understood any variation from the plan—in one instance, they found deck structures that were almost 2 inches lower

than they should have been according to the blueprints.

“Everything was stick-built back in those days, especially the first of a class because it was being built as the design was proceeding,” Lyon said. “You knew you had a gauge here and a pipe there, and if you wanted to read the pressure in the pipe you ran a line between them. Today, the specifications are much tighter, and we model everything before it’s built. But we had to take a lot of ship checks to make sure we were engineering the SSGN to as-built conditions, not to the design that existed 20 years ago.”

But those ship-checks were fed into the CATIA (Computer Aided Three-dimensional Interactive Application) model that was used to build the *Virginia*-class submarine, and today there exist exacting computer records of all four SSGNs, as-built.

As much as possible, designers also re-used existing equipment. The gas charging system used for ballistic missiles, for instance, was left about 80 percent intact, because it met the cleanliness and humidity requirements for a divers’ air charging system. In addition, designers adapted the D-5 tube to a two-chamber lock out truck, as opposed to a single chamber on the *Virginia*-class, which is wider and shallower, when modeling showed that the divers would get exces-

sive turbulence from a single chamber when it was filled, similar to what happens when one turns a full soda bottle upside down.

Adapting the old systems meant extensive certifications across multiple disciplines to make sure that they were safe by modern standards. For the lockout trunks, for instance, the design had to be approved by 11 different Naval Sea Systems Command offices.

But even using modern materials, there are extensive certification requirements under the SUBSAFE program, noted Naval Architecture Supervisor Kirk Daniels. For instance, the converted ship was going to be considerably lighter without 24 D-5 missiles aboard, and traditionally the way to make up for that is using lead ballast. Instead, the naval architecture team proposed the use of Ballast-crete.

“It’s a new material, never been used on a submarine before, so we had to come through a very thorough analysis of whether there would be any off-gassing from it, how it would respond to shock, that kind of thing,” Daniels said. “But we satisfied everyone that it was the right thing to do, and it really paid off. Not only was there a significant cost savings in material, but it installs a lot easier so it reduced the construction hours, and it’s more environmentally friend-

ly. It was a great decision for several reasons.”

Perhaps just as important was the personnel engineering that was required to accomplish the historic transformation of four ballistic-missile submarines into platforms unlike anything the Navy has ever put to sea.

“The fact that we had to set up two sites, one out west at the Puget Sound Naval Shipyard and one back east at the Norfolk Naval Shipyard, is something that’s often overlooked in terms of the major accomplishments on this project,” said EB’s Vice President for Maintenance and Modernization, Kevin Devine. “Crews were sent in to do this work while they had a refueling overhaul underway, and accomplished our work on time and on budget. At the height of the program we had upwards of 1,000 people at Puget Sound, which is like a small shipyard within the Naval Shipyard. We had security, we had quality, we had human resources and welders and planners, carpenters, everything needed to operate a self-sufficient team.”

That took extensive coordination with the shipyards that hosted the conversion starting months before the crews arrived so they would have the tool, parts and supplies required to jump right into the job. In addition, there were extensive briefings to

employees as they arrived at the shipyards to make sure they understood the rules in their new location. At Puget Sound Naval Shipyard, for instance, there are no hard hats allowed in an eating establishment, and the gym is open for use only for dues-paying members.

“You go to a different location, and of course there are different rules, so there’s a lot of ‘people issues,’ that you have to overcome,” said Brian Wilson, the Puget Sound SSGN Site Manager. “But a shipyard is a shipyard, so you learn the new rules and you manage the work from there.”

In fact, the cooperation in the shipyard team paid off for Puget Sound when it had to do a D-5 backfit on USS *Henry M. Jackson* (SSBN-730). Missile tubes can get out of round because of the intense pressures of an undersea environment and in a refit might require re-boring. The design team had pioneered the use of commercially available boring machines on the tubes for the SSGN conversion, and realized significant savings—setup can be done in just four hours instead of 18 with the old equipment, and the boring takes place in four or five days on a single shift, instead of working round the clock 10 days. When the *Henry M. Jackson* job got underway, Puget Sound

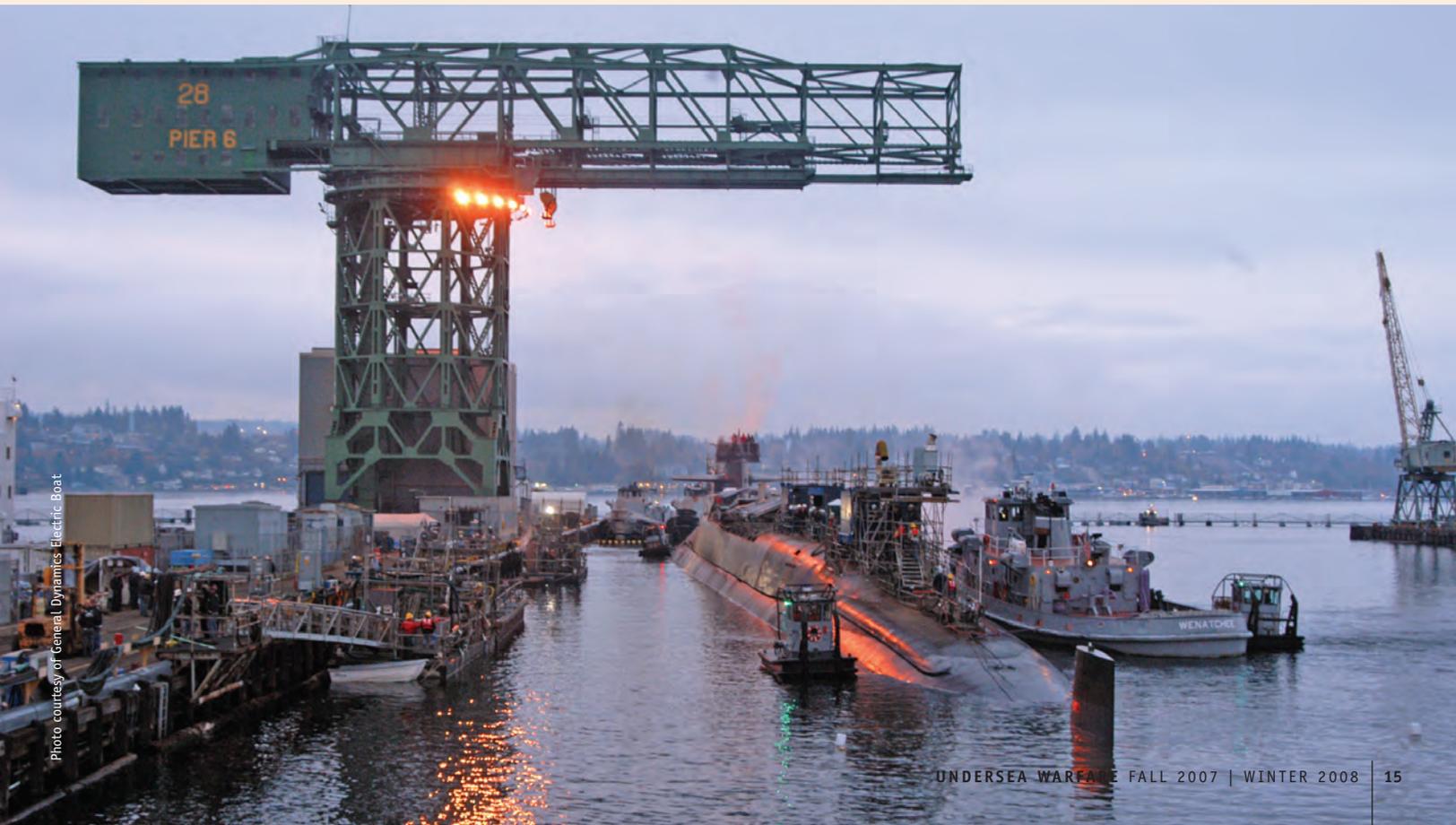
was using the commercial borer.

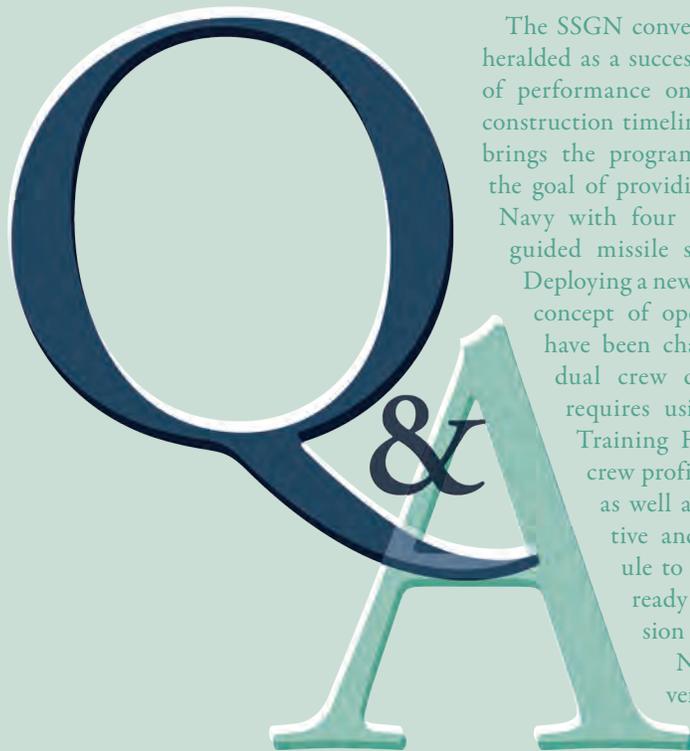
Finally, there was extensive communication between the operations at Puget Sound and Norfolk, including weekly teleconferences and a shared SSGN Lessons Learned database that was accessible at both sites. These communications were also coordinated with the material and ship’s test personnel who were headquartered in Groton.

“And at the end, the people who certified the ship ready to go to sea were back in Groton, so it all had to be done electronically. That’s probably the greatest success of the program, that we were able to manage the program at such a distance,” Devine said. “It’s incredible, what was achieved on this program.”

Mr. Hamilton is the Director of Communications for General Dynamics Electric Boat in Groton, Conn.

*Ohio* shown moored near a crane at Puget Sound Naval Shipyard, Wash., after it had been re-floated and was nearing the end of its SSGN Conversion. *Ohio* was the first SSGN redelivered to the Navy, on Dec. 11, 2005.





## SSGN:

### From the Commanding Officers' Perspectives

The SSGN conversion program is well heralded as a success story for its history of performance on achieving cost and construction timeline goals. Each success brings the program one step closer to the goal of providing the United States Navy with four ready-for-deployment guided missile submarines in 2008.

Deploying a new platform using a new concept of operations means there have been challenges as well. The dual crew deployment schedule requires using on land Trident Training Facilities to maintain crew proficiency while at home, as well as creating an innovative and flexible test schedule to verify both crews are ready to perform in all mission areas.

Now that all four converted SSBNs have been delivered back to the fleet as SSGNs, the future success of the boats lies with the crews and their officers' ability to operate at sea. These multi-mission platforms are demanding of their crews,

perhaps none more so than their commanding officers. Two of the commanding officers (CO) of SSGNs took time out of their schedules to talk to UNDERSEA WARFARE Magazine about their positions, the new boats, and the challenges they face.

The CO of USS *Ohio* (SSGN-726) (GOLD), Capt. Andrew Hale, graduated from the United States Naval Academy in 1984. Prior to commanding *Ohio* (GOLD), he served as a junior officer onboard USS *Dallas* (SSN-700), as the Engineer Officer onboard USS *San Francisco* (SSN-711), three strategic deterrent patrols as Executive Officer of USS *Nevada* (SSBN-733)(GOLD), as commanding officer of USS *Santa Fe* (SSN-763), and a short stint as commanding officer of *San Francisco* for three months in 2005.

Capt. William Traub, CO of USS *Florida* (SSGN-727)(BLUE), graduated from the United States Naval Academy in 1983. Prior to commanding *Florida* (BLUE), he served as a junior officer onboard USS *Hyman G. Rickover* (SSN-709), as Engineer Officer onboard USS *Baltimore* (SSN-704), as Executive Officer onboard USS *Wyoming* (SSBN-742)(BLUE), and as commanding officer of USS *Tucson* (SSN-770).



Photo by Petty Officer 2nd Class Barry R. Hirayama

**How have the design modifications made to the SSBNs to transform them to SSGNs been beneficial to the performance of your duties? How has it changed the way you perform your duties?**

*Capt. Traub:* There is a huge difference from the SSBN to the SSGN. Although the ships look very similar from the outside, the equipment on the inside has been completely refigured and updated. The addition of the ARCI [advanced rapid commercial-off-the-shelf insertion] Phase IV Sonar System and BYG-1 Fire Control System has made the detection, localization and tracking of contacts much easier. Unlike the SSBN, I have the ability to view any tactical display from multiple locations in the ship including the wardroom, officer study, crew's mess, and my stateroom. It has made me much more mobile throughout the ship and I do not feel as tied to the immediate vicinity of the control room as I have during previous shipboard assignments. This makes it easier for me to spread my experience to more of the crew. Also, the addition of the TOMAHAWK missile system and the Special Operations Forces [SOF] capabilities have made it necessary for me to expand my own knowledge of the ship and these mission areas.

**One of the modifications made to the SSGNs is the addition**



(Opposite) Capt. Andy Hale, commanding officer of USS *Ohio* (SSGN-726), receives a traditional Republic of Korea (ROK) welcome from a young Korean girl. (Above) *Ohio* arrives at Naval Station Pearl Harbor to take on supplies before continuing on their maiden deployment to the Western Pacific following their recent guided-missile overhaul.

**of lock-out chambers and a place for an Advanced SEAL Delivery System (ASDS) or a Dry Deck Shelter (DDS) so that the SSGN can better support Special Operations; has this modification in the capabilities of your boat changed the way you command?**

*Capt. Hale:* Absolutely. The Special Operations Force (SOF) capabilities have added an additional aspect of command and control. During SOF team missions, there is an increased need to maintain communications connectivity to ensure the safety of SOF teams. Tactically, we must position the ship optimally to minimize the added risk increased communications mast exposure brings to maximize the success and safety of SOF teams and their mission accomplishment. Earlier this year, my crew completed manned Dry Deck Shelter Operational Evaluation with a full complement of Special Operations Forces and Battle Management Center (BMC) staff. All SOF operations require careful management of command and control functions and strong coordination amongst the leaders of the SOF team, embarked BMC staff (possibly Naval Special Warfare Group staff or Joint Special Operations Task Force (JSOTF) staff, ship's force), and

shore commands. The increased communications connectivity of an SSGN provides intelligence support and coordination with all command teams.

The final decisions for operations ultimately rest with the ship's commanding officer and any embarked SOF and/or joint commanders, however, all inputs from each command team must be integrated to ensure safety of SOF personnel and mission accomplishment.

**There is also the added benefit of a greater missile capacity; what does this mean to the way you manage the boat and the crew?**

*Capt. Traub:* The potential SSGN deployment load out of 154 TOMAHAWK cruise missiles again adds an additional layer of capability and difficulty. During my previous tour on *Tucson*, our max salvo size was 16 missiles and we could only do that once and then the max salvo size was reduced to four missiles. SSGN brings a much larger salvo size and that salvo size can be launched multiple times. The planning of TOMAHAWK missions on SSGN requires a larger number of skilled operators and is much more time intensive for the weapons officer and commanding officer than on a SSN. On the

SSGN, I spend more time with strike training and proficiency maintenance than I did while in command of a SSN.

**What has been your biggest challenge as a CO of an SSGN thus far?**

*Capt. Traub:* Actually, there have been two big challenges. The first is maintaining the crew at a high level of proficiency in many more mission areas than a typical SSN or SSBN has while only being on the ship for half of the time. The second has been that this is the first time for many operations we have conducted. For example, during our last underway we conducted the first TOMAHAWK missile launch from an SSGN, the first minefield penetration exercise from an SSGN and the first shallow operations on an SSGN. There are very few lessons learned or manuals we can rely upon to conduct these first time operations. The crews on all four of the SSGNs are doing a great job of sharing our lessons learned, but each one of us is currently conducting many "firsts."

**Each of your crews will be headed out on deployment for the first time as an SSGN later this year; how do you prepare for that milestone and the responsibility you are faced with?**

*Capt. Hale:* With the upcoming deployment, every day of operation at sea is a precious training opportunity that we aggressively take advantage of by using every moment to integrate training on mission areas and operations. The Home Port Training Periods, the periods when we are off the boat, are used to aggressively hone all mission skills in the Tactical Training Facility simulators. The training is continuously challenging as the crew must be ready to deploy as soon as we arrive into theater for crew exchange. From a personal perspective, I must try to balance the tremendous responsibility the Navy has placed on my crew and I each day such that we keep what is important at the forefront and not get distracted by the minutia.

**How are these preparations different than preparing for previous deployments?**

*Capt. Hale:* With *Ohio* (GOLD) deploying for our first operational mission by relieving the BLUE crew in a forward deployed crew exchange in Guam, the

**There are very few lessons learned or manuals we can rely upon to conduct these first time operations. The crews on all four of the SSGNs are doing a great job of sharing our lessons learned, but each one of us is currently conducting many "firsts."**

crew must be fully prepared for all mission areas without working up for deployment at sea. That means we will be certified by our squadron after a rigorous Home Port Training Period (HPTP) in Tactical Training Facility simulators and a brief underway period once taking the ship in Guam. This is similar to what the SSBN crews have done for decades with the significant difference that we are being certified for several different mission areas, all new to the SSGN platform. While the strike and special operations mission areas have been executed since World War II by submarines, the scope and scale that SSGN brings to these missions changes the nature of preparation and certification. Further, with the minimal amount of at-sea training

prior to deployment, the crew must be ready to expeditiously ramp up for mission requirements. The two-crew concept allows sustained combat readiness for the SSGN while spreading out the individual operating tempo between both crews and allowing the HPTP for each crew to prepare for their next phase of deployment.

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

A Navy diver and SEAL from SEAL Delivery Team (SDV) 2 perform SDV operations with the nuclear-powered guided-missile submarine USS *Florida* (SSGN-728) for material certification.

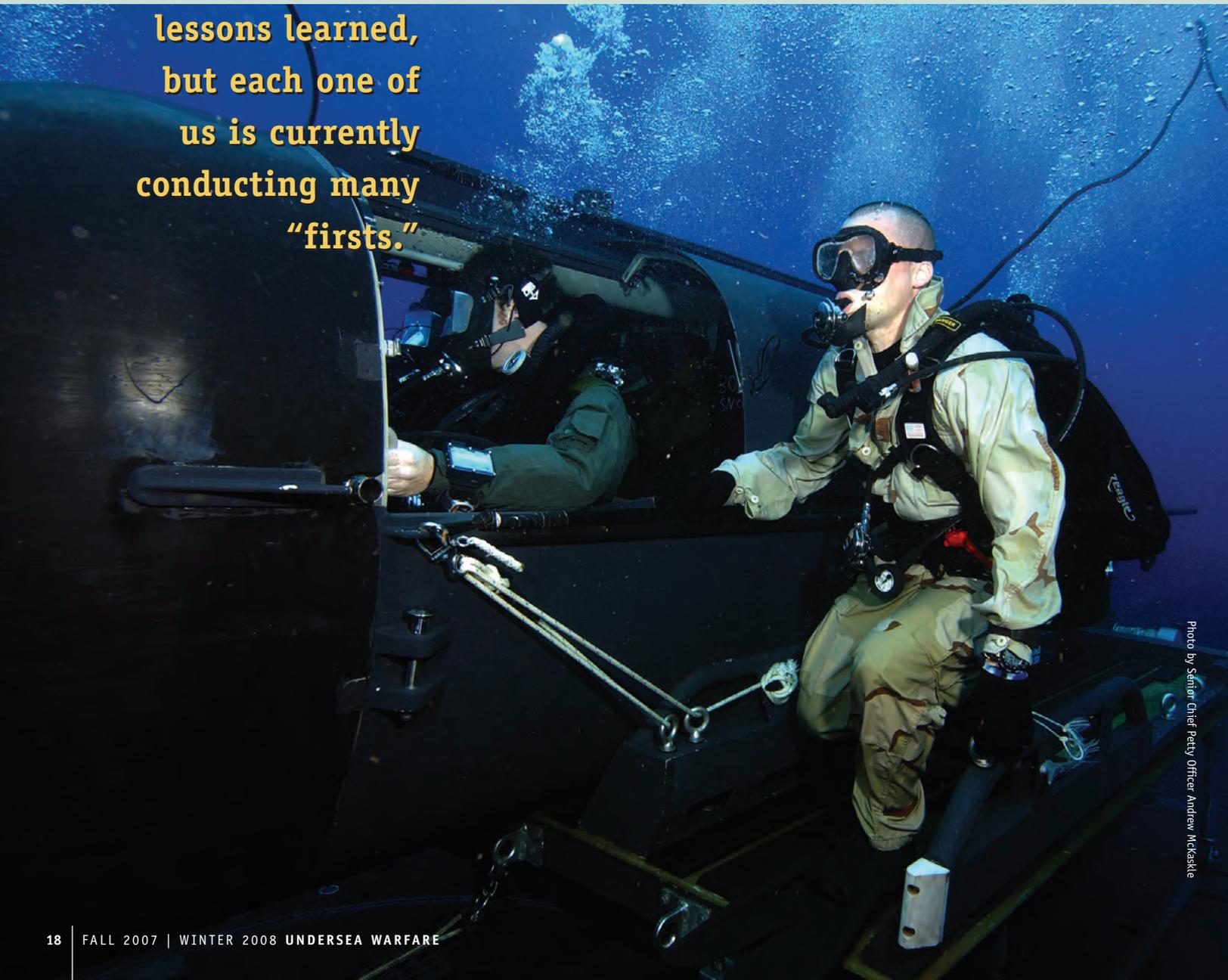


Photo by Senior Chief Petty Officer Andrew Mekskie

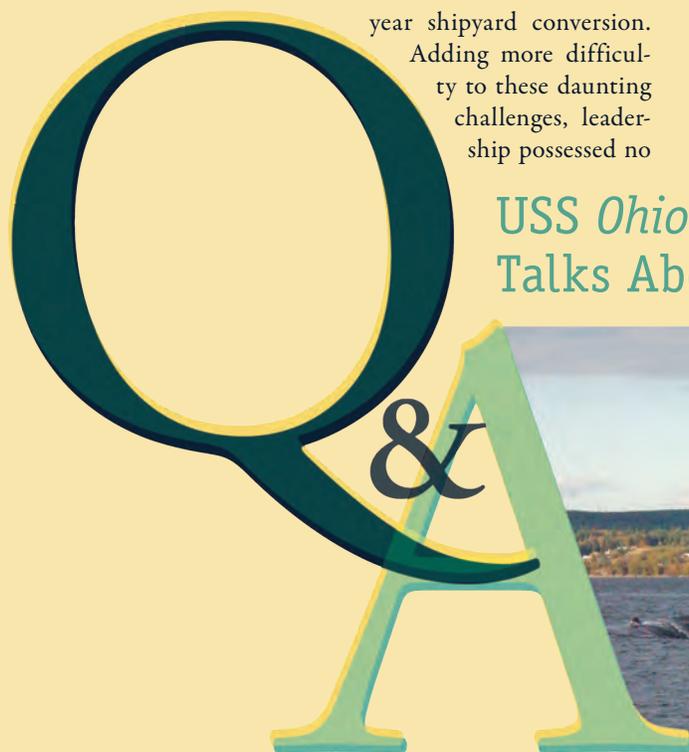
# The Challenges and Successes for the Crew of the New SSGN

The revolutionary capabilities of the SSGNs—particularly stemming from their increased payload and increased ability to support Special Operations Forces—have introduced a new menu of warfighting missions the crew must prepare and train for. While none of these warfighting missions are new to the Submarine Force, they are brand new for the SSGN and a crew that is fresh out of a four year shipyard conversion.

Adding more difficulty to these daunting challenges, leadership possessed no

platform where they could take their crew out to sea and shut the hatches. Due to the dual crew deployment schedule, the team had to hone and prove their skills in simulators on land rather than at sea prior to getting on a flight to begin their deployment.

However, in keeping with the successes the SSGN program accomplished in the overhaul process, they are meeting the training challenge head on with positive results. Lt. Cmdr. Alvin Ventura, Executive Officer of USS *Ohio* (SSGN-726)(GOLD), took time to talk to UNDERSEA WARFARE Magazine about the new SSGN challenges and successes before leaving for deployment in January.



## USS *Ohio* (GOLD) Executive Officer Talks About the New Mission Platform



Photo by Master Chief Petty Officer Jerry McLain

*Ohio*-class guided-missile submarine USS *Ohio* (SSGN-726) cruises toward its homeport in the Hood Canal portion of the Puget Sound.

**The SSGN program is seen as a success story for its ability to deliver a new capability while maintaining fiscal and timeline goals. What did the crew do to foster such success?**

Well, from the aspect of the command team, we aggressively foster a climate of success through our use of guidance, principles and philosophy to support the mission, the ship and Sailors. Our goal is to ensure that all the personnel—from the supervisors to the junior sailors—embrace all these tenants so that we, as a team, can produce successful results the first time. For some of the major ships evolutions, particularly things that we have low proficiency in or evolutions with higher risk, we develop comprehensive plans along with

operational risk management processes to identify the critical points and develop risk mitigation strategies that include a combination of the trainers, classroom training, simulators, and evolution walk-thrus. This allows us to then provide the appropriate deckplate leadership for the success of all evolutions.

**Could you talk about the challenges you encountered while training the crew for certification in traditional submarine warfare areas on a virtually new platform?**

In the “always first” *Ohio* tradition, many of the ships systems and many of the mission areas, particularly the SOF and strike mission areas, are new to the SSGN

platform. Everything we do is basically for the first time and of course it was challenging to train the crew, especially with little sea time. But we have open training period, which is the time between the periods when the crew actually has the ship, where we use the trainers at the Trident Training Facility, Bangor—they have excellent trainers that simulate the systems we have on board—to train the crew as best we can so that the first time we have the boat, it is a simple walk-thru and we can operate the ship as need be.

**Was it more difficult for your sailors with SSN or SSBN experience to become proficient in SSGN mission areas?**

The sailors with the SSN experience definitely have had an easier time transitioning



Photo by Chief Petty Officer Dave Fliesen

This ship brings to the theater commander the ability to conduct sustained clandestine SOF operations with a huge tactical TOMAHAWK punch in support of the Global War on Terror with one single platform. The amount of payload—the amount of fire power—SSGNs bring to the theater is unmatched.

to the SSGN mission areas. The mission areas that SSGN picked up—strike and special operations forces—are not new to the SSN, it is just the amount and the payload the we bring on are. So I think the SSN sailors are definitely more familiar with the rigor and pace of the SSGN operations. They have the ability to adapt quickly, and have seen boats adapt quickly, to changing missions and operational focus.

#### **What was the most difficult training challenge in preparing your crew for the first SSGN deployment?**

With *Ohio* just completing a four year transformation and the majority of crew having only strategic deterrent patrol experience, the biggest challenge was ensuring the crew was ready to face the challenges of the new mission of the SSGN with little at sea preparation. Every event we've done is the first time, from the forward deployed submarine crew exchange to special operations forces and strike operations, they have all been firsts for the crew, the ship and the SSGN program. So just managing the risk and making sure everyone is up to the task has been a rewarding challenge for all of us here.

#### **What is the deployment cycle for SSGN?**

The deployment cycle for SSGN leverages the proven dual crew concept of SSBN by using the BLUE and GOLD crews to deliver 67 percent operational time for the joint forces commander. The SSGN deployment cycle is designed for the submarine to be deployed for

12 months with the crews conducting four deployed crew exchanges. The crews are exchanged every three months, allowing the submarine to maximize forward deployed sustainability while managing the crews' op-tempo. Between the 12 month deployment cycles there is a 100 day maintenance period back in the submarine's home port for any major repairs needed before commencing the next 12 month deployment.

#### **How did you prepare the crew and their families for dealing with the deployment rotation for SSGN?**

The chief-of-the-boat (COB), the CO, and I are all former SSN sailors. So, with the preparations we've done, we've basically used the template that SSNs use and prepared the crew in the same manner. The only difference is that during three of the four deployments, we are flown into theater via air transportation with the crew and the ship ready for deployment.

#### **Do sailors see the SSGN deployment rotation as an improvement over SSN or SSBN deployment/patrol cycles?**

The SSGN deployment rotation is built off the SSBN cycle. I think for the former SSN sailors it allows the crew to have two separate three month deployments in a year versus one continuous six month deployment. The time in between the home port training period allows the crew to take some time off, recharge, and learn from what they saw in the previous deployment and hone in their tactical skills and

lessons learned to be better prepared for the following deployment.

#### **What measures are in place to ensure that the off-crew will be able to step on board and demonstrate the proficiency required of a deployment certified crew even though they will not have been on board for months?**

The home port training period is specifically designed to maintain and improve crew proficiency while they are in their off-crew cycle. All the trainers and training scenarios here are designed to simulate as accurately as possible the equipment and the environment the crew is expected to encounter on deployment. The home port training period culminates with a weeklong evaluated training session called the Command Training Exercise (CTE) which evaluates the crews' readiness prior to flying out for forward deployed operations. The emphasis on the home port training period is to maintain the crew's edge prior to the forward deployed crew exchange and to minimize the crew work up time with the submarine once in theater. Once the crew relieves in theater, we have a short period to work up and certify in mission areas that can't be adequately certified in the trainers—such as dry dock shelter operations and lock out chamber operations—because they require having a diver team on board to support that. We can also verify the readiness in the home port training mission areas prior to commencing mission requirements. So the overall goal of the homeport training period is to maintain and improve the crews'



Photo by Chief Petty Officer Dave Fliesen

proficiency and readiness to maximize the time the submarine is available to the joint forces commander in theater for operational tasking.

**What does an SSGN bring to the Operational Commander that an SSN does not?**

The SSN can provide the same mission areas as the SSGN—with the strike and SOF—but the SSGN brings an impressive amount of payload and sustainability of special operations forces to the theater commander. The ship is capable of carrying 154 TOMAHAWK missiles, literally tons of SOF munitions and equipment, and a full complement of up to 66 SOF personnel. Two missile tubes have been converted into lock out chambers to support lock in and lock out chamber operations, dry dock shelter with field delivery operations, and Advanced Seal Delivery System (ASDS) operations. Additionally, *Ohio* is equipped with a Small Combatant Joint Command Center (SCJC2) with robust communications connectivity allowing an embarked Joint Special Operations Forces Task Force (JSOFTF) commander to control and lead operations to bring the submarine to the front edge of joint operations.

**What capability would submarine sailors not familiar with SSGN find most revolutionary compared to their SSN / SSBN experience?**

The biggest one is that the SSGN mission is not just a concept. I think people think that it is still just a concept in development, when in reality, each SSGN sailor must be

immediately ready to take their submarine into the fight. This ship brings to the theater commander the ability to conduct sustained clandestine SOF operations with a huge tactical TOMAHAWK punch in support of the Global War on Terror with one single platform. The amount of payload—the amount of fire power—SSGNs bring to the

theater is unmatched.

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

*(Opposite)* *Ohio* prepares for a personnel transfer in Puget Sound, Wa. *(Above)* Media were transported to *Ohio* to see the new capabilities that the submarine now brings to the joint warfighter. *(Below)* The guided-missile submarine *Ohio* is pier-side in Busan during *Ohio's* first foreign port visit since its commissioning in 1981.



Photo by Petty Officer 2nd Class Barry Hirayama



## From USS *Barb* to the Ohio-class— The Use of Missiles on Submarines

With a flair for the dramatic, on Nov. 1, 2007 Rear Adm. William Hilarides, Program Executive Officer for Submarines, officially certified the first of four newly redesigned guided missile submarines (SSGNs), USS *Ohio* (SSGN-726), as having reached Initial Operational Capability (IOC), signing the document in the middle of a presentation to the Naval Submarine League in McLean, Va. *Ohio* is now “ready to assume its intended role in the Fleet” (according to the SSGN program office’s IOC definition), but what is that role exactly? And why did the Navy look to its four oldest missile submarines as the platforms for that role?

Briefly addressing the latter question will allow us to then tackle the former. The threat environment that the *Ohio*-class ballistic missile submarines (SSBNs) were originally designed to address has changed in the ensuing years. In 1994, the Defense Department’s Nuclear Posture Review determined that only 14 of the Navy’s 18 SSBNs were needed to fulfill their nuclear deterrent role. As the Navy’s IOC press release puts it:

*Rather than decommission the four oldest submarines, the Navy decid-*

*ed that it had been presented with a unique opportunity to gain four stealthy special operations and strike platforms at a fraction of the cost of any new platform with similar capabilities. The modifications made to Ohio and her sister ships, USS Michigan (SSGN-727), USS Florida (SSGN-728), and USS Georgia (SSGN-729), include improved intelligence, search, and reconnaissance (ISR) capabilities; improved communications via the Common Submarine Room; the ability to deploy with up to 154 TOMAHAWK cruise missiles; and special operations modifications including the ability to host a Dry Deck Shelter (DDS) and/or an Advanced SEAL Delivery System (ASDS) and two large lock-in/lock-out chambers to facilitate insertion and extraction of Navy SEALs and other special operators.*

The Navy, then, intends to use its rebuilt submarines in a variety of roles, two of the most important being guided missile strikes and special operations missions. Neither of these may universally be thought of as a traditionally “submarine” role, but

Navy planners did not simply dream up such missions as something the four old boats could do once it appeared they were destined for decommissioning. In fact, not only are the new *Virginia*-class submarines designed to accommodate such missions (albeit on a smaller platform), but many of the older *Los Angeles*-class submarines were converted to carry a few TOMAHAWK missiles and transport Navy SEALs. But why stop there? Looking even further back in the U.S. Navy’s history, one quickly discovers that submarine sailors have carried out missions involving the firing of guided missiles and the insertion of Special Operations Forces (SOF) since the days of World War II, when necessity was often the mother of tactical invention.

The first submariner to launch missiles from a submarine in combat was the noted tactical pioneer and World War II hero Rear Adm. Eugene Fluckey. Then-Cmdr. Fluckey, frustrated with the inherent limitations and design flaws of torpedoes, mounted a rocket launcher on the submarine he commanded, USS *Barb* (SS-220). After sneaking in to the harbor of Shari, Japan, on June 22, 1945, Fluckey launched twelve “ballistic missiles” (as he called them) into the mining and lumber town,

setting it ablaze.

With the concept of submarine-launched missiles now proven in rather spectacular fashion, the Navy decided to study the idea further by testing and modifying captured German V-1 “Buzz Bombs” for potential use against Japan in 1945-46. The war ended before the modified V-1s could be employed thus, but testing continued and an Americanized version of the buzz bomb, known as the “Loon,” quickly entered production. It contained a preset guidance device that could target the missile and its 2,200 pound high-explosive warhead onto a fixed target. The Navy modified the fleet submarines USS *Cusk* (SS-348) and USS *Carbonero* (SS-337) with ramps to launch the Loon, and altered their air-search radar so that they could send codes to the Loons, commanding them to go faster, slower, higher, lower, left, right, or dive. During a test on Feb. 12, 1947, *Cusk* became the first submarine to launch a truly guided missile.

Loon was seen merely as a first step in the Navy’s guided missile efforts, especially in light of its poor range (50 nautical miles under guidance, extendable to 135 nautical miles when using a second submarine as a relay). The Navy also wished to arm a guided missile with a nuclear warhead, thereby developing a credible at-sea deterrent capability. The Navy contracted with two companies to develop Loon’s replacement, to be capable of carrying a 3,000 pound warhead 500 nautical miles. Chance-Vought’s Regulus missile won out and became the U.S.’s first sea-based nuclear deterrent. Regulus was a 42-foot long unmanned turbojet aircraft, weighed seven tons, and was capable of speeds up to Mach 0.91 (550 knots). It could carry either a 40-50 kiloton nuclear warhead or a 1-2 megaton thermonuclear warhead.

Regulus was first deployed, on a heavy cruiser, in 1955. Other cruisers and even aircraft carriers were equipped to carry the missile, but the submarine was destined to be the true Regulus workhorse. The World War II fleet submarine USS *Tunny* (SS-282) was brought out of mothballs and recommissioned as SSG-282. Her main

modification was the addition of a pressurized hangar fifteen feet in diameter, just aft of the sail, with a ramp that could be extended further aft. The hangar could hold two Regulus missiles. *Tunny* launched the first Regulus missile in July 1953, and continued to serve for the next several years as a Regulus test platform. *Tunny*’s sister fleet boat USS *Barbero* (SS-317) was also restored to the fleet as an SSG and given the same modifications.

By mid-1956, it had become official Navy policy to keep one SSG in each ocean, which required more SSGs. In 1958 USS *Grayback* (SSG-574) and USS

*Growler* (SSG-577) were built specifically to carry Regulus (four per boat), and all four SSGs (along with three of the four Regulus-equipped cruisers) were moved to the Pacific to counter the growing Soviet threat. These four submarines became Submarine Squadron ONE, and were tasked with fulfilling the Navy’s new policy that four Regulus missiles be stationed off the Soviet coast at all times (either *Grayback* or *Growler*, or both of the modified fleet boats). *Tunny* commenced the first of these deterrent patrols in October 1959, and *Grayback* and *Growler* each followed in 1960.



(Opposite) USS *Grayback* (SSG-574) entering San Diego Harbor.

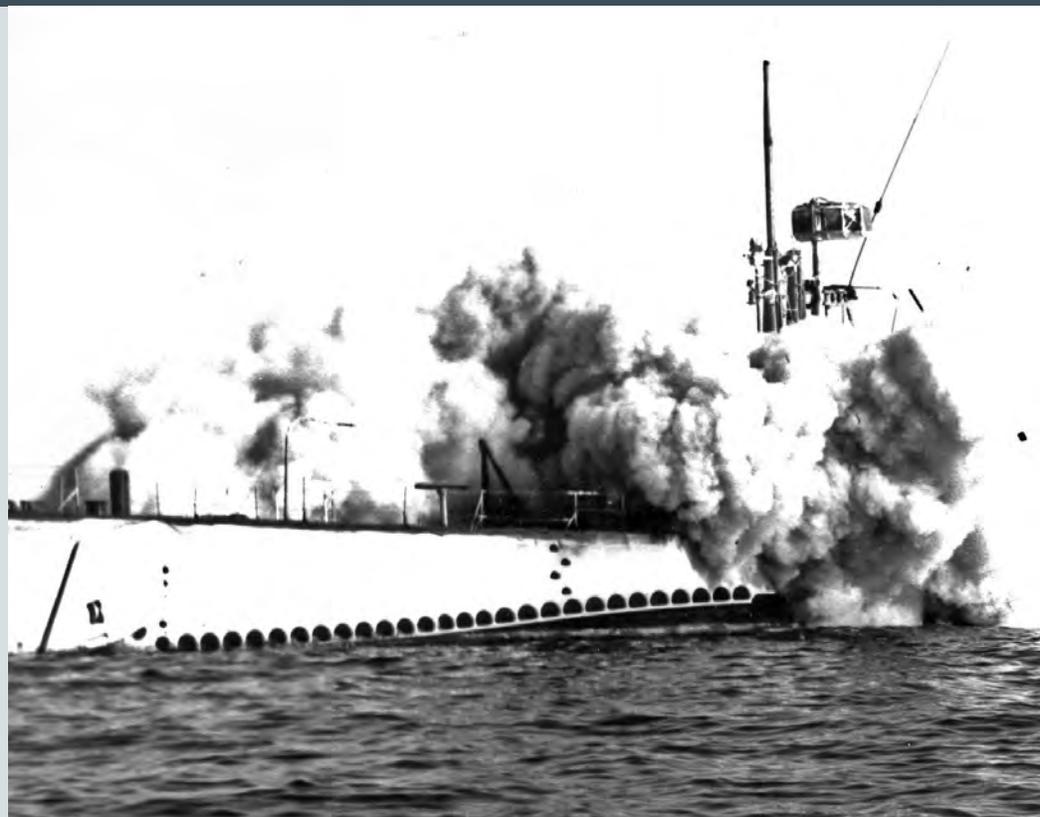
(Right, top) A Regulus I missile is loaded on USS *Tunny* (SSG-282).

(Right) A Regulus II Guided Missile aboard USS *Grayback* (SSG-574).

The first nuclear-powered submarine to carry Regulus, and therefore the first SSGN, was USS *Halibut* (SSGN-587), commissioned in 1960. By 1961, the Regulus-equipped cruiser patrols had ceased, and the would-be Regulus II, although successfully tested, succumbed to budgetary restraints. Soon thereafter, the dual technologies of compact nuclear warheads and large solid-fuel rocket motors brought an end to Regulus and SSGNs, and ushered in the era of the submarine-launched ballistic missile (SLBM) and the new classes of submarines that carried them, the SSBNs.

With the demise of Regulus, the U.S. Navy took a decades-long hiatus from building guided missile submarines and the early SSGNs are now all but forgotten. Conversely, the submarine fleet's involvement with special operations forces has endured, but the nature of such missions means they are rarely revealed or acknowledged. In point of fact, *Virginia* was the first submarine designed with the intent of embarking special operations forces. Nevertheless, such missions took place, with some of the earliest taking place in the Pacific Theater during World War II.

In August 1942, the Navy planned a diversionary attack on Makin Atoll in the Gilbert Islands to draw Japanese troops away from the first major American offensive in the Pacific that was taking place at Guadalcanal and Tulagi. Companies A and B of the Marine Corps' 2nd Raider Battalion, led by Lt. Col. Evans F. Carlson, were selected to attempt a clandestine assault on Makin. The only way to get



(Above) A Loon test vehicle launches from USS *Carbonero* (SS-337) during a series for 1949 test flights from the submarine. USS *Cusk* (SSG-348) was eventually fitted with a hanger. (Below) Bow view of USS *Growler* (SSG-577).

the famed "Carson's Raiders" to the island without alerting the Japanese would be by two large 1920s-era submarine "cruisers." USS *Argonaut* (SS-166) and USS *Nautilus* (SS-168) displaced 4,000 tons submerged and had been converted to troop carriers for this mission by having all torpedoes removed except those in the tubes, and having tiered wooden bunks installed for the extra passengers.

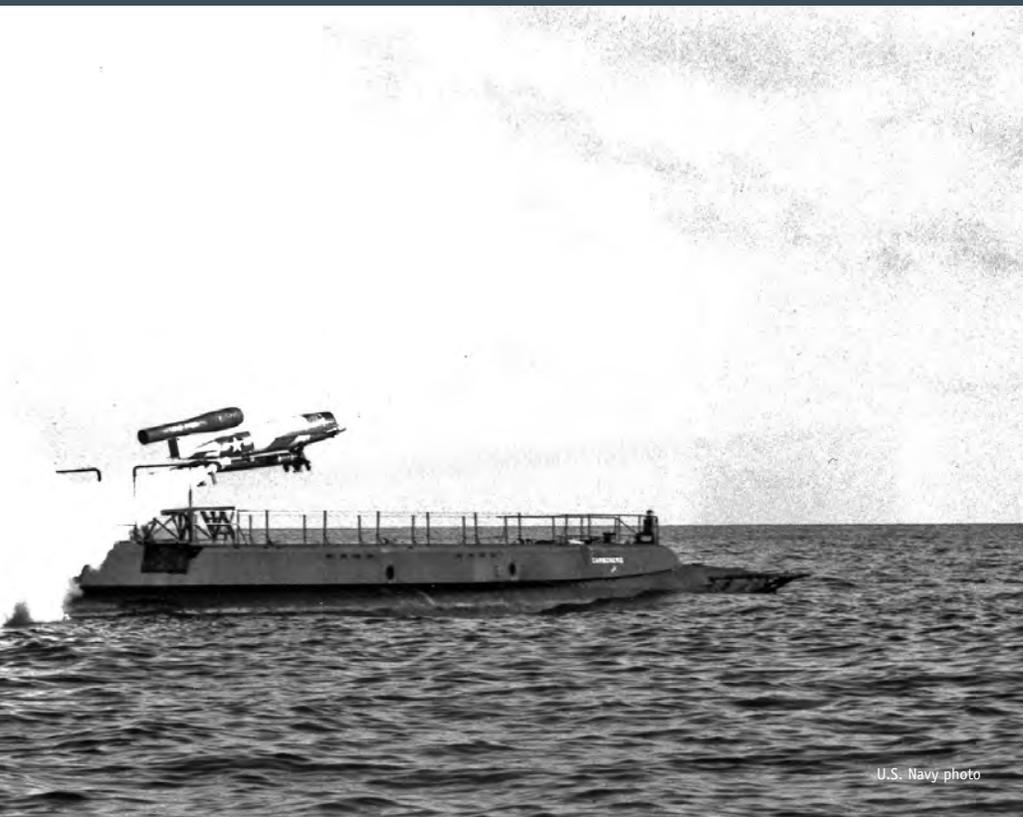
The submarines were large, but not large

enough for the men aboard. No less than 211 of Carlson's Raiders were split between the two submarines, in addition to the boats' own crews. Conditions on the eight-day trek from Pearl Harbor to Makin were miserable. The Marines were essentially confined to their racks—except for brief exercise breaks on deck—to stay out of the crews' way, and the stifling heat and smell combined with the lack of ventilation to produce mass outbreaks of seasickness.

At 3:00 a.m. on Aug. 17, the Marines began disembarking the submarines for their assault on Makin. Plans called for the Raiders to split up in two groups and land separately on the beach, but, despite repeated practice in Hawaii, the sea swells, the surf noise, and the need to transfer some troops from *Nautilus* to *Argonaut* landing craft all conspired to force Carlson to consolidate his landing plan to one location. Despite the swamping of many of the rubber landing crafts' engines, all 19 craft miraculously landed, with only one boat missing the change in orders and landing a mile away at its originally assigned location. Luckily for the assault itself, this group eventually found itself behind the Japanese line when fighting broke out, and was able to inflict significant damage.

While fighting raged on the island,





U.S. Navy photo

Carlson attempted to put the submarines themselves to use as sea-based artillery. *Argonaut* never received the message, but *Nautilus* successfully bombarded Japanese land positions and even sank a small transport and a patrol boat that shore-based Marines spotted. Later, both boats were forced to submerge when Japanese reconnaissance planes arrived. At 7:00 p.m., Carlson began his planned withdrawal from the island, but over the course of the day the surf had picked up, and only 100 men in seven boats made it back to the submarines. The remainder of the men faced only a brief skirmish that night, and in the morning four more landing craft were able to return to the submarines. At this point, *Nautilus* disembarked a boat with five Marine volunteers to return to shore with a line to pull the remaining boats out to the submarines, but a Japanese aircraft chose that exact instant to attack, forcing both submarines below and strafing the rescue boat. The boat and its volunteers were never seen again. The decision was made to postpone further rescue attempts until nightfall, but the Marines soon discovered that the surviving Japanese soldiers had evacuated the island.

The Marines spent the day gathering intelligence and destroying equipment at the Japanese headquarters, and then, under cover of darkness, four rubber landing craft were tied to a native boat in the lagoon

and the men sailed out to the submarines. *Nautilus* and *Argonaut* departed Makin Atoll short thirty Marines, all of whom were assumed to have been killed in action. Tragically, nine of those left behind were in fact alive, were captured by the Japanese, and were ceremonially beheaded on Oct. 16. The Japanese officer responsible for that decision, Vice Adm. Kose Abe, was convicted of war crimes after the war and hanged at Guam. *Nautilus* went on to

Submarines anchored off Thimble Shoals Cannel for the International Naval Review. USS *Barbero* (SS-317) sits in the foreground with a *Regulus I* onboard.



U.S. Navy photo

conduct several more missions similar to the SOF insertion at Makin Atoll, but in another demonstration of the horrors of war, *Argonaut* succumbed to depth charging with all hands onboard on Jan. 10, 1943.

Although the submarine troop insertion and extraction at Makin Atoll was not flawless, *Nautilus* and *Argonaut* had proven that such operations could be successful. As 1942 gave way to 1943, the Navy was turning its attention to the Japanese takeover of the Philippine Islands. Gen. Douglas MacArthur, in charge of the defense of the Philippines, was forced to draw back to Australia, and he began planning ways to bolster the Filipinos' own guerilla defense of their islands. It was clear to MacArthur that, while the Filipinos had the will to fight, they did not have the tactical leadership or supplies to be successful.

Inspired by his memory of American submarines successfully slipping away from their anchorage at Corregidor as the Japanese invaded, MacArthur decided that those boats could also sneak back to the Philippines. His staff informed him that the standard fleet-type boats could carry between five and 10 tons of supplies, plus six passengers, when leaving Australia on regular combat patrols. In view of the sizable requests MacArthur was receiving from his guerrillas, he pushed for a better alternative. His staff suggested he ask for the services of the Navy's two much larger



U.S. Navy photo

USS Growler (SSG-577)

transport-type submarines, *USS Narwhal* (SS-167) and *Nautilus*. To MacArthur's dismay, he learned that those submarines were so old and in such disrepair that *Narwhal* would not be available until November 1943, and *Nautilus* needed a complete overhaul after her Makin Atoll mission before she could put back to sea. Instead, Adm. Chester Nimitz suggested that, with a modified wartime weapon load-out, the fleet-type submarines could carry up to 34 tons of cargo and 25 passengers, and would be better suited to the narrow passages in and around the islands anyway. MacArthur agreed, and a steady, top secret parade of submarines began operating between Australia and the Philippines.

The first such mission was carried out by *USS Gudgeon* (SS-211) under the command of Lt. Cmdr. William Stovall, Jr. Seven Filipino soldiers and intelligence officers, disguised as mess boys and led by Maj. Jesus Villamor, U.S. Army, boarded *Gudgeon*

in Fremantle, Australia, on the night of Dec. 27, 1942. Despite a change in landing location en route, and initial poor landing conditions once on location, Villamor was eventually successful in landing his men and supplies on the island of Negros on the night of Jan. 14, 1943. The last submarine supply mission to the Philippines, performed by *USS Stingray* (SS-186), took place on New Year's Day, 1945. In all, 19 submarines participated in a total of 41 top secret missions to the Philippine Islands, with the transport submarines *Nautilus* and *Narwhal* conducting six and nine missions, respectively. The whole operation ultimately delivered 331 people, evacuated 472, and delivered some 1,325 tons of supplies to the Filipino guerillas. These missions would prove vital to the eventual liberation of the Philippines.

As is now apparent, the Navy's new *Ohio*-class SSGNs have been designed to perform a variety of missions that the submarine

## Regulus from Surface Ships by Norman Polmar

In the mid-1950s, zero-length launchers for the Regulus I surface-to-surface missile were provided to four heavy cruisers and to six aircraft carriers with each ship carrying several missiles. This would provide cruisers with a nuclear strike capability and increase the nuclear strike capabilities of carriers.

The cruisers could accommodate three Regulus I or two Regulus II missiles; additional missiles could be carried if pre-loading "marriage" of the warhead and missile were accepted (as was done in Regulus-equipped submarines). The Regulus missiles could be stowed below decks in the large stern hangar of the cruisers, originally provided for floatplanes for gunnery spotting and scouting. The first Regulus launch from a cruiser occurred on February 15, 1955, from the cruiser *USS Los Angeles* (CA-135).

The Regulus could be launched with preset guidance to guide the missile to specific coordinates, or under the "real-time" the command of surface ships or submerged submarines using the "Trounce" system. In the first joint cruiser-submarine Regulus operation, on November 19, 1957, the cruiser *USS Helena* (CA-75) launched a Regulus missile and guided it for 112 nautical miles; the fleet submarine *USS Cusk* (SS-348) then assumed guidance control for 70 nautical miles (130 kilometers); the guidance was then given over to the submarine *USS Carbonero* (SS-337), which guided the missile for the last 90 nautical miles to its target. The missile landed about 150 yards of the target point. The CEP (Circular Error Probable) for the Regulus I was reported to be 300 yards in a 1957 Navy evaluation.

Beyond the several heavy cruisers fitted to carry the Regulus I missile, several new construction cruisers and older ships being converted to surface-to-air missile cruisers were planned for Regulus II instal-

lation. These included the nuclear-propelled cruiser *USS Long Beach* (CGN-9). Cancellation of the Regulus II ended that plan.

In the 1950s, 12 attack carriers were planned to carry the nuclear-armed Regulus missile: Three of the super carriers of the *USS Forrestal* (CVA-59)-class, the three large carriers of the *USS Midway* (CVA-41)-class, and six smaller *USS Essex* (CVA-9)-class ships. In the end, only the six *Essex*-class ships were actually fitted with Regulus although the larger *USS Franklin D. Roosevelt* (CVA-42) and *USS Saratoga* (CVA-60) also launched Regulus missiles. The missiles were later removed from the carriers as the A-3D Skywarrior and A-4D Skyhawk attack aircraft—both developed specifically for the nuclear strike role—became available in large numbers.

There were advocates of a much larger Regulus program. For example, George Fielding Eliot, then dean of American military correspondents, in 1958 published a small volume entitled *Victory Without War 1958-1961*. The book, published by the semi-official U.S. Naval Institute, advocated the procurement of massive numbers of Regulus II missiles, whose range he wrote could be extended to 2,000 miles, and placed aboard aircraft carriers:

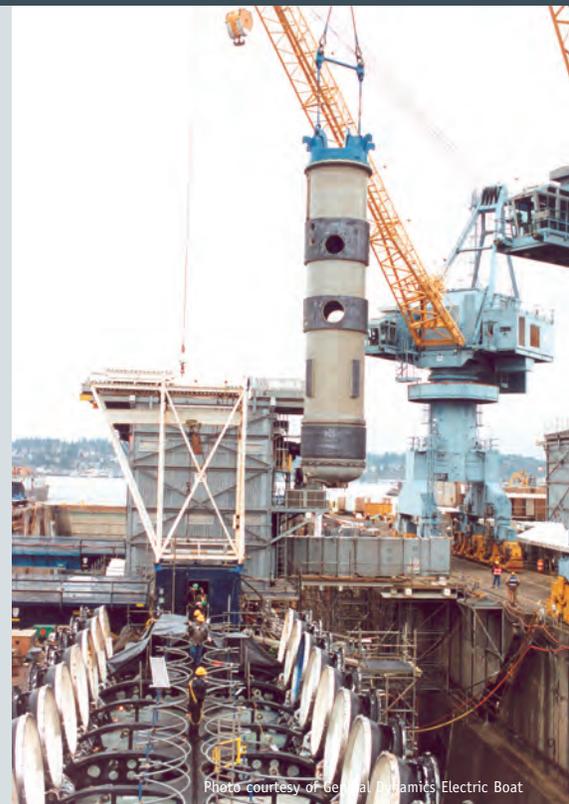
"Let us imagine 20 of these missiles grouped on a *Forrestal*-class carrier, ready to be fired from her four steam catapults—five missiles to each catapult. Each group of five missiles is programmed for a different target. The rate of fire can be as fast as one missile from each catapult every two minutes.

The logistics of the Regulus system is not complicated. We

force has, in fact, conducted quite successfully over the course of its history. The difference now, of course, is the simple fact that the new SSGNs are a new class of submarine, designed as a whole to handle these very disparate missions on a much grander scale than ever before. One SSGN alone has the potential to deploy with the same guided missile firepower as an entire Battle Group, while at the same time deploying up to 66 Special Operations Forces and serving as their command and control platform for the entire mission—including directing other assets such as unmanned undersea vehicles (UUVs), unmanned aerial vehicles (UAVs), and other friendly warships and operators. With the SSGNs, the Submarine Force has looked back over its history and created not only a single platform from many variegated missions, but because all those missions are encompassed in one platform, that platform is greater than the sum of its parts. And best of all, four submarines

with twenty years of service life left a-piece now have a new lease on life.

Mr. Holian is an analyst with Alion Science and Technology in Washington, D.C. and a contributing editor for UNDERSEA WARFARE Magazine.



A multiple all-up round canister (MAC) is loaded on USS *Ohio* (SSGN-726).

can, during 1958, take three older carriers from the reserve fleet (the *Boxer*, *Franklin*, and *Bunker Hill*) and fit them as missile transports. These ships have the speed, fuel capacity, and sea-keeping qualities to accompany task forces in all weather conditions. Each missile transport could provide stowage for as many as 400 Regulus II missiles. Each [carrier] could operate from her flight deck a number of helicopters which could be used to deliver the missiles to the [attack] carriers as the tactical situation might require.

A further growth factor of sea-based striking power might be gained by fitting the missile transports themselves with one or two steam catapults apiece, which would give them an attack capability of their own.”

Cancellation of the Regulus II missile—primarily to help fund the Polaris program—led to removal of the Regulus I missiles from cruisers and carriers as well as submarines. There was no nuclear-capable weapon provided to the former ships.

*Editor’s note:* This article is based on Mr. Polmar’s recently published book *Aircraft Carriers: A History of Carrier Aviation and Its Influence on World Events—Volume II, 1946—2006* (Potomac Books, 2008). Also see David K. Stumpf, *Regulus: The Forgotten Weapon* (Turner Publishing, 1996).

Mr. Polmar is a noted naval analyst and author based in Washington, D.C.



U.S. Navy photo

U.S. Navy photo

(Top) Launching Regulus from USS *Princeton* (CVS-37) at sea.  
(Bottom) Regulus I shot from from USS *Hancock* (CVA-19).





## USS *Ohio* Arrives in Guam for Crew Swap

by Seaman Jacob Sippel, USS *Frank Cable* (AS-40) Public Affairs



Photo by Seaman Apprentice Luciano Marano

(Above) USS *Ohio* (SSGN-726) arrives at Naval Station Pearl Harbor to take on supplies before continuing on her maiden deployment to the Western Pacific following its recent guided-missile overhaul. (Below) Petty Officer 1st Class Daniel Brien rigs the dry deck shelter aboard the guided-missile submarine *Ohio* for a dive.

USS *Ohio* (SSGN-726)(BLUE) arrived in Guam Jan. 10, for a regularly scheduled port visit.

Guam is the site for the first crew swap between the GOLD crew and the BLUE crew. Each crew consists of 165 Sailors. *Ohio* is scheduled to have three crew swaps and then return to Bangor, Wash., *Ohio*'s homeport.

*Ohio* is completing the first underway period of a one year deployment to 7th Fleet. The deployment of *Ohio* to the Western Pacific emphasizes the continued U.S. dedication to regional stability and to U.S. alliances.

"We are really excited to be in Guam," said Command Master Chief (SS) Thomas A. Price, chief of the boat.

*Ohio* is the first in its class to convert from a ballistic missile submarine (SSBN) to a guided-missile submarine (SSGN). The conversion transforms the four SSBN submarines, *Ohio*, USS *Michigan* (SSGN-727), USS *Florida* (SSGN-728), and USS *Georgia* (SSGN-729) into conventional land attack and special operations force platforms.

Each of these submarines are capable of carrying up to 154 TOMAHAWK land attack missiles, carry up to 66 special operations force personnel, a swimmer lock out shelter and an Advanced SEAL Delivery System.

"We know that we are on the first of its SSGN kind and we know that people are interested in what we can do," said Petty Officer 2nd Class (SS) Nate Fulkerson. "The crew knows we have to be ready at any time, and that's why we train a lot."

Ens. Jason Buonvino agrees.

"We do train a lot on the sub. We had the opportunity to get some quality training in while we were out at sea," said Buonvino. "The crew responded well to this underway. They adapted and met all the goals that we have set out."

While out at sea, *Ohio* took the opportunity to certify divers and train in shallow water ops.

"As big as the sub is, we still can maneuver in shallow waters," said Buonvino. "That's impressive. It's just another way *Ohio* can show versatility."

The GOLD crew is scheduled to relieve the BLUE crew in a week. After the swap, though, the BLUE crew will stay for roughly three weeks and help repair the submarine before they can fly home.

"It has been a very good underway, but I am looking forward to flying home," said Buonvino. "This has been very challenging for the entire crew, I am proud of the way the Sailors responded."



Photo by Petty Officer 2nd Class Barry R. Hirayama



## Change of Command

COMSUBGRU NINE  
Rear Adm. Timothy Giardina relieved  
Rear Adm. Frank Drennan

Naval Submarine Support Command  
Cmdr. William Stevenson relieved  
Cmdr. Michael Pietkiewicz

USS Augusta (SSN-710)  
Cmdr. Chad Brown relieved  
Cmdr. Rodney Hutton

USS Georgia (SSGN-729)  
Capt. Brian McLvaine relieved  
Cmdr. James Childs

USS Hampton (SSN-767)  
Cmdr. William Houston relieved  
Cmdr. Michael Portland

USS Maine (SSBN-741)(G)  
Cmdr. William Breitfelder relieved  
Cmdr. George Norman

## Qualified for Command

Lt. Cmdr. Christopher Bohner  
COMSUBRON TWO

Lt. Cmdr. Patrick Clark  
COMSUBRON SIX

Lt. Cmdr. Michael Eberlein  
USS Maine (SSBN-741)(B)

Lt. Cmdr. Kenneth Franklin  
USS Maine (SSBN-741)(B)

Lt. Cmdr. Brian Hogan  
COMSUBRON THREE

Lt. Cmdr. Brett Levander  
USS Columbia (SSN-771)

Lt. Cmdr. Gene Severtson  
COMSUBRON TWO

Lt. John Ethridge  
COMSUBRON THREE

Lt. Scot Hughes  
COMSUBRON THREE

Lt. Kelly Laing  
USS Pasadena (SSN-752)

## Qualified Nuclear Engineer Officer

Lt. Allen Agor  
USS Chicago (SSN-721)

Lt. Andrew Cross  
USS Buffalo (SSN-715)

Lt. Benjamin Drew  
USS Kentucky (SSBN-737)(G)

Lt. Michael Horr  
USS Minneapolis-St. Paul (SSN-708)

Lt. Juan Gomez  
USS Key West (SSN-722)

Lt. Chunhing Lo  
USS Los Angeles (SSN-688)

Lt. Michael Lyle  
USS Houston (SSN-713)

Lt. Alan Mardegian  
USS Greenville (SSN-772)

Lt. Jordan McCaleb  
USS Maine (SSBN-741)(G)

Lt. Christopher Meilstrup  
USS Asheville (SSN-758)

Lt. Eric Ritterman  
USS Maine (SSBN-741)(B)

Lt. Michael Roberts  
USS Maine (SSBN-741)(B)

Lt. John Smith  
USS Pennsylvania (SSBN-735)(B)

Lt. Justin Trenta  
USS Pennsylvania (SSBN-735)(B)

Lt. David You  
USS San Francisco (SSN-711)

Lt. j.g. Christian Beisel  
USS Nevada (SSBN-733)(G)

Lt. j.g. Jesse Birbach  
USS Kentucky (SSGN-737)(B)

Lt. j.g. Michael Bocchino  
USS Olympia (SSN-717)

Lt. j.g. Jeffery Bouton  
USS Pennsylvania (SSBN-735)(B)

Lt. j.g. Joseph Christensen  
USS Nevada (SSBN-733)(G)

Lt. j.g. Robert Cizek  
USS Louisiana (SSBN-743)(B)

Lt. j.g. Brandon Cobb  
USS Alabama (SSBN-731)

Lt. j.g. Aaron Cook  
USS San Francisco (SSN-711)

Lt. j.g. James Connelly  
USS Houston (SSN-713)

Lt. j.g. Drew Dewalt  
USS Cheyenne (SSN-773)

Lt. j.g. John Dietrich  
USS Tuscon (SSN-770)

Lt. j.g. Andrew Domina  
USS La Jolla (SSN-701)

Lt. j.g. Justin Dragon  
USS La Jolla (SSN-701)

Lt. j.g. Steven Dykstra  
USS Kentucky (SSBN-737)(B)

Lt. j.g. Stephen Elliott  
USS Henry M. Jackson (SSBN-723)(B)

Lt. j.g. Joseph Ferrari  
USS Ohio (SSGN-726)(G)

Lt. j.g. Kevin Foes  
USS Nebraska (SSBN-739)(G)

Lt. j.g. Charles Frantz  
USS Louisville (SSN-724)

Lt. j.g. William Fry  
USS Santa Fe (SSN-763)

Lt. j.g. Jacob Galbreath  
USS City of Corpus Christi (SSN-705)

Lt. j.g. Travis Gentz  
USS Tucson (SSN-770)

Lt. j.g. Joseph Hardy  
USS Louisiana (SSBN-735)(B)

Lt. j.g. Andrew Helgerson  
USS Pennsylvania (SSBN-735)(G)

Lt. j.g. Clayton Hughey  
USS Kentucky (SSBN-737)(G)

Lt. j.g. Charles Hurd  
USS Greenville (SSN-772)

Lt. j.g. Jon Kalscheuer  
USS Columbia (SSN-771)

Lt. j.g. Joseph Kathol  
USS Maine (SSBN-741)(B)

Lt. j.g. Shawn Kenady  
USS Kentucky (SSBN-737)(G)

Lt. j.g. Michael Kos  
USS Columbia (SSN-771)

Lt. j.g. William LaFleur  
USS La Jolla (SSN-701)

Lt. j.g. Randall Leslie  
USS Buffalo (SSN-715)

Lt. j.g. Jason Looper  
USS Kentucky (SSBN-737)(B)

Lt. j.g. Jesse Lorenzen  
USS Maine (SSBN-741)(G)

Lt. j.g. William Monk  
USS Kentucky (SSBN-737)(B)

Lt. j.g. Nicholas Moody  
USS Pasadena (SSN-752)

Lt. j.g. Jeffery Morrison  
USS Helena (SSN-725)

Lt. j.g. Shawn Newman  
USS Michigan (SSGN-727)(G)

Lt. j.g. Curtis Nieboer  
USS Maine (SSBN-741)(B)

Lt. j.g. Michael Nolan  
USS Honolulu (SSN-718)

Lt. j.g. Ryan Osgood  
USS Olympia (SSN-717)

Lt. j.g. Justin Powers-Luhm  
USS Charlotte (SSN-766)

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

## 66th Anniversary of Pearl Harbor Attacks

Pearl Harbor survivor Chief Petty Officer Edward Gaulrapp (Ret.) uses an aerial floor photo of Pearl Harbor, located at the Pacific Aviation Museum on Ford Island, to pinpoint his location during the Dec. 7, 1941 attack. Assigned to the Pearl Harbor-based *Perch*-class submarine USS *Pompano* (SS-181), Gaulrapp was in his barracks when the attacks began. He and several other Pearl Harbor survivors are in the Pearl Harbor area to observe the 66th anniversary of the attack.



Photo by Petty Officer 2nd Class Michael Lantron

Lt. j.g. Douglas Rosaaen  
USS Columbus (SSN-762)

Lt. j.g. Christopher Ruelle  
USS Pasadena (SSN-752)

Lt. j.g. Adam Schmiedeknecht  
USS Bremerton (SSN-698)

Lt. j.g. Douglas Smith  
USS Key West (SSN-722)

Lt. j.g. William Smith  
USS Greenville (SSN-772)

Lt. j.g. Steven Stefaniak  
USS Olympia (SSN-717)

Lt. j.g. Zachariah Stiles  
USS Maine (SSBN-741)(B)

Lt. j.g. Aaron Stutzman  
USS Pasadena (SSN-752)

Lt. j.g. Luke Toman  
USS Nebraska (SSBN-739)(B)

Lt. j.g. Christopher Topoll  
USS Cheyenne (SSN-773)

Lt. j.g. Timothy Tuck  
USS Key West (SSN-722)

Lt. j.g. Andrew Tuthill  
USS Helena (SSN-725)

Lt. j.g. Alexander Voeller  
USS Michigan (SSGN-727)(B)

Lt. j.g. Matthew White  
USS Houston (SSN-713)

Lt. j.g. Kurtis Wong  
USS Topeka (SSN-754)

Lt. j.g. Robert Wynn  
USS Honolulu (SSN-718)

### Line Officer Qualified in Submarines

Lt. Benjamin Banaszewski  
USS Honolulu (SSN-718)

Lt. Johann Guzman  
USS Minneapolis-St. Paul (SSN-708)

Lt. j.g. Peter Andrews  
USS Jefferson City (SSN-759)

Lt. j.g. Justin Ashurst  
USS Henry M. Jackson (SSBN-730)(G)

Lt. j.g. Jonathan Baugh  
USS Michigan (SSGN-727)(B)

Lt. j.g. Matthew Beaudry  
USS Minneapolis-St. Paul (SSN-708)

Lt. j.g. Matthew Berry  
USS Scranton (SSN-756)

Lt. j.g. Charles Blackledge  
USS Alabama (SSBN-731)

Lt.j.g. Adam Calhoun  
USS Montpelier (SSN-765)

Lt. j.g. Albert Caluag  
USS Buffalo (SSN-715)

Lt. j.g. Christopher Clevenger  
USS Cheyenne (SSN-773)

Lt. j.g. Douglas Copeland  
USS Oklahoma City (SSN-723)

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

Lt. j.g. Wallace Duncan  
USS Columbia (SSN-771)

Lt. j.g. Giovanni Estrada  
USS Louisiana (SSBN-743)(G)

Lt. j.g. Lee Fike  
USS La Jolla (SSN-701)

Lt. j.g. Christopher Fontaine  
USS Hartford (SSN-768)

Lt. j.g. Jonathan Garner  
USS Louisiana (SSBN-743)(G)

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

Lt. j.g. Jeremy Greenawalt  
USS Louisiana (SSBN-743)(G)

Lt. j.g. Joshua Hausbach  
USS Miami (SSN-755)

Lt. j.g. Gabriel Hernandez  
USS Ohio (SSGN-726)(G)

Lt. j.g. Travis Hogan  
USS Michigan (SSGN-727)(G)

Lt. j.g. Andrew Horah  
USS Key West (SSN-722)

Lt. j.g. David Huber  
USS Oklahoma City (SSN-723)

Lt. j.g. Clayton Hughey  
USS Kentucky (SSBN-737)(G)

Lt. j.g. Steven Iezzatti  
USS Nebraska (SSBN-739)(G)

## Skills Tested During Submarine Rescue Exercise in Western Australia

by Seaman Apprentice Luciano Marano



The UK Submarine Parachute Assistance Group (SPAG) practices rescuing submariners who have evacuated a sunken vessel during search and rescue exercises at Pacific Reach 2007. Photos courtesy of Defence Australia

Submariners from around the world took part in the international rescue exercise Pacific Reach, a triennial Asia-Pacific training module designed to encourage international cooperation in the field of submarine rescue procedures and protocol.

Pacific Reach 2007, held from Nov. 26 to Dec. 7, is the fourth exercise of the series and was hosted by Australia in the Western Australian Exercise Area (WAXA) in Cockburn Sound.

The program is designed to allow submariners a chance to practice emergency escape procedures in the event that a sub should sink or become uninhabitable. Submariners can leave a sunken vessel using an airlock chamber, called an escape tower and a specially-designed suit. A submariner enters the chamber, dons the suit and shuts the lower hatch. The chamber is then flooded and the escaper floats safely clear of the sub and upwards to safety.

Escape drills, rescue procedures and medical protocols were discussed and practiced at *Pacific Reach 2007*, in a hands-on intensive environment.

The submariners practiced their escape procedure from a submarine bottomed on the sea floor of the Cockburn Sound, a Submarine Assistance teams deployed to practice rescue operations for the “evacuated submariners,” getting them out of the water and into the hands of the Underwater Medical Unit for assessment and treatment.

Submariners from various nations around the world, more than 1,000 personnel total, were directly involved in the exercise. This included representatives from Canada, China, Republic of Korea, Japan, Malaysia, Singapore, the United Kingdom, and the United States, with each country bringing unique skills and equipment to the exercise. Also in attendance this year were military observers from Chile, India, Indonesia, Pakistan, Peru, Russia, South Africa, and the International Submarine Escape and Rescue Liaison Office (ISMERLO), a NATO sponsored international submarine search and rescue coordination agency.

Considering the size of the group, *Pacific Reach* is no small event. This year’s series included six ships, three submarines, two submarine rescue systems, a multi-national dive team and the UK Submarine Parachute Assistance Group (SPAG).

“*Pacific Reach* is an extraordinarily valuable opportunity to work with our regional neighbors and it is our pleasure to host this year’s activities,” said Commander Australian Naval Submarine Group, Commodore Rick Shalders.

This exercise was the fourth in a series of Asia-Pacific training modules designed to encourage international cooperation in the field of submarine rescue procedures and protocol. It was previously hosted by Singapore in 2000, Japan in 2002 and South Korea in 2004.

## Leadership Addresses Naval Submarine League Symposium

Rear Adm. William Hilarides, Vice Adm. John Donnelly, and Rear Adm. Bruce Grooms participated in a round table discussion at the 2007 Naval Submarine League Symposium. The symposium took place in October in McLean, Va. Rear Adm. Hilarides, Vice Adm. Donnelly, and Rear Adm. Grooms were joined by Force Master Chief Jeff Garrison, Adm. Jon Greenert, Commander, U.S. Fleet Forces Command, and Adm. Patrick Walsh, Vice Chief of Naval Operations, among many other distinguished active and retired members of the Submarine Force.



Photo by Mike Smith

Lt. j.g. Joseph Jankola  
USS Hawaii (SSN-766)

Lt. j.g. Carl Jappert  
USS Henry M. Jackson (SSBN-730)(G)

Lt. j.g. Philip Jones  
USS Hartford (SSN-768)

Lt. j.g. Benjamin Kalish  
USS Louisiana (SSBN-743)(G)

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

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

Lt. j.g. Andrew Lyboldt  
USS Henry M. Jackson (SSBN-730)(G)

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

Lt. j.g. Adam Matthews  
USS Louisiana (SSBN-743)(G)

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

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

Lt. j.g. William Monk  
USS Kentucky (SSBN-737)(B)

Lt. j.g. Scotty Murphy  
USS Montpelier (SSN-765)

Lt. j.g. Shawn Newman  
USS Michigan (SSGN-727)(G)

Lt. j.g. Peter Norgaard  
USS Maine (SSBN-741)(B)

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

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

Lt. j.g. Seth Pierce  
USS Key West (SSN-722)

Lt. j.g. Justin Powers-Luhn  
USS Charlotte (SSN-766)

Lt. j.g. Justin Reeves  
USS La Jolla (SSN-701)

Lt. j.g. Timothy Satrom  
USS Louisiana (SSBN-743)(B)

Lt. j.g. Derek Schmidt  
USS Honolulu (SSN-718)

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

Lt. j.g. Jerry Taylor  
USS Topeka (SSN-754)

Lt. j.g. Jarrod Trant  
USS Pennsylvania (SSBN-735)(B)

Lt. j.g. Justin Trenta  
USS Pennsylvania (SSBN-735)(G)

Lt. j.g. David Willard  
USS Dallas (SSN-700)

Lt. j.g. Kevin White  
USS Columbia (SSN-771)

Lt. j.g. Michael Woods  
USS Henry M. Jackson (SSBN-730)(G)

Lt. j.g. Gerald Wyatt  
USS Maine (SSBN-741)(B)

Lt. j.g. Adam Zaker  
USS City of Corpus Christi (SSN-705)

Lt. j.g. Adam Zimmermann  
USS Virginia (SSN-774)

### Supply Officer Qualified in Submarines

Lt. j.g. Benjamin Bailey  
USS Oklahoma City (SSN-723)

Lt. j.g. Christopher Burt  
USS Louisiana (SSBN-743)(G)

Lt. j.g. Wallace Duncan  
USS Columbia (SSN-771)

Lt. j.g. Edward Tucker III  
USS Nebraska (SSBN-739)(B)

Lt. j.g. Jamie McFarland  
USS La Jolla (SSN-701)

Lt. j.g. Kurtis Noack  
USS Henry M. Jackson (SSBN-730)(B)

Ens. Vernon Biby  
USS Ohio (SSGN-726)(B)

### Engineering Duty Officer Qualified in Submarines

Lt. Karl Burnett  
USS Alabama (SSBN-731)(G)

### Limited Duty Officer Qualified in Submarines

Ens. Maury Castaneda  
USS Minneapolis-St. Paul (SSN-708)

### Limited Duty Officer Qualified in Surface Warfare

Lt. Erik Coplin  
USS Frank Cable (AS-40)

### Medical Officer Qualified as Surface Warfare Medical Officer

Lt. Erik Ramsey  
USS Emory S. Land (AS-39)

### Chief Warrant Officer Qualified in Surface Warfare

Petty Officer 2nd Class Ronald Banks  
USS Emory S. Land (AS-39)

### Special Recognition—Battle “E” Winners

USS Boise (SSN-764)

USS Cheyenne (SSN-773)

USS Florida (SSGN-728)  
(BLUE and GOLD)

USS Houston (SSN-713)

USS Key West (SSN-722)

USS Jimmy Carter (SSN-23)

USS Louisiana (SSBN-743)  
(BLUE and GOLD)

USS Los Angeles (SSN-688)

USS Maine (SSBN-741)  
(BLUE and GOLD)

USS Philadelphia (SSN-690)

USS Rhode Island (SSBN-740)  
(BLUE and GOLD)

USS San Juan (SSN-751)

USS Scranton (SSN-756)

USS Topeka (SSN-754)



## CNO Recognizes Black Engineer of the Year

by Petty Officer 2nd Class Rebekah Blowers, Chief of Naval Operations Public Affairs



Photo by Petty Officer First Class Tiffini M. Jones

Cmdr. Richard Bryant (right) gives thanks to his family after receiving the Black Engineer of the Year award for Career Achievement in Government presented to him by Chief of Naval Operations (CNO) Adm. Gary Roughead (left) during the 2008 Black Engineer of the Year Awards gala in Baltimore.

Chief of Naval Operations (CNO) Adm. Gary Roughead presented the Black Engineer of the Year Award to Cmdr. Richard Bryant for Career Achievement in Government, Feb. 16. Bryant is the commanding officer of the fast attack submarine *USS Miami* (SSN-755).

Roughead said awards such as these showcase the talents and diver-

sity in today's Navy.

"It recognizes us as an organization that values diversity, that puts a premium on diversity, but it also shows the excellence that exists within the Navy," Roughead said. "I believe it just speaks volumes about who we are and what we stand for."

Roughead added that the Black Engineer of the Year Awards are very prestigious and those receiving the awards have historically risen to the most senior ranks of the Navy.

"I believe it inspires those who serve today and will inspire those who serve tomorrow," Roughead said. "The Navy affords limitless opportunities to our people, whether it's an education or experiences or assignments."

When asked for advice he would offer to those who want to be successful, Roughead urged all Sailors to seize every opportunity. He also reminded leaders at every level to guide their junior Sailors.

"Most importantly, reach down and share your experiences and your mentorship with those coming behind you. That is the most important thing to do," Roughead said.

The Black Engineer of the Year Awards honor innovators who demonstrate excellence in science, engineering or technology; leadership in workplaces and communities; outstanding work as role models and mentors; and commitment to recruiting and retaining minorities in the nation's science and technology enterprises.

## Rear Adm. Fluckey's Ashes Scattered at Site of WWII POW Rescue

Petty Officer 2nd Class Mike Micheli, assigned to the *Los Angeles*-class submarine *USS Pasadena* (SSN-752), renders a 13-gun salute during a burial at sea for retired Rear Adm. Eugene Fluckey. Fluckey's ashes were scattered at the same location where he and his crew rescued 14 allied prisoners of war stranded at sea more than 60 years ago. *Pasadena* is on a scheduled six-month deployment to the western Pacific Ocean.



Photo by Petty Officer Second Class Barry Hirayama



Photo by Petty Officer 3rd Class Jhi Scott

## U.S. Submarines Participate in Anti-Submarine Warfare Exercise

By USS *Enterprise* Public Affairs

The USS *Enterprise* Carrier Strike Group (CSG) 12 concluded a three-day, multi-unit exercise Nov. 13 aimed at sharpening its anti-submarine warfare (ASW) skills.

This exercise was geared toward maintaining security and stability in the region and is one of several exercises taking place in the 5th Fleet area of responsibility ensuring the U.S. Navy maintains the highest state of readiness and is capable of executing a broad range of operations, focusing on maintaining regional security and stability.

The ASW training ranged from practicing individual technician skills to coordinating multi-platform deterrent measures. Carrier strike

groups hold these exercises routinely to maintain proficiency and demonstrate anti-submarine capabilities.

"This was a routine training exercise to help our forces maintain a full-range of readiness," said Rear Adm. Dan Holloway, commander, CSG 12. "These exercises also help reassure regional countries of our ability to maintain security for lawful use of the sea."

"The value of conducting an anti-submarine warfare exercise during deployment cannot be understated," said Cmdr. Rich Bryant, USS *Miami's* (SSN-755) commanding officer. "We get the best training when we break out the play book and ensure we are ready for anything we're tasked to do."

"Our efforts are geared toward maintaining regional security, which helps build regional stability and global economic prosperity," said Holloway.

The exercise included participation from CSG 12, USS *Enterprise* (CVN-65), Destroyer Squadron 2, Carrier Air Wing 1, USS *Gettysburg* (CG-64), USNS *Supply* (T-AOE 6), USS *Philadelphia* (SSN-690) and *Miami*.

CSG 12 is operating in the North Arabian Sea in support of Maritime Security Operations (MSO) and Operation Enduring Freedom.

MSO help set the conditions for security and stability in the maritime environment, as well as complement the counterterrorism and security efforts of regional nations. These operations seek to disrupt violent extremists' use of the maritime environment as a venue for attack or to transport personnel, weapons or other material.

(Above) USS *Miami* (SSN-755) surfaces in the North Arabian Sea during an anti-submarine warfare (ASW) exercise with the *Enterprise* Carrier Strike Group.

(Right) *Miami* steams through the Arabian Sea accompanied by the nuclear-powered aircraft carrier USS *Enterprise* (CVN-65), Military Sealift Command fast combat support ship USNS *Supply* (T-AOE-6), and the guided-missile cruiser USS *Gettysburg* (CG-64).



Photo by Seaman Kiona McKissack



"Steady As She Goes" by Petty Officer 2nd Class Robert Malin. In 1998, Malin was assigned to record the U.S. Navy's role in RIMPAC 98, the biannual fleet exercise in the Pacific Ocean. The exercise's goal is to enhance the tactical capabilities of participating units in major aspects of maritime operations at sea. In 1998, the exercise took place in the waters off Hawaii and included participants from six Pacific Nations. The U.S. contributed more than 50 ships, 200 aircraft, and 25,000 military men and women from all services.

Robert Malin, a self-taught artist with no formal training, was born in Tauranga, New Zealand to an American father and British mother. Malin enlisted in the Navy one week after coming to the United States in 1993. His previous assignments include USS *Frank Cable* (AS-40), USS *Detroit* (AOE-4), and Naval Submarine Base Kings Bay.





## “Steady as She Goes”

Petty Officer 2nd Class Robert Malin