Surface Warfare

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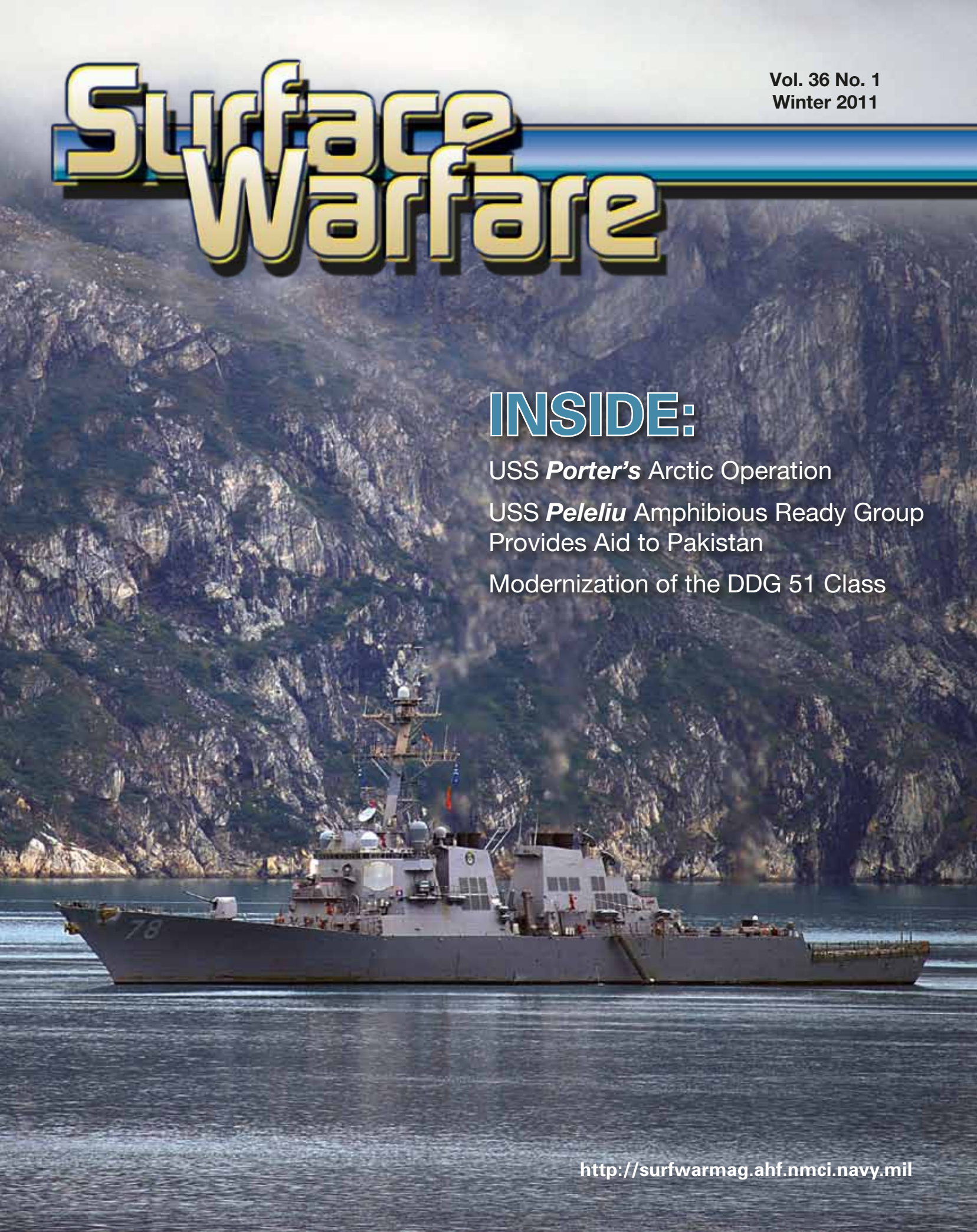

INSIDE:

USS ***Porter's*** Arctic Operation

USS ***Peleliu*** Amphibious Ready Group Provides Aid to Pakistan

Modernization of the DDG 51 Class

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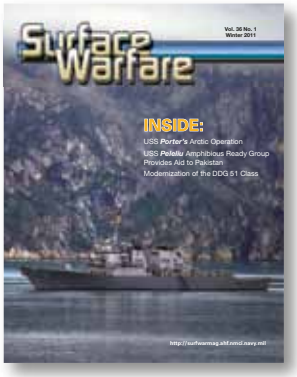

On the Cover:

USS ***Porter*** (DDG 78) heads for colder waters as part of the Canadian-led exercise Arctic *Natsiq*. *(U.S. Navy photo)*

On the Back:

Navy Veteran Paul Hurley discusses his story and the benefits he received from the new Post-9/11 G.I. Bill. See the featured article on page 33.

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Surface Warfare

➤ Amphibious transport dock ship USS ***Dubuque's*** (LPD 8) Maritime Raid Force (MRF) boards the M/V ***Magellan Star***. The MRF, comprised of ***Dubuque*** small boat crews and embarked Marines assigned to the U.S. Marine Corps 15th Marine Expeditionary Unit, successfully freed the crew and captured the pirates holding the vessel. *(Cmdr. Christopher Nodine/USN)*

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The SWO eMentor Program and Group Mentoring
Your electronic shipmates have the answers.

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FORCE COMMANDER'S CORNER

I am extremely proud of our Surface Force accomplishments. At the close of 2010, we welcomed two new destroyers, USS ***Gravely*** (DDG 107) and USS ***Jason Dunham*** (DDG 109), continuing the growth of our modern and incredibly capable Navy.

While our nation is at war, our diversity as a military force continued to be reflected in a wide range of engagements including strike group operations, counter-piracy, ballistic missile defense, theater security cooperation, humanitarian assistance, and numerous partnership missions. When late summer monsoons caused devastating flood waters in Pakistan, USS ***Peleliu*** (LHA 5) was able to provide helicopters and millions of pounds of relief supplies to save lives. During *Southern Partnership Station*, USS ***New Orleans*** (LPD 18) conducted theater security cooperation visits to Mexico, Peru, and Columbia, while DESRON 21 and USNS ***Mercy*** (T-AH 19) brought humanitarian assistance and partnership to six countries in Southeast Asia treating more than 109,000 patients during *Pacific Partnership* 2010. Already this year, USS ***Robert G. Bradley*** (FFG 49) kicked off *Africa Partnership Station* (APS) West and will visit Angola, Cameroon, Cape Verde, Gabon, Nigeria, Senegal, and Sierra Leone; in support of APS East, USS ***Stephen W. Groves*** (FFG 29) visited South Africa and Tanzania, enhancing regional and maritime safety and security there by partnering to develop capabilities and relationships. The Surface Force proves to be the most flexible asset in our nation's arsenal and the foundation of a Global Force for Good.

In December 2010, the CLASSRONs were realigned to COMNAVSURFPAC, COMNAVSURFLANT, LCSRON ONE, and MCMRON TWO. Harnessing the power of the Surface Warfare Enterprise, CLASSRONs helped bridge the gap between Fleet operators and the various resource/policy stakeholders — identifying, analyzing, and prioritizing many issues for resolution with great success, resulting in more efficiencies and cost savings/cost avoidance. With these elements now integrated in the TYCOM staffs they will continue to quickly respond to needs of the waterfront. In particular, this will result in increased synergy and oversight in addressing ship maintenance and readiness. On both coasts, there is now an "amphibious readiness" assistant chief of staff (ACOS) and a "CRUDES readiness" ACOS at the TYCOM, facilitating improved, centralized engagement. Each readiness ACOS provides a class analysis division which perpetuates the former "goodness of the CLASSRONs" by continuing the evaluation of class metrics, providing informed analysis, and passing proposed changes to the chain of command.

There are many other positive things occurring related to ship readiness and we are seeing the needles move in the right direction across a wide spectrum of programs and initiatives implemented in the past 1-2 years. 3M, COSR, SMC, LOA just to name a few are all experiencing positive results. I mention these items only to reflect how far we have come. Our mission is delivering warships ready for tasking and being combat ready. To get there requires establishing a culture of professionalism. It is about demanding, enforcing, and maintaining standards in all areas of leadership. Back to Basics plays a large part in this philosophy.

Finally, the SWO Pro Book is on track for Fleet roll-out this spring. This is an outstanding system and we have made it even better by implementing recommended changes noted from the pilot program. The SWO Pro Book will enhance the career growth of our officers by capturing and tracking professional qualifications and proficiency throughout an officer's professional development path, allowing for better career ownership and management.

Never forget that our Surface Force is the heart of our great Navy. Thank you for all of your hard work this year.

Make An Impact!

D. C. Curtis
Vice Admiral, U.S. Navy
Commander, Naval Surface Forces

Director's Corner

Surface Warriors!

I want to update you on some exciting and important initiatives that are shaping the future of our Surface Force. We are making great progress across the board, particularly in four major programs that will significantly impact the way we sail and fight in the decades ahead:

- **Littoral Combat Ship (LCS)**. These revolutionary warships will clear mines, destroy submarines, and counter surface craft in the near-shore areas of the world, where so many of our operational challenges are found. The first two LCS, USS ***Freedom*** (LCS 1) and USS ***Independence*** (LCS 2), are in the Fleet and are doing well in their seaframe and mission module testing. LCS 3, ***Fort Worth***, and LCS 4, ***Coronado***, are well into construction and exhibiting an exceptional degree of design stability. This positive indicator led Congress to authorize 10 additional ships of each design, 20 total, to be built between 2010 and 2015, with more to follow as we progress toward our goal of 55 ships. LCS will be a major part of our future Surface Fleet, as it will replace three ship classes (frigates, mine countermeasures, and patrol coastal ships). LCS requires fewer Sailors and, by employing rotational crewing, will generate much higher forward presence than traditional ships. In the years ahead, you will see more and more of these fast, highly maneuverable ships operating around the world.

- **DDG 51 and Ballistic Missile Defense**. Ballistic missiles and cruise missiles are a growing threat to naval forces. The best ship in the world to handle such threats is the DDG 51 ***Arleigh Burke***-class destroyer. Accordingly, after a five year break, we are again putting DDG 51 Flight IIA destroyers under contract. These new and improved ships, equipped with the latest ASW suite, SPY-1D(V) radar, and ballistic missile defense capability, will be joining the Fleet by mid-decade. In the years ahead, we will continue to upgrade this class. The future DDG 51 Flight III ship will carry the next-generation Air and Missile Defense Radar that will provide significantly enhanced protection for friends and forces, afloat and ashore.

- **DDG 1000**. We are already building two of the three ships that will comprise this class. These highly innovative, multi-mission ships will be especially effective at land-attack from the littorals. They will provide unprecedented Naval Surface Fire Support, achieving gunfire ranges in excess of 60 nautical miles. Additionally, their unique hull design will make them very quiet and hard to detect. DDG 1000 will have an Integrated Power System that will provide seamless electric power for propulsion, sensors, and ship's services. We will learn a great deal from these ships and we look forward to them joining the Fleet starting in 2016.

- **Current Fleet Modernization**. Seventy percent of the Fleet of 2020 is already in the water. Keeping our ships reliable and mission effective for their full service lives is a critical task for all of us. Accordingly, we are executing extensive modernization programs for a full array of surface combatant and amphibious warfare ships. These programs will upgrade hull, mechanical and electrical systems, weapons, sensors, and combat systems, thereby improving reliability and capabilities while reducing operating costs and maintenance hours.

These important and timely initiatives will support our Sailors today and tomorrow, ensuring a very bright future for Surface Warfare!

Frank Pandolfe
Rear Admiral, U.S. Navy
Director, Surface Warfare

By Lt. Scott Cheney-Peters, Military Editor

It's been 35 years since the first edition of *Surface Warfare* was published. In September 1975 the first issue rolled off the printing presses following the reorganization of surface forces under Commander, Naval Surfaces Forces Atlantic and Commander, Naval Surface Forces Pacific. The magazine was envisioned as a way to "increase professionalism, to improve readiness, and to revive our historic sense of cohesion and spirit."

That first issue was focused on the Fleet. It had stories about the ***Mayaguez*** Incident, an episode in the large-scale refugee evacuation effort following the collapse of the Cambodian and South Vietnamese governments; a port visit to Leningrad, U.S.S.R., by guided-missile frigate USS ***Leahy*** (DLG 16), and Soviet ***Kanin***-class guided-missile destroyer Boykiy (290); and the establishment of the Surface Warfare Officer School (SWOS) Command in Newport, R.I. It also included an update on the testing status of the new Aegis weapon system and its partner, the SM-2 Standard Missile, both having completed at-sea firing tests aboard the USS ***Norton Sound*** (AVM 1).

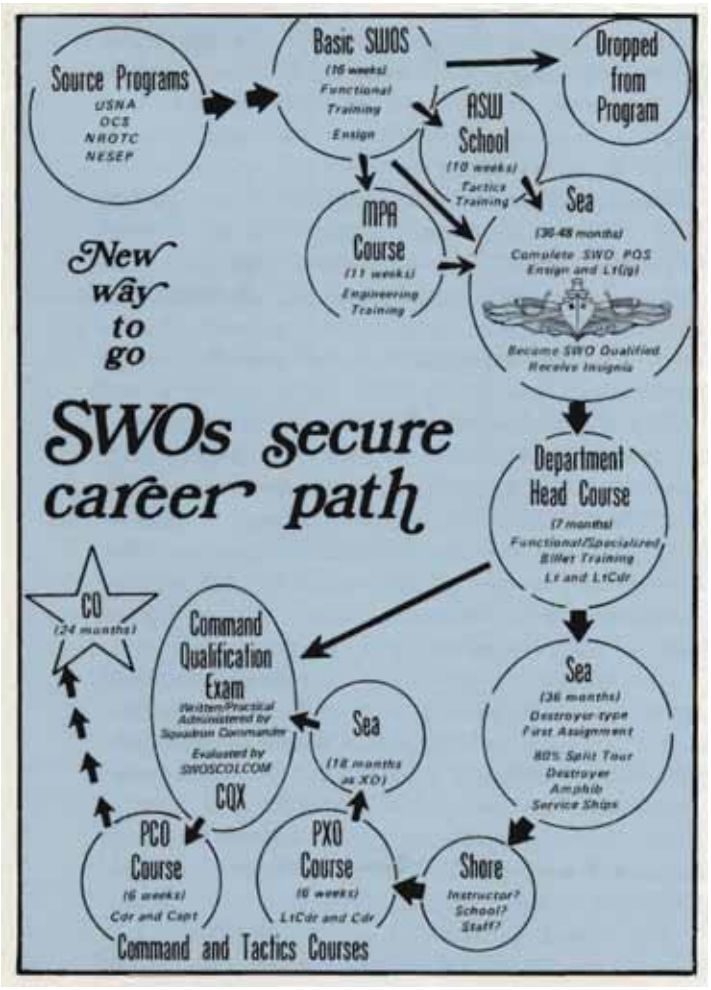
35 years has not diminished our focus on the Fleet. In this issue, we take a look at current operations aboard USS ***John S. McCain*** (DDG 56), USS ***Peleliu*** (LHA 5), USS ***Dubuque*** (LPD 8), and USS ***Porter*** (DDG 78). ***McCain*** reports on her visit to Vietnam, following an earlier rescue-at-sea of sailors off the Korean Peninsula; ***Peleliu*** and ***Dubuque*** reflect on their experiences supporting Pakistan flooding relief efforts; and ***Porter*** tells of cold days spent patrolling north of the Arctic Circle with our Canadian and Danish partners as part of the Canadian Exercise *Natsiq*.

One of the main aims of this issue is to highlight the vital support and services that different commands provide for our Fleet. The Center for Surface Combat Systems and the Office of Naval Intelligence, with detachments and resources around the world, explain who they are and what they offer to afloat commands. Lt. Cmdr. Sonya Brown-Connor details the SWO eMentoring program and how to participate. Additionally, the Department of Veterans Affairs shares the inspiring story of Navy veteran Paul Hurley, and how he has taken full advantage of the Post-9/11 G.I. Bill.

Further opportunities deal with billeting and advancement. Lt. Matt Todd illustrates the adventures of two lieutenants serving with foreign navies as part of the Personnel Exchange Program (PEP), and Naval Personnel Command highlights the importance and interconnectedness of Career Development Boards (CDB) and the new rules for Perform to Serve (PTS).

1975 set the precedent for a lot of what we do in the Surface Warfare community. In addition to Surface Fleet reorganization, Sailors welcomed the introduction of the ***Spruance***-class destroyers, and shortly thereafter ***Tarawa***-class amphibious assault ships. At *Surface Warfare*, fonts and styles may have changed over the years, but one thing that has remained constant is the magazine's dedication to the mission outlined in the first issue.

My heartfelt thanks to all who contributed to this issue. I hope you enjoy the magazine!



◀ The SWO career path as it appeared in the first issue of *Surface Warfare*.

Peleliu ARG, 15th MEU Lend a Hand in Pakistan

By MC2(EXW) Andrew Dunlap, USS ***Peleliu*** (LHA 5) Public Affairs

A Navy Amphibious Ready Group (ARG) and Marine Expeditionary Unit (MEU) are strategically paired for deployments to provide combatant commanders a versatile, sea-based force tailored for a variety of missions. One of those missions is to provide a quick response option for humanitarian aid in the wake of natural disaster.

The USS ***Peleliu*** (LHA 5) ARG and 15th MEU team showcased the unique flexibility of the blue – green team while conducting a regularly scheduled deployment in the U.S. 5th Fleet Area of Responsibility (AOR). After monsoon rains caused severe flooding in Pakistan in August 2010, Sailors and Marines went to work executing a range of missions over the course of several months.

"Once we heard the extent of the devastation in Pakistan, we knew the best available asset to provide support was the ***Peleliu*** ARG and 15th MEU," said Capt. Dale Fuller, commander of the ***Peleliu*** ARG, which was additionally comprised of USS ***Pearl Harbor*** (LSD 52) and USS ***Dubuque*** (LPD 8).

An aerial view of flooding in Pakistan taken from a CH-46E *Sea Knight* assigned to the "White Knights" of Marine Medium Helicopter Squadron (HMM) 165 (Reinforced) embarked aboard ***Peleliu***. *(Capt. Paul Duncan/USMC)*

The U.S. military quickly responded to the flooding. Even before the Pakistani government requested aid, ***Peleliu*** was directed to transit to the Indian Ocean from the Gulf of Aden and take station off the coast of Karachi, Pakistan. ***Peleliu***, along with her embarked helicopters of Marine Medium Helicopter Squadron (Reinforced) (HMM) 165, were the first Navy and Marine Corps assets on station. U.S. Army helicopters

Combat Cargo Marines load disaster relief supplies onto a Helicopter Sea Combat (HSC) Squadron 23 "Wild Cards" MH-60S *Seahawk* aboard the amphibious assault ship USS ***Peleliu*** (LHA 5). (*SN Ian Campbell/USN*)

Marine *Super Stallion* helicopters from HMM-165 land at Ghazi Air Base, Pakistan, as a part of the humanitarian assistance relief efforts. (*Capt. Paul Duncan/USMC*)

were providing aid to the Pakistan people prior to ***Peleliu***'s arrival; however, those helicopters deployed from Afghanistan and were only a temporary force until ***Peleliu*** could effect the relief. As the scope of the mission grew, U.S. Navy helicopters assigned to Mine Countermeasure Squadron (HM) 15 were deployed to augment the force.

After arriving on station, ***Peleliu*** became a logistical afloat staging base, as well as the command and control ship for Commander, Combined Task Force (CTF) 59. Rear Adm. Sinclair Harris, Commander, Expeditionary Strike Group 5 and CTF 59, embarked ***Peleliu*** and coordinated ship-to-shore operations.

"I saw tremendous dedication and coordination between the U.S. military and the Government of Pakistan, as well as the Pakistani military," Rear Adm. Harris said. "These Sailors and Marines stepped up to the plate when they were called. We helped our friends in Pakistan; it was not just our job, not just our mission, it was our honor."

For the Sailors and Marines aboard ***Peleliu***, the mission was simple: provide Pakistan with whatever assistance was necessary to alleviate human suffering. To that end, 15 medium and heavy-lift helicopters were sent in-country to Pakistan, with ***Peleliu*** remaining on station for more than 10 weeks.

Military Sealift Command supply ships replenished ***Peleliu*** every week, providing fuel, food, supplies, and mission-critical parts, allowing the ship to remain on station as long as needed. Supplies and parts were then flown ashore and distributed to various forward operating bases in northern and southern Pakistan. This logistics train enabled HMM-165 to distribute more than five million pounds of relief supplies and evacuate more than 9,000 internally displaced persons from areas inaccessible by ground vehicles.

"It's a great credit to these Sailors and Marines who are able to sustain such a long period on station," said Col. Roy Osborn, 15th MEU commanding officer. "They never got complacent or careless, which is imperative throughout any mission."

Normally, the relief efforts in Pakistan alone would have been a significant deployment accomplishment. However, the ARG-MEU team must also be — and were — capable of executing multiple missions simultaneously.

In addition to the humanitarian relief operations, ***Peleliu*** concurrently launched AV-8B *Harriers* in support of Operation *Enduring Freedom*. The *Harriers* of Marine Attack Squadron (VFA) 311 provided close air support for U.S. military ground forces in Afghanistan.

"In this region of the world because of our logistical proximity to Operation *Enduring Freedom*, utilizing our *Harrier* assets to protect our brethren on the ground embodies the flexibility of what an ARG — MEU team can do," Col. Osborn emphasized.

The ARG-MEU also conducted split operations, allowing for the execution of multiple missions in parallel throughout the 5th Fleet AOR. ***Dubuque*** conducted maritime security operations. ***Dubuque*** responded to a call for help from Panama-flagged and German-owned Motor Vessel (M/V) ***Magellan Star***. On Sept. 9, embarked 15th MEU Force Reconnaissance Marines seized and recovered the vessel which had been hijacked by suspected pirates. The visit, board, search, and seizure operations were successful, and the suspected pirates were taken into custody.

Also in September, ***Pearl Harbor***, in company with USS ***Winston S. Churchill*** (DDG 81), embarked 62 persons rescued at sea after their skiff capsized off the coast of Somalia.

Three ships, four missions, but all are part of one ARG-MEU team. As the theater reserve force for U.S. Central Command, ***Peleliu*** ARG and 15th MEU successfully executed their missions, recovering their last helicopters from the skies over Pakistan on Oct. 31 and departing the 5th Fleet AOR the following day. The Sailors and Marines provided relief to flood-stricken people, freed the crew of the M/V ***Magellan Star***, rescued persons off the coast of Somalia, and provided close air support for ground troops in Afghanistan.

The 2010 deployment showcased the unique capabilities the Navy and Marine Corps team can, and will, bring to the combatant commander and to nations in need.

USS *Dubuque* Brings the Goods to Pakistan

By MC1 David McKee, USS ***Dubuque*** (LPD 8) Public Affairs Officer

As the monsoon rains of August subsided in Pakistan, the difficulty of providing large-scale humanitarian and disaster relief boiled down to figuring out how to move tons of supplies from facilities far away to the flood-ravaged nation. This is where USS ***Dubuque*** (LPD 8) came in, conducting its role as a vessel of aid for the people of Pakistan.

After Commander, Naval Forces Central Command tasked the USS ***Peleliu*** (LHA 5) Amphibious Ready Group (ARG) and elements of the 15th Marine Expeditionary Unit (MEU) with providing assistance, ***Dubuque***'s Sailors quickly went into action to help render assistance.

Dubuque's role was to serve as a platform from which to transport personnel, equipment, and various supplies needed in the southern Asian nation to ***Peleliu***, which served as the command ship for the humanitarian relief efforts. In addition to personnel and equipment, the crew also transferred three CH-46E helicopters to ***Peleliu*** to support aid efforts.

"We are very good at what we do," emphasized ***Dubuque*** Commanding Officer, Capt. Christopher Bolt. "We battled heat and high seas to obtain the supplies, and then transited a long distance to bring the supplies to Pakistan."

The first step of the complex process of moving personnel and supplies was to embark Marines serving with the Combat Logistics Battalion (CLB), 15th MEU. The 110-member CLB element provided all the necessary equipment and supplies to support the Navy and Marine Corps helicopters operating in the flood zones of northern Pakistan.

Dubuque's second step involved receiving pallets of humanitarian supplies including toiletries, water purification tablets, blankets, tarps, five-gallon water jugs, and insect repellent from the dry cargo and ammunition ship USNS ***Sacagawea*** (T-AKE 2).

Finally, the pallets were prepared by personnel from the ship's Combat Cargo Platoon, who wrapped them with cargo nets to be transported via MH-60S *Sea Hawk* helicopter during a vertical replenishment (VERTREP) with ***Peleliu***.

Cpl. Jonathan Hoff, who serves with the Combat Cargo Platoon, helped prepare the cargo to be airlifted to ***Peleliu*** by running under the hovering helicopters and attaching the prepared pallets with a pendant.

"We played a small role in the relief effort, but our role was part of the larger effort to distribute relief supplies to the Pakistanis and give hope that with the support of the United States and other nations, they will be okay," Cpl. Hoff explained.

Pakistan is the third humanitarian relief mission for Ship's Serviceman (SH) 2nd Class (SW) Christian Puentes. He served aboard the hospital ship USNS ***Mercy*** (T-AH 19) during the tsunamis of 2004 and 2005, which also caused terrible devastation in parts of Asia.

According to SH2(SW) Puentes, reaching out to nations in need affirms the one thing all people have in common, extending past religion and borders – their humanity.

"It feels good to help a country that's going through hard times," SH2(SW) Puentes said. "We are all human. We sometimes have to put aside our differences and help others."

The United States and partner nations understand that natural disasters can act as threats to regional stability and national security. Over the years, the U.S. Navy's Humanitarian Assistance/Disaster Relief (HA/DR) operations have become regular occurrences. The responses to the 2004 tsunami and the annual Pacific Partnership humanitarian assistance operations are just a few examples of Navy HA/DR efforts.

"The U.S. is a fortunate nation in so many ways, and I am proud that we have the resources to provide relief to the Pakistani people as they weathered the flooding in their nation," Capt. Bolt said. "We, aboard ***Dubuque***, worked with a sense of urgency to complete our mission."

ABFC Vicente Ramirez and Lance Cpl. Richard Hayes prepare pallets of humanitarian supplies to be moved from USS ***Dubuque*** (LPD 8) to USS ***Peleliu*** (LHA 5) during a vertical replenishment. (*MC1 David McKee/USN*)

Going for the Gold Pin

By Ensign Patrick Love, Auxiliaries Officer, USS ***New Orleans*** (LPD 18)

At some point in almost every junior officer's career, they will sit in front of their commanding officer and department heads to prove they have the knowledge, confidence, and ability to become a Surface Warfare Officer (SWO) or Surface Warfare Supply Corps Officer (SWSCO), and earn their gold pin. To prepare them for that moment, junior officers aboard USS ***New Orleans*** (LPD 18) are benefiting from an innovative and demanding "SWO Qualification Project."

Before ***New Orleans'*** Amphibious Southern Partnership Station deployment in summer 2010, Commanding Officer Cmdr. Jeff Oakey realized that many of his young officers did not know why Casualty Reports (CASREPs), 3M, or tactics mattered. They were simply memorizing and repeating information to obtain a qualification.

Prospective officers of the deck, for example, memorized the rules of the road and the captain's standing orders, but sometimes would fail to fully understand how to implement them during real-world situations. The solution to this problem was to make qualification boards scenario-based, to place young officers in hypothetical situations and allow them to demonstrate application of necessary knowledge. The results were very encouraging, as watchstanders in Combat Information Center, Central Control Station, and on the bridge became much more confident when situations actually occurred on their watch. Cmdr. Oakey decided to implement the same format for SWO and SWSCO qualifications during deployment.

The warfare qualification process began with a scenario that entailed departing from Callao, Peru, sailing independently across the Pacific, and joining an expeditionary strike group to fight in a major conflict. Ten SWO and SWSCO candidates started their project the third week into the deployment and concluded a week after the deployment's end.

At the start of the effort, the group was provided the ship's 8 o'clock reports, 12 o'clock reports, and load plan. Each week, the captain advanced the scenario across the Pacific, posing an average of nine questions that the candidates, playing the roles of department heads, were required to research and answer during one of three weekly meetings. Questions were chosen to highlight a particular warfare mission, personnel issue, or a maintenance and readiness situation. Answers had to cite a source reference. In instances where references could not be found, candidates were required to create a product or conduct training on the topic.

As an example, if the ship was struck by a missile in the scenario, the candidates were required to utilize the ship's damage control plates to brief the captain, executive officer, and damage control assistant on the types of damage the ship would incur and where the damage would occur. This was an excellent opportunity for candidates to learn from their qualified peers and subject matter experts as well as practice giving briefs to the chain of command.

A SWO-qualified officer from the ship attended the weekly meetings and explained the topic in question. For instance, Lt. j.g. Jon Saewert, the ship's navigator and a former sonar technician, teamed up with the captain, a former anti-submarine warfare evaluator (ASWE), to give training on how sound waves travel through water, allowing effective ASW operations.

The scenarios that the group explored illuminated many aspects of the SWO profession. Candidates were responsible for proving themselves ready to compile navigation briefs, conduct underway replenishments (UNREPs), send Sailors home on emergency leave, troubleshoot a multitude of engineering casualties, transmit logistics requisitions (LOGREQs), defend against enemy surface action groups (SAGs), understand the detect to engage (DTE) sequence, and conduct amphibious operations. The candidates quickly realized how important it was to come to each meeting not only with an answer for their part of the scenario but also with a reference to support that answer. Citing a reference required careful research through applicable naval publications, instructions, ship documents and diagrams, and communication with subject matter experts (SMEs) on the ship.

"Having the reference shows that research has been done, that these young officers are not simply taking hearsay as fact, but rather they can say

▲ Junior officers aboard USS ***New Orleans*** (LPD 18) work through an in-depth scenario at a weekly meeting with their commanding officer, Cmdr. Jeff Oakey, as part of the ship's SWO Qualification Project. (*ENS Patrick Love/USN*)

with confidence that the information they are providing me is indeed fact," explained Cmdr. Oakey. "This will help them for the rest of their Navy careers."

Teamwork and a questioning attitude were two of the many traits the candidates honed while participating in the project. Teamwork was a crucial element in the project's success, and was an unexpected and enduring benefit. The candidates met on their own two to three times each week, discussed their findings, organized how they would present information, and ensured that all bases of the scenario had been covered for the week. This improved camaraderie, communication skills, and questioning attitudes. "We often found ourselves asking each other questions we thought the captain might ask," said Ensign Dwight Yamzon, ***New Orleans'*** weapons officer.

Earning a SWO or SWSCO pin in this fashion proved to be a positive experience. "I truly enjoyed this project because it required me to apply the knowledge I gained to situations that are likely to happen, not just memorize facts," explained Ensign Carla Salazar, the ship's assistant first lieutenant.

"I don't know of another ship on the waterfront where the junior officers have the opportunity to have an hour of face time with the captain each week and show him the knowledge they are gaining, like we do," said Ensign Nate Bell, the ship's information systems officer. This sentiment was echoed by other candidates and qualified SWOs as well. Lt. j.g. Mark Belanger, the ship's training officer, was a source of help for many of the group members.

"This is definitely an interesting and non-traditional approach to earning one's SWO pin," Lt. j.g. Belanger said. "The different tasks and real-world scenarios forced these junior officers out of their comfort zone and helped them broaden their knowledge base. Instead of studying alone for a short period of intensity preceding a SWO board, they worked as a team toward common goals under a steady strain of pressure."

"It has been an interesting and fun experience to help these future SWOs earn their pins," Lt. j.g. Belanger added.

The SWO Qualification Project was a very successful venture. For three junior officers, it was the capstone before their pinning; five others started Surface Warfare Officer School (SWOS) in January and February; and the rest are building on their new knowledge during the next iteration of the project.

New Orleans is continuing to refine and employ the "SWO Qualification Project." The next set of junior officers began their project as ***New Orleans*** entered the shipyard in November 2010.

DDG 51 Modernization
Sharpens the Spear

By Barbara Mendoza, N86 Public Affairs Officer

The U.S. Navy has begun a mid-life modernization program for ***Arleigh Burke***-class guided-missile destroyers, providing a comprehensive upgrade that will ensure the DDG 51 class maintains mission relevance and remains an integral and effective part of the Fleet for decades to come.

"The goal of the DDG 51 modernization effort is to increase mission effectiveness to ensure that these ships remain capable of delivering sea power for their expected service life," explained Cmdr. Nathan Strandquist, Aegis Modernization Requirements Officer, Office of the Chief of Naval Operations (OPNAV) N862C.

The program will be executed in two phases; first a six-month Hull, Mechanical, and Electrical (HM&E) availability, followed by a nine-month combat systems availability approximately two years later.

The HM&E alterations address hull strengthening, improve quality of life, reduce workload, and lower life cycle costs to support full service life. "HM&E upgrades will leverage systems design, engineering, and testing done during the new construction process for DDG 111 and 112," Cmdr. Strandquist said. Incorporating the tested and proven HM&E systems from the new construction ships will reduce risk for the DDG 51 modernization program. The program will also build upon the lessons learned from the CG modernization program.

The second phase includes 20 weeks for installation, followed by an additional 20 weeks required for the Combat Systems Ship Qualification Test (eight weeks for preparation and 12 weeks for execution) to certify the ship for combat operations. This phase will upgrade the Aegis Weapons System by adding a multi-mission signal processor and incorporating an open architecture (OA) computing environment that will serve as the foundation for future warfighting improvements.

"The result will be improved capability in both BMD and littoral combat operations," said Capt. Gary Parriott, Combat Systems Integration Branch Head, OPNAV N866. "Upgrading the Aegis design using modern commercial-off-the-shelf computing and display systems

▲ USS ***John Paul Jones*** (DDG 53), front, following the completion of her mid-life modernization, and USS ***Peleliu*** (LHA 5), moored at Naval Base San Diego in February. (*MCC(SW) Joe Kane/USN*)

will provide greater operational capabilities, more rapidly, and at less cost."

Additional upgrades include adding the Evolved *Sea Sparrow* Missile (ESSM), SQQ-89A(V)15 anti-submarine warfare (ASW) system, SM-6 missile, Naval Integrated Fire Control-Counter Air (NIFC-CA) capability, Close-in Weapons System (CIWS) Block 1B, Cooperative Engagement Capability (CEC), and an upgraded SPY signal processor. Additionally, the ***Arleigh Burke***-class MK-41 Vertical Launching System (VLS) will be upgraded to support newer variants of the SM missile family. Upon completion, the combat system capability of modernized DDGs will equal that of the newest DDG in the Fleet.

Throughout their intended service lives, DDG 51 destroyers will continue to provide multi-mission offensive and defensive capabilities with the added benefit of providing sea-based protection from the ballistic missile threat. The first DDGs being modernized are USS ***John Paul Jones*** (DDG 53) and USS ***Arleigh Burke*** (DDG 51) with the HM&E availability beginning in FY 10, followed by a combat systems upgrade in FY 12 for ***John Paul Jones*** and in FY 14 for ***Arleigh Burke***.

➤ Sailors assigned to USS ***John Paul Jones*** (DDG 53) stand in front of the ship during its last day in dry dock. ***John Paul Jones*** was the first destroyer to undergo the HM&E portions of the mid-life modernization. (*ET2 William Weinrich/USN*)

Porter Ventures North

By Ensign Aubrey Page, USS ***Porter*** (DDG 78) Public Affairs

In the heat of July, Sailors serving aboard USS ***Porter*** (DDG 78) carried their dress blues down the pier in preparation for a deployment north. ***Porter*** left Naval Station Norfolk on the journey of a lifetime, joining the Canadian Navy above the Arctic Circle for Exercise *Natsiq* 2010. Her mission: To assess the ability of the U.S. Navy to operate in the North Atlantic and to develop relationships with U.S. partners in the Arctic.

"When we were leaving I was thinking, 'This is going to be sweet!'," exclaimed Cryptologic Technician (Maintenance) (CTM) 2nd Class Michael Harrington. "The whole time I was so excited about it snowing in the summer. It didn't snow but I saw icebergs that were even bigger than I thought they would be. It was fun to travel north when I would normally be at the beach."

U.S. Navy operations in the Arctic are not new. However, most recent operations have been conducted by submarines. Now, surface ship operations in the far North are being planned, a goal supported by Vice Chief of Naval Operation Adm. Jonathan Greenert's recent release of a roadmap to guide Arctic operations.

"This was an excellent opportunity to work with our coalition partners and learn more about operations in this austere environment," explained Cmdr. David Peterson, ***Porter***'s commanding officer. "Hopefully this operation will lead to the development of additional standard operating procedures for future U.S. forces working in this area."

Exercise *Natsiq* was a two-month Canadian-led exercise designed to improve the collective capacity of our allies to effectively respond to safety and security threats or emergencies in the Arctic. Last year for the first time U.S. Navy, U.S. Coast Guard, and Danish Navy units were invited to participate. The Canadians and Danish often operate in the Northern Atlantic and have designed their navies to support Arctic missions.

While underway, the U.S., Canadian, and Danish ships often stopped to conduct personnel transfers among the ships. Sailors who participated had the opportunity to spend the day aboard a foreign vessel.

"I went aboard the Canadian ship and it was fun to see the differences," said Operations Specialist (OS) Seaman Demetrius James. "The food was interesting, the racks were set up differently, and the lounge area had sofas. I had good conversations with several of the crew members. I

USS ***Porter*** (DDG 78) Sailors, wearing specially designed low-temperature suits, practice search and rescue operations in conjunction with the Danish Navy. (*U.S. Navy photo*)

felt like the exchanges made us closer with the Canadian Navy," he added.

As ***Porter*** transited north, the crew observed environmental phenomena such as whale migrations. During a port visit to St. John's, Newfoundland, Sailors became accustomed to the cold and foggy climate that Newfoundlanders experience on many days. As the ship continued north, the temperature dropped but never got colder than 40 degrees Fahrenheit.

The fog presented a problem with sighting other vessels, whales, and icebergs. To keep the ship safe, qualified ***Porter*** Sailors stood watch as lookouts on the bow, bridge, and stern to provide full coverage. These lookouts, who wore suits specifically designed for low temperatures, stood watches during periods of low visibility. "The low visibility detail was a challenging watch but a good learning experience," said Culinary Specialist (CS) 3rd Class Jermie Harris.

In addition to the fog, there were also icebergs. To mitigate the risk they posed, ***Porter*** embarked a special metrological team to help predict their location and maintain a safe distance from them.

While venturing north, ***Porter*** pulled into a small Greenland bay to visit Grønnedal, an old base formerly used by the U.S. Navy during the Cold War. Denmark, which administers Greenland, now runs its own naval operations from the base with more than 200 military personnel and their dependents. ***Porter*** Sailors took hikes around the property and competed in street hockey tournaments — Canadian rules — with Sailors from other ships.

"It was fun to have a friendly competition with the other navies," said Fire Controlman (FC) 2nd Class (SW) Patrick Butler. "It was a new system of playing and it is their national sport. The Canadians were very excited to win."

In addition to port visits, ***Porter*** Sailors had the opportunity to ceremoniously cross a different kind of line. The Blue Nose ceremony is conducted upon crossing the Arctic Circle and very few surface Sailors have gone through it. In fact, the few prior submariners in ***Porter*** with "Blue Nose" qualifications conducted the initial ceremony.

"It was a once in a lifetime experience for surface Sailors," said FC1(SW) Melanie McArdle. "It was a great way for the crew to take a break from the daily routine and have some fun."

"I'm extremely proud of the crew and their ability to adapt their training to the harsh Arctic environment in support of the Maritime Strategy," said Cmdr. Peterson upon ***Porter***'s return to Norfolk. "Teaming with the Canadians, Danish and U.S. Coast Guard gave our Sailors valuable experiences, not only with our multinational partners but also with Arctic environment operations."

▲ Sailors of Danish warship HMDS ***Vaedderen*** (F359) compete in a game of street hockey with USS ***Porter*** (DDG 78) Sailors while spending the day in Grønnedal, Greenland, run by the Danish military. (*U.S. Navy photo*)

▲ HMCS ***Montreal*** (FFH 336) moors abreast USS ***Porter*** (DDG 78) under foggy conditions at a pier in Greenland's capital, Nuuk. (*U.S. Navy photo*)

Intellectual Before Actual—

CBRD Wargame 2010

By MC1(AW) Scott Vanderwyst, *Surface Warfare*

When one hears the word "wargame," many images come to mind — landing craft loaded with Marines hitting the beach, armed forces from multiple nations working together, large scale naval exercises — but one image it probably doesn't inspire is that of a conference room.

Yet a conference room may be the most important facet of any exercise. Intellectual before actual, discussion before deployment; these were key factors in the *Chemical, Biological and Radiological Defense (CBRD) Wargame* 2010, held last August at the Navy Surface Warfare Center Dahlgren Division (NSWCDD), Dahlgren, Va.

CBRD Wargame 2010 was comprised of more than 75 personnel representing Navy, DoD, and inter-agency commands, as well as partner defense contractors. To get a diverse breadth of experiences and viewpoints, participants included operational experts in anti-submarine and mine warfare, afloat amphibious staffs, carrier operations, and cruiser/destroyer operations. Anti-terrorism/force protection and CBRD subject matter experts from Fleet Forces Command and Pacific Fleet, the U.S. Marine Corps, and the Naval Medical community augmented the discussions. There were also a dozen observers from the Defense Threat Reduction Agency,

▲ Lt. Cmdr. Adam Samuels delivers an opening brief to more than 75 participants during *CBRD Wargame* 2010 held at the Naval Surface Warfare Center in Dahlgren, Va. *(MC1 Scott Vanderwyst/USN)*

U.S. Strategic Command (STRATCOM), and the Office of the Assistant Secretary of Defense for CBR and Nuclear Defense (CBRND).

"This was a rare opportunity to bring the Navy's CBR technical, programmatic, and operational folks all together in one place to go over realistic CBR scenarios in detail," explained Mike Pompeii, chief engineer for CBR defense at NSWC Dahlgren. "The technical experts, program managers and operational folks from the Fleet make a pretty powerful combination."

According to Lt. Cmdr. Adam Samuels, from the Office of the Chief of Naval Operations (OPNAV) N867, Fleet CBRN Defense Programs, their goal was to identify future Navy CBR capability needs in the context of amphibious landings. The exercise was based on the 2010 *Quadrennial Defense Review* (QDR) combined with projected threat and capability information from OPNAV N81 and Office of Naval Intelligence (ONI). It explored different events and operations that a ship, staff, or Fleet may have to conduct during an amphibious operation.

To accomplish this, a number of plausible scenarios were developed. Participants then determined how each scenario might play out, factoring in the personnel, equipment, and capabilities they would require. Each phase of amphibious operations contained an independent CBR scenario that questioned the ability to complete that portion of the mission during or following an event such as a covert biological attack, accidental toxic industrial chemical release, or use of radiological dispersal device.

To facilitate this endeavor, a "game" had to be designed and rules set up to ensure the most realistic outcome. "The game is a seminar style game, where cells of selected players are given vignettes, or scenarios, and asked to address questions or tasks within the

context of each of those scenarios," said William Simpson, a wargaming officer attached to the Marine Corps Warfighting Lab in Quantico, Va.

Four cells, or working groups, of 7-10 operators and subject matter experts were organized. To ensure each cell ran smoothly, specific roles were given to participants. The lead participant was responsible for ensuring the group finished all phases of each scenario in the allotted time, and for moderating all discussions. The laptop operator recorded each cell's response, and the presenter brought out each of the group's resolutions and fielded any questions during the out brief.

White cell facilitators were also on hand in each cell and assisted the gaming by providing background information and provoking questions to ensure discussions were moving in the right direction.

The format and thought-provoking scenarios allowed the cells to identify all sorts of information, trends, and opportunities. And, unlike other exercises, there was no "pass/fail."

"The players were not being tested on their ability to perform in a specific billet; rather, they were selected for their expertise needed to game the CBRN concept," Simpson said. "Their interaction was to work together to come up with the best solutions or answers."

Members of "Cell Bravo" discuss possible gaps and resolutions to their assigned amphibious operation scenario. *(MC1 Scott Vanderwyst/USN)*

Those solutions, however, are not always easily defined. Various opinions, from those who design the equipment to those who put it to use, had an important impact on each scenario.

"For participants, [the benefit was] from the exchange of ideas and information," said Walter Bengtson, a NSWCDD representative. "We took care to have a mixture of personnel, disciplines, and organizations in each cell."

Another objective of *CBRD Wargame* 2010 was to identify potential capability shortcomings in each scenario. Shortcomings became apparent during the course of the scenarios, when in order to resolve the hypothetical confrontation, current systems or capabilities were judged insufficient. According to Lt. Cmdr. Samuels, this year's *CBRD Wargame* met with great success, sparking good discussions and identifying over 120 potential limitations. Following completion of the exercise, the raw data was scrubbed by analysts at OPNAV and in the Fleet for duplication and other issues, allowing them to focus on the most critical and pressing issues.

"Identification and prioritization of these shortcomings is critical, given the shrinking fiscal resources available," said Lt. Cmdr. Samuels. "We can't solve everything, so working with the Fleet to assist in identifying those areas that will give us the best pay-off for the dollar invested is vital," Samuels continued. "Other shortcomings may be mitigated by changes in doctrine, training, organization, or command and control. This exercise was crucial for identifying the potential holes, but that's just the start of the process."

Participants in *CBRD Wargame* 2010 discussed the responses and capabilities of the Navy and Marines to CBR events during operations such as the one pictured. Marines of the 26th Marine Expeditionary Unit (26th MEU) approach the amphibious dock landing ship USS ***Carter Hall*** (LSD 50) after amphibious training in Djibouti. *(MC3 Kristin Grover/USN)*

10 Years On:

How USS *Cole* Shaped Force Protection

By Lt. Scott Cheney-Peters, Military Editor, *Surface Warfare*

GM2 Scott Wegmann stands watch at a .50-caliber machine gun mount, wearing an upgraded version of the Navy's tactical helmet aboard USS ***Stout*** (DDG 55). (*MCSN Anna Wade/USN*)

A year before the U.S. suffered the 9/11 attacks, terrorists struck the Navy. On Oct. 12, 2000, Al-Qaeda operatives conducted a small-boat suicide attack against USS ***Cole*** (DDG 67). Seventeen Sailors died and dozens were injured, but the determination and spirit of the crew saved the ship.

In the 10 years since the incident, the Navy has worked hard to prepare Sailors to defend against the ever-changing threat of terrorism. One important overhaul in the wake of the ***Cole*** bombing laid the groundwork for updating equipment: creation of a specific anti-terrorism/force protection (ATFP) Allowance Equipment List (AEL). AELs detail the items a command is required to carry on board, and allow them to easily requisition the equipment through the Navy stock system. One of the most important results of this change was standardization of items in the Navy's inventory and on board ships, increasing interoperability and accelerating replacements when required.

The ATFP AEL was based on a portion of the old Master-at-Arms (MA) AEL, with many additions and upgrades. According to Cmdr. John Lennox, ATFP/CBRD, Office of the Chief of Naval Operations (OPNAV) N867, new gear introduced to the Fleet included upgraded ATFP radios, walk-through metal detectors, hand-held explosive detectors, standardized body armor and lighter helmets, acoustic hailing devices, baggage scanners, and vehicle barriers, all items designed to keep ships safe when meeting any contingency at home or abroad.

New armament since the ***Cole*** incident has also aided in ATFP duties. MK 46 30mm guns have been installed on the ***San Antonio***-class amphibious transport dock ships; ***Ticonderoga***-class cruisers, ***Arleigh Burke***-class destroyers, and ***Whidbey Island***-class dock landing ships have all received MK 38 25mm guns. MK 95 twin .50-caliber machine gun mounts and MK 99 twin M240 machine guns have likewise been introduced to the Fleet to counter a variety of threats. Additionally, key shore facilities have upgraded their water barriers and surveillance systems.

Shipboard ATFP responsibilities and organizations have also been strengthened. A second-tour division officer or senior, appointed as the Anti-Terrorism Officer (ATO), is now directly responsible to the commanding officer for all ATFP matters. The ATO is aided by the ship's MA acting as the Anti-Terrorism Training Officer (ATTO), Anti-Terrorism Training Supervisors (AT TRASUPs), the Anti-Terrorism Training Team (ATTT), Anti-Terrorism Tactical Watch Officers (ATTWOs) who oversee the ship's self-defense watches in port, personnel involved in weapons qualifications, and in many cases a Force Protection Officer (FPO).

With the new equipment and responsibilities came a sustained focus on training. The Center for Naval Security Forces (CENSECFOR) took lessons learned from ***Cole*** and other terrorist attacks, and applied them

to courses required for all ATOs and ATTOs. Great emphasis is placed on critical thinking during the planning and execution of port visits and while reviewing the ship's AT Plan. ATTOs and AT TRASUPs — in addition to Small Arms Instructors (SAMIs) — receive rigorous instruction enabling them to train the rest of the crew. Personnel assigned as the ship's ATFP-specialty early responders, the Back-up Reaction Force (BRF), also complete vital training at CENSECFOR school houses so that they can counter an array of threats.

The training continues on board, with monthly, quarterly, and annual shipwide training to reinforce the mindset that ATFP, like damage control, is everyone's responsibility. In addition to the annual AT Level 1 training requirement on Navy Knowledge Online (NKO), some commands require their entire crews to complete the AT TRASUP-taught NSF-Sentry and SRF-B courses, where Sailors learn the basics of FP watchstanding and pass the associated weapons qualifications. The benefit to these commands is not only increased watchbill flexibility but more competent and better prepared Sailors, in the right frame of mind, protecting their ships and shipmates.

In the decade since the ***Cole*** attack, the amount of training in weapons qualifications and ATFP responsibilities, as well as the expectations for Sailors in those roles, has risen steadily. To prove their mettle, ships face a wide range of exercises and assessments. Like other warfare areas, the ATTT is required to keep a ship's crew in a sustained state of ATFP readiness through drills and training.

ATFP is also incorporated into Unit Level Training Assessments (ULTRAs), according to U.S. Fleet

▲ Sailors aboard USS ***O'Kane*** (DDG 77) defend the ship during the *Paulele Palulu (PAPA)* 2009 anti-terrorism field training exercises while members of the ship's Anti-Terrorism Training Team (ATTT) observe. PAPA, also known as *Reliant Shield*, is a Navy Region Hawaii anti-terrorism exercise focusing on the ability of ashore and afloat units to deter, detect, defend, and mitigate acts of terrorism within the Pearl Harbor area. (*MC2 Mark Logico/USN*)

➤ A Sailor stands a topside watch aboard USS ***Laboon*** (DDG 58) at Naval Station Norfolk in August 2010. (*MC1 Julie Matyascik/USN*)

Forces (USFF) Command officials, when the crew must demonstrate its ability to meet all Type Commander (TYCOM) instructions and Surface Force Training Manual (SFTM), weapons qualification, billet, course, and equipage requirements. Ships and their ATFP teams must qualify at advanced levels prior to deployment during their force protection exercise (FPEX) and composite unit training exercise (COMPUTEX) assessments, running through a range of scenarios to ensure they are ready to provide thorough ATFP in non-U.S. ports. Exercises such as the annual *Solid Curtain* have also been implemented to test and strengthen afloat and ashore command, control, and communication integration at U.S. homeports, providing valuable validation of ATFP systems and lessons learned.

USFF officials also state that the Navy desires as much feedback from the Fleet on ATFP needs as possible. Afloat Training Group (ATG), Fleet AT offices, and TYCOMs are all receptive to direct input on equipment modifications, additions, deletions, and other suggestions. Symposiums are regularly held in fleet concentration areas to discuss ATFP best practices and recommend training course modifications. If an afloat command identifies a better or new tool, they can work with their TYCOM to develop an Urgent Operational Need (UON) statement for review and verification. TYCOMs, working with other stakeholders as part of the ATFP Fleet Collaborative Team (FCT), collate and prioritize all inputs into a single authoritative ATFP Integrated Prioritized Capabilities List (IPCL) that is used to inform resourcing decisions for ATFP requirements.

More changes are coming. According to Cmdr. Lennox, LA-9/P Laser Dazzlers have recently been introduced to most ships, adding another non-lethal weapon tool to the ATFP toolbox. In 2011, the Navy expects to field a new body armor system replacing older models. The new Navy Security Forces Vest (NSFV) will be distributed to ships prior to deployment. It will provide additional protection from fragmentation, .44 MAG, and 7.62 rounds, with the help of a protective insert plate.

In just the past two years, many ATFP-related policy documents and instructions have changed. They will continue to be updated on a regular basis. Therefore it is imperative that ships maintain a robust means of revisiting and revising their own AT Plan to align with the updated documents as well as their homeport installation's AT Plan. ATFP is not static; as the threat changes, so too must the ship, Sailor, and AT Plan.

Ten years after the attack on ***Cole***, the Surface Fleet is better equipped, trained, and prepared than ever, but commands must never cease thinking critically about how to best use their resources to present a hardened target and prepare for the worst.

▲ GM1 Darsay Barnwell coaches Sailors qualifying on the M-16 rifle aboard USS ***Peleliu*** (LHA 5). Qualification on the M-16 is just one of the many prerequisites Sailors must complete before being allowed to stand a security watch. (*MC3 Omar Dominquez/USN*)

FLIP Allows Scientists to Reach the Ocean's "Outer Limits"

By Capt. Edward Lundquist, USN (Retired)

It looks like something from the 1963 science fiction television series "The Outer Limits," a science fiction show whose introduction told the audience, "*We will control the horizontal. We will control the vertical.*"

Built in 1962, the seagoing research platform called FLIP — for Floating Instrument Platform — still turns heads. Constructed by Gunderson Brothers Engineering Company in Portland, Ore., FLIP is still a very active research vessel. There's nothing else that looks like it, and no other research vessel in the Navy's arsenal that can do what it can do.

What's really unusual about FLIP is the fact that it actually does flip. An ocean-going tug tows the 355-foot, non-propelled vessel to sea in a horizontal position, at which point FLIP transitions to a vertical position, according to retired Capt. William Gaines, who manages the FLIP program at the Marine Physical Laboratory of Scripps Institution of Oceanography, a part of the University of California San Diego.

Classified as a non-propelled research barge, FLIP was built to test a then-classified Navy program called SUBROC, a Cold War-era submarine-launched weapon which could be used against enemy submarines. The Navy soon realized that the barge was capable of completing work that simply could not be accomplished by any other research platform.

Operated by Scripps for the Office of Naval Research (ONR), scientists use FLIP for underwater acoustic research because of its stability and low radiated noise. FLIP can be towed to the desired research

➤ FLIP acts like a spar buoy, transitioning from the horizontal to the vertical (as pictured) when ballasted. This creates a stable and quiet platform for acoustic research and other oceanographic studies. (*Courtesy of Scripps Institution of Oceanography*)

location and moored so scientists can conduct extended data collection or testing. FLIP is also a superb platform to conduct geophysics, physical oceanography, meteorology, and other scientific fields.

FLIP looks like the bow of a ship attached to a long pipe. The hull is only 12 feet in diameter where it connects to the bow, but then flares to 20-feet wide towards the stern. Only the forward section is inhabited. Once on station, FLIP transitions from the horizontal to vertical by flooding its ballast tanks from the stern in a manner similar to an amphibious ship preparing for launch craft operations.

"The blow and vent piping is connected to a manifold on the forward section of the vessel. The process is manually controlled, there are no computers involved in the process," Gaines explained. "Starting from the stern forward, tanks are vented, letting air to escape and seawater to enter the tanks through openings at the bottom of each tank. This changes the vessel's displacement causing the stern to sink. Once all the tanks are flooded, FLIP is standing upright in a vertical position."

With the 300-foot flooded hull submerged, the forward section stands 55 feet above the water — as tall as a five story building — and the hull has a mere 12 1/2-foot feet diameter at the waterline. Strange as it looks, the tapered shape actually adds to stability when upright. According Gaines, the entire process to convert from horizontal to vertical takes about 20 minutes.

When FLIP completes a mission and prepares to transition back to a horizontal position to be towed back to port, the crew releases 250 psi high-pressure air — stored in bottles in the ballast tanks — into the tanks to force the seawater out. This maneuver also "takes about 20 minutes to accomplish," Gaines said.

According to FLIP Officer-in-Charge, Tom Golfinos, FLIP maintains a crew of three while in port, but expands to five when underway, including a cook. "FLIP can carry a research team of 11, so there are a total of 16 people onboard during an extended research cruise," he explained. "It can get pretty crowded."

FLIP also supports a large laboratory space for scientific equipment.

All the fixtures on FLIP are either duplicated or able to rotate as the hull transitions to vertical. When the vessel flips, all the equipment inside — including diesel engines, tables, bunks and stoves — also flips.

"When FLIP is in the vertical position there is virtually no movement," Gaines said. "The three diesels used for power are shock-mounted, so there is very little radiated noise. With FLIP, you not only have stability, but an acoustically quiet operating research platform."

FLIP carries 3,500 gallons of diesel fuel and makes its own fresh water — 750 gallons a day — giving it an endurance of 30 days unsupported. Although it has to be towed to wherever it needs to work, FLIP costs much less to operate than other platforms because it is non self-propelled. A coastal research ship might use 1,000 gallons of fuel each day when on station, whereas FLIP uses less than 100 gallons.

"FLIP is a unique platform. It can drift or it can be stationary in a fixed position. Our research missions vary," Golfinos explained. "Last year, we went to Hawaii where we supported an ONR research program while drifting for 25 days."

While FLIP typically uses three anchors when it desires to maintain station, during a cruise off of Hawaii in 2001 FLIP used a single anchor in water 14,000-feet deep, with a 30,000-foot long 1 1/2 inch double braided nylon anchor line between the anchor and FLIP, Gaines said. The anchor was held on the ocean floor with 12 tons of anchor chain. "It took an hour for the anchor to reach bottom after being dropped from the support ship."

Three 60-foot equipment-deployment booms fold out from the sides to deploy sensors and antennas. "The scientists can take acoustic sensors and deploy them 60 feet from FLIP," Golfinos said. Scientists can also utilize FLIP's unique properties by dropping temperature sensors from the booms or along the hull to different depths to measure thermal variations in the ocean.

The Navy has used FLIP extensively to conduct research in deepwater acoustics and signal processing, and frequently worked with the Navy's diesel-powered deep-diving research submarine, USS ***Dolphin*** (AGSS 555), until it was decommissioned in 2006 with the shift in interest to "the shallower waters of the littoral," said Gaines.

FLIP has been used to examine ocean circulation, storm wave formation, and the transfer of thermal energy between the ocean and the atmosphere. Because FLIP can be moored in one location without making any noise, scientists can lower hydrophone arrays and other sensors into the water to conduct significant acoustic research. Pressure sensors and lasers can measure changes in wave height within a millimeter. When conducting marine mammal observations, an observer can be posted on the mast about 70 to 80 feet above the water to provide correlation between acoustic signals and visual observations. A large deep-sea winch can be mounted on FLIP to lower heavy instrument packages to deep ocean depths. Meteorological sensors on a vertical mast can take measurements immediately above the sea surface.

"You cannot put all of these sensors on a conventional research vessel," Golfinos emphasized.

That makes FLIP ideal for such research projects as measuring the depths that whales dive, effects of pressure on sound attenuation, long-range sound propagation, and turbulence and thermal structure of the ocean.

"We're the only ship that works in two positions, horizontal and vertical," Golfinos said. And that, he added, can attract some attention.

"We were vertical in a three-point moor when we saw a large merchant ship coming right at us," he recalled. "I called him on the bridge-to-bridge radio and asked him to stay clear." The ship finally did turn away, but it also slowed down and the captain called and asked Golfinos if he needed any help. "I told him that we were a research platform and we're fine, and to please stay clear. He said 'Are you sure? It looks like you are sinking.'"

Tim Schnoor is manager of facilities for ONR, which includes the Navy-owned research ships, as well as the deep submergence vessel, ***Alvin*** (DSV 2), and FLIP. While originally built for acoustics research, FLIP now conducts more broadly-based science research such as air-sea interaction studies. FLIP normally operates in the Pacific and the cost to transport it to the Atlantic or Polar Regions would likely be prohibitive, but Schnoor invites researchers who need the capabilities that FLIP provides to contact ONR. "It's available," he said.

The most recent research cruise involving FLIP took place last June off the coast of California, and involved a variety of platforms, including moored buoys, satellite imagery, another Scripps research ship, and aircraft; all using a host of sensors, sampling platforms, video and data recording equipment. Called High Resolution Air-Sea Interaction department research initiative (Hi-Res DRI), the data collected helps researchers better understand and model the interaction between wind and waves at the sea surface, which will help develop and employ better ship-based radars.

The ultimate goal of Hi-Res DRI is to develop the foundation for the next generation of simulation models of the interaction between the ocean-wave-atmosphere systems.

FLIP is an investment that has paid for itself many times over. According to Golfinos, the carefully maintained log book on the bridge records 377 missions FLIP has conducted to date. Because it is the only stable research platform of its type in the world, well maintained, and with continuously updated equipment, it continues to offer a state-of-the-art research platform.

ONR sponsors science and technology in support of the U.S. Navy and Marine Corps. Founded in 1946, ONR today funds work at more than 450 universities, laboratories, and other organizations. Science parties desiring to use FLIP should contact Tim Schnoor for availability:

Mr. Tim (Robert) Schnoor, Ocean Battlespace Sensing Science and Technology Department, ONR Code 32, ***tim.schnoor@navy.mil****, (703) 696-4530.*

➤ FLIP transiting in its horizontal configuration. *(Courtesy of Scripps Institution of Oceanography)*

Rating Conversions

Keep Good Sailors Employed

By MC1(AW) LaTunya Howard, Navy Personnel Command Public Affairs

With the merger of the Perform-to-Serve (PTS) and Fleet Rating Identification Engine (RIDE) programs, Navy leadership is advising Sailors to take full advantage of the program's conversion option to stay Navy as the force is shaped to provide future capabilities.

"We have 5,000 Sailors in overmanned ratings being looked at in PTS, but 6,000 vacancies in undermanned ratings not yet filled," said Mike Fair, deputy military community manager, Bureau of Naval Personnel. "We have to match these Sailors with undermanned specialties by educating Sailors on how PTS and Fleet RIDE can keep them from becoming separated from the Navy because they aren't in ratings where we need them."

PTS — implemented in March 2003 as a means for the Navy to match manning and mission requirements — is a centralized reservation system that balances overmanned and undermanned ratings, using reenlistments as its key tool. With Fleet RIDE integration, Sailors now have additional information on what other rating billets are open and what they qualify for outside of their current rating, based on their Armed Services Vocational Aptitude Battery (ASVAB) score.

"Most Sailors are loyal to their rating and are reluctant to change," said Senior Chief Navy Counselor (NCCS) (AW) Jermaine Rawls, Navy Personnel Command (NPC) PTS help desk. "Career Development Boards (CDB) are indispensable in raising the number of conversion requests through PTS."

▲ ITSR Bianca Cabral talks about her goals in the Navy during her career development board on-board the U.S. 7th Fleet flagship USS ***Blue Ridge*** (LCC 19). (*MC3 Devon Dow/USN*)

The chain of command must counsel Sailors before they enter the PTS window to emphasize the importance of applying for both in-rate and conversion quotas. "Some advantages that potentially accompany a rating conversion are advancement, a selective reenlistment bonus, formal training, college credit, and the opportunity to stay Navy," NCCS(AW) Rawls said.

The command career counselor can assist Sailors with understanding the benefits of considering all options throughout the PTS process.

"CDBs are a critical tool for the chain of command to interact directly with every Sailor from the day they check aboard," said Commander, Naval Air Forces, Vice Adm. Allen Myers. "They are a positive element of command climate, but only when implemented with the intended end state in mind: due diligence to our Sailors."

CDBs are required for all Sailors upon reporting to a command, after six months on board, after 12 months on board, and at 12-month intervals thereafter. Official guidance is contained in Office of the Chief of Naval Operations Instruction 1040.11B.

The command master chief and the command career counselor team are the focal points for career development initiatives within the command.

Typical topics covered during a board are watch-standing qualifications, continued education goals, advancement, short and long-term career objectives, PTS, and Armed Services Vocational Aptitude Battery (ASVAB) scores. Leadership can use CDBs to gain an understanding of the priorities of the Sailor, and help them set a good course towards success.

"It is crucial that we identify Sailors at initial CDBs who have low Armed Forces Qualification Test (AFQT) scores and get them enrolled into academic skills classes so they can retake the ASVAB test," said Vice Adm. Myers. "We are seeing Sailors who want to stay Navy but are not eligible to convert into other rates once in the PTS window."

"Waiting to correct low AFQT scores once a Sailor is in the PTS window is too late," he continued. "You have to identify it early with the initial CDBs. Losing a great Sailor because he or she could not meet a PTS window due to lack of initiating a PTS request is not something we desire."

For more information on PTS/Fleet RIDE visit the NPC PTS Web page ***http://www.npc.navy.mil/CareerInfo/PerformtoServe*** *or call 1-866-U-ASK-NPC.*

SABER: Supporting the Fleet with Timely and Accurate Tactical Intelligence

By David Winn, Surface Branch for Evaluation and Reporting, Office of Naval Intelligence

Based in Suitland, Md., the Office of Naval Intelligence (ONI), Nimitz Operational Intelligence Center's Surface Branch for Evaluation and Reporting (SABER) provides surface warfare capability assessments of both state and non-state organizations of interest to the U.S. Navy and national intelligence community (IC).

SABER analysts use all-source intelligence to analyze the organization, doctrine, operations, tactics, systems, training, and readiness of maritime forces. SABER's analysis is tailored to meet the needs of the U.S. Navy and IC with timely and accurate intelligence assessments on conventional surface forces.

Chartered in 1993 by the Chief of Naval Operations, SABER provides tailored operational threat assessments to commanders and mission planners as requested. To accomplish this, SABER produces all-source analysis of surface warfare capabilities and operations of potential threat countries. SABER provides near-term, mid-term, and future estimates and analysis of operations of state and paramilitary forces that have the capability to threaten U.S. naval assets and maritime interests.

Primary threat capabilities assessed include anti-surface warfare, mine warfare, coastal defense, amphibious warfare, maritime asymmetric and anti-access capabilities. These are disseminated electronically on a regular basis as SABERCUTs, which are comprehensive baseline assessments, as well as shorter Maritime Intelligence Reports (MIRs), when timely intelligence reporting is necessary on current events or new information. Additionally, SABER publishes a quarterly periodical, the SABER EDGE, which features intelligence products of interests to organizations across the surface warfare community. SABER does not analyze U.S. or allied operations and tactics, or recommend counter tactics.

SABER is staffed with a mixture of highly-trained surface warfare-qualified officers, naval aviators, and career civilian intelligence analysts. By combining the support and expertise of dedicated intelligence professionals with the practical, hands-on experience of Surface Warfare Officers, SABER brings new insight into intelligence assessments. SABER also makes extensive use of strategic and technical analysis developed at ONI and across the IC to inform and develop its own tactical and operational assessments. By looking beyond the order of battle to the doctrine, tactics, and training of an adversary's forces, SABER provides tactically relevant, near-term intelligence assessments based on their demonstrated and projected capabilities.

Divided into three regional teams, SABER covers all aspects of maritime warfare capabilities for credible potential adversaries in the Central Command, European Command and Pacific Command areas of responsibility. By focusing specifically on surface-based threats, SABER analysts can effectively produce in-depth studies that serve as a definitive reference for Navy leadership.

SABER provides briefings and finished intelligence products of capabilities and threat assessments to — and responds to Requests For Information (RFIs) from — a broad range of customers including, but not limited to Carrier and Expeditionary Strike Groups, Mine and Special Warfare units, Chief of Naval Operation's Strategic Studies Group, OPNAV staff, Naval Sea Systems Command, Navy Expeditionary Combat Command, theater commanders and other operational commanders, acquisition and research and development program managers, and partner IC agencies.

SABER support focuses on the doctrine and tactical capabilities of maritime adversaries rather than their strategic objectives.

SABER coordinates with its ONI counterparts for air and undersea warfare – Strike Protection Evaluations and Anti-air Research (SPEAR) and Submarine Warfare Operations Research Department (SWORD), respectively — to produce Integrated Warfare Assessments on threat countries, as well as combined products on topics of interest to all three warfare communities.

While SABER's reputation for solid assessments and unique insight has placed its analysts in increasing demand within the IC, serving the Fleet always remains its primary mission.

SABER analysts are always within reach of our customers. On SIPRNET, the collective address ***SABER@nmic.navy.smil.mil*** *reaches all members of SABER and ensures prompt replies. Reach us on* ***JWICS SABER@nmic.ic.gov****. SABER also maintains Intellipedia sites on JWICS (****http://www.intelink.ic.gov/wiki/SABER****) and SIPRNET (****http://www.intelink.sgov.gov/wiki/SABER****) where all products can be accessed. 24/7 fleet support queries can also be forwarded through the Senior Watch Officer of the Global Maritime Watch. E-mail* ***swo@nmic.ic.gov*** *on JWICS and* ***swo@nmic.navy.smil.mil*** *on SIPRNET.*

Testing Systems Engineering, Supportability, and Readiness Concepts during

Trident Warrior 2010

By Joel Timm, Richard Watanabe, Jack Lam, and Hai Tonthat, Naval Surface Warfare Center (NSWC), Port Hueneme Division

One of the challenges facing combat systems engineers is the ability to develop and test next-generation maintenance concepts to better support the Fleet. Naval Sea Systems Command (NAVSEA) combat systems In-Service Engineering Agents (ISEAs) are currently evaluating several distance support and business intelligence tools designed to support future and in-service systems that assess combat systems maintainability, supportability, and readiness. The most effective way to evaluate these tools and processes is through fleet experiments.

Trident Warrior 2010, an exercise sponsored by U.S. 3rd Fleet and U.S. Fleet Forces Command this past June, provided an opportunity to test the use of remote monitoring, remote diagnostics, and the integration of business intelligence processes and tools. The goal of the exercise was to determine whether fleet operators, decision makers, and the shore engineering support community found value in the improved informational awareness and mission readiness assessment processes and systems.

The status of a ship's equipment readiness and failures has traditionally been reported through radio messages or written electronic reports. Reporting the status of these failures after they have occurred is reactive in nature. If the shore support community is tasked to assist the ship through Distance Support (DS), the shore support technician has to get a detailed and accurate picture from the fleet technicians' messages to understand the problem. The resulting collaborative troubleshooting efforts can be lengthy, and communication between the shore support personnel and ship technicians can be misinterpreted, thus causing additional delays in correcting the problem. This is a prime concern for deployed platforms as non-operational systems can gravely impact the mission readiness of the Fleet.

ISEA uses field data from failures, maintenance history, and other metrics to analyze the root causes of those failures, and ultimately help facilitate the development of improvements for system design and support products. The current tools ISEA uses to obtain and analyze system performance metrics are manually intensive and limited in capability. As a result, engineering-level and supportability issues are not addressed in a timely manner, and the shore support community reacts to problems instead of anticipating and deploying solutions. Furthermore, establishing relationships between similar problems continues to be a challenge, as there is no systematic method to capture and maintain institutional knowledge of system issues found by shore-based subject matter experts (SMEs).

To more effectively support the Fleet and increase mission readiness while reducing maintenance costs, a number of tools have been developed and were the focus of *Trident Warrior*'s testing.

The Operational Readiness Test System Technical Assist Remote Support (ORTSTARS) introduced a capability for the shore community to establish a secure network connection from the shore facility to an Aegis ship's combat system. Through ORTSTARS, the shore-based technicians can provide real-time remote technical support by accessing the ship's system directly or capture recorded system performance data that is useful for engineering analysis.

The Advanced Readiness Management System (ARMS) collects and stores near-real time combat systems performance data from a ship through a secure remote connection. Data being fed to ARMS can be updated from systems such as ORTSTARS and processed to provide the overall health status of the system/equipment. Shore-based engineers can use ARMS to analyze the performance data and identify potential problems before they become critical.

The Engineering & Supportability Decision System (ESDS) provides an integrated data environment to identify and analyze potential engineering and supportability issues. ESDS improves the process for data analysis by combining necessary maintenance, engineering, and logistics data from authoritative sources in one location. ESDS uses ARMS as a data source, and combines it with historical maintenance and failure data to allow the SME to determine the root cause of identified problems.

Experimentation from *Trident Warrior* 2010 was designed to provide answers to detailed analytical questions involving these technologies in order to accelerate the process of getting them into the hands of the warfighter. The results of *Trident Warrior* 2010 experimentation will impact future doctrine and improve the technologies, allowing warfighters to keep ahead of adversaries in the rapidly changing environment.

Goal of the Readiness Testing

The test events were designed to examine the enhanced functionality of

FC2 Matthew Bell mans a SPY-1B radar console in the Combat Information Center aboard USS ***Shiloh*** (CG 67). *Trident Warrior* 2010 tested the ability of shore sites to remotely monitor and diagnose components, such as the radar, of an Aegis ship's combat system. (*Lt. j.g. Nelson Balido/USN*)

remotely projecting reactive, proactive, and predictive support to the Fleet in order to achieve the right readiness at the right time and cost. Effective and reliable information transfer was also tested as a key prerequisite to enable these capabilities.

To achieve the exercise's overall goal, the following objectives were developed:

- Validate the processes and connectivity for remote support by establishing the transfer of shipboard system data to the shore activity for analysis and report generation.
- Determine the effectiveness and usability of the received data for data analysis and the reports generated by the ISEA for the class squadron and ship.
- Identify additional opportunities to increase functional capabilities for remote support utilizing systems such as ORTSTARS, ARMS, and ESDS.

Experiment Execution

The ORTSTARS infrastructure allowed remote connection to USS ***Sampson*** (DDG 102) and the successful transfer of information. The testing approach and method involved using AN/SPY-1D(V) radar information transferred from the ship through the ORTSTARS infrastructure, to the shore ESDS/ARMS server located at Naval Surface Warfare Center (NSWC), Port Hueneme Division, Port Hueneme, Calif.

Monitoring during the month-long event was limited to underway time. Both the Transmitter Power and Phase data and the Element Test Function data were inputs to the ARMS system for readiness assessments and aided in the analysis of radar performance. The ESDS system was used to correlate the maintenance cost data of the SPY-1D(V) radar over time. Reports were then provided to the ship and the guided-missile destroyer (DDG) class squadron (CLASSRON).

To gauge the usefulness of the assessment information and gather feedback on increasing functional capabilities for remote support, surveys were administered at the conclusion of the exercise. The survey data from the shore-based SMEs, the DDG CLASSRON, and the ship's force all indicated a positive response and a need for tools like ESDS and ARMS.

The overall objectives of the experiment were thereby achieved. ISEAs validated the processes and connectivity, allowing the transfer of radar system performance data to shore for analysis and providing engineering readiness reports without error.

The usefulness and usability of the data and the reports by the ISEA for the CLASSRON and the ship were analyzed and proven to be effective tools for SMEs in identifying potential problem areas.

ISEAs also identified additional opportunities to increase functional capabilities by automating the transfer of data for the ESDS and ARMS.

Using a combination of technology and processes, this is the next step for increased mission readiness and effectiveness for surface combatants. ORTSTARS has been installed as a standard Aegis feature of the most recent DDG constructions and is being back-fitted as part of the DDG and guided-missile cruiser modernization programs.

Joel Timm works at NSWC, Port Hueneme, Calif., as the Remote Monitoring engineer in the Office of Engineering and Technology. Richard Watanabe currently is the manager, ESDS with NWSC. Jack Lam is an ESDS technical project manager at NSWC, and Hai Tonthat also works at NSWC as lead ISEA for Aegis Operational Readiness Test System (ORTS), Aegis LAN and interconnect system, and Aegis computers.

PEP: Providing SWOs an Opportunity to Contribute Internationally

By Lt. Matt Todd, International Officer and Exchange Programs, Chief of Naval Personnel

"Seeing the World" is one of the featured perks of being a Sailor in the U.S. Navy, and most of us will be fortunate enough to do just that at multiple points in our careers. But how many of us can say we were a part of the commissioning crew of a Norwegian frigate, or navigated through the Strait of Magellan … entirely in Spanish?

The Personnel Exchange Program (PEP) gives some of our Surface Warfare Officers (SWOs) the opportunity to do more than just see the world.

Lieutenants Matthew Hamm and Fletch Tove are two of those lucky few. After accepting PEP orders to Norway and Chile respectively, these SWOs each enjoyed their own unique tours abroad. They have found many similarities in serving with foreign navies. Lt. Hamm has so far spent over 18 months with the Norwegian Navy as an air warfare officer aboard three Norwegian ***Nansen***-class Aegis frigates, HNoMS ***Roald Amundsen*** (F311), HNoMS ***Fridtjof Nansen*** (F310), and HNoMS ***Helge Ingstad*** (F313), as part of their commissioning crew. Having served on three different hulls with three different crews, he feels fortunate to have gained a very broad perspective of the Norwegian Navy.

A thousand miles away, Lt. Tove reported directly to the Chilean Armada's ***Almirante Riveros*** (FF 18), a Dutch ***Karel Doorman***-class frigate. Serving as the assistant operations officer, he has spent over a year aboard patrolling Chile's lengthy and beautiful Pacific coastline, while getting a better understanding of La Escuadra Nacional, the Armada's primary battle fleet.

Even though they each enjoyed their own unique tour, both Lieutenants agree that complete immersion into a foreign navy and culture was unlike any other experience they've had in their lives.

From the beginning, Lt. Hamm was doing things in Norway he'd never imagined. Having previously stood watch as Officer of the Deck aboard a U.S. warship, he was immediately trusted by his captain to drive the ship through hundreds of miles of inner sea channels without any supervision. The task was overwhelming at first, both because he was accustomed to much larger bridge teams and due to the terrain of these waterways which made safe navigation a daunting task. But with a little training from his Norwegian colleagues on proven visual navigation and stop-watch

▲ Lt. Fletch Tove (second row, center), member of the Chilean frigate ***Almirante Riveros'*** cross-country team. (*U.S. Navy photo*)

▲ Lt. Matthew Hamm stands a typical Norwegian bridge watch with the assistance of a fully automated electronic navigation system. (*U.S. Navy photo*)

▲ Lt. Fletch Tove (back row, second from right) had the opportunity to train and work with the Chilean VBSS team. (*U.S. Navy photo*)

▲ A ceremony in Camp Norway, Nova Scotia, where Norwegian soldiers were trained during World War II. (*Lt. Matthew Hamm/USN*)

techniques, he quickly got the hang of it.

"This system forced me to be a more competent navigator and very proficient in my Norwegian, as all commands are given in the language," he said. "It's a type of sailing I may never experience again in my career." Aside from his bridge watchstanding, Lt. Hamm was also able to assist the integration of both navies during the Norwegian participation in a USS ***Harry S. Truman*** group sail, as well as USS ***Enterprise***'s Composite Training Unit Exercise (COMPTUEX).

Similarly, Lt. Tove wasted no time in becoming an integral part of ***Almirante Riveros***' crew. However, rather than initiating the new PEP officer with a difficult bridge watch, the Chilean officers welcomed him with a hail in their wardroom's immaculate bar. They swapped sea stories and compared differences in naval life between the two navies, while getting to know each other better in the process. Lt. Tove said he was "moved by how welcoming and accommodating the crew has been" since his first day onboard.

While he took the opportunity to enjoy himself with the Chileans, Lt. Tove also wasted no time in getting to work. Serving as the assistant operations officer, he was often called upon to translate North Atlantic Treaty Organization (NATO) message traffic because of its English format. During his first month aboard, he routinely gave full briefs in Spanish, and likewise conned the ship out of port. Calling on his visit, board, search, and seizure (VBSS) expertise from previous surface tours, he also helped develop the ship's maritime interdiction operations (MIO) instruction and training exercises.

Yet these were minor accomplishments compared with the heroic humanitarian effort the crew and the rest of the Chilean Armada put forth after a devastating earthquake rocked central Chile on Feb. 27, 2010, which created a devastating tsunami. The destruction in Chile reminded Lt. Tove of his time aboard USS ***Whidbey Island*** (LSD 41), and her part in providing emergency aid to Biloxi, Miss., following Hurricane Katrina. With the Chileans, he was able to provide aid first-hand, assisting in building a dozen emergency shelters for locals who had lost their homes. "It was one of the most rewarding things I have been able to do, not only in my naval career, but in my life," he emphasized.

Although the operational experiences of both officers have been challenging and exciting, they stressed that it is definitely not "all work and no play." During his tour, Lt. Hamm is living in the small city of Bergen, Norway and finds it difficult to remember a dull moment. "Everything from top-class art museums, restaurants, big-name concerts, performers, and the local soccer team, Brann, make Bergen a very social and outgoing place to live and enjoy oneself," he said. He also noted that the city is surrounded by "postcard-perfect mountains and flowing fjords," making the area an amazing place for outdoor activities

▲ Lt. Matthew Hamm and a view of the Brann football stadium in Bergen, Norway, from one of the most popular tourist destinations, Ulriken Mountain. (*U.S. Navy photo*)

▲ Norway's capital, Oslo, celebrates the commemoration of the Norwegian Constitution on May 17. (*Lt. Matthew Hamm/USN*)

like hiking, boating, and skiing. One of his favorite experiences was participating in the Norwegian Constitution celebration in May. Even though he has never found a shortage of activity in Bergen, Lt. Hamm also traveled throughout Europe, spending time in London, Amsterdam, and Spain.

Meanwhile, living in Viña del Mar, Chile, Lt. Tove finds plenty to keep him busy during off-duty hours. Located just across the bay from one of the Armada's main naval bases in Valparaiso, Viña del Mar is a renowned resort area that he described as a "picturesque seaside community." He believes that the timing of his tour could not have been better due to the concurrence of the World Cup and Chile's Bicentennial celebration, which featured an enormous Revista Naval (Naval Review) conducted by the Armada that was followed by an air show and fireworks.

The Chilean Armada also has a strong culture of fitness, which led Lt. Tove to join the ship's competitive soccer and cross-country teams. "Sport is a great way to bond, and I love that the level of competition here is so high," he explained. Lt. Tove has also been afforded a generous amount of time to travel by his chain of command because of the Chileans' extreme pride in their culture. His traveling highlights include star-gazing in the Atacama Desert, skiing at the world-renowned Portillo resort, and a solo expedition to the southern region of Patagonia. Next summer the Armada is scheduled to send him on a supply ship to Easter Island and on an icebreaker to Antarctica.

Lt. Hamm said he is saddened that the conclusion of his tour is approaching, but knows his time in Norway will benefit him greatly throughout his career. "Every job provides unique challenges, but surely my time in the Norwegian Navy is one of the most rewarding, memorable, and 'chance of a lifetime' experiences," said Lt. Hamm. He plans to take all that he has learned back with him to the Fleet, where he will next serve as the operations officer aboard USS ***Preble*** (DDG 88), homeported in San Diego.

Although Lt. Tove still has several months before he returns to the U.S., he is making the most of his remaining time with the Chilean Navy. When asked if he would recommend PEP to his peers, Lt. Tove said, "Without a doubt. PEP has afforded me an incredible opportunity to travel, forge strong new friendships, and really learn a new language. *Lo que más puede usted pide?*"

Good question; "What more could you ask for?"

For more information and to learn how to apply to PEP, check out the article "PEP: Your Opportunity" online at ***http://surfwarmag.ahf.nmci.navy.mil***

USS *John S. McCain* Leaves a Lasting Legacy

By Lt. j.g. Brian Hamilton, USS ***John S. McCain*** (DDG 56) Public Affairs Officer, and MC1(SW/AW) Brock Taylor, Navy Public Affairs Support Element West

More than 270 Sailors aboard USS ***John S. McCain*** (DDG 56) manned the rails in their summer whites as the guided-missile destroyer made final preparations to get underway from Da Nang, Vietnam, on Aug. 14. As the ship exited the basin, the crew waved their covers in unison to the citizens of Da Nang and to Vietnamese Navy personnel as a closing gesture of appreciation and well wishes.

What the crew left behind is a strong and growing friendship between the United States and Vietnam.

The ship made the port of call to commemorate the 15th anniversary of the normalization of diplomatic relations between the U.S. and Vietnam. As a sign of closer ties between the two nations, both navies spent a portion of the visit exchanging knowledge in non-combatant techniques such as damage control (DC), search and rescue (SAR), and culinary arts. U.S. Sailors also participated in community service projects and a sports day with their Vietnamese hosts.

"I've worked with several others navies before, but to be with the Vietnamese for the first time was a very meaningful experience for me," said DCC(SW) Paul Green.

Chief Green and his repair division Sailors, all experienced DC professionals, presented their equipment and put on a full day's worth of demonstrations for their Vietnamese counterparts. "Damage control is universal when it comes to saving a ship in any Navy," he added.

Chief Green and his Sailors displayed a broad range of DC skills, from dressing in full firefighting ensembles to using a portable exothermal cutting device (PECU). "The Vietnamese Sailors seemed very interested and showed a lot of enthusiasm. It was a lot of fun," said DCFN William Gilden.

▲ Vietnamese sailors watch as USS ***John S. McCain*** (DDG 56) Sailors demonstrate how to patch a leaking pipe during a damage control demonstration aboard the ship. (*MC1 Brock Taylor/USN*)

After watching a demonstration of a PECU cutting through a 1/4-inch steel plate in a matter of seconds, Vietnamese sailors learned how to operate the portable hydraulic cutting machine known as the "Jaws of Life." The final evolution brought everyone together, nearly hand-in-hand, to learn and practice hose-handling techniques.

In addition to DC, the ship's SAR team spent a day demonstrating for the Vietnamese Navy how the U.S. Navy conducts search and rescue missions. The hands-on exchange included everything from estimating the location of a lost person to safely deploying a rescue swimmer.

"We hope that the knowledge exchanges we conducted with the Vietnamese will have a positive impact on their SAR proficiency," said Ensign Jordan Diehl. "My hope is that what we did will help both our Sailors as well as the Vietnamese to be better prepared to respond to a mariner in distress should either of us come across one."

On March 10, 2010, ***John S. McCain*** came across just such a situation. While off the Korean peninsula, ***John S. McCain***'s bridge watch team spotted a fire on a ship on the horizon and spurred the ship into action. Crew members launched a rigid-hull inflatable boat (RHIB) which recovered 11 Korean sailors from a life raft near the burning vessel, cared for and fed the Koreans aboard the destroyer, and later transferred them to a Republic of Korea (ROK) Coast Guard vessel, once other Korean vessels had extinguished the fire.

"You don't get to decide when you will need to conduct a SAR mission," Ensign Diehl added. "You need to make sure that you are always ready, because you don't know when the necessity will arise."

During the Vietnam port call, Sailors made the most of their opportunities ashore. They participated in two community service projects, including one at Da Nang's Village of Hope Center for Disadvantaged Kids, where Sailors played with the children, distributed toys, and planted trees.

Back aboard ***John S. McCain*** , Sailors hosted a professional cooking exchange catered by local Da Nang chefs. "They showed us some amazing things," said Culinary Specialist 3rd Class Peerawit Komaraphat. "I was really impressed with the Vietnamese food, especially how they turned fruits and vegetables into works of art."

On the final evening, ***John S. McCain*** leadership held a reception on the flight deck, hosting local officials as well as U.S. dignitaries, including U.S. Ambassador to Vietnam, the Honorable Michael Michalak. The Vice Chairperson of the Da Nang People's Committee, Mr. Phung Van Viet, thanked the officers and Sailors for making the visit a memorable one.

During the reception, a video message recorded by Arizona Sen. John McCain, whose father and grandfather are the ship's namesake, was played on a large screen on the flight deck.

"I am confident that, together, our two countries will add to the security, the prosperity, and one day, I hope, to the freedom of all countries and peoples in the Asia-Pacific," Sen. McCain said.

Achieving a Brighter Future

Post-9/11 G.I. Bill ... Giving Aid and Opportunity to America's Most Deserving Heroes

By Department of Veterans Affairs Public Affairs

Navy veteran Paul Hurley swims with tremendous force. With precise body control and the power of a steamboat, he conquers the water. Hurley coordinates quick gasps of breath before he submerges into the water, flips direction, and explodes off the pool wall toward the other side. As he remerges, his George Mason University swim team skullcap pushes aside gallons of water as he continues to glide with a well-rehearsed and refined technique.

This feat of athleticism is made all the more impressive due to one inescapable fact — he has only one leg.

While serving in the Navy X-Division in Bahrain, Hurley was in a catastrophic car crash. He and a friend, Roger Napper, were driving home from a local café when they were sideswiped at 80 mph on the Bahrain Causeway. Napper did not survive and doctors said if Hurley hadn't been in such excellent condition from his training to be a Navy SEAL, he wouldn't have survived either.

Until experiencing the crash that nearly killed him, Hurley's primary ambition was to join the Basic Underwater Demolition/SEAL (BUD/S) special operations force, but after the amputation of his leg he had

Navy veteran Paul Hurley poses by George Mason University's practice pool. (*Josh Shirlen/American Independent Media*)

to readjust his plans. "Becoming a Navy SEAL was no longer an option," Hurley said. "I needed direction. I needed a purpose. The Post-9/11 G.I. Bill gave me both."

Though it's been in effect only one year, the Post-9/11 G.I. Bill continues to evolve. Newly approved legislation expands the Bill's benefits by revising assistance amounts, including distance learning as an approved program of education, and covering on-the-job training, apprenticeships, and correspondence courses. The Department of Defense also adjusted the Basic Allowance for Housing (BAH) rates to reflect updated housing costs across the country, effectively increasing the maximum benefits in most states. Hurley receives $1,900 a month for BAH, and his books and tuition at George Mason University are covered in full by Post-9/11 G.I. Bill benefits.

Hurley enlisted in the Navy upon graduation from high school, so after two and a half years of grueling rehabilitation following the accident, he decided his best course of action was to attend college.

"I was using the [Montgomery] G.I. Bill right before I got out and I was worried," Hurley explained. "I was worried because there wasn't a whole lot of money there, and as soon as I found out about the Post-9/11 G.I. Bill kicking in, I got really excited. That meant I could spend more time studying, focusing on school, and doing what I loved, like swimming."

Hurley is a member of the Patriot Masters — the George Mason University swim team — and is close to earning a spot on the U.S. Paralympics team. After graduation, he plans to use whatever is left from his G.I. Bill benefits to study international law in hopes of one day representing his nation in international affairs.

Hurley is not the only veteran who has felt the relief of the Post-9/11 G.I. Bill. According to Veteran Affairs Education Service Director Keith Wilson, more than $4.7 billion has been paid to more than 340,000 veterans. Wilson added that the VA now processes about 10,000 G.I. Bill claims a day.

With a struggling economy and a college degree increasingly the prerequisite to a good career, many veterans need a lifeline to achieve a brighter future. The Post-9/11 G.I. Bill aims to be that lifeline, offering veterans new opportunities in the country they have fought so valiantly to protect, and providing the support necessary to tackle the challenges of a changing world.

"The G.I. Bill has been great," Hurley claimed, "and it's relieved a lot of stress, because I had no idea how I'd make ends meet."

With adversity in check and a promising future ahead of him, Paul Hurley no longer struggles to keep his head above water. With a Sailor's strength and a student's ambition, he's charging right through it.

Post-9/11 veterans can view the benefits they are entitled to receive, and apply for these benefits at ***www.gibill.va.gov****. Also on the G.I. Bill web site: watch veterans and service members, including Paul Hurley, talk about their personal experiences with the Post-9/11 G.I. Bill under the 'My Stories' tab.*

Robert Bailey, a veterans' benefits coordinator, briefs active duty Sailors and retirees about the Post-9/11 GI Bill at Naval Construction Battalion Center, Gulfport. Miss. (*MC1 Terry Spain/USN*)

100 Years of Fleet Engineering Contributions

By Dr. E. Michael Golda, Chief Technologist, Machinery Research and Engineering Department
Naval Surface Warfare Center Carderock Division – Ship Systems Engineering Station

Now celebrating its 100th year of operation, the Naval Ship Systems Engineering Station (NAVSSES) at the Philadelphia Naval Yard had its beginnings as the U.S. Navy changed from coal to oil for fuel to fire its steam-powered ships. Adm. George W. Melville, Chief of the Bureau of Steam Engineering and Chief Engineer of the Navy, advocated for the establishment of Navy-operated laboratories and testing stations that would use rigorous methods to solve the numerous engineering challenges confronting naval ships.

Adm. Melville's advocacy led to the establishment of the precursor to NAVSSES, the Fuel Oil Testing Plant (FOTP), by the Secretary of the Navy on Nov. 18, 1910, at the Philadelphia Naval Yard. The FOTP was not only a laboratory, but also a fully functioning steam plant constructed to assess and improve the performance of steam boilers fired by fuel oil. The FOTP examined the full range of Navy boiler engineering issues including all features of boiler design, oil and water supplies, instrumentation, and the performance of different types of fuel oil.

In the 1920s, FOTP's capabilities expanded with new fire rooms and support facilities. The FOTP continued testing new boiler prototypes and conducted research on fuel oil burners, gas and steam baffles, soot blowers, improved boiler tubes, and better methods for maintaining boiler firesides and watersides.

The organization's name officially changed to Naval Boiler Laboratory (NBL) in 1931. NBL continued developing more fuel-efficient, smaller and lighter boilers. Developments continued in the area of fuel oil burners, air registers, safety valves, and the first generation of automatic boiler controls, as well as boiler compounds, rust-preventive compounds, boiler-cleaning chemicals, test procedures for boiler water samples, and understanding the causes of fireside slag. The lab's role in naval machinery expanded in 1941 with a new facility for testing main propulsion steam turbines and reduction gears. This prompted another name change, from NBL to the Naval Boiler and Turbine Laboratory (NBTL).

Meanwhile, the Naval Research Laboratory (NRL) developed a highly efficient thermal diffusion process to separate U235 isotopes from uranium U238 in the early 1940s. This was important for both nuclear reactors and weapons since U235 isotopes are the only ones in nature that can be broken apart by thermal neutrons. The NRL selected the NBTL as the site for the full-scale facility because of the availability of large quantities of high-pressure, high-temperature steam. NBTL provided more than 5,000 pounds of partially-enriched uranium for further refinement, some of which was incorporated into the U235 weapon, also known as "Little Boy," used to end the war with Japan. The U.S. Army later adopted this process and relocated it to Oak Ridge, Tenn., as part of the Manhattan Project.

During the 1950s, the Cold War accelerated the development of nuclear propulsion, new weapons systems and new classes of surface combatants. NBTL remained an active participant in the evolution of the Navy's machinery capability. They built a three-story, 40,000-square-foot extension to house additional shop space and offices.

▲ Class #35 of the Fuel Oil School at the FOTP poses for a photo on March 13, 1924. (*Photo Courtesy of Naval Ship Systems Engineering Station*)

▲ First Commanding Officer of the FOTP, Cmdr. James Hyland (Seen here as a Captain). (*Photo Courtesy of Naval Ship Systems Engineering Station*)

In 1966, the NOTL became the Naval Ship Engineering Center, Philadelphia Division (NAVSEC Philadelphia), when Navy Bureaus restructured into Systems Commands. They divided the work into three broad categories: heat systems, engine systems and applied physics. The Heat Power Division evaluated and improved numerous steam generators for the LPH 2, DDG 15, DE 1040, and the DEG 1 classes. The Machinery Division focused on turbines and propulsion plants, gears, clutches, couplings, turbogenerators, catapult receiver systems, lubrication, diesel engines, and air compressors.

With a dramatic drop in defense spending in the mid-1970s, NAVSEC Philadelphia focused on diverse engineering tasks, including work on motor generators, cleaning large electrical equipment aboard ships, and solving problems with submarine steering, diesel engines, fuel pumps, and a wide variety of other pieces of equipment. Philadelphia continued the tradition of solving tough machinery engineering problems, receiving dozens of fleet issues for investigation, analysis, and correction.

The Chief of Naval Operations officially established NAVSSES in October 1979 with missions to provide test and evaluation and in-service engineering. NAVSSES reduced the acquisition risk of the SSN 688I, LSD 41, FFG 7, and DDG 51 classes through full-scale, integrated machinery systems testing. Because of their extensive experience with full-scale steam testing, NAVSSES tested the main propulsion unit of the improved ***Los Angeles***-class submarine. The LSD 41 Land Based Engineering Facility validated the performance of the integrated 17,000 Brake HP diesel main propulsion system. NAVSSES significantly improved the reliability of the FFG 7 ship service diesel generator by conducting more then 12 years of full-scale testing. In the mid-1980s, they established the DDG 51 Land Based Engineering Site to conduct full scale testing of the gas turbine propulsion and generator systems.

NAVSSES conducted tests of fuel derived from shale from 1984 to 1987, and became the Navy's recognized technical experts for machinery control systems. NAVSSES ensured the Navy's ability to meet international pollution regulations by developing, testing, and providing oversight for the installation of shipboard oil water separators.

The end of the Cold War meant less ambitious ship building programs and reductions and realignments in Navy personnel and facilities. The Base Realignment and Closure (BRAC) process led to closing the Philadelphia Navy Ship Yard and Naval Station Philadelphia in 1991. The Secretary of the Navy approved the establishment of the Naval Surface Warfare Centers the same year, with NAVSSES becoming part of the Carderock Division (NSWCCD), but retaining its status as a separate command on the banks of the Delaware River in South Philadelphia. The opening of the Machinery Research and Development Center on Oct. 22, 1999, strengthened and expanded the research capability of NAVSSES by adding 10 relocated facilities and 275 personnel to the Philadelphia site from Annapolis, Md., a result of BRAC 1995.

The centralized concentration of engineering expertise and equipment in Philadelphia has also great effects on the instruction of the operators and supervisors of the Fleet. The original FOTP trained over 5,200 Navy officers and enlisted Sailors between 1912 and 1926 in safe and efficient boiler operation through its Fuel Oil School. In 1942, the Oil Burning School opened at NBTL. More than 25,000 officers and Sailors trained on a new generation of high-pressure, high-temperature boilers by the end of World War II. NAVSSES continued its role as a schoolhouse when the Fleet shifted to Gas Turbine prime movers. More than 3,500 officers and enlisted have trained at the DDG 51 Land Based Engineering Site, including 60 pre-commissioning units (PCUs) and 680 prospective chief engineers and commanding officers. NAVSSES currently teaches between 150 and 180 Sailors from DDGs undergoing modernization and PCUs, and USNA mechanical engineering majors each year.

During its first century, NAVSSES provided constantly improving machinery that helped the U.S. Navy win two World Wars and the Cold War. During its second century, NAVSSES will bring that very same dedication and engineering rigor — combined with the unique creativity of current and future employees — to solve present and future machinery engineering challenges facing the Navy.

An Intriguing History of the U.S. Navy Guided-Missile Cruiser

By MC1(AW) Scott Vanderwyst, *Surface Warfare*

Guided-missile cruisers have a complex, if short, history. From conversions of light and heavy cruisers to different designators, the guided-missile cruiser has left its unique imprint on the Navy.

It all started in 1952, when the Navy made the decision to upgrade two World War II heavy cruisers, USS ***Boston*** (CA 69) and USS ***Canberra*** (CA 70), installing two twin missile launchers for the newly developed *Terrier* anti-aircraft guided-missiles. Since both ships kept their 8-inch guns, they were re-designated guided-missile heavy cruisers (CAGs).

USS ***Boston*** (CAG 1) was re-commissioned in November 1955. She spent most of the following two years deployed in the Atlantic and Caribbean, testing her new weapon systems and conducting training to properly operate them. In 1958, ***Boston*** provided support during the Lebanon crisis. She took part in numerous deployments during the next eight years, often serving as flagship.

Boston began combat duty off the coast of Vietnam in 1967, where she fired thousands of rounds of conventional ammunition against enemy targets. However, due to technological advancements, her missile system became obsolete by 1968 and she was re-classified as a heavy cruiser and re-assigned her original hull number before being decommissioned two years later.

In 1957, the U.S. Navy also decided to convert six light cruisers, USS ***Galveston*** (CL 93), USS ***Little Rock*** (CL 92), USS ***Oklahoma City*** (CL 91), USS ***Providence*** (CL 82), USS ***Springfield*** (CL 66), and USS ***Topeka*** (CL 67), to guided-missile light cruisers with the designators CLG 3 through CLG 8, respectively. The first few ships initially kept their original hull number and only the designator changed, but the Navy decided to continue the numeric order of the cruisers. For example, ***Galveston*** began as CL 93, then became CLG 93, and finally finished service as CLG 3.

The newly re-classified USS ***Providence*** (CLG 6) began a massive overhaul in May 1957 and was re-commissioned in September 1959. The overhaul included the removal of all but one of her six-inch gun turrets and five-inch gun mounts. In their place, a twin-armed launcher and a large missile magazine were installed for the *Terrier* missile. ***Providence***'s superstructure was also removed, and replaced with an enlarged version with improved radar and communication capabilities. ***Providence*** then served the Navy in numerous roles throughout the remainder of her service, including flagship of 7th Fleet from 1962-1964 and again from 1966-1968.

During the Vietnam War, her advanced radar systems were used to control air combat operations while simultaneously shelling enemy targets ashore. ***Providence*** also provided naval gun fire support to the Marines fighting to recapture Hue City during the Tet offensive in February 1968. In April 1972, she returned to Vietnam one last

▲ Converted from a heavy cruiser, USS ***Boston*** (CAG 1) was the U.S. Navy's first guided-missile cruiser. (*Photo courtesy of Naval History and Heritage Command*)

▲ USS ***Providence*** (CLG 6), a converted light cruiser, conducted several operations during the Vietnam War. (*Photo courtesy of Naval History and Heritage Command*)

time to provide gun support against enemy targets before her final transit stateside in December.

Commissioned in September 1961, USS ***Long Beach*** (CGN 9) had a unique history. Besides being the last U.S. warship to be fitted with teakwood decks, she had the distinction of being the first ship built as a guided-missile cruiser rather than converted from another class. ***Long Beach*** was also the first nuclear-powered surface warship in the world, and the first U.S. Navy combatant ship with guided-missiles as her main battery. To demonstrate the advantages of nuclear power, ***Long Beach*** sailed more than 30,000 miles at an average speed of 25 knots without being refueled or resupplied during Operation *Sea Orbit*, in August 1963.

Following the success of ***Long Beach***, the Navy reverted to conversion, turning three heavy cruisers, USS ***Albany*** (CA 123), USS ***Chicago*** (CA 136), and USS ***Columbus*** (CA 74), into guided-missile cruisers during the early 1960s. This time the Navy dropped the word "heavy" in the reclassification, respectively designating the ships CG 10 through CG 12. USS ***Rochester*** (CA 124) and ***Bremerton*** (CA 130) were also scheduled for conversion and tentatively labeled CG 13 and CG 14, before the Navy cancelled overhaul plans for those two warships.

In June 1966, USS ***Chicago*** (CG 11) began conducting radar surveillance in support of U.S. Navy air operations over North Vietnam. Duties included tracking friendly aircraft, controlling barrier combat air patrols, advising support aircraft, and coordinating strike information with the Air Force. In August, ***Chicago*** assumed the duties of anti-air warfare commander (AAWC), demonstrating the ability of a CG to track complex air operations. At the same time she became the primary source for MIG warning information and assumed surveillance responsibility for the North Vietnamese-Chinese border.

For a decade, no more ships were converted to guided-missiles cruisers. This changed in 1975 when the Navy reclassified all of the guided-missile frigates (DLGs) as either guided-missile destroyers (DDGs) or CGs. Additionally, the designator CG 15 was intentionally skipped in order to keep the DLG numbering series intact. The first ship reclassified was USS ***Leahy*** (CG 16), previously DLG 16, and the system went up to and included USS ***Arkansas*** (CGN 41) when it was commissioned in 1980, which on paper had been ordered as DLGN 41. CGN 42 was to have been another nuclear powered guided-missile cruiser, but construction on that project was stopped in 1976 after they were found less cost and manpower-efficient than other options.

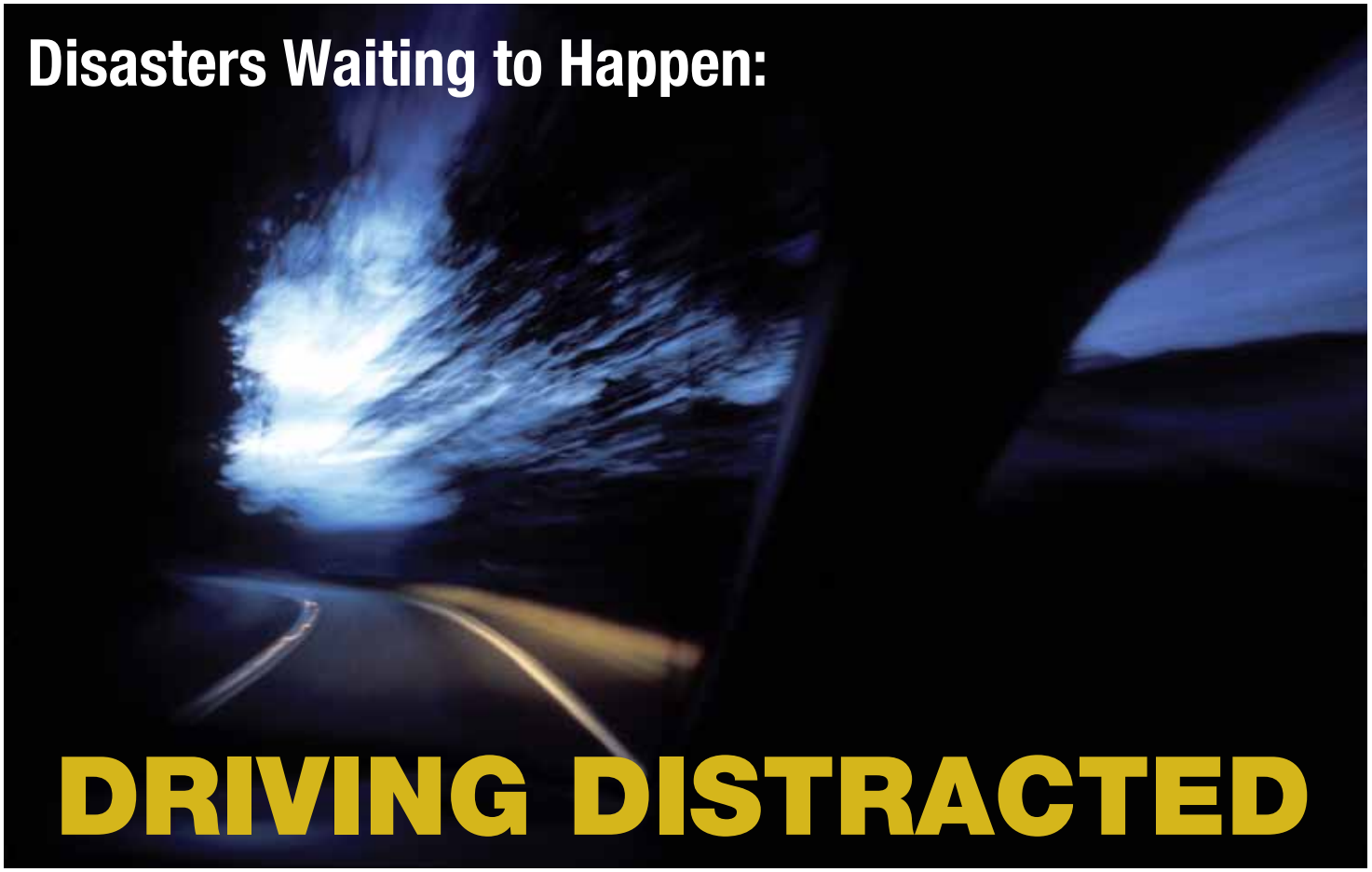
In 1980, the new DDG 47-class guided-missile destroyers were reclassified as guided-missile cruisers before they were laid down, although they still used ***Spruance***-class destroyer hulls and machinery. Since hull number 47 was already designated for the first vessel, CGs 43 through 46 were skipped. Thus, USS ***Ticonderoga*** (CG 47), commissioned in 1983, through USS ***Port Royal*** (CG 73), commissioned in 1994, were the last set of guided-missile cruisers to be converted or constructed to date. CGs 47 through 51 have since been decommissioned, but the remainder continue to serve with distinction in today's Surface Fleet.

For more information, visit the Naval History and Heritage Command: ***http://www.history.navy.mil/***

▲ USS ***Long Beach*** (CGN 9) was the world's first nuclear-powered surface warship, and the first Navy combatant ship with guided-missiles as her main battery. (*Photo courtesy of Naval History and Heritage Command*)

▲ USS ***Chicago*** (CG 11) assumed duties as anti-air warfare commander and surveillance responsibility for the North Vietnamese-Chinese border during the Vietnam War in 1966. (*Photo courtesy of Naval History and Heritage Command*)

Disasters Waiting to Happen:



DRIVING DISTRACTED

Derek Nelson, Media Division Head, Naval Safety Center

We've all seen them. Who in the heck are they talking to or texting? How come they're not paying attention to the potentially deadly task at hand: driving? Distractions to drivers are increasing, but many people don't understand the threat. It seems intuitive that being engrossed in a conversation while driving takes part of your mind off of driving. And most of us have seen other drivers do dangerous things while they're talking on the phone. According to the National Highway Traffic Safety Administration (NHTSA), at any given moment, more than a million American drivers are talking on handheld phones.

But the phones aren't the only distraction. How many of us scorn those talking but just as guiltily and dangerously text, eat, drink, shave, or put on make-up while driving? Riding to work with his van pool the other day, my boss said a woman in the next car was reading a newspaper propped on her steering wheel—at 70 mph on a busy interstate. Drivers fiddle with their cell phone, GPS, or CDs, or probe through a purse or glove compartment.

Yet we still think that somehow we're not like everyone else, that we're immune to distractions. To make matters worse, the rules can be confusing, and even the research is conflicting.

Behind the wheel, you make an average of 20 major decisions during every mile. What to post on your Facebook page should not be one of them. You often have less than half a second to act to avoid a collision—you have to pay attention. A simulator study showed that drivers on cell phones fail to see as much as half the information in their driving environment. Not a huge risk as long as nothing happens, but who can predict when that driver in front of you is going to stand on their brakes or swerve around some debris?

The Insurance Institute for Highway Safety (IIHS) recently reported that a driver's likelihood of getting in an accident increases fourfold when talking on a wireless phone, regardless of whether it's handheld or hands-free. Some studies have shown that distracted drivers appear to be just as impaired as drunk drivers, with a four to six times greater risk of crashing.

A recent series of military climate assessment surveys found that 18 percent of the respondents "often" or "very often" used a cell phone while driving, and 32 percent "sometimes" did so. Of the 60 personnel who added comments, 48 justified their driving habits by saying that they use a hands-free phone. However, some research shows that these devices are only marginally "safer." This is because it is the act of being in a conversation itself that is the main distraction, not the key strokes.

Comments from participants raised important issues. One pointed out that multi-tasking and dealing with other distractions is often a necessity. One wrote, "Are you going to ban people from having conversations with passengers? How about banning children in cars—a screaming baby in the back seat is a heck of a lot more distracting than a cell phone." The commentator makes a good point; you need to aware of all distractions and have a strategy for dealing with them. The fact that other distractions exist or are legal doesn't mean they are any less potentially dangerous, or that preventing additional distractions is not a necessary effort.

One survey participant said he talked on his phone while driving only when he was "making plans about being somewhere," or giving updates on his status. "Normally I have music that is way too loud to be on the phone," he wrote, oblivious to the potential distraction loud music may also create.

Some respondents recognize the dangers. "I honk my horn when someone is in front of me on a cell phone," one wrote. "I hate it. I've even seen someone on two cell phones at once, steering with his elbows."

Just as technology creates distractions, it also provides possible solutions. Many voice-activated smartphones can also dial and answer with voice commands, making them truly hands-free, but still not eliminating the distraction of the conversation. However, multiple versions of software are coming to market in the near future that control incoming calls, providing a tailored "I'm busy" response when the owner is driving.

New military rules are also aimed at curbing distractions. DoD and Office of the Chief of Naval Operations (OPNAV) instructions prohibit a driver's use of any hand-held electronic device such as cell phones in government-owned or rented vehicles, whether on base or off, unless parked. The OPNAV instruction extends this prohibition to all drivers on Navy installations. An Executive Order prohibits texting by federal employees driving government or private vehicles on official business, or when using government-supplied electronic devices.

But technology and rules aren't enough to fully protect you. You have to recognize the range of needless distractions: gadgets, noise, conversations, and problems. One of the survey respondents said of his phone, "I'll answer it, tell them I'm driving, then hang up and call them back when I stop." Better yet: Don't pick up the phone in the first place.

A few other risk-management suggestions:

- When on a long drive, experts recommend taking a break every two hours. Use that time to check and respond to voicemails and texts, or to provide status updates to your family, friends, or boss.
- If you call someone and they're driving, end the call and talk later.
- If you're a passenger and you can see that your driver isn't focused on the road, speak up.
- Adjust the mirrors and seats, and locate accessory controls and climate settings before you start driving.
- Turn off your phone while you're driving.
- If you have distractions that you can't mitigate such as a crying baby, increase the distance between your car and the car in front of you to give yourself more time to react to the unexpected.

Before you turn the ignition, make the decision not to drive distracted. When you answer your phone on the road, it's not only your life that you're taking in your hands.

Members of the Navy Mid-Atlantic Region Fire Department at Naval Air Station (NAS) Oceana, Virginia Beach, Va., simulate an emergency extraction rescue from a motor vehicle accident using the Jaws of Life. (*MC3 Jason Zalasky/USN*)

The Science of War:

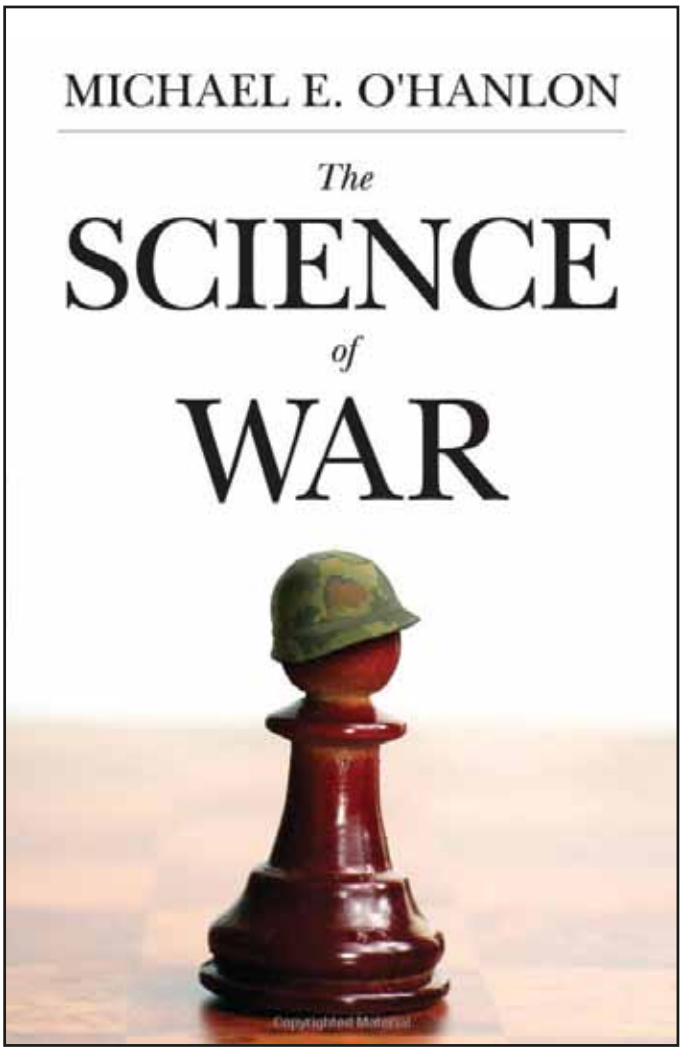
Defense Budgeting, Military Technology, Logistics, and Combat Outcomes

Review by Timothy Walton, Associate, Delex Systems, Inc.

This policy textbook published in late 2009 has quickly become a favorite of policymakers and military members alike. In *The Science of War*, Brookings Institute scholar Michael O'Hanlon briefly, but methodically, surveys defense budgeting, combat modeling, logistics, overseas bases, and technical issues in defense analysis. His work in publishing this book is a timely and valuable tool for critically analyzing crucial defense decisions.

O'Hanlon opens with the claim that imprecise scientific methods in defense analysis must never substitute for the study of the art, history, and contemporary aspects of warfare. Reaffirming the wisdom of Clausewitz and Sun Tzu, O'Hanlon argues that war remains an extension of politics, a fundamentally human endeavor in which questions of morale, leadership, cunning, and innovative tactics play a crucial role. But beyond the art of war, O'Hanlon asserts that rigorous analysis — the science of war — can help predict combat results, improve military capacity, and inform all the participants of the public policy process. In each of the four main chapters of his work, O'Hanlon presents analytical tools, supporting exercises, and policy alternatives to improve military studies using a scientific approach.

He begins by taking on the byzantine defense budgetary process, familiarizing readers with the complex lexicon of budgets necessary to navigate this policy minefield. He contends that budget analysis remains an imprecise process, not only because of the inherent uncertainty involved in anticipating future national security needs and developing new technologies, but also due to sloppiness, and political and parochial motivations.



In general, broad arguments matching American defense spending to historical, international, or economic perspectives are suspect. Instead, policy makers must match defense budgets with strategic demands, a metric O'Hanlon uses in comparing U.S. defense spending with that of China. Moreover, he presents different ways to categorize, break down, and define the defense budget such as the Kaufmann "top down" approach, the McNamara "programs" approach, and the Congressional Budget Office's "bottom-up" approach. He concludes by showcasing metrics to gauge military readiness before presenting several engaging questions. Those particularly pertinent to the Navy include asking, "What is the most cost-efficient way to carry out the forward presence mission of the U.S. attack submarine force?" and "How much would the United States need to cut back the Navy or Air Force to add two divisions to the Army?"

Chapter two covers combat and force-sizing models. Although it is incredibly difficult — if not impossible — to accurately forecast war, models are useful for predicting results and assessing potential capabilities and limitations.

Fitting the general mood of his book, O'Hanlon approaches complex models with a degree of skepticism, searching for the basic factors influencing them. Overly complex computer combat models might employ the wrong historical analogies or obscure key assumptions behind impenetrable lines of code. He presents relatively simple, yet illuminating mathematical models for a variety of forms of warfare including urban combat, counterinsurgency, peacekeeping, amphibious assault, blockade, and nuclear exchange calculations. Overall, O'Hanlon clearly presents the underlying military, political, and strategic assumptions that affect the models, allowing practitioners to learn them and apply them to contemporary questions.

The Science of War then ventures into the indispensable topics of logistics and overseas bases. Recognizing the oftentimes daunting level of detail involved in logistics, O'Hanlon focuses on transportation assets and bases. One marvels at reading the magnitude of forces the U.S. mobilizes globally in defense of its interests. For instance, just ten soldiers in modern military operations typically consume a ton of supplies in a single day, with two-thirds of that weight consisting of fuel and water. In addition to logistical capabilities, O'Hanlon also covers the constraints and practical obstacles facing logistical operations. Even if the U.S. has a certain logistical capability, what obstacles prevent the full implementation of that system?

O'Hanlon sketches an overview of America's global-basing network, and explains its vital role in maintaining U.S. access to areas of strategic interest. In asking "Which U.S. bases in Japan are most important?" O'Hanlon estimates that for Yokosuka, "a forward presence of one carrier in the Western Pacific could be maintained either by one carrier homeported in Japan, or about five carriers sharing the job based in the United States -- the difference could be as much as $25 billion a year."

In the final chapter which covers technical issues in defense analysis, O'Hanlon reviews the physical principles and parameters of several technologies — or methods — of warfare. He argues that scientific literacy of key concepts and terminologies is necessary for warfighters and generalists to participate in and influence highly technical conversations.

O'Hanlon also considers the revolution in military affairs debate, arguing that evolutionary rather than revolutionary changes have characterized advances in key defense technologies. He then covers trends and future opportunities in high energy lasers, launch vehicles and rockets, microsatellites, missile defense, and nuclear weapons.

Some of O'Hanlon's policy conclusions and recommendations appear dated rather than forward-thinking. For instance, in the budgeting chapter, O'Hanlon unfortunately calls for an increase in the size of the Army and Marine Corps, and increased compensation for men and women in uniform, seemingly oblivious to the deleterious effects of rising personnel costs, in particular health care costs, on service budgets. Furthermore, in several other sections O'Hanlon overestimates U.S. or Taiwanese capabilities vis-à-vis China, and discounts China's ability to develop novel capabilities and tactics. For instance, O'Hanlon pays little heed to rising Chinese anti-ship missile capabilities, much less anticipating the effects of an anti-ship ballistic missile. These deficiencies, however, do not detract from the central purpose of his book.

The Science of War succeeds as a textbook on how to analyze defense problems. O'Hanlon's analysis provides a clear guide to illuminating choices, bounding problems, and ruling out bad options, oftentimes through analytical common sense. His book offers Surface Warfare professionals the chance to learn about varied forms and aspects of warfare as well as provides an introduction to topics such as quantitative modeling. As such the book might provide a more generalist complement to Capt. Wayne Hughes' *Fleet Tactics and Coastal Combat*.

The Navy — and the nation — face looming defense challenges. How will it balance personnel and acquisition accounts, raise Surface Fleet readiness, efficiently procure new systems, improve U.S. force posture in the Pacific, and prepare for advanced and dynamic potential adversaries? Addressing these challenges to ensure U.S. national security success will require serious study and men and women capable of creatively thinking about techno-tactical and operational questions without ignoring the broader concerns of strategy and grand strategy. As the Surface Warfare community continues to hit the books, *The Science of War* is a very good place to start.

The Science of War: Defense Budgeting, Military Technology, Logistics, and Combat Outcomes
By Michael E. O'Hanlon (Princeton University Press 2009)
266 Pages
ISBN: 978-0-691-13702-5
List price: $35.00

What Surface Warriors Need to Know to Help Manage Stress

Hugh Cox, Public Affairs, Navy and Marine Corps Public Health Center (NMCPHC)

While the stress of the winter holidays may be over, today's Surface Warriors and their families must deal with a variety of stressors year-round, and they may not always be adequately equipped do it. The recently launched Navy Operational Stress Control Program (OSC) aims to be just the tool to help Sailors and their families manage stress in today's high operational-tempo (OPTEMPO) environment.

OSC, the Navy's newest resource designed to help the warfighter navigate the day-to-day pressures associated with frequent, sometimes unscheduled deployments, was developed by a host of subject matter experts from across the Navy.

"The effects of stress, when not recognized or properly managed, particularly on Sailors and their families during deployments, can be devastating," explained Dr. Mark Long, public health educator with NMCPHC, located in Portsmouth, Va. "OSC has been designed for application in any environment: underway aboard ship, at home, and basically anywhere else the warfighter goes."

According to Brett Darnell, a contractor providing technical support to NMCPHC, OSC is proving to be a critical tool in building and maintaining strength, wellness, and mental toughness in individual Sailors, their families, and their commands. The program also helps them prepare for the challenges and stressors associated with military operations and everyday life.

"Navy leaders may not have the ability to change the OPTEMPO and demands of military operations, but by employing the concepts and tools of OSC, they are better equipped to maintain their most important assets — their shipmates — in top condition, ready to handle any challenge they encounter," Darnell emphasized.

OSC subject matter is currently being incorporated into training programs from Boot Camp to the Senior Enlisted Academy, and from Officer Candidate School to the Naval War College. Navy OSC training is now a part of the leadership training continuum. As individuals advance in their careers, their required leadership training now contains OSC content appropriate to their level of responsibility and maturity.

OSC may be just the right tool for Sailors and their families to prepare for the stress associated with the holiday season – and beyond.

"Stress usually affects all of us, whether we are at home, traveling, entertaining, visiting family, or deployed," Long said. The keys to minimizing and navigating stress are as follows:

- Recognize that anxiety and distress does occur.
- Identify triggers so we may prepare for and handle them.
- Make time for ourselves, take a breather, seek out support and assistance from others.
- Practice healthy behaviors.

For more information on OSC, and dealing with stress, visit the Navy Operational Stress Control website at **http://navynavstress.com/**.

Are you an expert at identifying surface combatants from foreign navies? Can you tell whether a ship on the horizon is an ally or an enemy? It's time to test your ship identification skills. Man the "big eyes," and take a look at the ship pictured below and let us know what type of vessel it is, its name and what nation operates it.

Send your entry to **surfwarmag@navy.mil** with "Ship Shape" in the subject line. Be sure to include your rate, name, ship or unit of assignment and current mailing address. The first individual to provide the correct information will receive recognition in the next issue of *Surface Warfare*.

Congratulations to retired Cmdr. Dennis Irwin, working as an analyst at Afloat Training Group Pacific, who was the first to identify last issue's ship as the Canadian Navy ***Iroquois***-class guided missile destroyer HMCS ***Algonquin*** (DDG 283).

➤ The Canadian Navy ***Iroquois***-class guided-missile destroyer HMCS ***Algonquin*** (DDG 283) returns to Joint Base Pearl Harbor-Hickam after participating in *Rim of the Pacific* (RIMPAC) 2010 exercises. RIMPAC is a biennial, multinational exercise designed to strengthen regional partnerships and improve multinational interoperability. (*MC2 Paul Honnick/USN*)

▲ This ship sails alongside USS ***Mustin*** (DDG 89) while commemorating the fiftieth anniversary of an alliance. (*Photo courtesy of the Japan Maritime Self-Defense Force*)

Views from the Fleet

➤ AEAN John Fisher shovels snow in front of USS ***Constitution***. (*SN Shannon Heavin/USN*)

➤ OSSN Chris Marcial mans the radar station on the bridge of USS ***Harpers Ferry*** (LSD 49). (*MC1 Richard Doolin/USN*)

➤ FC3 Aaron Barnard supervises FC3 Jeffrey Brickson as he loads the Close-in Weapons System aboard guided-missile cruiser USS ***Leyte Gulf*** (CG 55). (*MC3 Robert Guerra/USN*)

◀ USS ***Barry*** (DDG 52) transits the Strait of Gibraltar as part of the USS ***Enterprise*** (CVN 65) Carrier Strike Group. (*MC3 Jonathan Sunderman/USN*)

▲ HT3 Nelly Martinez grinds a TV bracket in the welding shop aboard the aircraft carrier USS ***Ronald Reagan*** (CVN 76). (*MC3 Oliver Cole/USN*)

▼ USS ***Crommelin*** (FFG 37) Sailors launch an inflatable target, called a "killer tomato," during weapons and target training between ***Crommelin*** and Royal Cambodian Navy patrol craft during *Cooperation Afloat Readiness and Training* (CARAT) Cambodia 2010. (*MC1 Robert Clowney/USN*)

Notice to Mariners

Commissioning:

USS ***Jason Dunham*** (DDG 109) . . . . . Nov. 13, 2010
USS ***Gravely*** (DDG 107) . . . . . Nov. 20, 2010

Christening:

USS ***Fort Worth*** (LCS 3) . . . . . Dec. 4, 2010

Decommissioning:

USS ***Hawes*** (FFG 53) . . . . . Dec. 10, 2010

Awards:

- SECNAV 2010 Safety Excellence Award: Afloat, Large Deck Combatant
  Winner: USS ***Nassau*** (LHA 4)
- SECNAV 2010 Safety Excellence Award: Afloat, Surface Combatant
  Winner: USS ***Preble*** (DDG 88)
- SECNAV 2010 Safety Excellence Award: Afloat, Amphibious
  Winner: USS ***Dubuque*** (LPD 8)
- SECNAV 2010 Safety Excellence Award: Afloat, Auxiliary
  Winner: USS ***Frank Cable*** (AS 40)
- SECNAV 2010 Safety Excellence Award: Afloat, Littoral Warfare
  Winner: MCM Crew Constant
- Navy League of the United States Admiral Ben Moreell Award for Logistics Competence
  Winner: LSSC Beryl O'Conner, USS ***George H. W. Bush*** (CVN 77)
- Navy League of the United States Hon. J. William Middendorf II Award for Engineering Excellence
  Winner: GSE1 Jose Carrillo, USS ***Lake Erie*** (CG 70)
- Navy League of the United States Capt. Winifred Quick Collins Award for Inspiration Leadership (Enlisted)
  Winner: CMC Cheri Inverso, US NAVCENT FWD HQ AFG
- Navy League of the United States John Paul Jones Award for Inspirational Leadership (Officer)
  Winner: Capt. John Cordle, USS ***San Jacinto*** (CG 56)
- Pac Fleet 2010 Vice Adm. James Bond Stockdale Award for Inspirational Leadership
  Winner: Cmdr. Michael A. McCartney, USS ***Chung-Hoon*** (DDG 93)
- Association of Old Crows 2010 Outstanding Navy Unit Award Surface (Electronic Warfare Unit)
  Winner: USS ***Lassen*** (DDG 82)
- SECNAV 2010 Energy and Management Award, Large Ship Category
  Winner: USS ***Iwo Jima*** (LHD 7)
- SECNAV 2010 Energy and Management Award, Small Ship Category
  Winner: USS ***Lake Champlain*** (CG 57)

CONGRATULATIONS to this issue's winner, Lt. j.g. Kevin Matson, main propulsion assistant (MPA) on board USS ***Oak Hill*** (LSD 51). Lt. j.g Matson was first to answer all five questions on stories within our Fall 2010 issue. Here are the answers:

1. In 2008 a study on the USS ***Porter*** (DDG 78) revealed that plastic bottles make up 15 percent of a ship's plastic waste stream.
2. The Navy's objective to deploy the country's first Green Fleet is set for 2016.
3. In September 2009 the ice volume was the lowest on record at 67 percent.
4. Large pulpers handle between 500 to 1000 pounds per hour, and small pulpers handle between 200 and 300 pounds per hour.
5. The Navy partners with academia, private industry, and non-governmental organizations in developing and executing its marine mammal research program.

CHANGES OF COMMAND

COMDESRON 31 / January
Capt. David Welch relieved
Capt. Richard Clemmons

USS ***Anzio*** (CG 68) / January
Capt. John Dorey relieved
Capt. Frank Olmo

USS ***Mobile Bay*** (CG 53) / January
Capt. Thomas Halvorson relieved
Capt. James Housinger

Beachmaster Unit One / January
Cmdr. Erik Nilsson relieved
Cmdr. Christian Perry

USS V***andegrift*** (FFG 48) / January
Cmdr. Brandon Bryan relieved
Cmdr. Steven Prescott Boehm

USS ***Mustin*** (DDG 89) / January
Cmdr. Scott Tate relieved
Cmdr. Michael Misiewicz

USS ***Sterett*** (DDG 104) / January
Cmdr. Richard McDaniel relieved
Cmdr. Darren McPherson

COMDESRON 21 / February
Capt. Marc Dalton relieved
Capt. Lisa Franchetti

USS ***Nicholas*** (FFG 47) / February
Cmdr. Stephen Fuller relieved
Cmdr. Mark Kesselring

USS ***Winston S. Churchill*** (DDG 81) / February
Cmdr. Michael Hutchens relieved
Cmdr. Juan Orozco

USS ***Tortuga*** (LSD 46) / February
Cmdr. Adrian Ragland relieved
Cmdr. James Lowell

USS ***Bulkeley*** (DDG 84) / February
Cmdr. Sean Anderson relieved
Cmdr. Christopher DeGregory

USS ***John L. Hall*** (FFG 32) / February
Cmdr. Richard Meyer relieved
Cmdr. Steven Petroff

USS ***New York*** (LPD 21) / February
Cmdr. William Herrmann relieved
Cmdr. Frank Jones

USS ***Gonzalez*** (DDG 66) / February
Cmdr. Steven Lee relieved
Cmdr. Lynn Acheson

USS ***Port Royal*** (CG 73) / March
Capt. Eric Weilenman relieves
Capt. John Lauer

USS ***Oscar Austin*** (DDG 79) / March
Cmdr. Charlos Washington relieves
Cmdr. Jeffery Hoppe

USS ***Laboon*** (DDG 58) / March
Cmdr. James Storm relieves
Cmdr. Donald Donegan

USS ***Dewey*** (DDG 105) / March
Cmdr. John Howard relieves
Cmdr. Warren Buller

USS ***Howard*** (DDG 83) / March
Cmdr. Andree Bergmann relieves
Cmdr. William Switzer

USS ***Thach*** (FFG 43) / March
Cmdr. Jeffery Scudder relieves
Cmdr. Anthony Lesperance

USS ***Germantown*** (LSD 42) / March
Cmdr. Bryan Delaney relieves
Cmdr. Michael Crary

USS ***Underwood*** (FFG 36) / March
Cmdr. Peter Mirisola relieves
Cmdr. Craig Bowden

USS ***Klakring*** (FFG 42) / March
Cmdr. Darrel Canady relieves
Cmdr. Scott Smith

Pre-Commissioning Unit ***Michael Murphy*** (DDG 112) / March
Cmdr. Corey Turner assumes command.

List of all O-3/O-4 Commands

PC Crew ***Alpha***	Lt. Cmdr. Phil Knight
PC Crew ***Bravo***	Lt. Brian Luebbert
PC Crew ***Charlie***	Lt. Cmdr. John Lucas
PC Crew ***Delta***	Lt. Cmdr. Donovan Rivera
PC Crew ***Echo***	Lt. Cmdr. Matthew Foster
PC Crew ***Foxtrot***	Lt. Cmdr. Andrew Klug
PC Crew ***Golf***	Lt. Cmdr. Kurt Braeckel
PC Crew ***Hotel***	Lt. Cmdr. Matt Lehmann
PC Crew ***India***	Lt. Cmdr. Nate Diaz
PC Crew ***Juliet***	Lt. Kevin Ducharme
PC Crew ***Kilo***	Lt. Cmdr. Benjamin Ventresca
PC Crew ***Lima***	Lt. Cmdr. Edward Bertucci
PC Crew ***Mike***	Lt. Cmdr. Kelley Jones
MCM Crew ***Bulwark***	Lt. Cmdr. Robert Sparling
MCM Crew ***Conflict***	Lt. Cmdr. Courtney Minetree
MCM Crew ***Constant***	Lt. Cmdr. Jose Roman
MCM Crew ***Dominant***	Lt. Cmdr. Gerald Lorio
MCM Crew ***Exultant***	Lt. Cmdr. Edward Pledger
MCM Crew ***Fearless***	Lt. Cmdr. Martin Holguin
MCM Crew ***Leader***	Lt. Cmdr. Morgan Roberts
MCM Crew ***Persistent***	Lt. Cmdr. Vic Sheldon
MCM Crew ***Reaper***	Lt. Cmdr. Wayne Liebold
MCM Crew ***Swerve***	Lt. Cmdr. Andrew Bucher
USS ***Avenger*** (MCM 1)	Lt. Cmdr. Patrick German
USS ***Defender*** (MCM 2)	Lt. Cmdr. Andria Slough
USS ***Guardian*** (MCM 5)	Lt. Cmdr. Ken Brown
USS ***Patriot*** (MCM 7)	Lt. Cmdr. Walt Mainor

My name is Paul

I am Veteran of the United States Navy. This is my story. My dream was to serve this country as a Navy Seal. I enlisted at 18 and served as a Gunner's Mate in the U.S. Navy. I was seriously injured while assigned to a mobile security unit in Bahrain. Becoming a Navy Seal was no longer an option. I needed direction. I needed a purpose.
The Post-9/11 GI Bill gave me both.

Now I'm attending George Mason University with my tuition fully paid, plus a housing allowance and money for books. After giving so much, it's great to know I served a country that gives back.

POST★9/11
GI BILL

To see Paul's video and other inspiring stories, go to
www.GIBILL.va.gov/my-story

Current Ratings of the U.S. Navy

Boatswain's Mate (BM)
Train and supervise personnel in all activities relating to seamanship; oversee the maintenance of the ship's external structure and deck equipment.

Culinary Specialist (CS)
Operate galleys and other dining facilities; preparing menus and ordering food items. Ashore, they manage officer and bachelor enlisted quarters for permanent and temporary personnel.

Cryptologic Technician (CT)
Control the flow of messages and information and also conduct Electronic Warfare. They handle radiotelephone communications and foreign language translation; maintain electronic and electromechanical equipment; computer communication; and all Morse code communications and operate radio direction-finding equipment.

Electronics Technician (ET)
Responsible for electronic equipment used to send and receive messages, detect enemy planes and ships, and determine target distances.

Fire Controlman (FC)
Maintain the control mechanism used in weapons systems on combat ship; responsible for the operation, routine care and repair of this equipment.

Fire Control Technician (FT)
Maintain the electronic equipment used in submarine weapons systems; responsible for the operation and maintenance of the electronic, electrical, and mechanical equipment.

Gunner's Mate (GM)
Operate and maintain all gunnery equipment, guided-missile launching systems, rocket launchers, guns, turrets, and associated equipment; test ammunition, missiles, and their ordnance components.

Hospital Corpsman (HM)
Provide health care to personnel and their families; serve as battlefield medics, pharmacy technicians, medical technicians, nurse's aides, physicians, and dentist's assistants.

Intelligence Specialist (IS)
Involved in collecting and interpreting intelligence, and information about enemies or potential enemies; analyze photographs and prepare charts, maps, and reports that describe strategic situations worldwide.

Information Systems Technician (IT)
Design, install, operate, and maintain state-of-the-art information systems; write programs to handle the collection, manipulation and distribution of data for a wide variety of applications.

Legalman (LN)
Work in Navy legal offices, as paralegals, performing administrative and clerical tasks necessary to process claims, and conduct court and administrative hearings.

Logistics Specialist (LS)
Ensure supplies are available including everything from clothing and machine parts to forms and food.

Master-at-Arms (MA)
Uphold law and order aboard ships and shore stations, control access to naval installations, and deploy overseas with expeditionary forces performing Antiterrorism/Force Protection duties.

Mass Communication Specialist (MC)
Present the U.S. Navy story to audiences in the Navy and to the rest of the world through a variety of media; write and produce print and broadcast journalism, news, and feature stories.

Mineman (MN)
Test, maintain, and repair, and overhaul mines and their components; maintain mine-handling and mine-laying equipment.

Missile Technician (MT)
Assemble, maintain, and repair missiles carried aboard submarines; maintain the specialized equipment used in these functions.

Musician (MU)
Perform in official Navy bands; give concerts and provide music for military ceremonies, religious services, parades, receptions and dances.

Navy Counselor (NC)
Offer vocational guidance to Navy personnel; assess the interests, aptitudes, abilities, and personalities of Sailors. Not available to incoming recruits.

Operations Specialist (OS)
Operate radar, navigation and communications equipment in the shipboard combat information centers and/or bridges, detect and track ships, planes, and missiles, and operate and maintain identification friend or foe (IFF) systems.

Personnel Specialist (PS)
Provide enlisted personnel with information and counseling about Navy jobs, opportunities for general education/training, and promotion requirements.

Quartermaster (QM)
Assist the navigator and officer of the deck, steer the ship, take radar bearings and ranges, make depth soundings and celestial observations, plot courses, and command small craft.

Religious Programs Specialist (RP)
Assist Navy chaplains with administrative and budgetary tasks; serve as custodians of chapel funds, keep religious documents and stay in contact with religious and community agencies.

Special Warfare Boat Operator (SB)
Operate fast speedboats through waterways or the open ocean while performing high speed, medium range, or all weather insertion/extraction of Special Operations Forces.

Ship's Serviceman (SH)
Manage barber shops, tailor shops, ships' uniform stores, laundries and dry cleaning plants; serve as clerks in exchanges, gas stations, warehouses, and commissary stores

Special Warfare Operator (SO)
Are the Navy SEALs; oversee ocean-borne mine disposal, carry out direct action raids against military targets, conduct reconnaissance, and secure beachheads for invading amphibious forces.

Sonar Technician (ST)
Responsible for underwater surveillance; assist in safe navigation and aid in search and rescue and attack operations. They also operate and repair sonar equipment, antisubmarine warfare fire control equipment.

Yeoman (YN)
Perform secretarial and clerical work; maintain service records, organize files, operate copy machines, order, and distribute supplies.

Damage Controlman (DC)
Perform the work necessary for damage control, ship stability, and firefighting; prepare defenses against chemical, biological, and radiological (CBR) warfare attacks.

Electrician's Mate (EM)
Operate and repair the ship or station's electrical power plant and electrical equipment.

Engineman (EN)
Responsible for internal diesel and gasoline engines; maintain refrigeration, air-conditioning, distilling-plant engines, and compressors.

Explosive Ordnance Disposal (EOD)
Locate, identify, render safe and dispose of all forms of ordnance both U.S. and foreign made; occasionally assist civilian law enforcement agencies.

Gas Turbine System Technician (GS)
Responsible for all gas turbine engines; maintain all facets of propulsion machinery.

Hull Maintenance Technician (HT)
Responsible for maintaining ships' hulls, fittings, piping systems and machinery; install and maintain all shipboard and shore based plumbing and piping systems.

Interior Communications Electrician (IC)
Operate and repair electronic devices used in the ship's interior communications systems.

Machinist's Mate (MM)
Responsible for ship's steam propulsion and auxiliary equipment as well as the continuous operation of the many engines, compressors, gears, refrigeration, and air-conditioning equipment.

Machinery Repairman (MR)
Make replacement parts and repair or overhaul a ship's engine auxiliary equipment, such as evaporators, air compressors and pumps.

Navy Diver (ND)
Utilized for a wide variety of tasks such as underwater ship maintenance, construction, explosive ordnance disposal, and underwater rescue; support to all submersible operations.

Aviation Boatswain's Mate (AB)
Maintain and repair aircraft catapults, arresting gear and barricades. They direct aircraft on the flight deck and in hangar bays before launch and after recovery.

Air-Traffic Controller (AC)
Assist with the safe, orderly, and speedy flow of air traffic by directing and controlling aircraft. They operate field lighting systems and communicate with aircraft.

Aviation Machinist's Mate (AD)
Maintain, adjust, service, and replace aircraft engines and accessories.

Aviation Electrician's Mate (AE)
Maintain, adjust, and repair aircraft electrical power generating and converting systems; maintain lighting, control, and indicating systems.

Aerographer's Mate (AG)
Trained in meteorology and the use of aerological instruments, prepare weather maps and forecasts, and can analyze atmospheric conditions to determine the best flight levels for aircraft.

Aviation Structural Mechanic (AM)
Maintain and repair various aircraft parts; maintain and repair oxygen, cockpit and cabin pressurization, and ejection seat systems.

Aviation Ordnanceman (AO)
Handle, install, operate, and repair aviation ordnance equipment; responsible for the maintenance of guns, bombs, torpedoes, rockets, and missiles.

Aviation Support Equipment Technician (AS)
Perform intermediate maintenance on aviation accessory equipment.

Aviation Electronics Technician (AT)
Maintain, test, and repair all aircraft radio, radar, and other rapid communications/navigation equipment.

Naval Aircrewman (AW)
Operate airborne radar and electronic equipment used in detecting, locating, and tracking submarines.

Aviation Maintenance Administrationman (AZ)
Plan and schedule maintenance workload including inspections and modifications to aircraft and equipment.

Aircrew Survival Equipmentman (PR)
Responsible for the packing and care of parachutes; maintain flight clothing, rubber life rafts, life jackets, and air-sea rescue equipment.

Builder (BU)
Skilled carpenters, masons, and painters. Build and repair all types of structures including piers, bridges, towers, and buildings.

Construction Electrician (CE)
Responsible for the power production and electrical work required to build and operate airfields, roads, barracks, and hospitals.

Construction Mechanic (CM)
Maintain heavy construction and automotive equipment; work with gasoline and diesel engines.

Engineering Aide (EA)
Conduct surveys, perform soil tests, and prepare topographic and hydrographic maps; provide construction engineers with information to develop final construction plans.

Equipment Operator (EO)
Work with heavy machinery such as bulldozers, power shovels, and pile drivers. They grade and remove debris from construction sites and set in place other pieces of equipment or materials needed for the job.

Steelworker (SW)
Operate all special equipment used to move or hoist structural steel, structural shapes and similar material. They erect and dismantle steel bridges, piers, buildings, storage tanks.

Utilitiesman (UT)
Plan, supervise and perform the installation of plumbing, steam, compressed air, and fuel storage/distribution systems.

Former Ratings of the U.S. Navy

Aviation Storekeeper (AK)
Merged into Storekeeper on Jan. 1, 2003.

Aviation Structural Mechanic(Hydraulics/Structures) (AMH/AMS)
Merged into Aviation Structural Mechanic on March 1, 2001.

Aviation Support Equipment Technician(Electrical) (ASE)

Aviation Support Equipment Technician (Hydraulics and Structure) (ASH)

Aviation Support Equipment Technician(Mechanical) (ASM)
Merged into Aviation Support Equipment Technician on March 1, 1990.

Aviation Antisubmarine Warfare Technician (AX)
Merged into Aviation Electronics Technician on Jan. 1, 1991.

Boiler Technician (BT)
Merged into Machinist's Mate on Oct. 1, 1996.

Crytologic Technician (Communications) (CTO)
Merged into Information Systems Technician on March 1, 2006.

Crytologic Technician (Administration) (CTA)
Merged into Yeoman on Jan. 1, 2009.

Disbursing Clerk (DK)
Merged into Personnel Specialist on Oct. 1, 2005.

Draftsman (DM)
Merged into Mass Communication Specialist on July 1, 2006.

Data Systems Technician (DS)
Merged into Electronics Technician and Fire Controlman on Oct. 1, 1998.

Dentalman (DT)
Merged into Hospital Corpsman on Aug. 30, 2005.

Electronic Warfare Technician (EW)
Merged into Cryptologic Technician on Oct. 1, 2003.

Journalist (JO)
Merged into Mass Communication Specialist on July 1, 2006.

Lithographer (LI)
Merged into Mass Communication Specialist on July 1, 2006.

Mess Management Specialist (MS)
Changed to Culinary Specialist on Jan. 15, 2004.

Ocean Systems Technician (OT)
Merged into Sonar Technician on Oct. 1, 2005.

Postal Clerk (PC)
Merged into Logistics Specialist on Oct. 1, 2009.

Personnelman (PN)
Merged into Personnel Specialist on Oct. 1, 2005.

Photographers Mate (PH)
Merged into Mass Communication Specialist on July 1, 2006.

Radioman (RM)
Merged into Information Specialist Technician in November 1999.

Storekeeper (SK)
Merged into Logistics Specialist on Oct. 1, 2009.

Signalman (SM)
Disestablished on Nov. 4, 2003.

Torpedoman's Mate (TM)
Merged into Gunner's Mate on Oct. 1, 2007.

Short History of the Rating Badge

Source: Naval History and Heritage Command

- Uniform regulations of February 19, 1841, introduced a sleeve mark for petty officers. This consisted of a left-facing eagle with wings pointed down, perched on a fouled anchor. The badges were worn either on the Sailor's left or right sleeve depending on their assigned station.
- A system of rating badges with eight specialty marks was introduced on December 1, 1866. Depending on the design and where these badges were worn, thirteen ratings could be identified. The regulation specified that petty officers of the starboard watch were to wear rating badges on their right sleeves; the left sleeve was to be used for those on the port watch.
- On September 24, 1894, General Order 431 changed the eagle's wings to point upward. The eagle continued to face to the left.
- The regulations of January 25, 1913, changed the location of rating badges to reflect the Sailor's specialty. Right arm rates signified the Seamen Branch; left arm rates signified the Artificer (skilled craftsman) Branch, Engine Room Force, and all other petty officers.
- The uniform regulations of May 31, 1941, specified that the eagle was to face to the left in the rates comprising the Seaman Branch. All other rating badges were to have an eagle facing to the right.
- Right arm rates were disestablished on April 2, 1949. Henceforth, all rating badges were to be worn on the left sleeve with the eagle facing to the right.