



UNDERSEAWARFARE

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

Forward Deployed!

U.S. SUBS OPERATE
IN THE PACIFIC RIM,
OFF THE COAST OF
MOROCCO, IN THE
ARCTIC, AND BEYOND

INSIDE

The Crew of PCU *Virginia*
Faces New Challenges

SSGN Conversions Underway

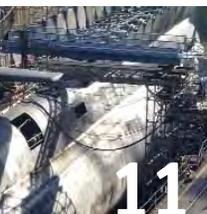
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Photo by PHAN Rob Gaston

The *Los Angeles*-class submarine USS *Albuquerque* (SSN-706) surfaces in the Atlantic Ocean while participating in *Majestic Eagle 2004*, a multinational exercise conducted off the coast of Morocco. The exercise demonstrated the combined-force capabilities and quick response times of participating air, undersea, and surface warfare groups. Countries involved in the NATO-led exercise include the United States, the United Kingdom, Morocco, France, Italy, Portugal, Spain and Turkey. Participation in *Majestic Eagle* was part of a scheduled deployment supporting the Navy's new Fleet Response Plan (FRP) Summer Pulse 2004, the simultaneous deployment of seven carrier strike groups (CSGs), demonstrating the ability of the Navy to provide credible combat across the globe in five theaters with other U.S., allied, and coalition military forces.

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

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

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RDML Joe Walsh, USN
Director, Submarine Warfare

**...submarines are
inherently crucial to
the defense of freedom
now and in the future.**

In early June, I relieved RADM (Sel) Tracy as the Director of Submarine Warfare (N77) and wish him fair winds and following seas in his new job as Commander, USS *Harry S Truman* Strike Group.

During this time of forceful change in the Submarine Force, I am privileged to be serving as our community's resource sponsor. I am pleased to report to you that things are going very well for the Submarine Force as we work within the Pentagon to ensure that we remain a valuable asset in America's warfighting arsenal for years to come.

As I begin my tenure in this position, I approach my job here with these tasks in mind:

- *Driving the execution of the current year's fiscal budget.*
- *Coordinating with the type commanders to develop the Submarine Force's inputs to the POM process.*
- *Encouraging active participation in the analytical process, such as campaign analysis and the development of integrated capabilities.*

During this Year of the Submarine, we have had the opportunity to demonstrate the importance of integration with other fleet assets and the unique flexibility submarines provide. You can be proud of the fact that we provided a considerable share of the Navy's combat force during SUMMER PULSE '04. Ten submarines demonstrated timely surge capabilities as they were deployed in four AORs, supporting Carrier Strike Groups and other operations and exercises in the first application of the Fleet Response Plan.

In addition to demonstrating to senior leadership the impressive ability of the current Submarine Force to surge quickly, the year 2004 will be remembered as a seminal one in the evolution of our future force.

The most important development will be the commissioning in October of the first submarine designed from the start for the post-Cold War environment, in which we face asymmetrical threats from the Global War on Terrorism and other contingencies. The new USS *Virginia* (SSN-774), underway on sea trials as this issue goes to press, represents a dramatic shift in operational capabilities and an unprecedented ability to operate in the littorals. I had the privilege of briefing Vice-President Cheney in person on the potential that this new class brings to the fleet during his tour of New London and Virginia. The use of mission modules in *Virginia* will greatly improve the capabilities of future submarines. Several studies have explored design options for providing modular payload volumes in future ships. These options have ranged from relatively minor modifications to the current *Virginia* configuration to an evolution toward submarines outfitted with a completely-modular payload capacity.

In addition to the upcoming commissioning of *Virginia* this year, we have already witnessed the stand-up of CSS-19, the start of three of four planned conversions from ballistic missile submarines to SSGNs, the christening of *Jimmy Carter* (SSN-23) and *Texas* (SSN-775) and the keel-laying of *North Carolina* (SSN-777). We will also commemorate in September the 50th anniversary of the commissioning of USS *Nautilus* (SSN-571) and the dawn of the undersea nuclear age.

I am certain you understand the challenge of maintaining a capable Submarine Force that meets the surge requirements of the present as we move toward our future fleet. To do this, we must refuel first-flight *Los Angeles*-class submarines and achieve a build rate of two *Virginia*-class boats per year. My staff at N77 is working hard with Navy leadership and Congress to make this happen. But it also requires the efforts of those on watch under the sea to make the compelling case that submarines are inherently crucial to the defense of freedom now and in the future.

Former Commander-in-Chief Christens

PCU *Jimmy Carter*

New Submarine Honors Only U.S. President Qualified in Submarines



Photo by J03 Steven Feller

Former First Lady Rosalynn Carter smashes a bottle of champagne against the sail of the *Seawolf*-class nuclear attack submarine PCU *Jimmy Carter* (SSN-23) during the ship's christening ceremony.

With a dousing of champagne and a blessing for “all who sail in her,” former First Lady Rosalynn Carter christened PCU *Jimmy Carter* (SSN-23) at the General Dynamics Electric Boat shipyard in Groton, Connecticut on 5 June. Mrs. Carter, former President Jimmy Carter, their daughter Amy, and a crowd of more than 4,500 attended the christening of the third and last *Seawolf*-class submarine.

“This is a wonderful day for me – and to see my wife break the champagne on undoubtedly the finest and most formidable ship in the world was a great honor for me,” said President Carter. “And to have my name on it – I am very grateful.” VADM Kirkland Donald, Commander, Naval Submarine Forces, noted the eagerness of the crew to get *Jimmy Carter* out to sea, and he praised the men for all their personal and professional accomplishments.

“We are eagerly awaiting the arrival of this fine ship in our fleet and the remarkable capability that she’ll bring,” said Donald. “This crew is very eager to get under way. Over 40 Sailors earned their ‘dolphins’ – while training onboard other submarines – and they have a perfect retention rate of 100 percent and an exceptional advancement rate that’s well above the Navy’s average. Eighteen of their enlisted Sailors have been selected into officer commissioning programs. I think it reflects the caliber of this crew that *Jimmy Carter* is the recipient of the 2003 Atlantic Fleet Golden Anchor Award.”

Jimmy Carter's most celebrated feature is a hull extension that makes the 453-foot-long submarine 100 feet longer than the other two *Seawolf*-class submarines, USS *Seawolf* (SSN-21) and USS *Connecticut* (SSN-22). This hull extension provides *Jimmy Carter* with a wealth of new capabilities that make her a true multi-mission platform (MMP). The new submarine has an ocean interface that allows the deployment of remotely-operated vehicles, which will be able to retrieve and deploy weapons, countermeasures, and sensors. *Jimmy Carter* is also Special Operations-friendly and can accommodate a Dry Deck Shelter or an Advanced SEAL



Delivery System (ASDS) for Special Operations Forces (SOF). It has a reconfigurable cargo area, which allows for stowage of SOF supplies, and includes a Command Center Suite for mission planning. The submarine can berth up to 50 SOF personnel.

Electric Boat President and General Dynamics Vice President John Casey was particularly excited about *Jimmy Carter's* multi-mission capabilities. "This is an exciting day to be in the submarine business," Casey said. "This ship I'm standing on this morning represents a remarkable achievement for Electric Boat, the Navy, and our nation. Five years ago, this vessel's distinctive role as a multi-mission platform existed only in the minds of a few. Today, this notion has become a reality, providing the ship and submarine force with astounding capabilities."

"The key to this success has been the Integrated Product and Process Development approach – also known as the Design/Build approach," said Casey. "An entire 100-foot, 2,500-ton hull section, nearly as complex as an entire *Los Angeles*-class submarine, has come from concept to construction and integration with the overall ship in just under five years. That's an amazing accomplishment."

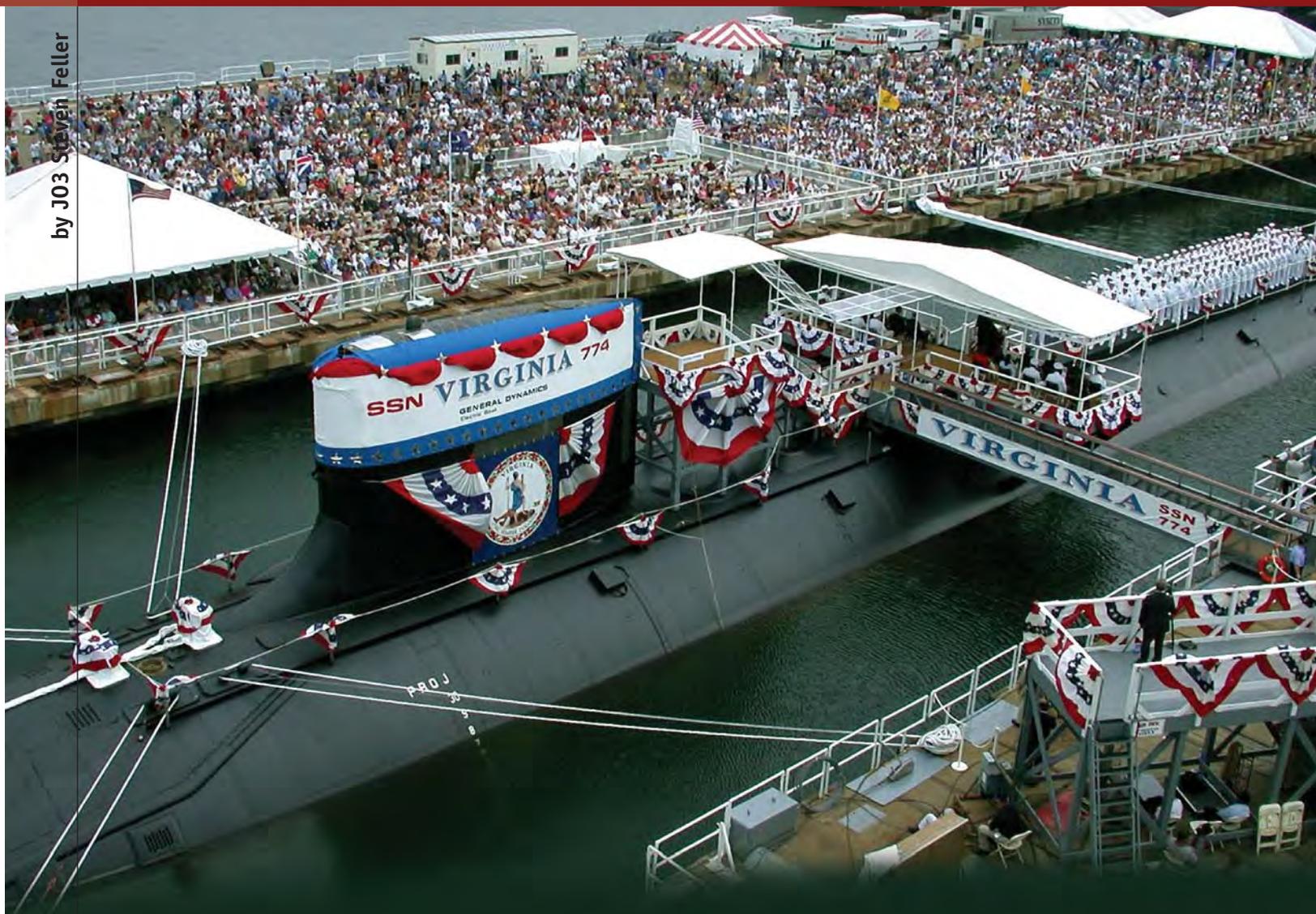
J03 Feller is assigned to the Public Affairs Office of Commander, Navy Region Northeast.



Photo by J03 Steven Feller

General Dynamics Electric Boat moves the third and final *Seawolf*-class nuclear attack submarine, *Jimmy Carter* (SSN-23), outdoors for the first time. Differentiating *Jimmy Carter* from the others of her class is a 100-foot hull extension that enhances her multi-mission payload capability and enables her to accommodate a new generation of advanced weapons and sensor technologies.

Former President Jimmy Carter (right) waves to the crowd as he and Navy Secretary Gordon England take their seats for the christening ceremony of *Jimmy Carter*. The new submarine honors Carter as the 39th President of the United States – and the only U.S. Chief Executive ever qualified in submarines. This christening was a homecoming of sorts for the former Commander-in-Chief, who was stationed in the Groton, Connecticut area from 1948 to 1952 as a young submarine officer.



Anyone familiar with PCU *Virginia* (SSN-774) and its capabilities would agree that it is a technological marvel. The first of a new class of fast-attack submarines, this model of innovation is the beginning of a new era for the U.S. Navy's Submarine Force.

Complementing the impressive machinery and advanced technology within the steel hull is an equally outstanding crew, which has been dedicated to preparing *Virginia* to join the world's greatest Navy. As the *Virginia's* commissioning date of 23 October fast approaches, the crew is more ready than ever to demonstrate to the world their ship's breakthrough capabilities and its 7,835 tons of quiet diplomacy.

HARD-CHARGING AND PERSISTENT: The Crew of PCU *Virginia* Looks Ahead

Welcome Aboard

Like Sailors on other ships, *Virginia's* crewmembers come from a variety of backgrounds and had a number of reasons for joining the Navy and the Submarine Force. For MMFN Toros Asadourian and EM3 Joseph Gehring, being a part of the *Virginia's* crew offers them a unique welcome to the fleet.

"When I was in 'A' and 'C' school, I requested orders to come to *Virginia*," said Asadourian. "Since I graduated near the top of my class, I was able to choose where I wanted to go, if that choice was available." In his third week as a *Virginia* Sailor, the New York City native joins "A" division, where he will work on the submarine's mechanical systems. "It feels pretty good being a crewmember here," he said. "No one before us has done anything with the new types of equipment we have aboard."

Gehring, a nuclear-trained electrician's mate from Tampa, Florida, echoed Asadourian's comments about learning to use *Virginia's* new technology. "It's neat training ourselves how to use this equipment. The basic theory is the same, but the technology is new," he said.

As the first new submarines designed after the Cold War, the *Virginia*-class fast-attack boats are intended for battle-space dominance across a broad spectrum of regional and littoral missions, as well as in the open-ocean. *Virginia* is equipped with sophisticated surveillance capabilities and special warfare enhancements, to include the Advanced SEAL Delivery System, state-of-the-art submarine communications and electronic support measures with "Plug and Fight" electronics, new sonar sensors for anti-submarine and mine warfare, and the capability of firing land-attack salvoes of 16 Tomahawks from 12 vertical-launch tubes and four torpedo tubes.

Photo courtesy of General Dynamics

Although there's a heavy emphasis on meeting *Virginia*'s commissioning date, Asadourian said he does not feel any pressure to perform at a higher level than would be expected of him anywhere else "There's a great demand to perform well everywhere," he said. "It doesn't matter what command you're with."

The Challenge of Middle Leadership

Middle leadership anywhere offers a variety of challenges. It requires balancing the need to be a good leader to junior Sailors with being a good follower of the senior leadership. It takes attentive listening and strong communication skills to translate assigned tasks and missions into coherent directions so that junior Sailors can play their part in accomplishing what's required. Two *Virginia* crewmembers who have done that consistently well are EM1(SS) Kevin Garner and ST2(SS) John Parcel. A native of Des Moines, Iowa, Parcel has been onboard for two and a half years, and Garner, who hails from Atlanta, Georgia, has been aboard since the beginning. Both are adamant about remaining onboard and seeing *Virginia* through to her commissioning. As Parcel put it, "It would be terrible to do all this work and not see the reward."

And *Virginia* offers many rewards. Before they even put on their *Virginia* ball caps, Garner and Parcel knew that coming here would be an exciting experience. "I was serving aboard USS *West Virginia* (SSBN-736) (BLUE), and I was up for orders," said Garner. "I chose to come here instead of going to shore duty."

Parcel seized his opportunity after a chance meeting at a San Diego Submarine Ball, I ran into Vice Admiral [Albert] Konetzni [then Deputy and Chief of Staff, U.S. Atlantic Fleet], and we discussed possible career opportunities in the information technology field. He suggested I go to

the *Virginia*. The next day I called his office, and now here I am," said Parcel.

Garner said that being a crewmember onboard the first of a new class of submarine presents challenges that others might not face. "We need to make sure our systems are ready to be tested and our divisions ready to train," he said. "There are a lot of issues to keep in mind, and for this crew, the learning curve is very steep. We've had to learn how to use pieces of equipment that weren't even built yet, and it took a lot of effort to keep people apprised of what was going on."

"One of the hardest things was unlearning all I had learned," added Parcel. "It took a long time to get used to the idea that what worked on my previous boats wasn't going to work here. All of us had to unlearn things before we could learn again."

"Being the first crew on a new class of submarine, you put in a lot of hours. And everyone is going to be here while we prepare to go to sea," said Garner.

Not only do the Sailors put in long hours, but families put in long hours as well. Garner and Parcel both noted that being a family member of a Sailor assigned

Unfortunately, the crew won't be getting a whole lot of family time any time soon. They have a lot to do in the coming months.

"Getting this ship ready has been a great challenge ever since I became a plank owner," said Garner. "For us in middle leadership positions, we take the taskings we're given and bring them down to the deck-plate level to get the job done, all the while keeping our chain of command informed."

"It's crucially important to not only be a good leader to your junior guys, but to be a good listener as well," added Parcel. "You have to be willing to communicate both ways."

How to Assemble a Crew

ETCM(SS) Timothy Acker is the "Danny Ocean" of PCU *Virginia*. He was the very first to receive orders to *Virginia* and, like the fictional character portrayed by both Frank Sinatra and George Clooney in film versions of *Ocean's 11*, his job was to assemble the "perfect" team that would become the *Virginia* crew. "I've been here since Day One," said the Watertown, South Dakota native. "I was at Prototype in Ballston Spa, New York, and



Virginia Chief of the Boat CMDCM (SS) Casey L. White raises the American flag aboard *Virginia* for the first time. *Virginia* will be commissioned later this year in her namesake state.

to a pre-commissioning unit can be harder than being a family member of a Sailor on an already-commissioned submarine.

"On other boats, you may do an availability of six weeks or so when the crew goes into shift work and works long hours," said Parcel. "Aboard *Virginia*, we've been doing that now for three years. Once we got started, we went into what amounted to a hugely-extended availability. "We work 15- or 18-hour days and then we go home just to sleep and then we do it again...for weeks at a time. Our families sacrifice a lot."

I helped put this crew together. I contacted prospective crewmembers. I contacted the Commanding Officer, who was at PCO [Prospective Commanding Officer] school at the time. Some of the crew submitted 1306s [Personnel Action Requests] to come here; some were ready to roll and just got orders. In my case, I had to submit a package."

Acker said the pressure to get *Virginia* commissioned is self-imposed. "We are the first of a new class of submarine," said Acker. "Our challenge is getting all of our systems to integrate and work well. I can

Virginia is seen here in January 2003 at General Dynamics Electric Boat in Groton, Connecticut



Photo courtesy of General Dynamics.

build my system, and another guy can build his, but the difficulties arise in joining those systems, getting them to work properly, and coming up with the right solutions.”

A major difficulty in training a crew to a new class of submarine is that there are no formal manuals available for the forward, no-nuclear systems”. This may seem like a minor issue, but it is a very sensitive one in the nuclear world since it implies that we would send a crew out to operate a nuclear reactor without any formal guidance. “It’s extremely challenging because all of our procedures had to be written,” said Acker. “All of them had to be validated and proven safe, because these are the procedures that other submarines in this class will follow. It’s a huge responsibility.”

Acker said he and his crew are gaining a lot from serving in this command and working with each other. “I love what I do, and I’m proud to be a submariner. I fought to get this job because I knew I was the best candidate,” he said. “It’s also rewarding to know that 50 years from now, we may still be using some of this equipment. Being a part of this crew is being a part of a legacy.”

“This whole crew will leave a legacy behind, and knowing that you’ve been handpicked to be onboard is a great feeling. And other people see that too. In our Reactor Control Division, we had six of our 10 Sailors get promoted to CPO in the first three years. When I got orders here, I came as an ETC; now I’m a master chief,” continued Acker.

After *Virginia* is commissioned, a portion of the crew will depart for other assignments. Acker, who was recently reenlisted by ADM Frank L. “Skip” Bowman, Director, Naval Nuclear Propulsion, plans to enroll in the Command Master Chief program. Garner was just selected for the Limited Duty Officer (LDO) program and will head to the USS *Harry S. Truman* (CVN-75) as an LDO. As for Parcel, he would eventually like to go “somewhere warmer, like San Diego.”

Regardless of where their future leads them, they and the rest of the PCU crew will always be joined by the bonds they developed in readying the *Virginia* for her service to the fleet.

J03 Feller is assigned to the Public Affairs Office of Commander, Navy Region Northeast.

Hawaii Governor to be PCU *Hawaii*’s Sponsor by Team Submarine Public Affairs



In June, Secretary of the Navy Gordon R. England asked Hawaii Governor Linda Lingle to sponsor the nation’s third *Virginia*-class fast-attack submarine, PCU *Hawaii* (SSN-776). The submarine, now under construction at General Dynamics Electric Boat in Groton, Connecticut, is 63 percent complete and scheduled to enter the fleet in 2007.

“Governor Lingle is a tremendous supporter of our armed forces and was honored to receive the Secretary’s invitation,” said MG

Robert Lee, Adjutant General of the Hawaii National Guard. “She is looking forward to serving as sponsor of USS *Hawaii*.”

Upon taking office in December 2002, Lingle quickly developed a strong relationship with the military and worked to elevate her state’s role in promoting peace and security in the Asia-Pacific region. She was the first governor of Hawaii in decades to tour Pearl Harbor Naval Shipyard when she visited the base in 2003.

Hawaii is the third in the 30-ship *Virginia* class. She is one of 10 *Virginia*-class submarines under contract and is the next to follow PCU *Virginia* (SSN-774) and PCU *Texas* (SSN-775). The *Virginia*-class submarines incorporate revolutionary technology



and innovative design processes, such as spiral development and commercial-off-the-shelf equipment, which address 21st-century operational requirements and reap unparalleled cost-efficiency benefits.

Virginia-class capabilities include anti-submarine and anti-surface warfare; covert strike and special operations; covert mine and elec-

tronic warfare; and intelligence, surveillance, reconnaissance. Unlike any other submarines in the world, the *Virginia*-class boats are suited equally to operate both in the open ocean and close to shore, where stealth is a primary concern.

As PCU *Hawaii*’s sponsor, Governor Lingle will perform ceremonial functions at events that mark major submarine construction milestones. She will speak at the submarine’s keel-laying, when her initials will be welded onto an attached steel plate to authenticate the keel – and later participate in the ship’s christening by breaking the traditional bottle of champagne against the hull, officially naming the ship. She will also approve the design of the submarine’s official seal and at commissioning, give the order to “man our ship and bring her to life.”

Although more than 170 submarines have been lost worldwide in non-combat operations in the past hundred years, it was the August 2000 *Kursk* tragedy, which resulted in the death of the entire crew, that was the catalyst for the submarine community worldwide to begin training together and pooling resources to create a truly international solution to the problem of submarine rescue.

PACIFIC REACH | 2004

U.S. FOREIGN NAVIES PRACTICE SUBMARINE RESCUE,
FOSTER COOPERATION, AND IMPROVE INTEROPERABILITY



Mystic (DSRV-1) is hoisted off the pylons after Pacific Reach 2004. The exercise practices the ability to mobilize assets worldwide in the event a submarine is unable to surface on its own.



Pacific Reach 2004 has numerous goals, including enhancing submarine rescue capability and developing submarine rescue techniques. Here the *Mystic* riding USS *La Jolla* on pylons, prepares to commence its rescue exercise.

In an effort to promote cooperation and interoperability in the area of submarine rescue in Asian waters, USS *La Jolla* (SSN-701), acting as the mother submarine (MOSUB) for the U. S. Navy's Deep Submergence Rescue Vehicle (DSRV) *Mystic*, the Deep Submergence Unit (DSU) from Submarine Development Squadron Five (SUBDEVRON 5), and USS *Safeguard* (ARS-50) participated in Pacific Reach 2004 this May. The exercise, held in the Eastern Sea near Cheju Island, Korea, practices the ability to mobilize assets worldwide in the unlikely event a submarine

becomes disabled and is not able to return to the surface on its own.

Pacific Reach 2004 is the third in this a series of bi-annual exercises. Similar to NATO's Sorbet Royale, Pacific Reach 2004 is specifically designed to bring together nations that operate submarines in Asian waters. The 2002 exercise was conducted in Sasebo, Japan and the 2000 exercise in Singapore. VADM Sung Man Kim, Commander-in-Chief, Republic of Korea Navy said, during the opening ceremony, "I'm confident we'll be able to enhance the level of submarine rescue operations by familiarizing rescue procedures, sharing information on each navy's rescue assets, rescue operations, techniques, and medical treatments."

Pacific Reach has a number of goals, including enhancing submarine rescue capability, fostering mutual trust among participating countries, demonstrating capability and interoperability among participating submarine and submarine rescue vehicles, and developing submarine rescue techniques. It also provides rescue vehicle pilots and operators with training opportunities in actual conditions, increases familiarity with other participating countries' submarine rescue equipment, and develops new mating and rescue procedures.

According to CAPT Russell Ervin, from SUBDEVRON 5, "Pacific Reach 04 is a showcase for both the cooperation and growing organic capability that Asian submarining nations are building. Many rescue techniques are unique to Asia, having evolved from the immense distances and variable operating conditions of the Pacific.

"From arctic to tropical waters, from reef and shoal-littered littorals to the deepest

blue water in the world, those navies operating in Asian waters contend with the most challenging operating theater on the planet. Asian navies are emerging as submarine rescue thought leaders and have a great deal to offer the international community. Several Asian nations are in the process of sending submariners to the International Submarine Escape and Rescue Liaison Office (ISMERLO) located in Norfolk, Virginia. In Asia, especially due to the distances and limited rescue assets, we depend on one another more than other areas of the world," he added.

Worldwide interest in this event has grown to five participating and eight observing countries. Gathered at Jinhae, Korea, on the southeast coast of the country and home base to the Republic of Korea (ROK) Navy, the U.S. participated with the navies of Japan, Australia, and Singapore. Observing nations included Canada, China, Chile, France, India, Indonesia, Thailand, and the United Kingdom.

The major assets provided by the other countries included:

- > ROKS *Hwachun* (AOE-59)
- > ROKS *Cheonghaejin* (ASR-21)
- > ROKS *Choimoosun* (SS-063)
- > JDS *Chiyoda* (AS-405)
- > JDS *Sachishio* (SS-582)
- > HMAS *Rankin* (SS-78)

Planning for this event began in May 2003 with a series of meetings to determine the scenarios and address the operational challenges of conducting a multinational exercise. These meetings covered issues such as security, transportation, and supplies. DSU handled the logistical operations of getting *Mystic* transported, working with the local government, inspecting roads and

“From arctic to tropical waters, from reef and shoal-littered littorals to the deepest blue water in the world, those navies operating in Asian waters contend with the most challenging operating theater on the planet.”

(below) Preparation and coordination were key to the success of the exercise. Korea's *LR5K* commencing its dive after being lowered into the water. Participating nations were able to observe the DSRV conduct a rescue and cross-deck to other ships to gain a better understanding of the capabilities and techniques of the participating countries.

bridges for handling *Mystic's* 80,000 pound load, and certifying the participating submarines for the mating procedure.

“Bringing the *Mystic* to Korea was logistically challenging. Even with detailed planning, we needed to find alternative transport for the DSRV to Korea,” said LT Joseph Burrows, repair officer of the DSU. When real-world operations required the C-5 to ferry heavy armor to Iraq, the DSRV was flown to Korea aboard an Antonov 124, a Russian transport under contract with Lockheed Martin. The professionalism of the DSU team overcame each hurdle and gained this invaluable real-world training.

Preparation and coordination were key to the success of the exercise. “It was the thorough planning and common understanding gained in the planning conferences and pre-exercise, in-port serials that created a flexible and dynamic understanding of the operations objectives,” said Ervin. “We were able to overcome the effects of even poor weather and uncooperative radio communication seamlessly to achieve our goals,” he added.

While the DSRVs were rescuing simulated “disabled” submarines at the bottom of the ocean, the observing nations were given the opportunity to cross-deck to other ships to monitor operations directly, gaining a better understanding of the capabilities and techniques of the participating countries. Not only did observers get a chance to see the DSRV conduct a rescue, but they also reviewed the other countries’ decompression chamber, medical, and operations support procedures. Observers also gave briefings on their respective navy’s capabilities and procedures to the participating countries and the observers.



(left) Korea's Deep Submergence Rescue Vehicle – *LR5K* – is seen on her cradle onboard *ROKS Cheonghaejin* (ASR-21). Bringing the *Mystic* to Jinhae, Korea for the exercise was logistically challenging. Alternate transportation was needed to transport the U.S. DSRV to Korea. With the aid of foreign rescue assets, such as *Cheonghaejin*, the operation was a success.

Once a rescue is performed, the focus shifts to supporting the medical aspect of rescue, making the medical symposium at the heart of the exercise a crucial element of its success. The symposium gave medical officers the opportunity to discuss issues related to diving operations and procedures, facilitating an open dialog and transfer of information on best practices and reviewing the effects diving operations have on the human body.

“Everyone attending the event came with unique issues with diving operations and decompression. The symposium gave us a forum where we could discuss strength and weaknesses of different systems and provide possible solutions or bring a different perspective,” said CDR Scott Reichard, the senior medical officer at SUBDEVRON 5.

The commander of SUBDEVRON 5, CAPT Mark Myers, sees a very bright future in the area of submarine rescue. “The U.S. Navy’s Submarine Rescue Program has a long and distinguished record of uncompromising commitment and professionalism. From the famous rescue of the USS *Squalus* (SS-192) in 1938 to the present, the submarine community has taken both submarine rescue and escape seriously. SUBDEVRON 5 stands ready twenty-four/seven to deploy its Deep Submergence Unit in hours to save lives of submariners around the world,” said Myers.

“We are leading the way towards international cooperation by hosting the ISMER-LO, leveraging the world’s assets to save lives when minutes count. We are preparing a fundamental mission shift to an optimized blend of the Active/Reserve component and contractor teams to minimize the system’s lifecycle operations costs. I am very proud of these young men and women – including the doctors and nurses who stand ready to go into dangerous waters to rescue their fellow sailors,” he said.

According to Ervin, the exercise was a resounding success. “Not only were all operational objectives met, but both participating and observing nations grew closer in establishing a common forum for conducting submarine rescue on a global basis.”

LT Choi is assigned to COMSUBPAC Public Affairs.



The Deep Submergence Rescue Vehicle *Mystic* (DSRV-1) is carefully loaded onto a Russian-built Antonov (An-124) Condor by Sailors assigned to the Deep Submergence Unit (DSU) and the aircraft’s crew. The An-124 is owned and operated by the Volga-Dnepr Group based in Russia. Seen here, *Mystic* and 13 members of her crew are being flown to the Republic of Korea to participate in Exercise Pacific Reach. The exercise improves submarine rescue capabilities and also fosters familiarization with submarine rescue techniques among different nations.

Deep Submergence Rescue Vehicles Conceived in the Wake of the USS *Thresher* Disaster

Deep Submergence Rescue Vehicles perform rescue operations on submerged, disabled submarines of the U.S. Navy or foreign navies.

DSRVs are designed for quick deployment in the event of a submarine accident and are transportable by truck, aircraft, ship, or by a specially configured attack submarine. At the accident site, the DSRV works with either a “mother” ship or “mother” submarine. The DSRV dives, conducts a sonar search, and attaches to the disabled submarine’s hatch, and can embark up to 24 personnel for transfer to the “mother” vessel.

The DSRV also has an arm to clear hatches on a disabled submarine and a combined cable cutter and gripper which is able to lift 1,000 pounds.

DSRVs were developed as a result of the USS *Thresher* (SSN-593) accident in 1963, when all hands were lost. At the time, there was a far greater disparity between submarine operating depths and the capabilities of rescue vessels. The Deep Submergence Systems Project contracted with Lockheed Missiles and Space, Co. to produce a deep diving rescue submarine, the first of which was launched in 1970.

Builder: Lockheed Missiles and Space, Co., Sunnyvale, California

Power Plant: Electric motors, silver/zinc batteries, one shaft, 15 shaft horsepower, four thrusters, 7.5 horsepower

Length: 49 feet (15 meters)

Beam: 8 feet (2.4 meters)

Displacement: 38 tons (38.61 metric tons)

Speed: 4 kts

Maximum depth: 5,000 feet (1524 meters)

Sonar: Search and navigation

Crew: Two pilots, two rescue personnel and the capacity for 24 passengers



The *Ohio*-class submarine USS *Michigan* (SSBN-727) enters the intermediate maintenance facility at the Puget Sound Naval Shipyard for an engineered refueling overhaul and conversion into a guided missile submarine (SSGN).

The U.S. Navy is passing through a time of fundamental change. Older ships and weapon systems that were developed primarily to counter blue-water Cold War threats, with two superpowers butting heads for naval dominion, are now giving way to more modern, versatile designs. Moreover, the demise of the Soviet Union, combined with the rise in global terrorism, has prompted the Navy to shift its focus to the littorals and adopt the Sea Power 21 concept as a fundamental doctrine. An excellent example of the effects of this change on force structure can be found in the SSGN conversion program.

SSGN Conversions: Embodying the Sea Power 21 Vision

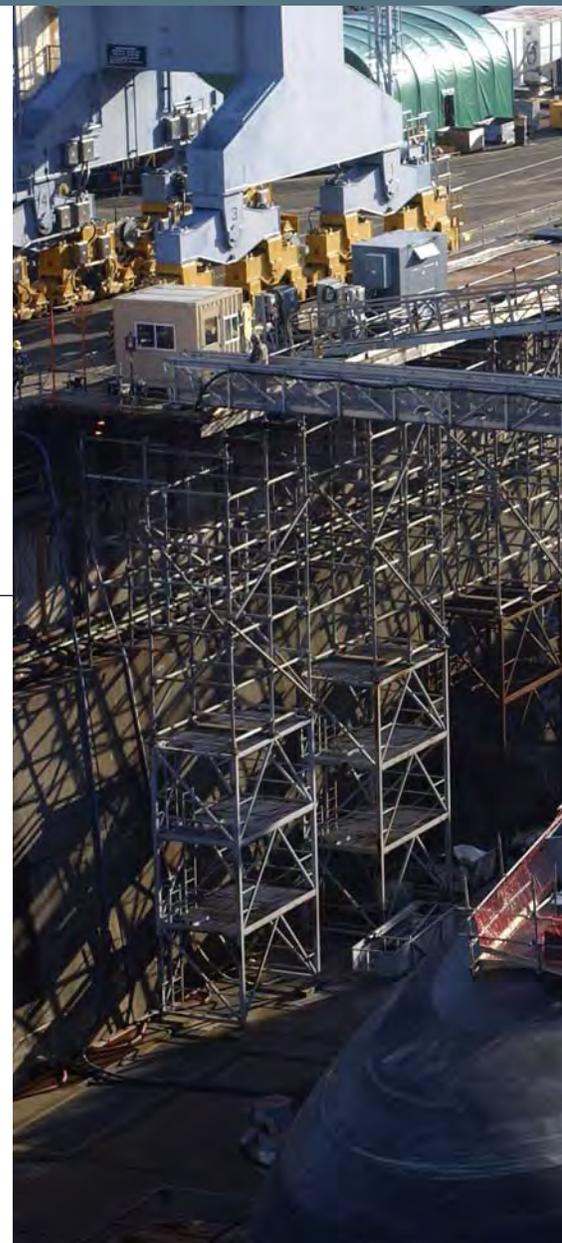
THE SSGN EMBODIES THE OFFENSIVE CAPABILITIES OF SEA STRIKE, WITH THE ABILITY TO LAUNCH UP TO 154 TOMAHAWK CRUISE MISSILES FROM 22 OF HER 24 FORMER TRIDENT MISSILE TUBES. THAT IS 32 MORE VERTICALLY-LAUNCHED MISSILES THAN ARE CARRIED ON THE LATEST *Ticonderoga*-CLASS CRUISERS AND 58 MORE THAN ON FLIGHT IIA *Arleigh Burke*-CLASS DESTROYERS.

Although generally, older ships are being phased out and replaced by new counterparts as they reach the end of their service lives, an interesting exception within one warship class is already in progress on a much more compressed schedule. The 1994 Nuclear Posture Review concluded that the Navy will need only 14 of its 18 USS *Ohio* (SSBN-726)-class ballistic missile submarines to adequately provide the seaborne strategic deterrent that is the nation's most secure nuclear option. Rather than simply scrapping the four oldest boats – *Ohio*, USS *Michigan* (SSBN-727), USS *Florida* (SSBN-728), and USS *Georgia* (SSBN-729) – still highly-capable submarines with 80-plus years of total operational life remaining, the Navy decided to convert these ships into stealthy guided-missile strike and Special Operations Forces (SOF) platforms. Currently, *Ohio* is scheduled to complete conversion in November 2005, three years to the month after she began a preliminary overhaul and two years after beginning actual conversion. *Florida* began her preliminary overhaul in August 2003 and is scheduled to complete in April of 2006. *Michigan* recently entered drydock in March 2004 for her overhaul, and will complete her conversion in October 2006. Finally, *Georgia* will begin her overhaul in March 2005 and will complete the conversion process in September 2007, about the same time *Ohio* reaches Initial Operational Capability (IOC).

The SSGN conversions are designed to provide Navy leaders a strike platform capable of fulfilling multiple roles easily and effectively, while at the same time minimizing cost by leveraging existing

hulls and their original builder's inherent knowledge of the platform. Since the Electric Boat Division of General Dynamics built all the *Ohio*-class SSBNs, the company can use its prior experience and detailed familiarity with the submarines to take the lead in redesigning and converting them quickly and efficiently to the new configuration.

Sea Power 21's principal elements are Sea Strike, Sea Shield, Sea Basing, Sea Warrior, Sea Trial, and Sea Enterprise. These are all tied together through FORCEnet, which subsumes the networks and communication systems that are designed to give naval leaders an all-encompassing, real-time picture of the battlespace. Sea Strike embodies offensive capabilities within Sea Power 21. It provides the means to conduct sustained, precision attacks on targets both at sea and inland. The SSGN will excel in this arena, with the ability to launch up to 154 Tomahawk cruise missiles from 22 of her 24 former TRIDENT missile tubes. That is 32 more vertically-launched missiles than are carried on the latest *Ticonderoga*-class cruisers and 58 more than on Flight IIA *Arleigh Burke*-class destroyers. The SSGN's other two tubes have been redesigned to accommodate dual five-man lock-in/lock-out chambers so Navy SEALs can exit the submarine while submerged and perform their own strike missions. At a time when the United States military is hunting terrorists in remote locations all over the globe, being able to covertly launch a large number of precision-strike missiles or deploy dozens of the world's best sea-borne warriors provides the Navy



with extraordinary stealth and powerful new capabilities.

The defensive focus of Sea Power 21 is called Sea Shield. Its purpose is to defend American territory, warfighters, friends, and allies, anywhere in the world's oceans and littorals. Thanks to their stealth and current plans to exchange crews at forward bases, the SSGNs will be able to deploy in-theater longer than almost any other Navy asset. Combined with their state-of-the-art Intelligence, Surveillance, and Reconnaissance (ISR) capabilities for detecting and reacting to enemy threats, the SSGNs will quickly become one of the Navy's crucial Sea Shield elements. Furthermore, the ships' modular missile tubes will be able to host a variety of other systems, including remote mine-hunting unmanned underwater vehicles



USS *Ohio* (SSBN-726) undergoes conversion from a ballistic-missile submarine (SSBN) to a guided-missile submarine (SSGN). By FY 2007, all four SSGNs, *Ohio*, *Michigan*, *Georgia*, and *Florida*, are scheduled to have completed conversion. *Ohio* is scheduled to attain initial operational capability by 2007.

(UUVs) and possibly even unmanned aerial vehicles (UAVs), thus greatly increasing their defensive capabilities.

The SSGNs' incredible size and mission flexibility will make them perfect platforms for Sea Basing. Sea Basing emphasizes extending the Navy's reach and sustainability by using self-sufficient, mobile at-sea bases in forward areas. Each SSGN will provide just such a sea base for up to 66 Navy SEALs. In addition to the dual lock-in/lock-out chambers mentioned above, each boat will also have the ability to host two Dry Deck Shelters (DDS), two Advanced SEAL Delivery Systems (ASDS), or one of each. With all these options for deploying Special Operations Forces (SOF), SSGN becomes essentially a mobile SOF operating base right under the adversary's nose.

Georgia Prepares for Silent Hammer

In October 2004, the Navy will conduct a follow-on Sea Trial experiment called "Silent Hammer" off San Diego. Building on the success of "Giant Shadow," "Silent Hammer" will test several new technologies, including the Flexible Payload Module and the Stealthy Affordable Capsule System (SACS), installed aboard "Silent Hammer's" SSGN stand-in, *Georgia*. These features will give the submarine a more flexible interface with the sea for facilitating the off-load of weapons and unmanned vehicles.

The exercise will also test an SSGN's effectiveness in a more "Joint" scenario, with networked forces at sea, in the air, and on land. This will be directed from *Georgia's* newly-installed Battle Management Center, which will allow an embarked Joint Commander to make real-time, theater-wide command decisions from underwater. As in "Giant Shadow," "Silent Hammer" will test an SSGN's ability to transport and deploy SEALs and unmanned vehicles to a target zone. *Georgia* will again launch simulated Tomahawk missiles at land targets, but this time with the added complexity of coordinating the attack with a Marine Expeditionary Strike Group, which will also provide targeting information.

Sea Warrior is the Navy's new program to shape the men and women of tomorrow's Fleet through progressive training and staffing initiatives. It also addresses quality-of-life issues. For example, to support SEALs for lengthy deployments, the four SSGNs entering conversion are being equipped with additional exercise and cardiovascular equipment, and even a virtual laser weapons range, so the SEALs can stay fit and maintain their skills within the confines of the submarine. The SSGNs will receive the Common Submarine Radio Room, which will also be backfit into most other current and future submarines in the fleet. This will ensure that future radiomen only need to learn the complexities of one submarine radio room, and can move with ease among the different submarine classes as needed. Additionally, more living space will be provided onboard by rebuilding the existing Navigation Center into a Battle Management Center, which will house command/control and mission-planning functions.

In addition to being an unmatched strike and SOF platform, SSGN will also be a great Sea Trial host. Sea Trial encompasses all of the Navy's at-sea demonstration efforts, including partnerships with government and civilian research centers and academic institutions to develop the weapons of the future. Thanks to their unmatched payload capacity, versatility, and multiple large ocean interfaces, SSGNs will be the platform from which virtually all new submarine technologies will be tested in the near future. In fact, before her conversion,

Florida still an SSBN but "acting" as an SSGN —was the star of the first true Sea Trial experiment, called "Giant Shadow." [Ed. Note: See "Charting the Course of the Future Navy" in the Spring 2003 issue of *UNDERSEA WARFARE*.]

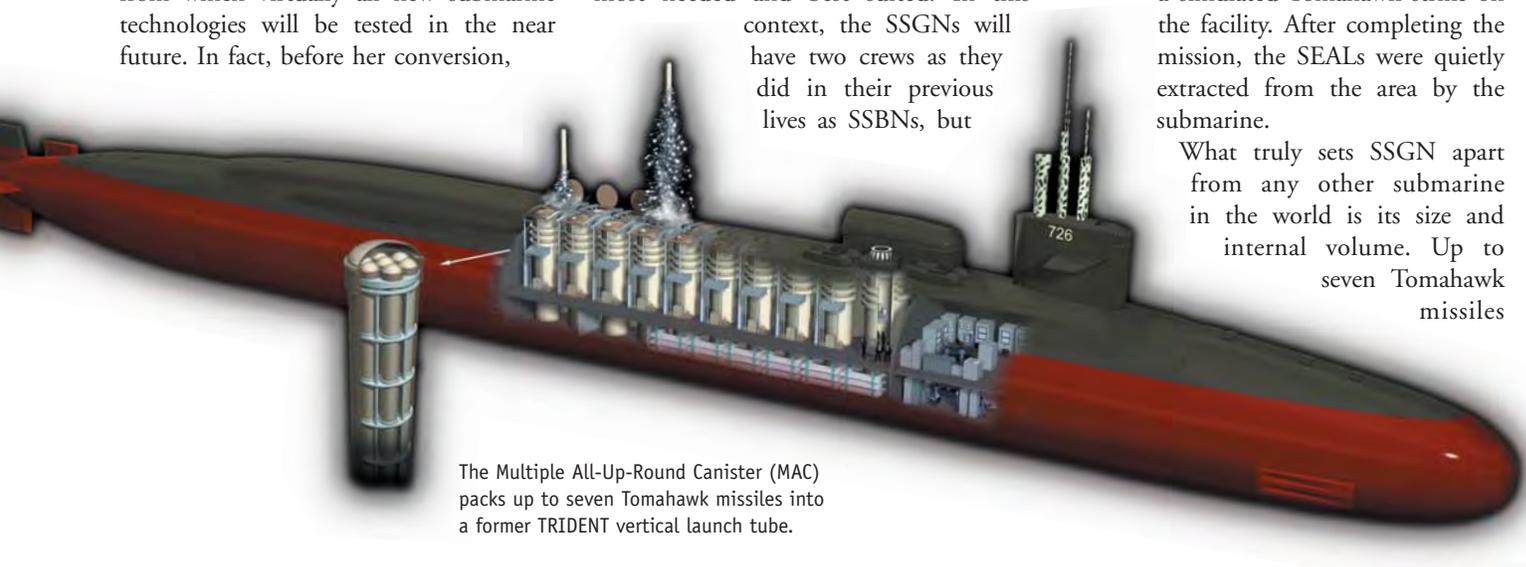
The final piece of Sea Power 21 is *Sea Enterprise*. This is the business end of naval operations — building, equipping, and maintaining the fleet as efficiently as possible so Sailors are freed up to keep us at the forefront of the world's navies. The SSGN Program Office has been a leader in this effort to improve business practices. In three years, these submarines went from concept to the start of conversion, and by fiscal year 2007, all four SSGNs will have been delivered to the Navy, just as the lead ship, *Ohio*, gains IOC. To save time and money, Norfolk Naval Shipyard and Puget Sound Naval Shipyard, both supporting Electric Boat, will perform conversion work on two submarines each. The conversions are staggered at six-month intervals and begin only halfway through each submarine's normal overhaul, giving the Navy these powerful new capabilities in almost unprecedented turn-around time.

As a complement to Sea Power 21, the CNO has recently announced the Navy's new Fleet Response Plan, which calls for more flexible force deployments based on the premise of "Presence with a Purpose." Rather than rigid deployment dates and tour lengths, the Navy is moving towards deploying its forces where they are most needed and best suited. In this context, the SSGNs will have two crews as they did in their previous lives as SSBNs, but

instead of returning to their homeports after every patrol, they will routinely exchange Blue and Gold crews at forward bases. This practice will significantly lower transit times while greatly increasing the time spent on station. In fact, the currently-planned deployment cycle allows two SSGNs to be in theater at all times, with three SSGNs in theater up to 60 percent of the time.

At-sea tests in January 2003 provided a glimpse of the SSGN's future capabilities. During that month, *Florida* performed a Demonstration Validation (DemVal) test, in which she fired two Tomahawk missiles from Multiple All-Up-Round Canisters (MACs) in former ballistic-missile tubes to establish the feasibility of launching cruise missiles in that way. The successful test proved that the SSGNs will be able to launch Tomahawk missiles without damaging the missiles remaining in each seven-missile MAC or the ship itself. After the DemVal, *Florida* moved into the "Giant Shadow" Sea Trial, which showed how the SSGNs could deploy SEALs and UUVs in a realistic mission scenario. After a UUV was launched vertically from a ballistic missile tube to check the area for mines — another first — the SEALs were inserted clandestinely on the beach by *Florida* to investigate a simulated chemical/biological weapons facility. The SEALs successfully contacted the submarine to arrange for resupply on the beach by a UUV, and then called in a simulated Tomahawk strike on the facility. After completing the mission, the SEALs were quietly extracted from the area by the submarine.

What truly sets SSGN apart from any other submarine in the world is its size and internal volume. Up to seven Tomahawk missiles



The Multiple All-Up-Round Canister (MAC) packs up to seven Tomahawk missiles into a former TRIDENT vertical launch tube.

can fit into each former TRIDENT missile tube, or alternatively, these large-volume tubes can potentially hold UUVs, UAVs, unmanned surface vehicles (USVs), extra equipment for SEAL teams, or other payloads. Each of the 22 available tubes is about the size of a tractor-trailer, so new warfighting uses for this space are limited only by the imagination.

SSGN will meet the needs of both today's and tomorrow's Navy. Taking advantage of improved business practices and leveraging extant platforms and expertise, this program to convert four former "boomers" to flexi-

ble, stealthy-attack and ISR platforms has progressed at an unprecedented rate and at an affordable cost. When these assets are delivered to the fleet in the very near future, the Navy will have taken another major step toward dominion on, in, and around the high seas. With their stealth, the SSGNs can loiter on station in a non-provocative manner for months at a time, lying in wait and ready to strike at a moment's notice at a variety of potential targets. Or, they can deliver a team of Navy SEALs and their equipment to a drop-off point, dispatch them in their own mini-submersible ASDS,

resupply them using UUVs, answer a call for cruise missile strikes if necessary, and then extract the landing party, all without the enemy knowing they were there. The SSGNs represent an unsurpassed return on investment by the Navy and for the taxpayer, and they will soon be plying the world's oceans, quietly ready to perform their duty at a moment's notice.

Mr. Holian is an analyst with Anteon Corporation in Washington, D.C. and a Contributing Editor to *Undersea Warfare*.

USS Florida Continues SSGN Transformation with New CO

by Chief Journalist (SW/AW) Mark O. Piggott, COMSUBLANT Public Affairs

CDR Gregory M. Ott relieved CDR David M. Duryea as Commanding Officer, USS *Florida* (SSGN-728), on April 16 at Norfolk Naval Shipyard. This was another milestone in *Florida's* conversion from a ballistic missile submarine (SSBN) to a guided-missile submarine (SSGN).

"Historic Norfolk Naval Shipyard is the nation's first public shipyard, and no stranger to naval transformation," said VADM Kirkland H. Donald, Commander, Naval Submarine Forces. "It has been no easy task for CDR Duryea to take *Florida* from her role as an SSBN, combining crews, accomplishing the first launch of a Tomahawk cruise missile from an *Ohio*-class submarine missile tube, completing the CNO's first Sea Trial experiment, "Giant Shadow," and bringing his submarine into the shipyard for a re-fueling overhaul and conversion," Donald continued.

"But through his keen tactical expertise, astute leadership, unwavering standards, and personal concern for the crew, Dave was worthy of the task, and this magnificent crew rose to the challenge."

Florida entered Norfolk Naval Shipyard in July 2003 to undergo refueling and conversion from an SSBN to an SSGN. Transformational submarines, both physically and conceptually, SSGNs will operate in otherwise inaccessible areas to provide unique capabilities. These include carrying up to 154 cruise missiles, which can be launched in rapid succession, and hosting 66 Special Operations Forces (SOF) personnel, a



A patrolling security boat cruises past USS *Florida* (SSBN-728) docked at the Delta Pier on the Hood Canal at the Naval Submarine Base Bangor in Washington. *Florida* entered Norfolk Naval Shipyard in July 2003 to undergo refueling and conversion from an SSBN to an SSGN.

swimmer lock-out shelter, and an Advanced SEAL Delivery System (ASDS). These features will provide a massive amount of firepower in a survivable and virtually undetectable platform, which can remain on station indefinitely.

"Greg, I envy you for your opportunity to take her to sea as an SSGN," CDR Duryea said. "You are the perfect guy for this assignment, and I wish you all the best."

A native of Wakefield, New Jersey, CDR Ott joined the Navy in 1985 after graduating from Lehigh University with a Bachelor of Science Degree in Mechanical Engineering. He has served on USS *Francis Scott Key* (SSBN-657) and USS *Providence* (SSN-719) and then

commanded USS *Charlotte* (SSN-766), where earlier he had been the submarine's executive officer.

Ott knows that the road ahead for *Florida* and her crew is filled with new challenges for the future. "The engineers and submarine designers are breathing new life into *Florida* and giving us a brand new kind of ship – the SSGN," he noted. "It's up to us to plot the course for how we will use this new capability," he continued, "and it's up to us to develop and implement the routine for taking her to sea."

The ship is scheduled to complete her conversion and rejoin the fleet in 2006.



While USS *Honolulu* (SSN-718) is the 24th *Los Angeles*-class submarine to surface at the North Pole, she is the first of the first-flight 688 to perform operations Arctic.

Photo by Greg von Eubank

HEADING NORTH!

TRAVELING THE ARCTIC REGION,
U.S. SUBMARINES FIND ADVENTURE,
NEW CHALLENGES, AND NEW FRIENDS

HONOLULU DEPLOYMENT MARKS FIRST FIRST-FLIGHT 688 TO SURFACE AT THE NORTH POLE

by CDR Chuck Harris, USN

*“Captain, the ship is ready
to vertically surface.”*

The OOD made the report from the darkened Control Room while watching the ship’s Control Party maintain the 7,000-ton submarine completely motionless at 170 feet. It was dark. The Control Room was rigged for low-level light and the OOD’s final sweep on the scope to confirm no ice overhead was in the image intensification mode because of the lack of light. It was early October and the sun was already three degrees below the horizon. This gave incredible permanent sunset views but produced little illumination 110 feet down at the level of the periscope head window. Ice keels dropping down to 40 feet were not visible in the normal image

settings of the scope when they were as close as 90 feet.

A quick check of the side-scan sonar system to confirm the ship's position, and all was ready. After months of work-up and practice, USS *Honolulu* (SSN-718) was finally set to carry out an evolution discussed, planned, and practiced by the crew numerous times. We would be the first first-flight 688 to surface at the North Pole. Getting to that point and then actually surfacing hadn't happened quite the way anyone expected it to. As most submarines that preceded *Honolulu* had found, not much of anything in the Arctic happens quite the way it's expected to.

After the long challenging journey to the Pole, the crew had struggled for the last 30 hours simply trying to find a place to surface. We had practiced and discussed the possibility of hovering under and surfacing vertically in a small open-water area. We all had expected that finding a suitable place would be relatively easy. We were mistaken. After a full day of searching, our hopes of surfacing at the North Pole began to fade. It didn't help that the ship had not seen an open area in the ice for almost a week – the last being just 12 hours after passing under the ice edge at 75°N. I began bracing the crew for the eventuality of not being able to surface. Everyone was disappointed. The schedule gave us less than 24 hours more to find a polynya near the Pole, and in hopes of finding something, we moved to a new area about four miles away.

12 hours later, the OOD, LT David Edgerton, informed me he had found a spot – small but with clear open water and a bit of slush ice. Initially we had little hope, because the ice was moving, and most of us were convinced the tiny area would close up long before we had the opportunity to map the region and prepare the ship. Soon after we began mapping the area, the movement became apparent, with the polynya plotter reporting almost a half a knot of current. Persistence paid off though, and six hours later, LT Edgerton had the ship hovering at 170 feet and stopped dead in the water. At this point, the next challenge revealed itself.

As the OOD surveyed the polynya through the scope, it became apparent that the ship was moving sideways with respect to the opening at an appreciable rate. Since the polynya was now less than 100 yards

HAMPTON CREW TOURS THE NORTH POLE WITH HMS TIRELESS IN JOINT ARCTIC EXERCISE by JOC Kevin Elliott, USNR

With a burst of air into the forward ballast tanks, USS *Hampton* (SSN-767) surfaced through a thin sheet of ice at the North Pole on 19 April 2004. The Sailors onboard that day had the chance to experience something few others have ...surfacing at the top of the world.

"Of all the memorable things I've done in a submarine, this was one of the most amazing," said CDR Robert Burke, Commanding Officer of *Hampton*. "I was struck by the dead silence, the absolute crispness of the air, and the absolute foreign feeling of the environment. I could have been on the surface of the moon."

Hampton had sailed more than 5,000 miles from its homeport of Norfolk, Virginia during ICEX 04, an exercise to demonstrate a submarine's ability to operate under the ice of the Arctic Ocean for an extended period of time.

ICEX is a joint United States and United Kingdom operation. The Royal Navy's HMS *Tireless* surfaced first and advised *Hampton* of an open spot in the ice nearby.

After three weeks underway, *Hampton's* crew was ready for a break. They tossed a football, hit a few golf balls, and generally played in the snow. They also capitalized on this rare opportunity to take each other's picture in the desolate environment, and to visit HMS *Tireless*.

"I made some new friends up at the North Pole," said Electronics Technician 1st Class Adam Burchette. "They gave us a tour of the ship, then we sat in the mess and drank tea. They told us about their country and we told them about ours."

The blue ice fascinated LTJG Lawrence W. Thompson of Kansas City. "Being from the Midwest I'm not a stranger to snow, but you don't realize how barren it is here until you walk around," he said. "It's just miles and miles of ice. A lot of the ice formations have a blue look to them because they have been compacted for years and there is no air left. It's so compacted it only reflects the blue light."

Hampton and her crew spent 16 hours at the North Pole and then submerged to continue the ICEX exercise. ICEX 04 has been in the planning stages for two years to ensure the Submarine Force can operate proficiently in every possible environment. *Hampton's* crew made the most of their chance to participate in ICEX and their time on the ice at the North Pole.

USS *Hampton* sits at the North Pole. In recent years, both the United States' and the Royal Navy have focused interest in maintaining and improving their operational skills and capabilities in the Arctic, supporting their common goal for greater flexibility. *Tireless* surfaced with USS *Hampton* (SSN-767) for ICEX 04. After three weeks underway, *Hampton* crewmembers were happy to meet new people. The two crews enjoyed swapping sea stories and even shared a cup of tea together.

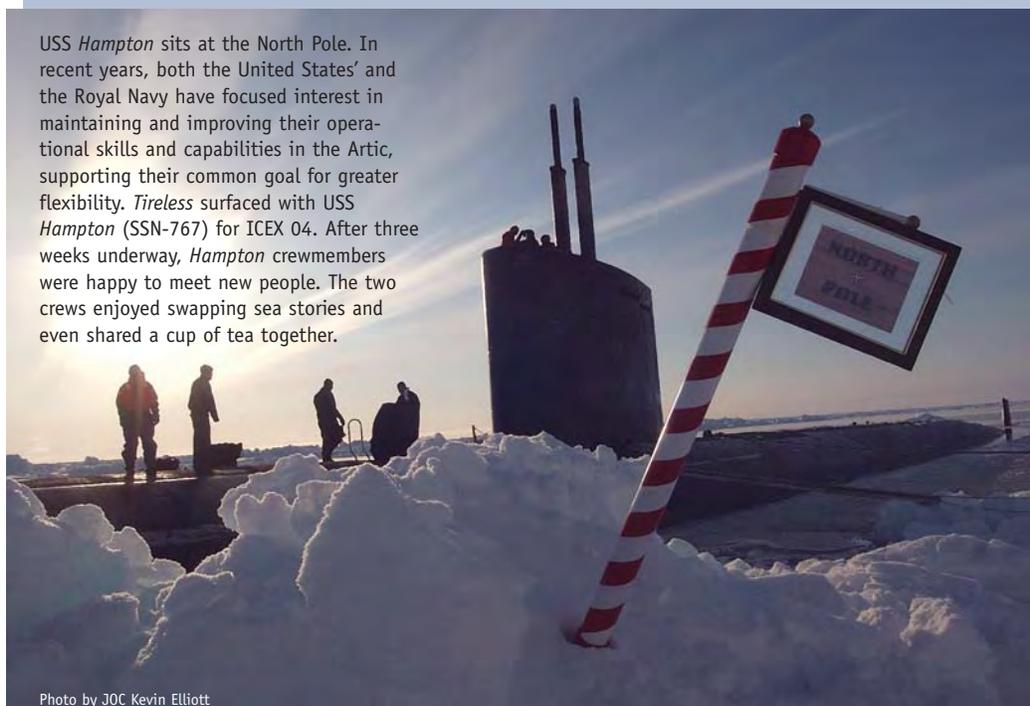


Photo by JOC Kevin Elliott



(left) *Honolulu* moored to the ice for almost 25 hours about 280 miles from the North Pole following the surfacing event there.

(below) HMS *Tireless* sits at the North Pole. *Tireless* surfaced with USS *Hampton* (SSN-767) for ICEX 04. After three weeks underway, the two crews enjoyed swapping sea stories and even sharing a cup of tea together.



Hono was halfway through an eight-month Arabian Gulf/Seventh Fleet deployment when the word came of the ICEX. “How’d you like to go to the North Pole in October?” read the e-mail from *Hono*’s Commodore, CAPT Bill French. The crew was thrilled. Only four-and-a-half months after returning to Pearl Harbor, *Hono* was northbound for 28-degree water only 10 months after being in the 97-degree waters of the Arabian Gulf.

The task? *Honolulu* was charged with further evaluating the operation of our under-ice, forward-looking sonar system in order to improve SSN arctic performance. *Hono* was also tasked to evaluate operating and casualty procedures for deep-Arctic operations of first-flight 688 submarines. Because the ship carried the latest communications gear in her radio room, and little was known about using some of this equipment at very high latitudes, the *Hono* radiomen established their own objective of testing the limits of these new capabilities.

Like any extended operation, the trip had its challenges. Shortly after entering the shallow water of the Bering Sea, an external power supply for the forward-looking sonar system failed, threatening the mission and forcing the ship to scramble to find a nearby location suitable for transferring a new power supply to the ship. A quick check of the Sailing Directions suggested that Dutch Harbor in the Aleutians was the ideal place. COMSUBPAC turned to, assigned additional water south, and arranged for delivery of a replacement there. A two-day run south and *Hono* was off Dutch Harbor with the harbor-master alongside transferring the part. After only three hours, *Hono* had the subsystem replaced, and the mission was back on track.

Getting into the Arctic Basin from the Pacific side is not easy. Several thousand years ago, a land bridge connected what is now Alaska and the far eastern tip of Russia. The two landmasses have only separated recently – in geologic terms – and the water between them is not deep. The Bering Sea to the south and the Chukchi Sea to the north of the Bering Strait are also shallow. Coming from the Pacific requires a run of over 1,000 miles inside the 50-fathom curve and over 700 miles inside 30 fathoms. *Hono* was only 25 feet off the bottom for several days, sometimes coming as shallow as 110 feet. Fortunately,

wide, and the surfacing would take about five minutes from 170 feet to the surface, the current definitely posed a problem. The ship would have to make another try. Putting the ship on the right edge of the polynya and stopping quickly set the ship up for the event.

“Officer of the Deck, vertically surface the ship”

With the precision that marks the performance of all submarine watch sections, the OOD gave the order, and the ship’s Control Party smoothly transitioned from motionless hovering to controlled ascent. Forced out by high-pressure air, seawater went overboard from the ship’s depth control system. 5,000, 10,000, 15,000 pounds were counted off by the Chief of the Watch. The Diving Officer of the Watch, ETCS (SS) Neil Davenport – the ship’s Assistant Navigator, monitored the ascent rate and quietly gave orders to blow even more ballast. A screen in front of the Helmsman showed the ship coming up through a strong salinity gradient. The water closer to the ice was less saline, which made the ship heavier. The Chief of the Boat, CMDCM (SS) Mike Keck remarked

that coming up in the Arctic was certainly different than the practice sessions in the Hawaiian operating areas. There, the ship blew only 2,500 pounds from the Depth Control tanks to get a 35 foot per minute ascent rate. By 120 feet, Senior Chief Davenport had already blown 25,000 pounds and the ship was still slowing noticeably with every change of 10 feet.

As the ship passed 100 feet, LT Edgerton took one last sweep and lowered the scope. At this point, everyone focused their attention on the monitors showing the view from the overhead camera. The 25 men in the Control Room watched the surface move closer and closer until finally the sail passed through the slush ice and into history, making *Honolulu* the first first-flight 688 not only to reach the Pole, but also to surface there.

The trip to the North Pole was not the main point of the ICEX, just an enjoyable side trip on a voyage that took *Hono* around the rim of the Arctic Ocean. For a crew that had seen more than most submarines in the past year, everyone reveled in their good fortune to have been chosen to participate in this lifetime event.

contacts were non-existent once north of St. Lawrence Island a U.S. possession just southwest of the Bering Strait. Despite the lack of contacts, the area has proven hazardous for submerged submarine operations. During her famous run to the North Pole in 1958, USS *Nautilus* (SSN-571) found ice jammed so thick in the area between St. Lawrence and the Russian mainland that her skipper, CDR Anderson, abandoned that route and instead made an end-around the east side of the island. *Hono* saw no ice near St Lawrence but found riding so close to the bottom challenge enough.

In all, *Honolulu* spent 16 days under the Arctic ice pack and surfaced four times, with the second and fourth being the longest 25 and 8 hours, respectively. Surfacing opportunities came suddenly and with little warning. Because the ship had been under the ice for over a week, and the first surfacing had to be cut short, the crew was focused on finding more suitable sur-

The view from the bridge was breathtaking. Around one-third of the horizon, the perpetual sunset glowed every hue of orange, red, and yellow imaginable. On the opposite side, the horizon was a deep blue underneath a swath of purple with a full moon hanging in the middle. The moon reflected off the still water and ice of the polynya, and although the wind chilled everything down immediately, it made no sound, since there was nothing to impede its passage. No one on the crew could have imagined the view we took in that afternoon. The desolation was so complete that it defies all description. After several attempts to establish communications with an Iridium phone, I finally contacted my neighbor CDR Duane Ashton, CO of USS *Columbia* (SSN-771), since I was bursting to describe this unbelievable scene to someone. Although Duane expressed appreciation for the call, he admitted later that it was somewhat tempered by the fact that it was 0230 in Pearl Harbor – some-

The ship cut a swath through the thin ice, prompting one crewmember to remark that *Honolulu* was now the world's most expensive icebreaker. After about an hour on the surface, the OOD spotted what appeared to be a suitable point of ice to moor the ship against. The area next to the ridge was covered by a thin layer of ice about three inches thick, which made the approach tricky – mainly because it was hard to see any protruding ice keels that might slice into the rubber boot covering the sonar dome and possibly on through to the fiberglass dome itself. As the ship approached the mooring point, ice rolled up and over the bow, building up to more than two feet near the forward vents. The ice seemed protective of the ridge and gently steered the bow away from the mooring point as the ship approached. We discovered that by approaching our intended “berth” within about 25 feet and then backing away, the thin ice was sucked into the vortex of the retreating bow. Repeating this maneuver several times, each time approaching closer to the edge of the ice ridge, the ship was able to get within four feet of the edge and then swing the stern over so that the hull rested against the heavy ice. Within a half hour, a brow was across and lines made fast to anchors set in the ice.

The ship set a polar bear watch and outlined an area about 150 yards from the ship that marked the limits for the crew. The ship was about 270 miles from the Pole and over 500 miles from the nearest land (Greenland) so polar bears were not considered to be a big threat – not in this remote area. 20 hours later, we realized how wrong we were, when the sail watch spotted a full-grown female with two adolescent cubs about 1,000 yards directly downwind heading for *Hono*. The three spent an hour exploring the ship rather tentatively and then moved on – probably after realizing there was nothing edible around. The range of these magnificent animals must be incredible, and even a recent Canadian Geographic article incorrectly showed the area where we spotted these bears to be empty of them.

After days under the ice following the second surfacing, *Honolulu* finally found a place to come up to conduct the communications testing the Radio Division had been pressing for. Our radio team found that submarines transiting across the arctic

continued on page 40



Three polar bears investigate an unusual visitor to their habitat. Sighted by a lookout from the sail of the submarine, the bears investigated *Honolulu* for two hours before leaving.

facing areas. These were tough to discern. The ice canopy was persistent, and areas that had clearly been open water only a few days before were iced over by the time *Hono* slid quietly underneath. Entering under the ice pack was abrupt. The transition from open water to pack ice—the marginal ice zone or MIZ—lasted only 12 miles. Three days after leaving the North Pole, the side-scan system showed *Hono* passing under a large polynya several hundred yards in every direction. The OOD mapped out the area quickly, and soon we were again ascending to the surface.

thing I hadn't remembered when ringing him up. Meanwhile my OOD and Weapons Officer, LT Paul Acquavella shifted propulsion to the outboard and began driving through the slush around the perimeter of the polynya looking for a suitable location to moor the ship.

With glass-calm water, it was safe to put crewmembers on the main deck while the ship motored along on the outboard, and many took the opportunity. There was no guarantee the ship would be able to find a suitable location to moor, but everyone was determined and focused on trying.



Photo by Brian Nokell, NSB Bangor Visual Information

(left) A partnership of operational and fleet maintenance leaders celebrated Naval Intermediate Maintenance Facility's (or IMF's) completion of their 500th TRIDENT refit on the USS *Pennsylvania* (SSBN-735) (G) at Naval Base Kitsap, Bangor.

(below) After reported noise while underway, the fairwater planes of USS *Kentucky* (SSBN-737) were removed by IMF, Bangor, for inspection, repair, and refurbishment. The delicate refit was accomplished while the ship was afloat, requiring adroit cooperation between riggers, crane operators, and the entire waterfront crew.

(bottom) A welder conducts a magnetic particle inspection at PNS & IMF, Bremerton, following a weld layer application.

IMF Bangor Completes 500th TRIDENT Refit

The Naval Intermediate Maintenance Facility (IMF), Bangor completed its 500th TRIDENT refit on 4 June 2004, for the USS *Pennsylvania* (SSBN-735) at Naval Submarine Base, Bangor.

This important milestone consisted of more than 36,000 production man-hours and 600 jobs performed on the submarine to accomplish planned incremental overhaul and repairs. The four-week long TRIDENT submarine refits have been accomplished at Bangor ever since the arrival of the USS *Ohio* (SSBN-726) in July 1982. IMF (formerly the TRIDENT Refit Facility) was built specifically for the purpose of maintaining the fleet at Bangor and was the model used for TRIDENT Refit Facility, Kings Bay, Georgia.

IMF has expertise in hull, mechanical, electrical, electronics, and weapons systems repair and continually responds to meet the fleet's maintenance and repair needs with on-time, cost-effective and quality service.

"It's an honor to be here at IMF as we celebrate the 500th TRIDENT refit at Bangor," said CAPT Thomas H. Barge II, commanding officer of IMF. "Even as we mark this special event, we should remember that we got here by more than twenty years of quiet excellence – IMF civilian employees and Fleet Sailors working day-in and day-out to keep the TRIDENT Fleet ready for operations at sea."

IMF employs more than 1,600 military and civilian workers on three sites. They are based at Naval Submarine Base, Bangor, with a detachment in Everett, Washington and Naval Station Bremerton. IMF has recently consolidated with Puget Sound Naval Shipyard and is part of the roll-up of all Northwest naval maintenance activities into the Regional Maintenance Center commanded by CAPT Clarke Orzalli.

Katie Eberling is the Command Information Officer for Naval Intermediate Maintenance Facility, Pacific Northwest.

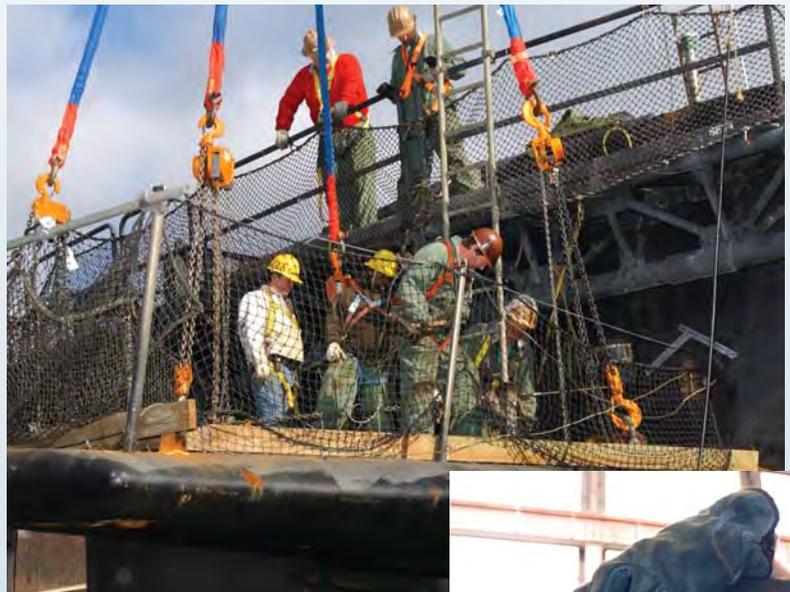


Photo by Katie Eberling, IMFACPNW



Photo by Wendy Hallmark, PSNS

P A C I F I C
O C E A N

S O U T H
C H I N A
S E A

Saviors and Suppliers

World War II Submarine Special Operations in the Philippines

Manila Bay
Manila
Corregidor

Mindoro

Sibuyan

Sea

Visayan

Sea

P H I L I P P I N E S

Panay

Leyte

Leyte Gulf

Camotes

Sea

Negros

Bohol

Bohol Sea

S U L U S E A

MINDANAO

C E L E B E S S E A

Anyone happening to glance towards the American fleet-type submarine USS *Gudgeon* (SS-211) during the night of Sunday, 27 December 1942, as she lay moored to the dock at Fremantle, Australia, might have observed an unusual sight. Seven mess boys boarded the submarine, saluted the colors, and then immediately proceeded down the hatch. No sooner were they below decks than *Gudgeon*, captained by LCDR William Stovall, Jr., slid away from the dock and quietly maneuvered out to sea.

The “mess boys” were in fact disguised Filipino soldiers and intelligence officers, led by Major Jesus Villamor, U.S. Army. Two days earlier, *Gudgeon*’s crew had loaded her with a ton of equipment specially ordered for the mission their passengers were about to embark upon. *Gudgeon*’s top-secret task: to deliver the soldiers and their gear to Mindanao and Panay, two key Philippine islands, to help bolster the Philippine guerilla forces resisting the Japanese occupation, without being detected.

The fleet-type submarine USS *Gudgeon* (SS-211) in San Francisco Bay, California in August 1943. *Gudgeon* was sent on the first official guerrilla submarine mission to the Philippines, and later completed one more. *Gudgeon's* CO on the second occasion concluded his official report by stating: "As long as a torpedo shortage exists, it seems feasible and highly desirable that every submarine bound for the Philippines or the South China Sea carry what men and equipment it can to [the Philippine guerrilla] troops who are on the spot and capable of seriously harassing the enemy."



One year before *Gudgeon* slipped out of Fremantle, General Douglas MacArthur, responsible for the defense of the Philippine Islands, was forced to declare the capital, Manila, an open city in the face of Japanese invasion forces. At his new headquarters on the fortified island of Corregidor in Manila Bay, MacArthur searched for effective ways to fight back against the wave of Japanese invaders threatening to take over the island nation. The general quickly realized that, should the invaders secure the whole country, the best hope for retaking the islands would be to enlist the support of native forces to harass the enemy while the U.S. military prepared for its counter-offensive. Soon enough, messengers were sent out to encourage loyal Filipinos to set up guerrilla units to gather intelligence and keep the Japanese forces distracted. Unfortunately for MacArthur, it soon became clear that these guerrilla forces were doomed to failure in their initial state of preparation. Brave and loyal though they may have been, they did not have the strong leadership necessary to perform meaningful operations. Nor did they have any means for receiving badly-needed supplies from outside the country.

A solution to the latter problem began to take shape in MacArthur's mind as he watched submarines slink into the small anchorage at Corregidor during the Japanese siege of that stronghold. The boats were on special missions to deliver supplies and to evacuate people and equipment while under constant threat from Japanese air and surface attack. The first boat to arrive was USS *Seawolf* (SS-197), commanded by LCDR Frederick "Fearless Freddy" Warder. Warder's greatest concern was about mines in Manila Bay. The U.S. Navy had mined



"Fearless Freddy" Warder (on the right), CO of USS *Seawolf* (SS-197) during the early stages of the guerrilla campaign, was the first to sneak much-needed ammunition and supplies to the defenders on Corregidor. Warder is shown here with Fleet Admiral Chester Nimitz at the U.S. Naval Reserve Training Center, Tulsa, Oklahoma in 1961. By this time, Warder had risen to the rank of Rear Admiral.

the area in anticipation of the Japanese invasion, and the locations of the mines were not well documented. Worse, with the Japanese now in control, nobody knew if they had mined the bay as well. Warder, guessing that the Japanese didn't expect a counter-attack soon, gambled that they had not mined the area. He also assumed that the Japanese did not anticipate American submarines operating behind

their lines. Both gambles paid off, and after Warder delivered his cargo of ammunition, he was able to leave Corregidor with 25 rescued Americans (mostly pilots), 16 torpedoes, and various spare submarine parts. Impressed by *Gudgeon's* success, General MacArthur began to wonder whether similar submarine missions could be used to supply Filipino guerrillas.

Under direct orders from President Roosevelt, General MacArthur was finally evacuated from Corregidor for Australia in March 1942. The submarine resupply missions continued until the fall of Corregidor in May, but during this interim, MacArthur had begun hearing that meaningful groups of Filipino guerrillas had formed and were awaiting supplies and instructions. Remembering his experience in Corregidor, MacArthur started inquiring about whether submarines could be used in top-secret supply missions to the Philippines. His staff informed him that the standard fleet-type boats could carry between five and 10 tons of supplies, plus six passengers, when leaving Australia on regular combat patrols. In view of the sizable requests MacArthur was receiving from his guerrillas, he pushed for a better alternative. His staff suggested he ask for the services of the Navy's two much larger transport-type submarines, USS *Narwhal* (SS-167) and USS *Nautilus* (SS-168). To MacArthur's dismay, he learned that those submarines were so old and in such disrepair that *Narwhal* would not be available until November 1943, and *Nautilus* needed a complete overhaul before she could put back to sea. Instead, ADM Chester Nimitz suggested that, with a modified wartime weapon load-out, the fleet-type submarines could carry up to 34 tons of cargo and 25 passengers, and would be better suited to the narrow passages in and around the islands anyway. MacArthur agreed with this approach, and as recounted above, *Gudgeon* was underway for the Philippines by late December.

After departing Fremantle, *Gudgeon* set out towards her destination on Mindanao, running on the surface but diving regularly only to maintain her trim and to avoid Japanese patrols. As they approached the archipelago, Major Villamor informed LCDR Stovall that there was a change in plans. Villamor had apparently received intelligence just before departing Fremantle that Japanese patrols had increased in the original landing area. The new destination was on the island of Negros. Furthermore, Villamor announced he and his men would not use the 18-foot dinghy that had been lashed to the exterior of the boat for the beach landing, but would rather put ashore in the inflatable rafts they had practiced with. Stovall was not pleased with these last-minute revela-

One thing submariners making guerrilla runs to the Philippines learned quickly was to expect the unexpected. No two missions were exactly the same, and very few were performed exactly according to plan...

tions, especially since he could have taken a shorter route to Negros, and the now-unnecessary dinghy had adversely affected his diving characteristics. However, he agreed to the changes, provided that periscope reconnaissance of the shore proved the landing could be made safely for both the landing party and the submarine. The first night, high winds and seas prohibited approaching the original landing site, so the submerged *Gudgeon* moved quietly along the coast into the next day, scanning for a new location. That night, another likely choice was negated after a number of mysterious lights suddenly appeared on the beach. Subsequently, one of Villamor's men identified them as Filipino night fishermen. Finally on the third night, 14 January 1943, a deserted beach was identified, and Villamor successfully loaded his men and supplies into the rafts and landed ashore.

Soon after submarines started making regular guerrilla runs to the Philippines, a way was found to ameliorate the lack of a strong, relatively-unified command for the native Filipino forces. The solution took the form of one Charles "Chick" Parsons. Parsons was a young American businessman living and operating out of Manila. He was also a Lieutenant Commander in an Intelligence Unit of the U.S. Naval Reserve who had remained behind in the city to collect intelligence on the Japanese occupiers. Fluent in several of the over 70 native dialects, intimately familiar with the islands, and a good friend of MacArthur from their days together in Manila, Parsons was just the man the General was looking for to act as a go-between with the Filipino guerrillas.

After being called to Australia to meet with MacArthur to discuss the situation,

Parsons accepted the position. In late February 1943, he was spirited to Labangan aboard the submarine USS *Tambor* (SS-198), captained by LCDR S. H. Ambruster. His mission was to deliver \$10,000 in cash and two tons of ammunition to Army LT COL Wendell Fertig, one of the guerrilla leaders in the region. Parsons also carried ashore a substantial amount of radio equipment for use in setting up a spy network, codenamed "Spyron." Parsons' first clandestine visit back to the Philippines lasted until July 1943. During that time, he criss-crossed several islands on foot, horseback, and canoe, always at great personal risk of capture or death by the Japanese, meeting and coordinating with guerrilla leaders, setting up coast watchers, taking part in ambushes, rendezvousing with other submarines to pick up supplies and men, and making contacts for future Spyron stations. He would later make at least four more secret trips to the Philippines to bolster the guerrilla effort and, ultimately, pave the way for the U.S. invasion.

One thing submariners making guerrilla runs to the Philippines learned quickly was to expect the unexpected. No two missions were exactly the same, and very few were performed exactly according to plan, whether due to mechanical problems, enemy interference, weather, or simply no-shows on the beach. One of the greatest fears the submariners had were airplanes, even friendly ones. One never knew when a pilot, friend or foe, would take a submarine for a target and open fire. As a result, the submariners kept a vigilant watch on the skies and dove at the first sign of any aircraft.

The two transport submarines, *Narwhal* and *Nautilus*, finally entered the guerrilla game in 1943, and the next year *Nautilus*,

commanded by CDR George Sharp, had an interesting run-in with patrolling aircraft. In late July, *Nautilus* was ordered to deliver one Navy officer, 22 enlisted men, and 10 tons of supplies to Mindoro; two Filipino Army enlisted men and 30 tons of supplies to Bohol; and two U.S. Army enlisted men and 30 tons of supplies to Leyte. At dawn on the very first morning of her mission, radar detected an airplane at five miles and closing. The plane was immediately recognized as friendly, but the pilot was less observant. He dove towards the submarine and dropped a bomb, which luckily landed harmlessly in front of the ship. His ensuing strafing attempt was also unsuccessful, missing his target by 100 yards. With that, the pilot inexplicably broke away, and was never seen or heard from again.

Later that same day *Nautilus* detected several more air contacts, causing the submarine to constantly dive quickly and then cautiously return to the surface to continue with the mission. Finally, the drop-off at Mindoro was completed successfully. The delivery to Bohol was called off due to the sudden arrival of a Japanese occupation force, so Sharp proceeded to Leyte. The submarine failed to make contact with the guerrillas there, so Sharp proceeded to the alternate site, where security signals were successfully exchanged with one of the guerrilla leaders, LT COL Roberto Kangeleon. With the goods safely on the beach, *Nautilus* headed for home, but not before another accuracy-challenged bombardier attacked with a bomb that exploded wide and well above the slow-diving submarine. The plane harassed *Nautilus* all day, keeping the submarine below water until nightfall, when she was finally able to continue on her journey home to Fremantle.

Colonel Ruperto Kangeleon, Philippine guerrilla leader, reporting to General Douglas MacArthur in Tacloban, Leyte, on 23 October 1944, three days after American forces re-invaded the Philippines there. Early on, the various guerrilla groups on the islands fought each other as frequently as the Japanese, with one of the worst situations on Leyte. Chick Parsons resolved the issue on that island by convincing the much-respected Kangeleon to come out of retirement and assume leadership of all local guerrilla factions.

At first, most submarines on secret missions to the Philippines delivered supplies and military personnel before heading off to perform more traditional wartime patrols in search of Japanese ships to sink. In the spring of 1944, this began to change as pressure from the United States pushed the Japanese back into the western Pacific. This drive kept the submarines too busy to supply the Philippines on their way to the theater, but many were tasked with picking people up from the islands on the return leg of a deployment. USS *Crevalle* (SS-291), commanded by LCDR F. D.

Walker, Jr., was ordered to pick up 25 evacuees on Negros. Upon arriving at the designated location, Walker discovered the expected 25 evacuees in one boat, plus 16 others with baggage in another. Many children were among those escaping the island, and Walker accepted both boatloads. During the return trip to Australia, the refugees were fed in the galley, requiring them to pass through the control room for each meal. The children were fascinated by the lights and switches there and couldn't resist trying to play with them. In the words of Walker, "the Chief of the Watch solved





The transport submarine USS *Nautilus* (SS-168) is shown here returning to Pearl Harbor in August 1942 after transporting part of the Marine Corps' 2nd Raider Battalion – “Carlson’s Raiders” – to Makin Island to divert Japanese attention and supplies from the battle for Guadalcanal ranging over 1,000 miles to the southwest. That mission foreshadowed her later clandestine runs to the Philippines, transporting men and supplies to anti-Japanese guerrilla fighters there.

this by putting a sign on the switchboard reading, ‘Any children found in the control room without their parents will be shot.’ The mothers read this gravely to their kids, who seemed to take it as a matter of course. Considering that some of them could not remember when they were not fugitives, perhaps this is understandable.”

In addition to the new underage menace within the ship, *Crevalle* and her passengers still had external threats to worry about before reaching the safety of Australia. After being forced to dive twice by aircraft, the submarine detected a large

sonar in what Walker described as the worst depth charging he had experienced. When the sonar was fixed, the crew found the attackers still searching directly above them, and the submarine crept away as quickly and as quietly as possible. Although heavily damaged by the depth charge attack, *Crevalle* reached Australia with all hands.

In all, 19 submarines participated in a total of 41 secret missions to the Philippine Islands, beginning with *Gudgeon’s* run in late December 1942. The last officially recorded guerrilla run, by USS *Stingray*

tons of supplies to the Philippines.

Parsons’ network of spies and coast watchers proved invaluable not only to the liberation of the Philippines, but also to the Pacific war effort as a whole. In one somewhat amusing example of their effectiveness, on 4 August 1944 USS *Cero* (SS-225), commanded by CDR E. F. Disette, torpedoed a tanker and observed it breaking up but was forced to dive beneath the tanker’s attacking escorts to escape. After dark, Disette surfaced to send his action report, but before he even got on the air, he received a message from headquarters: “Nice work *CERO*. Coast watcher reports sub sank 10,000 ton tanker off coast your assigned area. It had to be you.” Several months prior to that incident, the coast watchers were also the first to alert Southwest Pacific Headquarters in Brisbane, Australia, to a massing of Japanese naval power in the islands. This information led to a submarine net being thrown around the Japanese, tracking their every move, and eventually resulted in the U.S. Navy gaining a major victory in the Battle of the Philippine Sea – the so-called “Marianas Turkey Shoot.”

In every radio broadcast he made from Australia to the Japanese-occupied Philippines, General MacArthur had famously insisted, “I shall return,” a morale-boosting promise heard by many Filipinos on radio equipment brought to the islands on “guerrilla” submarines. When the tide of the war fully turned in favor of the Americans, and MacArthur was finally able to liberate the Philippines from the Japanese, those U.S. boats had already played a major role in making preparations on the ground.

Mr. Holian is an analyst with Anteon Corporation in Washington, D.C.



The transport submarine USS *Narwhal* (SS-167) during trials off Provincetown, Massachusetts in July 1930. During a 1943 mission with Chick Parsons aboard, *Narwhal* encountered two Japanese patrol ships while running on the surface. The boat’s near miraculous escape from the ensuing stern chase led the captain to dub the boat’s four ancient and rickety diesel engines “Matthew, Mark, Luke, and John” – the four Apostles.

Japanese convoy. Walker set a course to cut off the last ship in the group, but the convoy suddenly changed course and bore directly down on *Crevalle*. Walker’s superiors later attributed the convoy’s maneuver to an alert by the second aircraft encountered earlier. Whatever the case, *Crevalle* suddenly had no option but to dive. As the convoy passed 90 feet above the submarine without incident, Walker ordered the boat to level off and maintain depth. Moments later, two groups of two depth charges exploded close aboard, knocking out the

(SS-186) on New Year’s Day, 1945, took place between the re-invasion of the Philippines at Leyte Gulf on 20 October 1944 and the liberation of Manila on 4 February 1945. Of the conventional submarines, only *Stingray* participated in more than two runs (her total being five), and the two transport submarines, *Nautilus* and *Narwhal*, were the true workhorses of the operation, with six and nine operations respectively. In the course of the campaign, U.S. submarines delivered 331 people, evacuated 472, and delivered some 1,325

RIMPAC 2004

Enhances Stability and Increases Interoperability in the Pacific Rim

Australia's *Collins*-class submarine, HMAS *Rankin* (SSK-78) stands out to sea at periscope depth to participate in exercise Rim of the Pacific (RIMPAC) 2004.

RIMPAC was the largest international maritime exercise ever held in the waters around the Hawaiian Islands. This year's exercise includes seven participating nations: Australia, Canada, Chile, Japan, South Korea, United Kingdom and United States. RIMPAC is intended to increase the tactical proficiency of participating units in a wide array of combined operations at sea, while enhancing stability in the Pacific Rim region.

Photo by PH1 David A. Levy

Every two years, thousands of Sailors from the allied countries in the Pacific theater converge on Hawaii for the Rim of the Pacific (RIMPAC) exercise.

For RIMPAC 2004, more than 18,000 personnel onboard submarines and surface ships from the United States, United Kingdom, Canada, Australia, Japan, South Korea and Chile tested their capabilities in a collaborative maritime effort. The naval assets for RIMPAC 2004 included four U.S. Pacific Fleet nuclear-powered attack submarines, USS *Key West* (SSN-722), USS *Louisville* (SSN-724), USS *Charlotte* (SSN-766), and USS *Olympia* (SSN-717), four allied-force diesel submarines, and the nuclear-powered aircraft carrier USS *John C. Stennis* (CVN-74). Approximately 100 aircraft also participated in the month-long exercise.

According to CAPT Russ Janicke, Deputy Commander of Submarine Squadron 3, this year's RIMPAC provided an excellent opportunity for gaining anti-submarine warfare (ASW) experience for the submarines and ships involved. "It's particularly good for our submarines, because we get to interact with some of the allied diesel boats. Four of them are here for the exercise this year. It's very unique, because it [the exercise] only happens every two years, and this is one of the larger RIMPACs we have had in a long time," said Janicke.

Since RIMPAC occurs on a regular basis, past experience and present-day issues are used to develop realistic scenarios for all participants. "We try to take lessons learned, and as we gear up for the exercise, we try to integrate those lessons and any new technology that has emerged. The most important thing about RIMPAC is just sitting down and talking to fellow Sailors and officers from the allied navies about tactics and phases of the exercise; we learn an awful lot," Janicke said.

As technology changes, the Submarine Force has changed along with it and has increasingly adopted COTS developments, which have made real-time decision-making among submarine, surface and air assets a reality. “COTS technology is a key part in this RIMPAC 2004. I look back to the RIMPAC of 2000 I participated in as Commanding Officer of USS *Louisville* and we didn’t have that. My ability to interact was pretty limited. In the four years since then, we have made huge advances in COTS communication, sonar, and fire control technology,” said Janicke.

In addition to incorporating the latest warfighting technology, the inherent stealth of the participating allied diesel submarines represented a key element of real world threats for the various vessels in the exercise.

According to Janicke, “COMSUBPAC plays a key role in RIMPAC. There has been a reinvigoration of ASW. The submarines are important since they play both aggressor and hunters to provide training platforms toward the overall fleet goal of improving ASW. With three of our nuclear-powered attack submarines and four allied diesel submarines, that’s far more than we’ve had in past exercises. It really challenges the various forces to be able to handle that undersea threat, and it ties in very well with our fleet goal of improving our ASW capability.”

Because the allied naval forces have had the opportunity to incorporate the use of so many different assets, including diesel submarines, the ultimate result of their experiences will be measured when the time comes to put their efforts forth in a coalition force.

“Our biggest goal is to increase interoperability and communications with our allied forces. One of the most important aspects of completing RIMPAC is that we have the ability, on relatively short notice, to work with any of our allies. It becomes a real force multiplier,” said Janicke.

The navies are teaming together to employ lessons learned in the Global War on Terrorism while honing warfighting skills to continue the fight, said high-level naval leaders at the June 29 press conference. “That’s a significant part of this exercise,” said Vice Adm. Michael J. McCabe, Commander, U.S. THIRD Fleet and RIMPAC Commander, Combined Task Force. “It always has been, and it’s never been more important than now.”

In terms of overall effectiveness, Janicke is convinced that no matter what, the esprit de corps among the allied naval participants is so strong that their combined efforts will be able to deal effectively with anything that threatens the use of sea-lanes and the citizens of the allied countries.

Janicke concluded, “As I watched as one of the allied submarines came in to Pearl Harbor, I was thinking about the Global War on Terrorism. It convinces me that those guys [terrorists] are never going to win. We have some pretty good friends and they’re willing to help us out.”

JOC Rush is the Force Journalist serving under Commander, Naval Submarine Forces.

(top) Chilean Submarine CS *Simpson* (SS-21) prepares to render honors to the USS *Arizona* Memorial as the submarine pulls into port in Pearl Harbor.

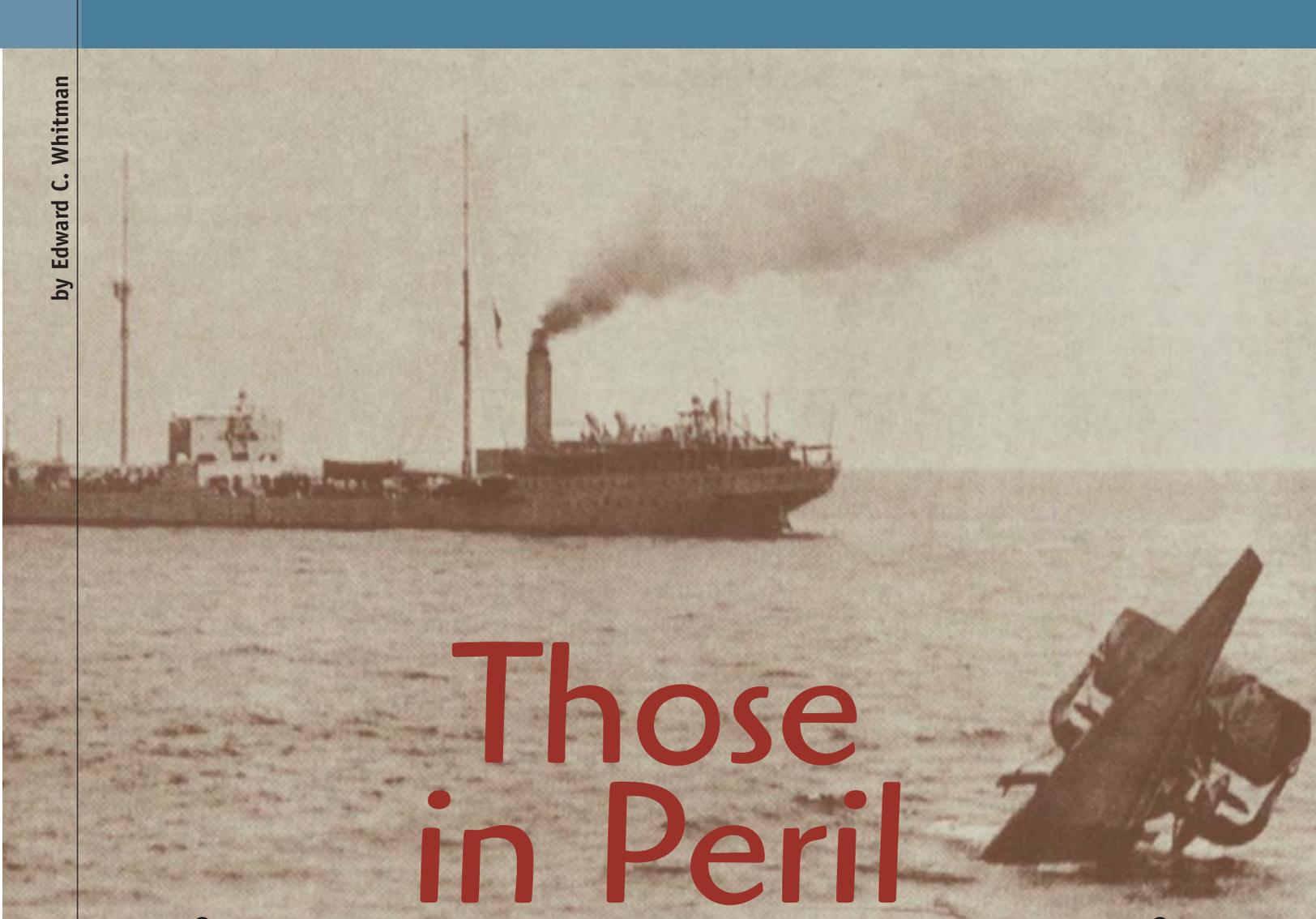
(bottom) Line handlers aboard the Japanese submarine *Narushio* (SS-595) secure lines after arriving in Pearl Harbor for a port call.



Photo by JOC Gowin Colbert



Photo by PH3 Sara M. Coates



Those in Peril

T H E S - 5 I N C I D E N T

During the first two decades of its existence, a period that included the First World War, the U.S. Submarine Force suffered no combat losses of submarines and men and relatively few to accidents at sea. Prior to 1920, there had been only two major U.S. submarine disasters – the foundering of USS *F-4* (SS-23) off Honolulu in March 1915, with the loss of all hands; and the sinking of USS *F-1* (SS-20) in a collision with her sister ship, *F-3*, near San Diego in December 1917, with 19 deaths.¹ Then, on 1 September 1920, USS *S-5* (SS-110) suffered partial flooding during a practice dive east of Delaware and settled to the bottom in 180 feet of water with her entire 40-man crew still onboard and alive. Although this was before submarine rescue vessels, Momsen lungs, and McCann rescue bells, what might have been a third major U.S. submarine

tragedy was narrowly averted by the extraordinary perseverance of *S-5*'s officers and men and the heroic assistance of two passing merchant ships. *S-5*'s story remains one of the great tales of submarine rescue at sea.

The fifth submarine of the Navy's World War I era S-class, *S-5* was launched at the Portsmouth Navy Yard in November 1919 and commissioned on 6 March 1920 with LCDR Charles M. ("Savvy") Cooke, Jr. in command. After nearly six months of follow-on sea tests and crew training, *S-5* was deemed ready to join the fleet. On Monday, 30 August, she left the Boston Navy Yard for a series of port calls in several southeastern cities, beginning with Baltimore, where *S-5* was expected on Friday, 3 September. The transit would also incorporate several high-speed runs and endurance trials, both surfaced and submerged.

Business as Usual...

By Tuesday evening, Cooke had conned S-5 successfully through her endurance runs, and at 0950 next morning Wednesday, 1 September, he commenced a required four-hour, high-speed surface run, intending to follow it immediately with a crash dive and a one-hour, high-speed submerged trial. The latter was planned for shortly before 1400 at latitude 38.36 N, longitude 74.00 E, about 55 miles east-southeast of the Delaware Capes.

One of the crucial steps in smartly executing the crash dive was closing the main induction valve, which controlled the 16-inch diameter air intake that ventilated the submarine on the surface, and in particular, supplied external oxygen to the diesel engines. Because timing this action was particularly critical, manning the main induction valve was generally entrusted to the most experienced men onboard, in S-5's case, the Chief of the Boat, Gunner's Mate Percy Fox. In earlier trials, S-5's main induc-

(left) In this startling photograph, the stern of the stricken S-5 protrudes some 20 feet above the surface with one of the assembled rescue ships in the background. Even before Navy assistance arrived, Cooke and his men had escaped from a hole cut through the submarine's "tail cone" with the help of heroic mariners from two passing merchant ships.

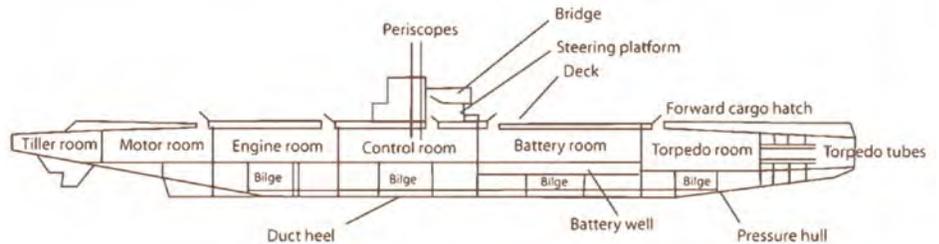
tion, located overhead in the submarine's control room had proven extremely hard to manipulate. Moreover, the large, lever-operated Kingston valves which admitted water to the bottom of the six main ballast tanks were also notoriously recalcitrant and often took several men to operate. To accelerate crash dives, it had become common practice to open the Kingston valves somewhat prior to diving and depend on the air trapped in the ballast tanks to prevent them from filling. Then, to initiate submergence, the vents at the top of the tanks would be opened to allow incoming water to drive out the air and flood the tanks.

Some 20 minutes before the planned crash dive, Cooke ordered the Kingstons opened to allow S-5 to "ride on her vents." Almost immediately, the boat developed a list to starboard, indicating that one of the ballast tanks on that side was shipping water prematurely. Correcting the problem required considerable opening and closing of the stubborn Kingston valves, and because this required additional manpower



(left) On 1 September 1920, 55 miles east southeast of the Delaware Capes, USS S-5 (SS-110) flooded and settled to the bottom in 30 fathoms of water after her crew failed to close the main induction valve during a crash dive. Ultimately, all 40 of her officers and men survived because of their own perseverance and the assistance of two passing merchant ships.

(Below) S-5 was divided into five main compartments as shown here. In the initial flooding, the torpedo room was almost entirely filled, and when seawater reached the battery wells and generated deadly chlorine gas, the battery room was abandoned also. S-5's crew eventually escaped the near-vertical submarine through the tiller room.



on the levers, Percy Fox jumped in to help out. By the time the submarine was ready to dive, she was riding on an even keel, but the Kingstons required constant attention to keep her there.

A Crash Dive... to the Bottom

Just before 1400, Cooke sounded the diving klaxon, and the crew moved quickly to execute the intricate choreography that would take the boat down. Just as S-5 headed under, however, personnel in the boat's forward compartment – the torpedo room – were horrified by a torrent of green water sluicing into the space from the overhead ventilator. In quick succession, the ventilators in the other compartments began spewing water also. Preoccupied with the problems at the Kingstons, Percy Fox had left the main induction valve open!

Officers and crew quickly initiated emergency surfacing procedures: As Cooke ordered the ballast tanks blown, Fox made a frantic attempt to close the main induction but found he could barely move it. Wherever possible, air vents and individual compartment ventilators were shut, but because the torpedo room had to be so hastily vacated and sealed off behind a watertight door, it remained essentially open to the sea, and S-5 tilted inexorably toward the sea floor. After an agonizing several minutes, she plowed into the muddy

bottom, settling upright in 180 feet of water.

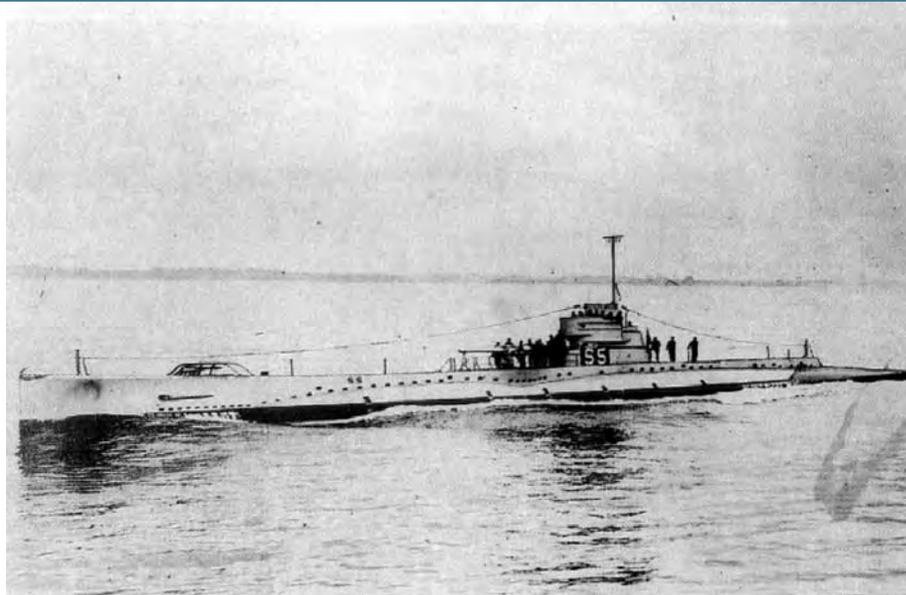
S-5 was 231 feet long and displaced 876 tons surfaced and 1,092 tons submerged. She was divided into five main compartments with a bilge under each. Moving aft from the torpedo room, the other spaces were the battery room (which also contained crew berthing), the control room, the engine room, and the motor room. The mad scramble to halt the flooding and shut the water-tight doors between compartments during the first moments of the emergency had succeeded in sealing all but the abandoned torpedo room, which was two-thirds full of water. However, there were also significant amounts of water in the bilges, and the boat was flooded with about 75 tons of excess ballast. Moreover, despite the strenuous efforts of several men to close it, the main induction valve was apparently still partly open, and water continued to flow into the torpedo room from the overhead ventilator. On the hopeful side, the submarine's hull remained intact, rudimentary lighting was restored, and all of the officers and crew had survived the boat's encounter with the bottom with only minor injuries.

Cooke's first instinct was to blow his residual ballast in hopes of bringing the boat to the surface under her own power. Although one of S-5's electric-drive motors had been irreparably damaged by the ini-

tial deluge of seawater, Cooke attempted to back the boat out of the mud by blowing the forward and midships ballast tanks and reversing the remaining motor. It took additional laborious manipulation of the Kingston valves to prevent the boat from rolling over, but even on an even keel, the boat could not be induced to break loose from the mud, and when the second drive motor shorted out and died, *S-5* and 40 men were left stranded 30 fathoms below the surface.

Not for Want of Trying...

A 1910 Naval Academy graduate from Fort Smith, Arkansas, Charles Cooke earned his nickname, “Savvy,” by graduating second in his class. After several successful tours on battleships, he entered the submarine service in late 1913, and by the time he commissioned *S-5* in 1920, he had also commanded *USS E-2* (SS-25) and *USS R-2* (SS-79). As an up-and-coming submarine officer, he was widely respected for his intelligence, even temper, and technical acumen. Now he faced the greatest challenge of his career. Both individual escapes to the surface and waiting for rescue seemed fruitless—*S-5* wouldn’t be overdue in Baltimore for several days, and she lay on the bottom in an area only lightly trafficked by merchant ships. Cooke’s only



Launched at the Portsmouth Navy Yard in 1919, *S-5* had only been in commission for six months when she was lost off the Delaware Capes in September 1920. One of the earliest of the 51 World War I-era *S*-boats, she displaced 876 tons surfaced and 1,092 tons submerged on a length of 231 feet.

remaining resources were the last of his battery power, about half of his compressed air, and the native ingenuity and determination of him and his crew.

After failing to back *S-5* out of the bottom, Cooke next attempted to dewater the torpedo room with, first, a high-pressure centrifugal pump and then a large low-pressure pump. Both failed. This left only the small regulating pump, a slow-speed, low-pressure unit normally limited to maintaining trim. To give the regulating pump the “boost” it needed to overcome the external water pressure, Cooke came up with the idea of pressurizing the torpedo room internally using some of the remaining compressed-air supply. After an hour, the water level forward began to drop — proving that the residual flooding had at least been contained — but the capacity of the pump was so small that emptying the torpedo room before their air supply ran out would have been impossible. By this time, *S-5* had been trapped on the bottom for nearly two hours, and options for getting her to the surface were few indeed.

Various accounts of the *S-5* mishap differ on Savvy’s rationale for his next move. Had he analyzed the situation and planned what eventually happened? Or was it merely the unexpected outcome of a last, desperate throw of the dice? In any event, he elected without warning to use virtually all of his remaining air to empty the aft ballast tanks. This produced an immediate result. With the stern suddenly more buoyant, it

broke free of the bottom, and pivoting on the flooded bow, the entire length of the submarine rotated vertically, thrusting the stern toward the surface. Inside, men, equipment, and accumulated bilge water cascaded downhill from compartment to compartment as the angle of the boat with the sea floor increased rapidly until at nearly 60 degrees from the horizontal, some kind of stability was reached, and all motion stopped.

Finding themselves suddenly in a strange new vertical world, the men clung precariously to whatever support they could find. But because the battery room was now the lowest unflooded compartment, most of the residual seawater ended up there, and in reacting with sulfuric acid in the batteries, it quickly generated chlorine gas, potentially deadly to the men still occupying the berthing spaces. They were laboriously evacuated by hauling them up the slope of the deck, and the battery room was sealed off from the rest of the boat. To offset the residual flooding, Cooke also directed that sufficient air pressure be applied to the torpedo room to force some remaining water back out through the main induction system, still partially open to the sea. *S-5* and her men had now been on the bottom for nearly five hours, and although their air supply was holding up reasonably well, it would only be a matter of time before the build-up of carbon dioxide and the decreasing percentage of oxygen in the atmosphere began to cause debilitating physiological effects.



S-5’s Commanding Officer LCDR Charles (“Savvy”) Cooke was a 1910 graduate of the Naval Academy and had served in submarines since 1913. He retired as an admiral in 1948, having begun World War II in command of *USS Pennsylvania* (BB-38) at Pearl Harbor. He is shown here as a midshipman.

...as air escaped through the widening hole, the decreasing internal pressure allowed more water to leak into the hull, and the boat began slowly sinking back toward the bottom. The crew's race against time accelerated.

The Only Way Out?

Somewhat after 1900, several men who had found refuge in the motor room – now the top most compartment – reported a startling observation: the sound of waves beating against the hull! The truth dawned: Given *S-5*'s length, the depth of water where she was marooned, and the angle she made with the horizontal, 20 feet of the boat's stern was protruding above the surface! However, the after escape hatch was still 30 feet below water, and even if the boat were completely vertical, the hatch would barely break the surface. Cooke immediately realized that there was only one final possibility – to cut their way out.

Abaft the motor room was one very small compartment – the tiller room – where the rudder post and steering gear were located. Around 2000, Savvy made his way upward from the control room, and with several crew members and a manual breast drill, entered the tiller room for an attempt to bore through the three-quarter inch, high-strength steel that separated them from the outside world. Despite the cramped conditions and awkward angle of attack, the men had succeeded within twenty minutes in drilling a quarter-inch hole through the hull, which revealed that indeed the stern was well out of the water and – not surprisingly – that night had fallen.

With only a selection of drills and miscellaneous hand tools to work with, Cooke decided to proceed by drilling a circle of closely-spaced holes and employing a hammer and chisel to knock out the intervening metal. With perseverance, this would eventually result in a large enough opening for a man to wriggle through, but considering how long it had taken to drill the first hole, it would likely take over three days to finish the job.

Nonetheless, Cooke organized the crew into working parties to take on the back-breaking task, and the drilling began in earnest within an hour.

The crew kept at it all night long, and by sunrise on the morning of Thursday, 2 September, had opened up a slot through which they could scan much of the horizon in the gathering dawn. Two ships appeared, too far away to be of any help. Meanwhile, the atmosphere inside the boat was becoming increasingly foul, and the effects of oxygen deprivation and carbon dioxide asphyxiation were worsening rapidly. The men panted for breath and could barely summon the energy needed to climb up into the stern and take their turns drilling on the hull. Moreover, as air escaped through the widening hole, the decreasing internal pressure allowed more water to leak into the hull, and the boat began slowly sinking back toward the bottom. The crew's race against time accelerated.

For Those in Peril...

By 1400 Thursday afternoon, 24 hours after *S-5* nosed into the bottom, Cooke and his drilling teams had only achieved a triangular hole six by eight inches, and most of his men were either incapacitated or unconscious from lack of oxygen. Then, when all seemed lost, another ship appeared, much closer than the first two, and Savvy and his men searched frantically for a way to attract attention. Ultimately, they found a ten-foot copper pipe, fastened a Sailor's tee-shirt to it, thrust it out through the hole in the hull and waved desperately for help.

The ship was a small coastal steamer, SS *Alanthus*, bound from New York to Newport News under the command of Captain Earnest A. Johnson, a veteran merchant mariner. Although *Alanthus* was



Although the Navy gave up their attempt to salvage *S-5* in 1921, her hulk was re-discovered in 1989 by civilian sport divers 48 miles southeast of Cape May, New Jersey, and it remains a challenging dive site today. This is a side-scan sonar image of the hull on the bottom.

actually moving away from *S-5* at the time, by an extraordinary stroke of luck, a man on deck glimpsed the distant outline of the submarine's stern and its fluttering white flag. *Alanthus* immediately came around to investigate.

Johnson brought *Alanthus* as close to the hulk as he dared and had himself rowed over in a small boat to the submarine's protruding stern. After a shouted exchange with Savvy Cooke, Johnson immediately recognized the urgency of the situation and the need to act quickly. He returned to his ship, maneuvered her against the submarine, and tethered *S-5*'s stern to *Alanthus* with a manila hawser, chain slings, and cables. Next, he ordered a wooden platform erected to give working access to the submarine's stern, and his engineers improvised an air pump to replenish the atmosphere in the stricken boat. With some of the immediate danger



(above) The circle of plating cut laboriously from *S-5*'s hull to allow Cooke and his men to escape was preserved and may be seen today in the Navy Museum at the Washington, DC Navy Yard. It is approximately two feet in diameter and 3/4th inch thick.

(below) The crew of *S-5* the day after their rescue from the sunken submarine, decidedly out of uniform, but lucky to be alive. Subsequently, most of them were transferred to the submarine USS *S-9* (SS-114) despite a near-unanimous desire to continue serving under LCDR Cooke.



relieved, Captain Johnson then turned to the problem of getting Cooke and his men out of the submarine.

Johnson had left *Alanthus*'s radio operator in New York, and he had no way to call for help. Moreover, he had no drills or cutting tools onboard, so to continue enlarging the escape hole, his men under Chief Engineer Carl Jakobsen had to depend on using *S-5*'s own badly-worn equipment, passed out

through the small opening. By 1700, Jakobsen's crew had resumed drilling from outside the hull, but progress was agonizingly slow. Luckily, at about the same time, another, much larger ship appeared on the horizon a 4,800-ton passenger steamer, the SS *General George W. Goethals*, and Johnson succeeded in attracting her attention with an emergency flag hoist. *Goethals*' Master, Captain E.O. Swinson, brought his ship to the scene and anchored nearby. Fortunately, *Goethals* was considerably better equipped than *Alanthus*, and was able to radio the Navy for assistance. All up and down the eastern seaboard from Philadelphia, Norfolk, New York, and New London, Navy ships prepared to cast off and head for the scene.

Swinson sent his Chief Engineer, William Grace, and the latter's first assistant Richard McWilliams, to help with the drilling, and they brought a manual ratchet drill that proved much better

suited to the task. Since *S-5*'s crew was still in considerable danger, and the first Navy rescuers wouldn't arrive until 0400 Friday morning, the two merchant captains agreed to continue with their own effort, and Grace and McWilliams took over the drilling shortly after 1900. The two engineers attacked the job with a will and Grace — a large, powerful man was able to drill a new hole every four or five minutes.

By midnight, they had completed the 18-inch circle of holes, and an hour later, having chiseled out the remaining metal, drove in the resulting chunk of hull plating with a sledge hammer.² After nearly 36 hours trapped in their disabled boat, *S-5*'s crew was free!

The men made their way out one by one and were ferried to an improvised infirmary in *Alanthus*'s galley, where two doctors from *Goethals* provided emergency treatment. Because of the debilitated condition of the crew and the need for each of them to climb much of the length of the submarine to get out, evacuating the 40 men was a difficult and laborious process, only completed after 0330, just as the first Navy ships began to arrive. Savvy Cooke, awake for nearly two days, was the last to leave his command.

The Rest of the Story

The last of over a half-dozen Navy ships to reach the scene in the early morning of Friday, 3 September was the battleship USS *Ohio* (BB-12), which appeared at 0900. By then, *Goethals* had already left the scene, and Cooke and most of his men were asleep but recovering quickly onboard *Alanthus*. The small freighter was asked to make a first attempt to salvage the submarine by towing her to shallow water nearer land, but the task was too much for her limited power. Thus, after *S-5* was made fast to *Ohio* and the rescued crew transferred, *Alanthus* left for Newport News to the cheers of the fleet. Late in the afternoon, *Ohio* herself attempted to tow the submarine nearer to shore, but after several hours with *Ohio* at full power and *S-5* apparently dragging along the bottom, the towing cable parted. At that time, only four miles had been made good toward land, and operations to save the boat were suspended.³

Navy authorities convened two investigations into the loss of *S-5*, the first onboard *Ohio* just after the rescue, and then a second, more formal proceeding at the Philadelphia Navy Yard in November. During these inquiries, Percy Fox's failure to close the main induction valve was identified as the proximate cause, and Savvy Cooke was criticized for failing to ascertain personally that the boat was safe for diving. However, the formal court also noted a number of extenuating circumstances —

continued on page 38

The "Radar/Sonar Officer" reports contacts to the OOD during a NavOps exercise in the submarine simulator.



Bringing Science to Life

Teaching Science Using Submarine Technology and the ex-USS *Narwhal* (SSN-671)

Do you remember how you learned science in school? How about during your shipboard assignments? What distinguished your "book" learning from the reality of the actual application of your knowledge? Most likely, it was the "hands-on" training typical of submarine duty that made the biggest impression. Well, just imagine how 5th graders feel when they assume the role of Chief of the Watch in a fully-articulating submarine simulator during an exercise that is part of the NavOps Deep Submergence™ curriculum. NavOps is a nine-month science curriculum developed by Purdue University Calumet for the Gary, Indiana school district.

Yes, 5th graders routinely perform navigation with Navy charts and maneuvering boards, calculate water density, and plot sonar contacts as their Research & Rescue submarine steams around the world, both in their classrooms and also in a submarine simulator during "missions." The enthusiasm and commitment of the students, teachers, and parents in Gary has stimulated a desire to expand the program into the Northern Kentucky/Greater Cincinnati region and to make it broadly available in the United States. Originally designed for disadvantaged students in the Gary district, it became obvious that this program could play a significant educational role anywhere.

The National Submarine Science Discovery Center (NSSDC) is an organization dedicated to the development of

interactive, "hands on" mathematics and science training for children. Why? The sobering reality is that the United States has an annual – and increasing – shortfall of qualified graduates to fill jobs in science- and technology-related fields. NSSDC makes strategic sense for the region and the nation. We plan to combine a former nuclear-powered submarine USS *Narwhal* (SSN-671), an interactive science discovery center, and a science education outreach program into one facility. If NSSDC's request is approved *Narwhal* will become the only former nuclear-powered submarine to be donated by the Navy to a non-military entity. The primary objective is to deliver improved science education, and NSSDC will attract visitors from all over the region. We already have significant ties to the Smithsonian Institution and other national science programs.

The NavOps curriculum was developed with a Navy grant by Purdue University Calumet's Department of Education, because studies have shown that students who have not had a positive science experience by the 5th grade have a low probability of taking elective science or mathematics courses in later academic life. The

program, which combines a curriculum, classroom experiments, and simulation exercises, started in one school of the Gary, Indiana school district in the fall of 1997 and expanded to all 22 district schools in 1998. The NavOps submarine control room simulator and software were developed by a submariner, CWO4 Fred Huddleston, USNR (ret.). He made sure it was realistic, stimulating, and fun, while delivering the "hands on" learning experience critical to understanding of science and technology concepts. Students are assessed not only on development of individual skill levels in science but also on their ability to work as a team with a common goal. NavOps continues to be the Gary district's science program for the 5th grade and is now in its seventh year.

An analysis of the concept in the context of the Greater Cincinnati/Northern Kentucky region indicated that NSSDC could have an economic impact of over \$20 million annually. Additionally, as the only science center for 150 miles in any direction, it would draw multiple visitor segments. These include regional and local visitors, national tourists, educational visitors attracted by the NavOps classes, and attendees of military reunions and special events. After the concept had been defined, studied, and proposed on a contingent basis to the



NSSDC is located directly adjacent to Newport on the Levee.

The projected opening date for the project is slated for 2007. Seen here is an artist's conception of the planned discovery center on the Ohio River.



region—with a very positive response—we sought a location that would ensure a high probability of success. The City of Newport, Kentucky, directly across the Ohio River from Cincinnati, agreed to donate an ideal site. It is on the river directly adjacent to a local family entertainment center that draws almost four million visitors annually and includes the Newport Aquarium. Additionally, the site can be seen from almost every seat in the new Cincinnati Reds venue, the Great American Ball-park, as well as from downtown Cincinnati and adjoining Ohio River communities.

The NSSDC concept and proposed location were persuasive, but asking for an SSN was highly unusual, and no former nuclear-powered submarine had ever been donated previously. Designation of an actual SSN for the Center seemed necessary to attract financial backing. The Navy inactivated and defueled *Narwhal* at Newport News in 1999 and towed her to Puget Sound Naval Shipyard (PSNS) for scrapping. At the time, she was the only submarine realistically viable for potential declassification and donation. Senator Jim Bunning of Kentucky submitted an amendment to the Defense Appropriations Act via the Joint Conference Committee in August 2003 that would authorize the Secretary of the Navy to designate *Narwhal* for NSSDC, provided that the latter could meet the Navy's ship donation criteria. The Navy had no objection to the proposed legislation, and President Bush signed it into law on September 30, 2003.

Transfer of *Narwhal* to NSSDC will be at no cost to the Navy other than what would normally be incurred in disposing of a typical SSN. In order to achieve declassification, the reactor compart-

ment and all equipment aft of it must be completely removed. This essentially entails cutting the reactor compartment out of the hull. *Narwhal* will be displayed completely out of the water, sitting on keel blocks or a keel cradle on the deck of a ballastable barge, similar to a floating drydock but with watertight ends. We will insert a plug identical in dimension to the reactor compartment to ensure that the overall length remains the same as it was when the boat was constructed. About 40 percent of the *Narwhal's* hull will be visible above the sides of the barge.



Narwhal's emergency generator room is currently in superior condition. The planned configuration will include access to *Narwhal* from the barge deck via a ramp leading onto the quarterdeck and into the restored operations and bow sections.

In the planned configuration, the space aft of the reactor compartment will be open and used for displays, interactive exhibits, or historical presentations. Access to *Narwhal* from the barge deck will be via a ramp leading to a double-door entrance-way onto a quarterdeck. Forward would be the restored operations and bow sections, and nearby would be a building for other elements of the Discovery Center.

The barge is needed to support the modified hull structurally to facilitate towing it to Newport via the Panama Canal and the Mississippi and Ohio Rivers, where a

vessel can draw only 10 feet, and to display *Narwhal* at its final berth. Thus, this ocean-going barge must be capable of being flooded down in a dry dock so that the submarine can be floated over it and positioned onto the keel blocks or cradle for modification and ultimate display. The entire project will cost approximately \$60 million, with over half represented by "in-kind" contributions already committed, such as the submarine itself, its modifications at Puget Sound Naval Shipyard, and a donated berth location. Out-of-pocket costs are estimated at about \$26 million and will be finalized from engineering studies, economic analysis, and master planning.

Effort is proceeding on several fronts. NSSDC now has a brochure and video package to communicate the vision of our project. Marine Corps veteran and Academy Award winning actor Gene Hackman narrated the seven-minute video, "Bringing Science to Life!" on a pro bono basis. This video focuses on the urgent need to build up our science education programs and how NSSDC will help to meet this need. Naval Sea Systems Command and PSNS are developing an engineering design package for the *Narwhal* modifications and NSSDC is expected to open on Memorial Day in 2007. To learn more about the project, please visit our web site at: <http://www.NSSDC.us>

Tom Schram is the Executive Director of the National Submarine Science Discovery Center (NSSDC) in Newport, Kentucky and one of its founders. He served seven years as an Intelligence Officer (1610) after graduating from the Naval Academy in 1969. He spent 15 years with Procter & Gamble before becoming an independent marketing consultant. He began work on this project in August of 2002.



PCU North Carolina Keel-laying Held in May

On 22 May 2004 in Newport News, Virginia, Welder Stanley Britt permanently welds the initials of Ship's Sponsor Mrs. Linda Bowman during the keel laying ceremony of Pre-Commissioning Unit (PCU) *North Carolina* (SSN-777), the U.S. Navy's newest Virginia-class submarine. PCU *North Carolina* is the 4th Virginia-class submarine to begin construction, and is the 6th Navy vessel to be named *North Carolina*. The ship's sponsor Mrs. Linda Bowman said, "For the submarine *North Carolina*, my hope is that she will sail in peace to keep us free. My assurance is that she will always be ready to defend that freedom whenever necessary." The plate with her initials will be permanently affixed to the stern of the ship.

Also in attendance were Assistant Secretary of the Navy Hansford T. Johnson, North Carolina Senator Elizabeth Dole, Navy Nuclear Reactors Director ADM Frank "Skip" Bowman, and Northrop Grumman President Thomas C. Schievelbein. The current construction schedule for *North Carolina* calls for the submarine's launching in late 2005 followed by commissioning in late 2007.



Photo by J01 Donald P. Rule

Qualified For Command

LCDR Andrew Gainer
USS Florida (SSGN-728)

LCDR Brian Sittlow
USS Henry M. Jackson (SSBN-730)(B)

LCDR Charles Cone
USS Pennsylvania (SSBN-735)(G)

LCDR Christopher Buziak
USS Olympia (SSN-717)

LCDR Christopher Nash
USS Montpelier (SSN-765)

LCDR Dennis Robertson
USS Pennsylvania (SSBN-735)(B)

LCDR Douglas Adams
USS Bremerton (SSN-698)

LCDR Eric Severseike
USS Michigan (SSBN-727)

LCDR Justin Richards
USS Alaska (SSBN-732)(B)

LCDR Kevin Schmidt
USS Parche (SSN-683)

LCDR Lee Sisco
USS La Jolla (SSN-701)

LCDR Michael Varney
USS Topeka (SSN-754)

LCDR Richard Webb
USS Henry M. Jackson (SSBN-730)(B)

LT Gell Pittman
USS Alabama (SSBN-731)(B)

Qualified Surface Warfare Supply Corps Officer

LT Erik Naley
USS Frank Cable (AS-40)

LTJG Steven Peters
USS Frank Cable (AS-40)

Qualified Surface Warfare Medical Department Officer

CDR Rowland Mccoy
USS Frank Cable (AS-40)

LCDR Lloyd Sloan
USS Frank Cable (AS-40)

Changes of Command

USS City of Corpus Christi (SSN-705)
CDR Marc W. Denno relieved
CDR Robert J. Schmidt

USS San Francisco (SSN-711)
CDR Kevin G. Mooney Relieved
CDR Paul A. Povlock

USS Michigan (SSGN-727)
CDR Thomas Calabrese relieved
CDR Dietrich Kuhlmann
In a Crew Consolidation Ceremony

USS Georgia (SSGN-729)
CDR John Tammen relieved
CDR Chris Ratliff in a
Crew Consolidation Ceremony

USS Kentucky (SSBN-737)(B)
CDR Paul Skarpness relieved
CDR Ronald Melampy

Command Stand-Up

Naval Submarine Support Center (NSSC)
Bangor Stand-Up –
CDR Peter Dawson
NSSC Bangor will be the central point in the Northwest for submarine administrative and support functions, with specific areas of responsibility to include personnel, medical, legal, chaplain, supply, combat systems, material, communications, and waterfront operations.

CSS-19 Stand-Up –
CAPT Derek Hesse
COMSUBRON-19 will oversee the operational and pre-deployment training and certification of assigned submarines and ensure each is maintained at optimum readiness to support assigned missions. Ships assigned to CSS-19 are USS *Georgia* (SSGN-729), USS *Alabama* (SSBN-731), USS *Alaska* (SSBN-732), and USS *Nevada* (SSBN-733).

Qualified Surface Warfare Officer

ENS George Grovner III
USS Frank Cable (AS-40)

ENS Samuel Merritt
USS Frank Cable (AS-40)

CWO2 David Moriarity
USS Frank Cable (AS-40)

LTJG Bryan Robertson
USS Frank Cable (AS-40)

CWO3 Raymond Spann
USS Frank Cable (AS-40)

ENS Alex Torres
USS Frank Cable (AS-40)

LT Lawrence Upchurch
USS Frank Cable (AS-40)

CWO2 Clyde Wright
USS Frank Cable (AS-40)



Line Officer Qualified in Submarines

LTJG Mike Amerine
USS Bremerton (SSN-698)

LTJG David Amondson
USS Nevada (SSBN-733)(B)

LTJG Daniel Attaway
USS Kentucky (SSBN-737)(G)

LTJG David Bailey
USS Topeka (SSN-754)

LTJG Charles Balka
USS Topeka (SSN-754)

LTJG Brett Bateman
USS Henry M. Jackson (SSBN-730)(G)

LTJG Timothy Berthold
USS Salt Lake City (SSN-716)

LTJG Richard Betancourt
USS Topeka (SSN-754)

LTJG Kevin Boss
USS Charlotte (SSN-766)

LTJG Todd Bowie
USS Providence (SSN-719)

LTJG Kenneth Brandt
USS Pittsburgh (SSN-720)

LTJG William Bundy
USS Portsmouth (SSN-707)

LTJG Robert Carr
USS Greenville (SSN-772)

LTJG Gregory Cizin
USS Alabama (SSBN-731)(B)

LTJG Robert-Earl Clark
USS Salt Lake City (SSN-716)

LTJG Kenneth Cooke
USS Boise (SSN-764)

LTJG Jeffrey Degroot
USS Connecticut (SSN-22)

LTJG David Duke
USS Portsmouth (SSN-707)

LT Brian Earp
USS Nevada (SSBN-733)(B)

LTJG Alexander Fleming
USS San Francisco (SSN-711)

LTJG Eugene Gard
USS Bremerton (SSN-698)

LTJG Robert Garis
USS Olympia (SSN-717)

LTJG Leete Garrett
USS Topeka (SSN-754)

LTJG Robert Gautier
USS Parche (SSN-683)

LTJG Christopher Gregson
USS Alabama (SSBN-731)(G)

LTJG Steven Grossman
USS Greenville (SSN-772)

LTJG Nathan Hall
USS Nevada (SSBN-733)(B)

LTJG Christopher Hall
USS Topeka (SSN-754)

LTJG Curtis Hamilton
USS Nevada (SSBN-733)(B)

LTJG William Harley
USS Columbus (SSN-762)

LTJG Justin Hawkins
USS Greenville (SSN-772)

LTJG Christopher Hedrick
USS Cheyenne (SSN-773)

LTJG Marc Hensley
USS Santa Fe (SSN-763)

LTJG Jonathan Higgins
USS Michigan (SSGN-727)

LTJG Matthew Hoffmann
USS Nevada (SSBN-733)(G)

LTJG Kenneth Holland
USS Buffalo (SSN-715)

LTJG Keith Hout
USS Alaska (SSBN-732)(G)

LTJG Corey Johnson
USS Houston (SSN-713)

LTJG Christopher Johnson
USS Maine (SSBN-741)

LTJG Sterling Jordan
USS Pasadena (SSN-752)

LTJG Brian Kilburn
USS Greenville (SSN-772)

LT Jonathon Kim
USS Topeka (SSN-754)

LTJG Eric Kirlin
USS Minneapolis-Saint Paul (SON-

LTJG Karl Kraut
USS Columbus (SSN-762)

LTJG Adam Kuehne
USS Pennsylvania (SSBN-735)(G)

LTJG Jason Labani
USS Kentucky (SSBN-737)(G)

LT Toby Lentz
USS Maine (SSN-)

LTJG William Lewis
USS Helena (SSN-725)

LTJG Matthew Lewis
USS Santa Fe (SSN-763)

LTJG Mark Longhi
USS Tucson (SSN-770)

LTJG Matthew Luff
USS Nevada (SSBN-733)(B)

LTJG Jeremy Mabe
USS Alabama (SSBN-731)(B)

LTJG Jose Martinez
USS Portsmouth (SSN-707)

LTJG Mark Mitchell
USS Nebraska (SSBN-739)(G)

LTJG James Moffitt
USS Honolulu (SSN-718)

LTJG Michael Monaghan
USS Los Angeles (SSN-688)

LTJG Matthew Myers
USS City of Corpus Christi (SSN-705)

LTJG Derrick O'Brien
USS Bremerton (SSN-698)

LTJG Joseph Patterson
USS Cheyenne (SSN-773)

LTJG Michael Piasant
USS Maine (SSBN-741)(G)

LTJG Scott Pickford
USS Bremerton (SSN-698)

LTJG Jeffery Poirier
USS Greenville (SSN-772)

LTJG Joshua Powers
USS Providence (SSN-719)

LTJG James Prouty
USS Henry M. Jackson (SSBN-730)(G)

LTJG Earon Rein
USS Topeka (SSN-754)

LTJG Kevin Richardson
USS Nebraska (SSBN-739)(G)

LTJG James Richie
USS Alabama (SSBN-731)(B)

LTJG Marshall Riggall
USS San Juan (SSN-751)

LTJG Brandon Shafer
USS Maine (SSBN-741)(G)

LTJG Jason Smith
USS Alabama (SSBN-731)(G)

LTJG Joshua Stewart
USS Louisville (SSN-724)

LTJG Kevin Stilow
USS Albany (SSN-753)

LTJG Steven Stivers
USS Nevada (SSBN-733)(G)

LTJG Adam Thomas
USS Montpelier (SSN-765)

TJG Meng Tia
USS Pasadena (SSN-752)

LTJG Craig Toney
USS La Jolla (SSN-701)

LTJG Steven Van Cott
USS Columbia (SSN-771)

LTJG Mark Vennekotter
USS City of Corpus Christi (SSN-705)

LTJG Michael Vodehnal
USS San Francisco (SSN-711)

LTJG Jonathan Ward
USS Michigan (SSGN-727)

LT John Waterston
USS Parche (SSN-683)

LTJG Michael Wilcheck
USS Columbia (SSN-771)

LTJG Michael Winn
USS La Jolla (SSN-701)

LT Joshua Wood
USS Jefferson City (SSN-759)

LTJG Thomas Woodward
USS Asheville (SSN-758)

LTJG Kurt Young
USS Henry M. Jackson (SSBN-730)(G)

LTJG Kevin Young
USS Nebraska (SSBN-739)(G)

LTJG Daniel Zuckschwerdt
USS Parche (SSN-683)

Limited Duty Officer Qualified in Submarines

LT Michael Anderson
USS Michigan (SSGN-727)

LCDR Edison Henry
USS Dolphin (AGSS-555)

LT Nicholas Milano
USS Michigan (SSGN-727)

LTJG Dean Whitehouse
COMSUBRON-1

Supply Corps Officer Qualified in Submarines

ENS Michael Aldrich
USS Kentucky (SSBN-737)(G)

ENS Benjamin Powell
USS Greenville (SSN-772)

LTJG Christopher Seifert
USS Asheville (SSN-758)

Target Tests ASW Sensors and Weapons

This test platform, formally titled Weapon Set-To-hit Threat Target (WSTTT), was developed in San Diego to support Operational Test and Evaluation Force (OPTEVFOR) operations used to test Anti-Submarine Warfare (ASW) sensors and weapons. It can be lowered and raised from a surface support platform, but has no dedicated propulsion system. The platform allows unarmed ASW torpedoes to impact the vessel without damage.



Photos by PH2 Todd Reeves



Mine-hunting Submersible Supports 5th Fleet Exercise

(right) AT3 Cassie Gibson guides an AN/AQS-14 mine detection submersible unit back onto its cradle on the ramp of an MH-53 Sea Dragon assigned to the "Blackhawks" of Helicopter Mine Countermeasures Squadron One Five (HM-15) during mine-hunting missions as part a bilateral exercise with a country in the 5th Fleet theater. The exercise tested a number of warfare areas, include mine counter measures, anti-air, surface and submarine, electronic and explosive ordnance disposal.



Photos by PH1 Bart A. Bauer



(left) AT3 Gibson and AM1 Jeffery Osborne secure the AN/AQS-14 submersible after recovering it on the ramp of an MH-53 Sea Dragon.



San Francisco Returns to Guam



Photo by PH2 Mark A. Leonesto

The attack submarine USS *San Francisco* (SSN-711) escorted by two harbor tugs, returns to Apra Harbor, Guam, after a five-month deployment. *San Francisco* is attached to Submarine Squadron 15, which is forward-deployed and is homeported in the U.S. territory of Guam.

Tucson Deploys to the Western Pacific

USS *Tucson* (SSN-770) Commanding Officer CDR James Pitts (center) and members of this navigation detail man the boat's sail as they depart Pear Harbor, Hawaii. *Tucson* the 59th of 62 *Los Angeles*-class nuclear-powered attack submarines is deploying to the Western Pacific.



Photo by J03 Corwin Colbert

Those in Peril

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apparent defects in the main induction valve, Fox's preoccupation with the balky Kingstons, and the unexpected failure of the high-pressure pump – in exonerating both captain and crew. The court commended Cooke and his men for their conduct after the sinking and suggested a suitable gesture of appreciation to the gallant merchant seamen who had come to *S-5*'s aid. Subsequently, the Secretary of the Navy rewarded Captains Johnson and Swinson, and engineers Jakobsen, Grace, and McWilliams for their part in the rescue. In more far-reaching actions, the Navy ordered major modifications to the main induction system on the S-class boats and began requiring an automated indicator board on submarines “the Christmas tree” that would show the status of all hull openings before submergence.

Savvy Cooke served in the Navy for nearly 30 more years and retired as a full admiral in 1948. During this period, he commanded Submarine Division 11 in the early 1930s and the battleship USS *Pennsylvania* (BB-38) during the Pearl Harbor attack, when the ship was in drydock and suffered little damage. Later in World War II, as an advisor to allied forces, he went ashore as an observer at Normandy on D-Day, and after the final victory, he served for two years as Commander, Seventh Fleet. Cooke died in 1970 and is buried in Arlington National Cemetery.

Dr. Whitman is the Senior Editor of UNDERSEA WARFARE Magazine.

Bibliography:

The most thorough and well-researched account of the *S-5* disaster is found in A.J. Hill, *Under Pressure The Final Voyage of Submarine S-Five*, Free Press, 2002

Dictionary of American Naval Fighting Ships (DANFS), “Submarines” (1959-1991)

Friedman, Norman, *U.S. Submarines Through 1945 An Illustrated Design History*, U.S. Naval Institute Press (1995)

¹ Additionally, USS *H-1* (SS-28) grounded off Baja California in March 1920, and four men drowned attempting to reach shore. During this same era, five other boats suffered relatively serious mishaps, including fires, explosions, and sinkings at the pier, with a total of 14 lives lost.

² During subsequent salvage operations, this circle of hull plating was retrieved, and it is now on display at the Navy Museum in the Washington Navy Yard.

³ The Navy made sporadic attempts to salvage *S-5* between October 1920 and the following August, but engineering difficulties and evidence of serious internal damage led eventually to abandoning the boat where she lay on the bottom. The hulk remains there today, of significant interest to scuba divers, who visit the site regularly.



Qualified Nuclear Engineer Officer

LTJG George Arnett
USS Houston (SSN-713)

LTJG Daniel Attaway
USS Kentucky (SSBN-737)(G)

LTJG Jonathan Beard
USS Michigan (SSBN-727)

LTJG Kevin Boss
USS Charlotte (SSN-766)

LTJG Benjamin Britt
USS Pennsylvania (SSBN-735)(B)

LT William Brooks
USS Asheville (SSN-758)

LTJG Robert Carr
USS Greenville (SSN-772)

LTJG Philip Castellano
USS Asheville (SSN-758)

LTJG Vincent Chen
USS Salt Lake City (SSN-716)

LTJG Hyun Chun
USS Ohio (SSBN-726)

LT Gregory Corder
USS Helena (SSN-725)

LT Roger Cortesi
USS Pasadena (SSN-752)

LTJG Gustave Dahl
USS Georgia (SSBN-729)(B)

LTJG Martin Dillon
USS Georgia (SSBN-729)

LTJG Jean Domercant
USS Los Angeles (SSN-688)

LTJG Eric Engelbrecht
USS Georgia (SSBN-729)(B)

LTJG Bryan Farmer
USS Pennsylvania (SSBN-735)(G)

LTJG James Farrow
USS Cheyenne (SSN-773)

LTJG Ryan Frommelt
USS Jefferson City (SSN-759)

LTJG Marcus Gioe
USS Chicago (SSN-721)

LTJG David Grogan
USS City Of Corpus Christi (SSN-705)

LTJG Kostas Hatzidakis
USS Portsmouth (SSN-707)

LTJG Ian Hildreth
USS Columbia (SSN-771)

LTJG Gregory Johnson
USS Pennsylvania (SSBN-735)(B)

LTJG Douglas Jonart
USS Pennsylvania (SSBN-735)(G)

LTJG Charles Kelly
USS Tucson (SSN-770)

LTJG Joshua King
USS Los Angeles (SSN-688)

LTJG Gregory Klos
USS Ohio (SSGN-726)

LTJG Jason Labani
USS Kentucky (SSBN-737)(G)

LTJG Joseph May
USS Pennsylvania (SSBN-735)(G)

LTJG Ramon Medina
USS Jefferson City (SSN-759)

LTJG Michael Mercado
USS Asheville (SSN-758)

LTJG Roger Montgomery
USS H. M. Jackson (SSBN-730)(B)

LTJG Timothy Newberry
USS Ohio (SSGN-726)

LTJG Joseph Nold
USS Helena (SSN-725)

LTJG Michael Palmieri
USS Louisville (SSN-724)

LTJG David Payne
USS Alabama (SSBN-731)(G)

LTJG Wendel Penetrante
USS Bremerton (SSN-698)

LTJG Jason Pepin
USS Nevada (SSBN-733)(G)

LT Deryk Petersen
USS Henry M. Jackson (SSBN-730)(G)

LTJG David Pray
USS Jefferson City (SSN-759)

LT Kenneth Princen
USS Parche (SSN-683)

LTJG James Prouty
USS Henry M. Jackson (SSBN-730)(G)

LTJG William Reed
USS La Jolla (SSN-701)

LTJG Thomas Resig
USS Alaska (SSBN-732)(B)

LTJG Warren Ross
USS Charlotte (SSN-766)

LTJG Matthew Schell
USS Buffalo (SSN-715)

LT Micah Smith
USS San Francisco (SSN-711)

LTJG Steven Stivers
USS Nevada (SSBN-733)(G)

LTJG Jesse Stoffel
USS Michigan (SSGN-727)

LTJG Nicholas Stojanovich
USS Cheyenne (SSN-773)

LTJG Matthew Sutphen
USS Ohio (SSGN-726)

LTJG Michael Thomas
USS Honolulu (SSN-718)

LTJG Scott Thompson
USS Ohio (SSGN-726)

LTJG Mark Tschechtelin
USS San Francisco (SSN-711)

LTJG Joseph Viera
USS Tucson (SSN-770)

LTJG Jon Walkwitz
USS Tucson (SSN-770)

LTJG Jamie Weigandt
USS Henry M. Jackson (SSBN-730)(B)

LTJG Isak Wold
USS Louisville (SSN-724)

LT Timothy Yanik
USS Louisville (SSN-724)

COMSUBGRU 10 Opens American Stock Exchange During Fleet Week



Commander, U.S. Second Fleet/NATO Striking Fleet Atlantic and Naval Forces North Fleet East, VADM Gary Roughead (right) rings the opening bell at the American Stock Exchange, during the 17th Annual Fleet Week in New York. Commander, Submarine Group Ten, RADM Jeffrey B. Cassias (center) and Chairman and Chief Executive Officer of the American Stock Exchange Salvatore F. Sodano, look on. Over 4,000 Sailors, Marines and Coast Guardsmen on 12 ships participated in this year's Fleet Week.



Heading North

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will suffer communication blackouts for a much shorter period of time than we previously thought.

Although not a tactical mission in the pure sense, the *Hono* team seized every opportunity to maintain their sharp tactical skills. During passes of Little Diomed Island in the Bering Strait and Amutka Island in the Aleutian Island chain, we exercised our ability to conduct covert reconnaissance, including a photo run past both islands.

Just as USS *Connecticut* (SSN-22) confirmed in early 2003, operating submarines in the Arctic adds value – to both the Submarine Force and the Navy. Most directly, it serves to keep a ready sea-lane open for moving submarines between the Atlantic and Pacific fleets much faster and more securely than transiting the Panama Canal. Maintaining periodic presence in the Arctic prevents our unique under-ice skills from atrophying. Missions like *Honolulu's* (as the first first-flight 688 submarine) and *Connecticut's* (as the first *Seawolf*-class submarine) provide valuable lessons-learned in operating procedures. And they give our leaders the confidence to send older first-flight 688's a large percentage of the Submarine Force and new classes of submarines into and through the Arctic region. Indirectly the Arctic serves as the ultimate proving ground for operating submarines. No place is tougher and more demanding for a crew than operating in the high Arctic. There is certainly no place with a lower margin for error. Undoubtedly, the *Hono* team is a better group of operators as a result of their time under the ice.

In the end, the first-flight 688 proved to be a tough ship and a very capable platform for arctic operations. *Honolulu's* run dispelled some myths and alleviated many of fears and concerns about operating these submarines – not originally designed for under-ice operations – in the deep Arctic region. There are good reasons, both explicit and implicit, for the Submarine Force to be active in the Arctic, and there are still discoveries to be made. The *Hono* crew was proud and honored to have furthered this understanding and contributed to the discovery.

CDR Harris is the Commanding Officer of USS *Honolulu* (SSN-718)



CDR David Kirk relieves CDR Michael Jabaley as commanding officer of USS *Louisville* (SSN-724) in a change of command ceremony at the Pearl Harbor Naval Station submarine piers.

Kirk relieves Jabaley as USS *Louisville* Commanding Officer

by J03 Corwin Colbert, USN

CDR David Kirk relieved CDR Michael Jabaley as commanding officer of USS *Louisville* (SSN-724) in a change of command ceremony on 5 August at the Pearl Harbor Naval Station submarine piers.

CAPT William Toti, Commander Submarine Squadron Three, presented Jabaley with the Meritorious Service Medal for exceptionally meritorious service as commanding officer of USS *Louisville*.

Afterwards, Jabaley, who led the crew in receiving the Pacific Fleet Retention Honor Roll for the year 2003, Squadron Three's Battle Efficiency award, and the Navy Unit Commendation for its role in fighting the Global War on Terrorism, expressed his deep appreciation for a successful tour and welcomed the new CO.

Jabaley's next command will be Commander Submarine Force, U.S. Pacific Fleet, Tactical Readiness Evaluation team.

Kirk, most recently assigned to the Joint Chiefs of Staff as chief of operations division, expressed his enthusiasm for his new tour and new crew.

"I promise you have my undivided attention and we will continue the proud USS *Louisville* tradition you have established under CDR. Jabaley, of rising to every occasion and carrying out every mission. I look forward to working with and getting to know each of you in the years ahead."

Special Recognitions

2004 Society of Professional Hispanic Engineers Award Winners

Hispanic In Technology Government Award

LCDR Eduardo Fernandez,
Executive Officer
USS Henry M. Jackson (SSBN-730)(B)

Most Promising Engineer

LCDR Edward Robledo, Engineer
USS Maryland (SSBN-738)(B)

Copernicus Award

ETCS Tony Smith (SUBPAC)

Congratulations to USS *Frank Cable* (AS-40) for Large Sea Winner in the 2003 Project Good Neighbor Flagship Award. The Project Good Neighbor Awards recognize shore, sea, and overseas commands for outstanding community service projects by presenting awards in five flagship sponsor categories: Personal Excellence Partnership; Health, Safety, and Fitness; Project Good Neighbor; Campaign Drug Free; and Environmental Stewardship.

Congratulations To USS *Salt Lake City* and USS for their selection as Winner And Runner Up, respectively, in the 2004 Ney Food Service Awards Competition.

Winner

USS *Salt Lake City* (SSN-716)
LTJG Ruminski, Supply Officer (D)
ENS Wilson, Supply Officer (R)
CSC Thompson, LCPO
CS1 Tucker
CS2 Dabney
CS2 Stephens
CS3 Martin
CS3 Moore
CSSN Usher
CSSN Williams

Runner-Up

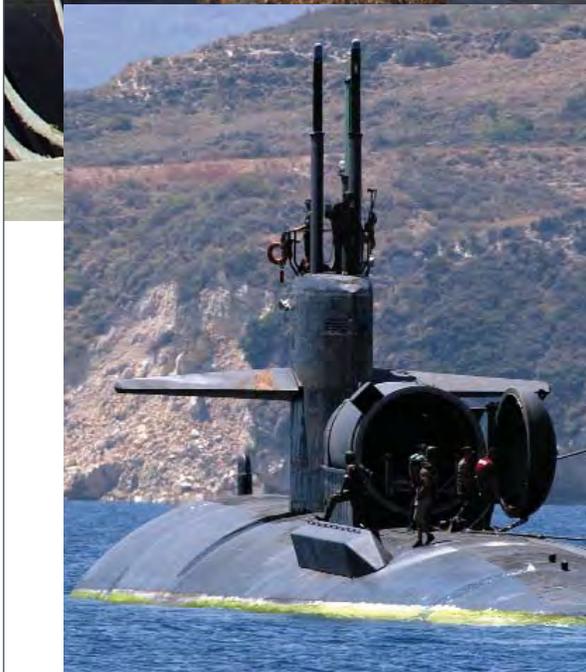
USS *Honolulu* (SSN-718)
LTJG Mina, Supply Officer (D)
LTJG Mark, Supply Officer, (R)
CSC Gardner, LCPO
CS1 Nevergall
CS2 Degraff
CS2 Morton
CS3 Medina
CS3 Stewart
CSSN Bozeman
CSSN Tatters
SN Montgomery
SN Parker



Dry Deck Shelter Adds SOF Capabilities to USS Dallas

Photos by Paul Farley

MASA Nathan Hastings scans the surrounding area while standing a pier security watch as the crew of the *Los Angeles*-class attack submarine USS *Dallas* (SSN-700) prepares to get underway from Souda Bay, Crete. Commissioned in 1981, *Dallas* is the first *Los Angeles*-class submarine to have a Dry Deck Shelter (DDS). Dry Deck Shelters provide specially configured nuclear-powered submarines with a greater capability for deploying Special Operations Forces (SOF). DDSs can transport, deploy, and recover SOF teams from Combat Rubber Raiding Crafts (CRRCs) or SEAL Delivery Vehicles (SDVs), all while remaining submerged. In an era of littoral warfare, this capability substantially enhances the combat flexibility of both the submarine and SOF personnel.



(far left) *Dallas* departs Souda Bay following a brief port visit. *Dallas* is homeported in Groton, CT, and is currently on a routine deployment.

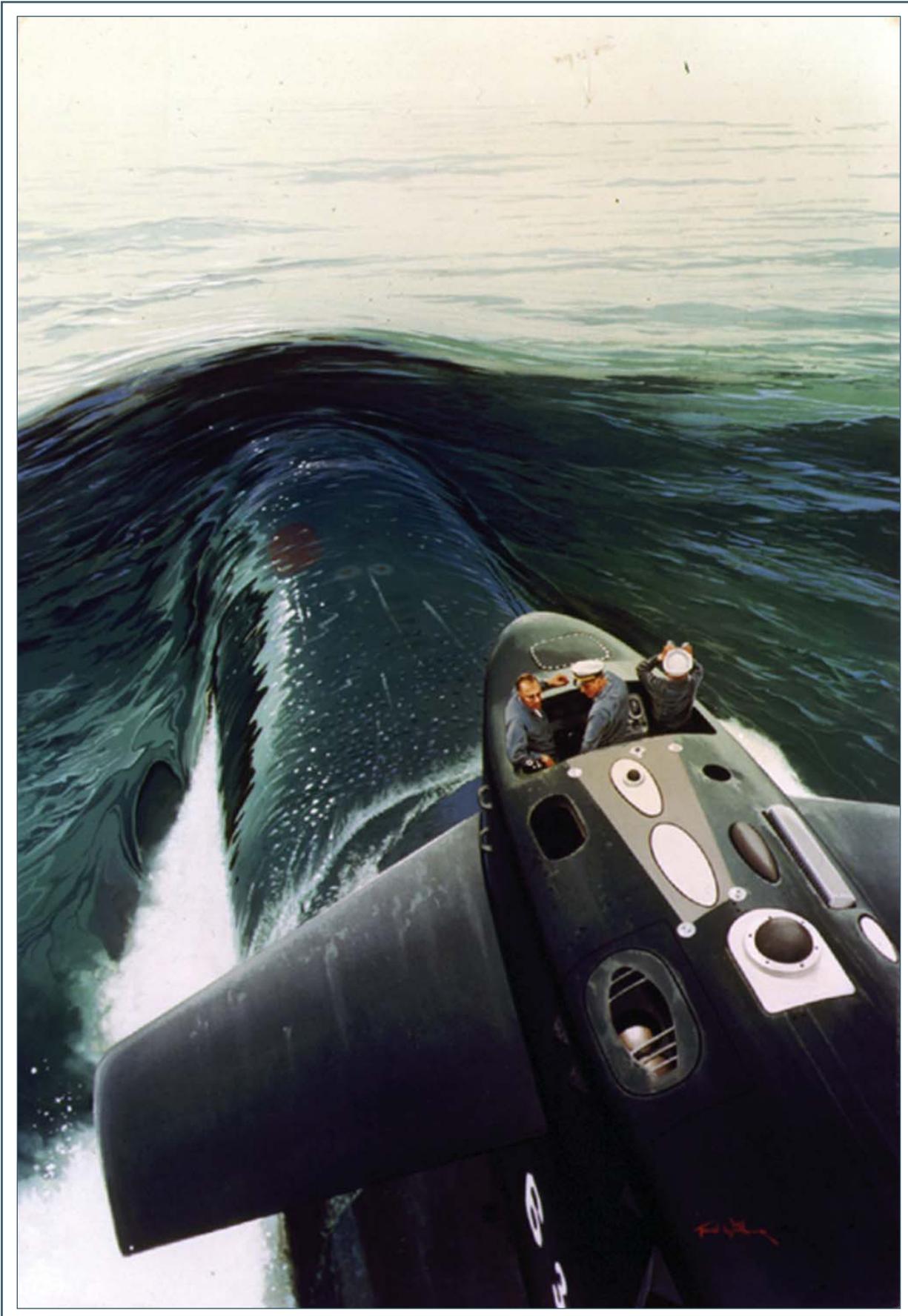
(left) MA2 Ryan Carver releases the bowline on *Dallas* as the boat gets underway.



On The Back

***Nathaniel Greene* (SSBN-636) Underway, March 29, 1965, for 21st Polaris shot.** By Edward "Ted" Terhune Wilbur. USS *Nathaniel Greene* (SSBN-636), a *James Madison*-class ballistic submarine, was commissioned in 1964 and was the only ship of the U.S. Navy to be named for the major general of the Continental Army during the American Revolutionary War. CAPT Ted Wilbur, (USN) Ret., is a naval aviator and combat artist, with more than 6,000 flying hours, including time in aircraft from the F4U Corsair to jet fighters and multi-engine aircraft. His work has appeared in many magazines and his paintings have hung in the National Air & Space Museum in Washington, D.C. and are part of the U.S. Navy's permanent collection of art. He is former Editor and Publisher of Naval Aviation News magazine and is an artist fellow of the American Society of Aviation Artists. He is currently a contributing artist for Naval Aviation News magazine, most notably as illustrator of the long-running feature "Grampaw Pettibone"





Nathaniel Greene (SSBN-636) Underway,
March 29, 1965, for 21st Polaris shot

By Edward "Ted" Terhune Wilbur