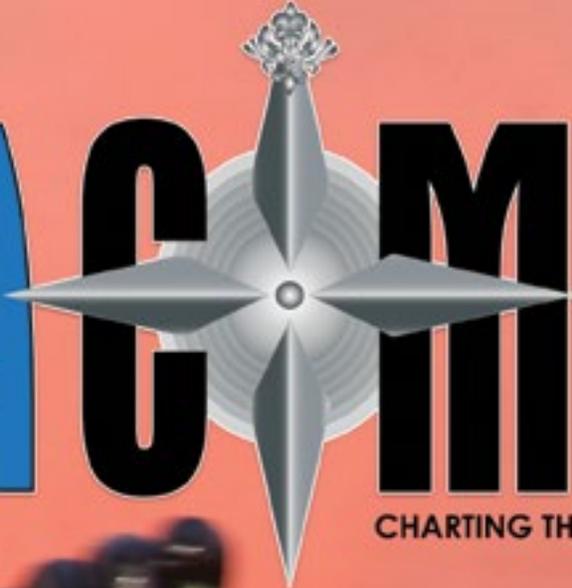


FALL-WINTER 2012/2013

SEA COMPASS



CHARTING THE COURSE TO A MISHAP-FREE NAVY

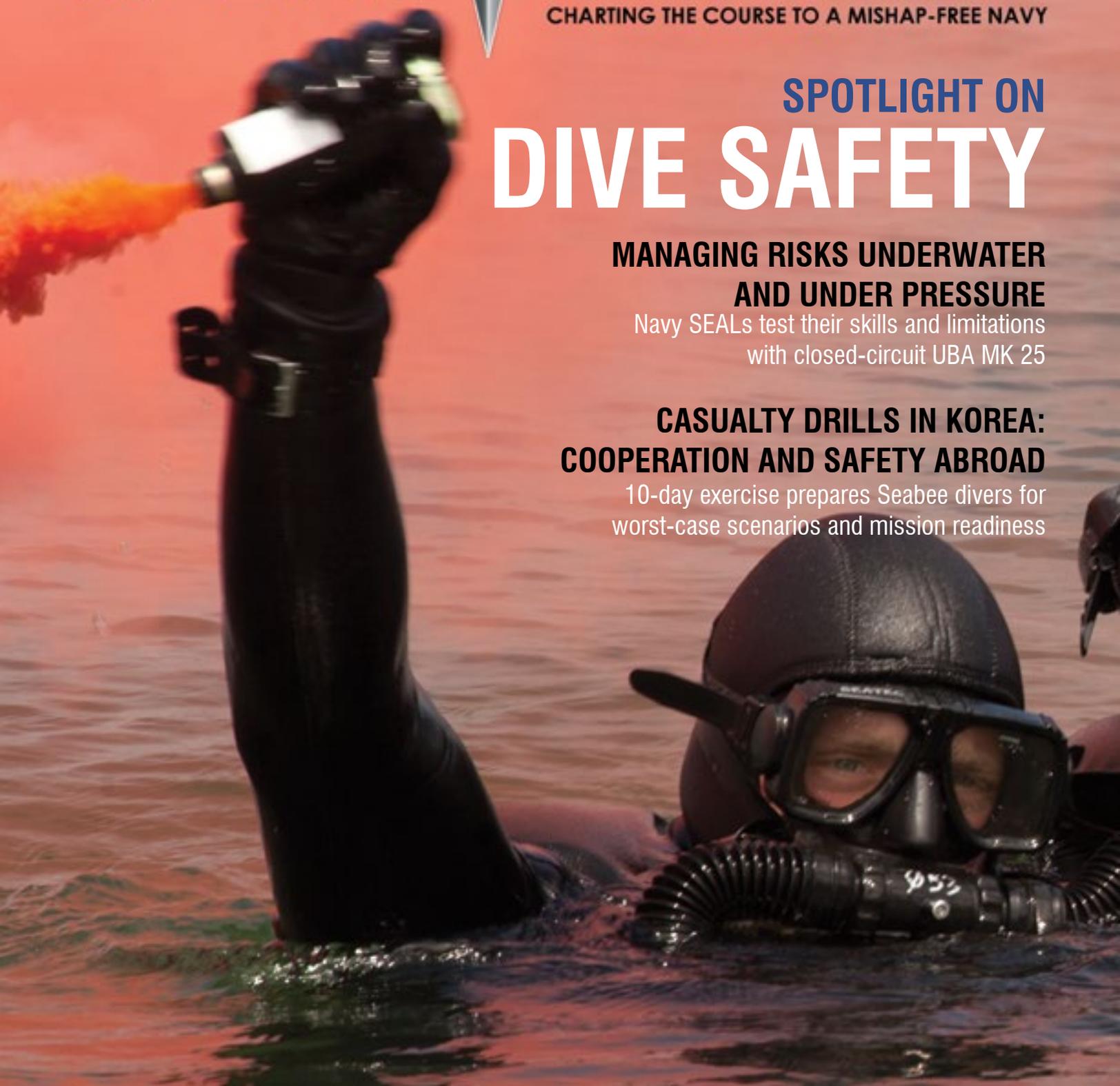
SPOTLIGHT ON DIVE SAFETY

MANAGING RISKS UNDERWATER AND UNDER PRESSURE

Navy SEALs test their skills and limitations
with closed-circuit UBA MK 25

CASUALTY DRILLS IN KOREA: COOPERATION AND SAFETY ABROAD

10-day exercise prepares Seabee divers for
worst-case scenarios and mission readiness



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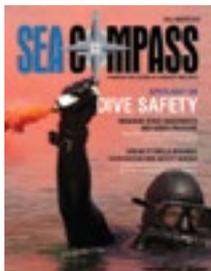
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MISSION STATEMENT: Our goal is to provide information and resources to help our Sailors, Marines and civilians focus their efforts on the mission. We will provide relevant data and analysis to help you manage risk, on or off duty. *Sea Compass* will do its part to keep you informed and be combat ready.

Sea Compass is published twice yearly and distributed to ships, submarines, diving commands, shore-based commands, and DoD agencies. *Sea Compass* (ISSN 1550-1434) is published by Commander, Naval Safety Center, at 375 A Street, Norfolk, VA 23511-4399. Periodical postage paid at Norfolk, Va. Postmaster: Send address changes to Commander, Naval Safety Center, Attn: *Sea Compass*, 375 A Street, Norfolk, VA 23511-4399.



COVER PHOTO AND OPPOSITE PAGE: A Basic Underwater Demolition/SEAL (BUD/S) candidate waves a flare during a simulated dive casualty drill while training at Naval Amphibious Base Coronado. Dive training is the second phase of training candidates participate in during training. The Navy SEALs are the maritime component of U.S. Special Operations Forces and are trained to conduct a variety of operations from the sea, air and land. (U.S. Navy photo by MC2 (SW/AW) Dominique Canales)

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2012 Afloat CNO Safety Award

Submissions for calendar year 2012 Afloat CNO Safety Awards and the Ship's Helicopter Safety Awards are due to the Naval Safety Center, via TYCOMs, no later than Feb. 15, 2013.

We had some great submissions and fierce competition last year, and hope to receive equal or greater submissions this year.

Additionally, the VADM Bulkeley and RADM Buie Awards submission packages are due to ISICs by March 15, 2013 and to the NSC by April 1.

The point of contact for the awards submission is LT Kevin Ginter. He can be reached at kevin.ginter@navy.mil. Please refer to OPNAVINST 3590.24E for package submission criteria.

COMMANDER'S MESSAGE

Traits of a Better, Stronger Warfighter

As we bring this year to a close, I want to congratulate the recipients of the 2012 Department of the Navy Safety Excellence Awards. You epitomize empowering the team and professional mission execution—two of the most valuable attributes that make us better warfighters. You are the driving force in building a leaner, stronger fighting force. To the leaders of these commands, I applaud your dedication to empowering your people and working together as a team.

You have proven that although we face many challenges, we can create a culture of safety where risk management is foremost in our thoughts while afloat, or on liberty. Everyone, from Commanders to junior Sailors, must be involved in ensuring mishap prevention is the foundation of our safety culture.

Over the years, we have done well in understanding the causal factors of mishaps, identifying and minimizing the hazards, and placing risk-management tools in our Sailors' hands. We have established safety programs with sound policies, standard operating procedures and references.

That's a good starting point, but we need to continue expanding the safety culture mentioned above. Our work is inherently dangerous. When mishaps occur, we cannot accept them. Instead we must focus on what allowed them to happen and most important, what steps we can take to ensure they will not be repeated.

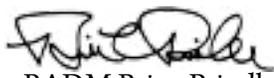
To successfully embrace this safety culture, awareness must become a daily conscious effort by everyone. This is attainable by focusing on preparedness and ensuring every member of the command shares these three traits:

First, our Sailors must be **Capable**. Leaders must ensure they are taught proper procedures so they can follow and enforce them. Second, they must be **Empowered** by command leadership. Every CO, XO and CMC must make clear that even the most junior person with the least experience can be in the right place to prevent a mishap, and they are expected to do so. Third, they must be actively **Engaged**. Safety doesn't belong to the skipper and safety officer. Everyone must be a self-starter because we cannot afford to have anyone standing back thinking someone else will take required action.

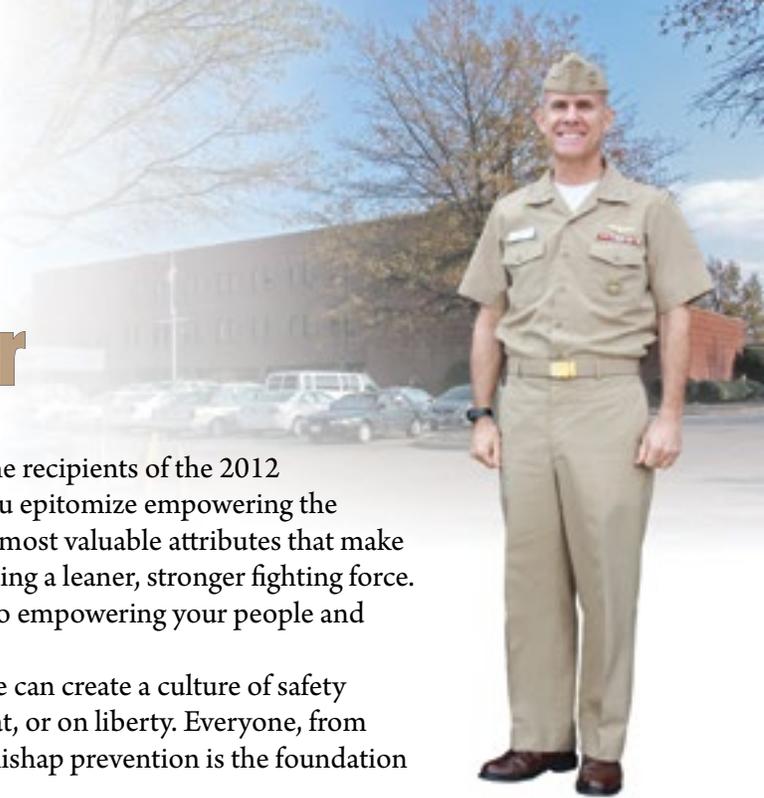
Everyone must help manage risk. "Risk management" isn't just a "safety" term. It is about how professionals prepare for a task, execute it, and how the team learns from every experience. It means following procedures no matter how much pressure there is to get a job done. It means taking the time to think about what we're about to do before we do it, especially during an unfamiliar, demanding activity that involves some risk.

By now, we all know there are different levels of risk management. When we have plenty of time, we use deliberate risk management. But because conditions can change with little or no warning, being ready and alert can help manage that change and minimize risks associated with it. That's when we use time critical risk management (TCRM). Some of this year's accomplishments (DON Safety Award winners, USS *Blue Ridge* achieving top 3M score on the waterfront and the fleetwide effort on updating the "electrical safety bible") are evidence of how ORM and TCRM are helping us understand and manage the risks we face.

Throughout this issue, we address risk-mitigation strategies that can benefit commands and Sailors, alike. Fleet contributing writers and Naval Safety Center subject-matter experts talk about best practices, lessons learned, and resources that can help prevent future mishaps. As *Sea Compass* enters its second publication year, we are anxious to receive more of your submissions. Through sharing of experiences and information we are able to empower our people and perform our mission with maximum efficiency.



RADM Brian Prindle



EDITOR'S NOTE

Sea Compass Turns One

We had a pretty good first year! Thanks to our supporters: the Naval Safety Center staff and subject-matter experts, contributing writers and photographers, fleet public affairs officers, retired service members and civilian contributors, and leaders. Most importantly, thanks to our subscribers and readers.

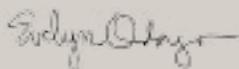
You have inspired me to make each issue as informative, resourceful—as well as entertaining—as possible. It is an honor to be in this position. To be responsible for delivering relevant and useful information to our readers is a charge I take on very seriously. I am counting on your continued support to make the future issues robust with information, articles and personal stories.

We accomplished many things during our first year in circulation. We distributed more than 10,000 copies of our inaugural issue in Fall 2011. The first “green” issue (Winter 2012) was published online as part of the new *Sea Compass* landing page on our Web site. We sizzled the spring/summer issue with our damage control and fire-fighting cover story.

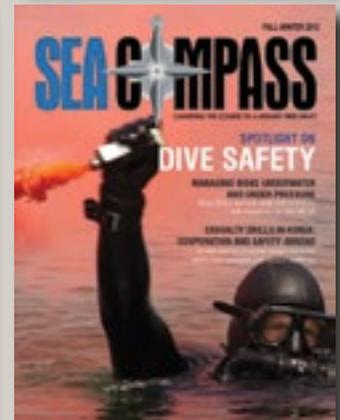
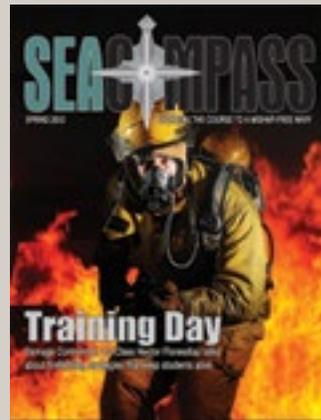
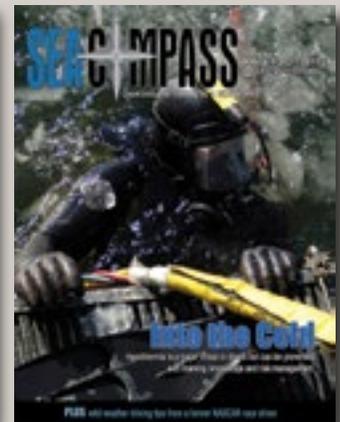
As you read this year’s final issue, I hope you enjoy our spotlight on dive safety. Our Navy SEALs and Seabee divers endure so much during training and while performing actual missions. MC2 (SW/AW) Dominique Canales and Chief Construction Electrician (SCW/MDV) Terence Juergens give us a close look at how these underwater warriors manage risks.

As you get ready for the season’s downtime—whether on vacation, staycation, or holding the fort at work—pick up a copy of *Sea Compass*. Enjoy feature stories, regular topics and off-duty tips that will get you through the winter break.

Best wishes for a great new year!



Evelyn Odango
evelyn.odango@navy.mil



Our online page offers articles and resources that can help you chart the course to a mishap-free Navy. Visit the *Sea Compass* magazine page at <http://www.public.navy.mil/navsafecen/pages/media/sea-compass/index.aspx>.

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Read our guidelines for article and photo submissions.

Time-Critical Risk Management

Because conditions can change with little or no warning, being ready and alert can manage that change and minimize risks associated with it.

- A - Assess the situation.
- B - Balance resources.
- C - Communicate to others.
- D - *Do* and *Debrief* the event.



Scan the code with your smartphone to visit the ORM web page. Data rates may apply.

<http://www.public.navy.mil/navsafecen/pages/orm/ORM.aspx>

U.S. Navy photo of USS Mississippi (SSN 782) courtesy of General Dynamics Electric Boat



Naval Safety Center photo composite

Blue Ridge Gets Top 3M Score on Waterfront

By MCSN Samuel Weldin, *Navy News Service*

U.S. 7th Fleet flagship USS *Blue Ridge* (LCC 19) wrapped up a week-long Maintenance and Material Management (3M) assessment with an overall score of 92.53 percent by summer's end. Afloat Training Group Western Pacific (ATGWP) evaluated *Blue Ridge* Sailors on the 3M system and its compliance with COMNAVSURFLANT/COMNAVSURFPAC Instruction 4790.1F.

Chief Engineman Tony Doyle, the lead ATGWP 3M inspector, said *Blue Ridge* is in the lead across the waterfront after the implementation of the instruction

"These are phenomenal numbers, sir, they really are," Doyle said during the inspection out brief with *Blue Ridge's* [then] Commanding Officer, CAPT Will Pennington and the ship's officers and chief petty officers.

"Continue to press on with your khaki engagement—there's no way you'd be where you are today without your officers and chiefs," Doyle added.

The inspection included spot checks, administrative effectiveness reviews (AER) and equipment validations and a thorough review of the consolidated ship's maintenance program (CSMP). The AER is a review of a division's 3M record-keeping practice while the CSMP review challenges maintenance men and work center supervisors' knowledge on writing work candidates.

"Writing a work candidate the right way is extremely important," explains EA02 work center supervisor, Engineman 2nd Class David Kirchens. "It's through the work candidate that the big Navy receives material and equipment information from the fleet."

Kirchens added evaluations did not stop with the CSMP review. ATGWP also challenged work center supervisors and 3M assistants in their proficiency of the Navy maintenance scheduling program SKED.

"Being called down and tested by a master chief from ATG on how well I know SKED can be kind of scary," Kirchens said. "Luckily, my chain of command gave me all the support I needed to do well."

Through the 3MA, *Blue Ridge* maintained its high standards set by 3M Coordinator Senior Chief Machinery Repairman Edgardo S. Agustin. "The score was the highest of all the ships on Japan's waterfront," said Agustin. "The work and effort by the 3M training team made this 3MA a success. The 3M process is all about intensive preparation and I challenge our Sailors to keep this level of maintenance and high standards."

3M is one of the most important inspections because it directly affects the ship's longevity. The 3M system is always a top priority for *Blue Ridge* Sailors because they understand how the program affects the crew and the ship.

"*Blue Ridge* was commissioned in 1970 and our goal is to prolong the ships life to the 2039 decommissioning date," said Agustin. "I expected us to pass, but my expectations were definitely exceeded. 3M is not a process, but a way of life for us."

Navy ships must re-qualify their 3M program every 18 to 24 months, to ensure equipment is being properly maintained and their programs are effective. **SC**

Spotlight on Excellence



2012 Department of the Navy Safety Excellence Award

"You saved lives and property and prevented accidents. On behalf of the Secretary of the Navy, I thank you and offer congratulations for your accomplishments."

– Under Secretary of the Navy Robert Work

Industrial, Category A - Naval Facilities Engineering Command Northwest

Industrial, Category B - U.S. Naval Ship Repair Facility and Japan Regional Maintenance Center

Industrial, Category C - Marine Corps Logistics Base Barstow

Non-Industrial, Category A - Naval Submarine Base Kings Bay

Non-Industrial, Category B - Naval Air Station Lemoore

Non-Industrial, Category C - Naval Base Ventura County

Fleet Operational/Fleet Support - Marine Corps Support Facility Blount Island

Large Deck Combatant - USS *Ronald Reagan* (CVN 76)

Surface Combatant - USS *Lake Champlain* (CG 57)

Amphibious - USS *Green Bay* (LPD 20)

Submarine - USS *Tennessee* (SSBN 734) (Blue)

Auxiliary - USNS *Grasp* (T-ARS 51)

Marine Corps Active Duty Aviation - Marine Attack Squadron 223

Navy Active Duty Aviation - Helicopter Maritime Strike Squadron 77 "Saberhawks"

Marine Corps Reserve Aviation - Marine Light Attack Helicopter Squadron 773

Navy Reserve Aviation - Fleet Logistics Support Squadron 57

Training Aviation - Training Squadron 10

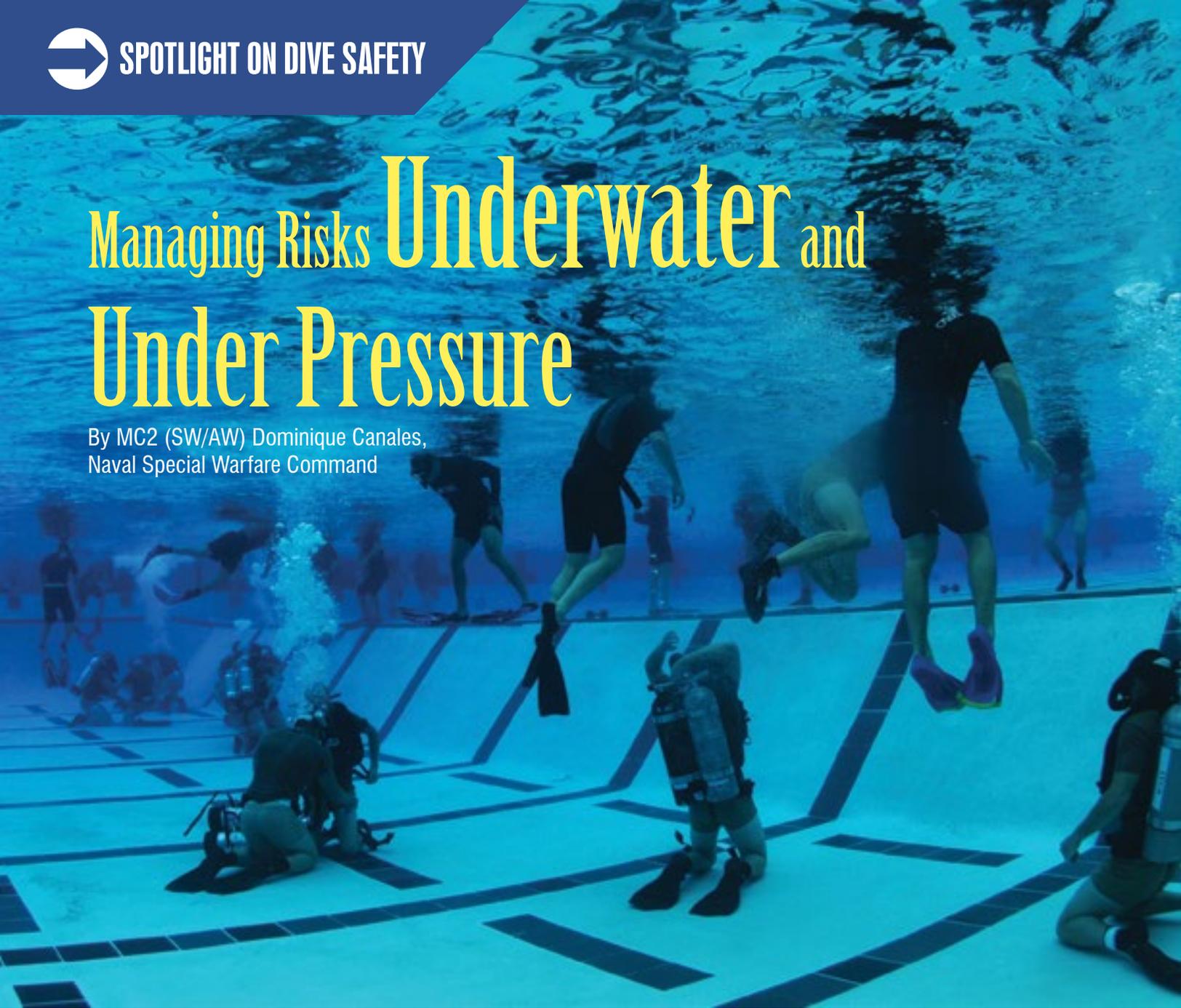
Safety Integration in Acquisition - Naval Sea Systems Command Shallow Water Combat Submersible Team

Emerging Center of Excellence - U.S. Forces Afghanistan (USFOR-A), Naval Sea Systems Command, Naval Ordnance Safety and Security Activity, and USFOR-A Systems Safety

Established in 2002 by former SECNAV Gordon R. England, the Safety Excellence Awards are designed to promote safe practices throughout the Department of the Navy and personally recognize those commands that have integrated an awareness of safety in everyday operations, reducing loss in man-hours, material damage, among other factors that may decrease Navy assets.

Managing Risks Underwater and Under Pressure

By MC2 (SW/AW) Dominique Canales,
Naval Special Warfare Command



Home to the second most active dive locker in the Navy, Naval Special Warfare Basic Training Command students and instructors make more than 10,000 dives per year. This environment—along with the MK 25 rig the divers must proficiently use—tests the students’ abilities and limitations.

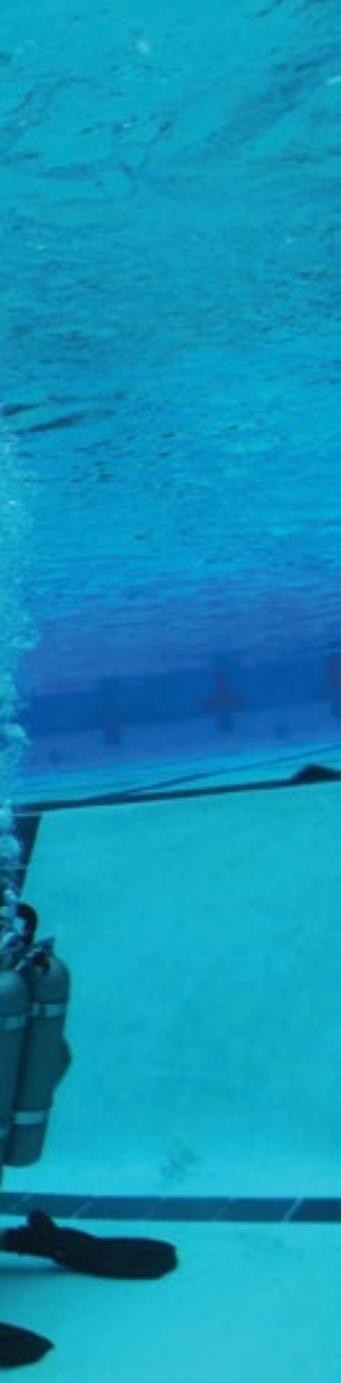
“Instructors help mitigate the magnified risks by using a ‘crawl, walk, run’ approach to student dive training,” said Lt. j.g. Mim Warlick, the BTC diving officer. “This helps ensure that precautions and safety principles are ingrained in each student-diver’s memory.”

Before donning a rig and getting wet, students learn the rules about diving. They receive medical briefs and take a proficiency exam in the classroom. While briefs

are a staple for most training, they significantly help ensure each participant’s well-being during dive training.

Chief Special Warfare Operator Ben Oleson, NSWBTC dive chief, explained that instructors try to build on what students have already learned. After providing a good foundation of basic skills, instructors put less emphasis on what students previously learned and focus more on new skills or what in a particular scenario has changed. The instructors also use quizzes and demonstrations to ensure each student is fully aware of expectations.

“We try to reach every type of learner,” said Warlick. “We tell them, we question them, we use illustrations and we have them demonstrate newly acquired skills in

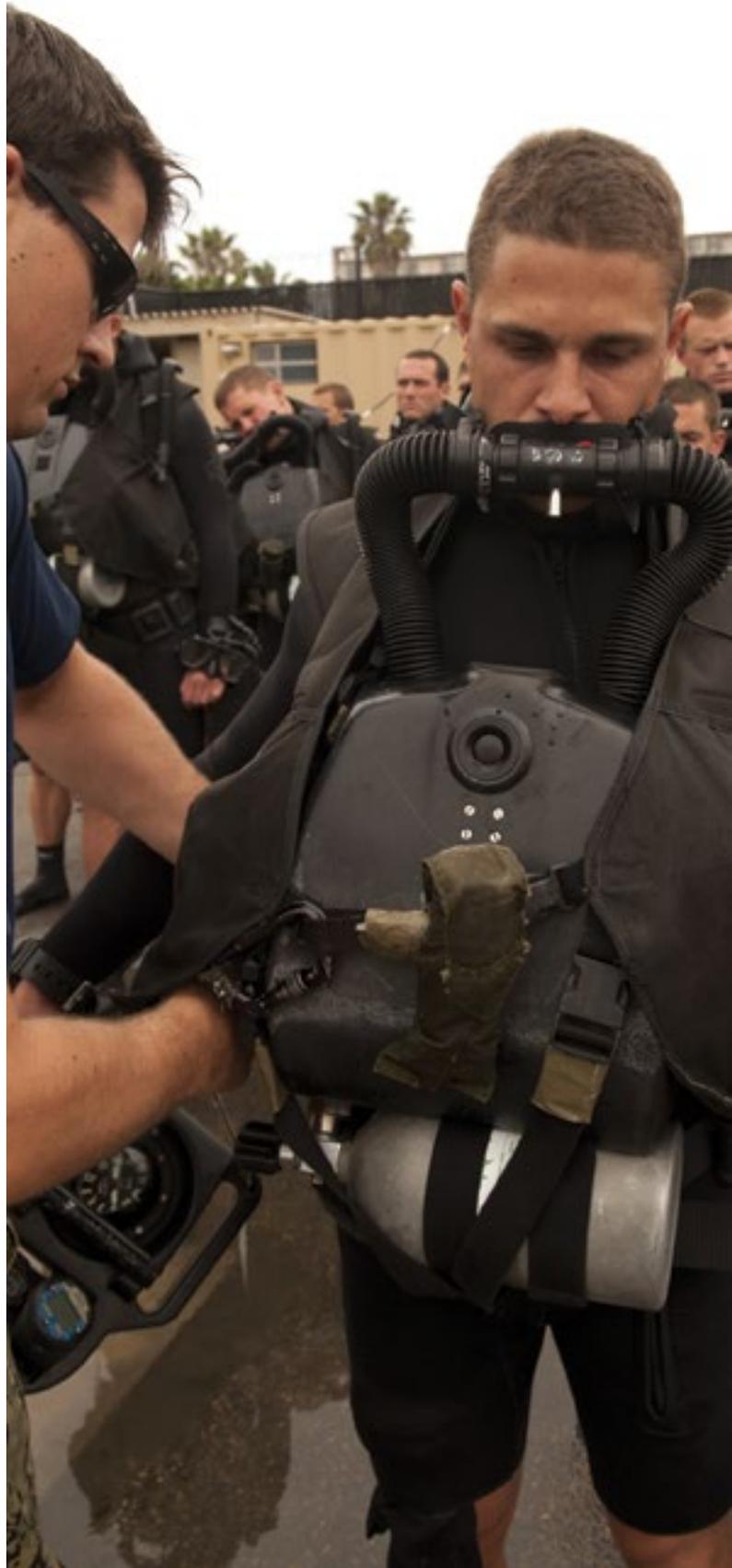


The Naval Special Warfare (NSW) community's roots can be traced back to the WW II aquatic commandos of the Scouts and Raiders, Naval Combat Demolition Units and Underwater Demolition Teams. Clad in only swim trunks and armed with a dive knife, the heroic underwater exploits of these courageous and groundbreaking operators saw them doing everything from intelligence gathering to demolition—all under the cover of darkness and hypothermia-inducing cold water.

As NSW developed into one of the world's most formidable special operations force (SOF) assets, qualifying as a combat swimmer and diver has become the cornerstone of SEAL history and training. It is the main capability that separates SEALs from other SOF components. With most populations and possible targets near bodies of water, a frogman's ability to reach and strike objectives from underwater has proven to be an invaluable asset.

Left: Students from BUD/S Class 287 participate in night gear exchange during the second phase of training at Naval Amphibious Base Coronado. During this evolution, two students enter the water and exchange dive gear with masks that have been completely blackened. (U.S. Navy photo by MC2 Kyle D. Gahlau)

Time, depth, water temperature, stress—and even oxygen—can all work against a diver using the MK 25 underwater breathing apparatus (UBA). Knowing the risks and how to mitigate them is the key to safe naval special warfare UBA operations. Learning them begins at Basic Underwater Demolition/SEAL (BUD/S) training.



The closed-circuit oxygen underwater breathing apparatus, MK 25, is used by SEALs so that their presence can go undetected during dive missions. While the upside of the unit is that it prevents any exhaust bubbles from surfacing, it also comes with a long list of risks not found with open-circuit units. (U.S. Navy photo by MC2 Dominique Canales)

“The safety practices learned as BUD/S students remain etched in a SEAL's mind forever.”

front of the class. We have a very compressed schedule and these students are expected to know a lot in a short period of time.”

Precautions are critical while students learn to use the closed-circuit dive system. “The closed-circuit system uses pure oxygen and comes with additional risks over and above the risks of mixed-air systems used by professional divers,” said Doug Hucker, NSWV high-risk training officer.

Instructors review the students in class, discuss the minimum amount of allowable oxygen for a UBA dive and review all necessary signaling and protective gear.

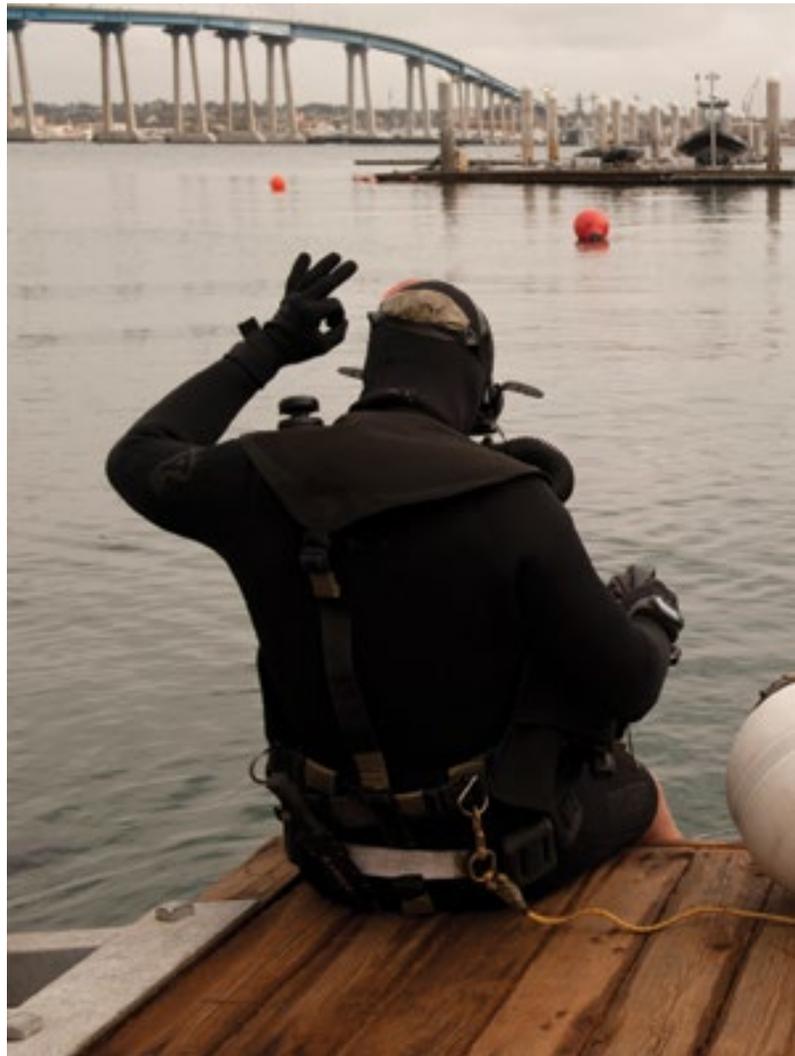
“Anytime a student dives, they run the risk of touching something and need to be protected,” said Oleson. “There is a signal device attached to the rig so that if there is a problem, they can signal. They start with hand signals, then use a whistle or, if needed, smoke or flares. Students should do anything they need to do to get our attention if there is a problem.”

Students are equipped with a depth gauge and a watch to monitor dive time to ensure they don't exceed the excursion limits of the apparatus.

“This UBA is only certified to a certain depth,” said Hucker. “The only reason why a dive student would need to go beyond the limitations of the closed circuit system is if they are in the bay and a large cruiser passes through. Then they would have to ‘eat mud’—dive to the bottom of the bay—and wait for the ship to pass. On the off chance they reach that limit in the bay and go too deep, they would need to surface and terminate their dive.”

The students wear all their gear in a controlled environment long before venturing into the bay. Hucker explained that instructors keep a close eye on students to ensure they properly don their equipment and remain focused on the task at hand rather than what may lie ahead of them. Training in a controlled environment also helps instructors effectively manage large groups, which means more equipment and students to observe.

“Class sizes have at least doubled since I went through,” said Oleson. “We have had as many as 87 students in a class, and trying to manage more than 40 buoys becomes a safety problem. We try to keep the



training as close to base as possible for safety. If we get closer to Naval Base San Diego or by North Island, it gets harder to manage.”

Prior to a dive in the bay, the instructors and operations department at NSWV put operational risk management (ORM) to use as they assess risks and plan for the evolution.

“The ORM process is key when it comes to high-risk training,” said Hucker. “In this case, the training is away from Naval Base San Diego because of the ships that go in and out of the bay.”

The center carefully coordinates to ensure that boat support is available and sends notice to mariners in the area that there will be divers. Boat support can be limited, so SEAL qualification training instructors and BUD/S instructors meet weekly to eliminate conflicting dive schedules and ensure that safety boats are available for every evolution in a week. Before an



BUD/S candidates give the "ok" sign prior to entering the water during dive training at Naval Amphibious Base Coronado. (U.S. Navy photo by MC2 Dominique Canales)

event, instructors fill out an evolution sheet (pre-dive checklist) for training.

"It has the names of the dive officer and dive supervisor for that evolution," said Oleson. "We annotate that we have called to ensure that the primary decompression chamber is up and running or make preparations if it is not. It also has the procedures and a timeline to follow in case there is a dive mishap."

After briefing, students file onto the grinder, gear up and wait for an inspection from the dive supervisor. This is the second of three equipment checks for the students before stepping foot into the water. The final check is purging. This is when students purge all the regular breathable air in the tubes of their UBA and begin breathing pure oxygen for two minutes prior to entering the water. This process is referred to as "going on air," and where all the primary points of safety and awareness students learned in the classroom start to apply.

"When the students go on bag, this is where they start to look for systems such as lightheadedness, dizziness and incoherent behavior to name a few," said Hucker.

Extra medical equipment is on standby and at the site in case of emergency. A standby diver is also present on the end of the pier, ready to go.

"Everything is here at the site for the instructors to recall-extract a student from the water, treat an injury on site or transport a student in case of an emergency," said Oleson. "We are never without it."

For the first few dives, the students work on buoyancy and pace.

"During the first dives they are learning how to trim their bodies to move efficiently in the water," said Oleson. "This is so they don't potentially overwork themselves because they are swimming inefficiently."

Oleson said the students want to avoid constantly changing depths because they're not neutrally buoyant. The constant changes in pressure can cause an arterial gas embolism and uneven swimming can cause the MK 25 re-breather to malfunction because the diver is overworking his body.

By design, the rig contains a scrubber to remove carbon dioxide from the closed breathing loop at a certain level of efficiency. If the diver is over swimming, stressed or begins breathing too hard, the efficiency of the scrubber can be overwhelmed. By learning to move efficiently through the water, a student has less potential of overwhelming the rig and suffering carbon dioxide buildup, which is potentially deadly.

"These principles and safety techniques are uniform throughout the NSW community," Hucker said.

SEALs will dive with different partners throughout their careers, so students learn the same dive safety and practices used at the team level.

"Safety is a way of life here," Hucker added. "These are uniform practices across the board, the same safety practices are used at the teams. Having the same practices ensures that everyone knows the way we dive and will be able to dive with anyone."

The safety practices learned as BUD/S students remain etched in a SEAL's mind forever. According to Hucker, the basic training is like muscle memory, the SEALs will never forget the safety practices they learned during initial training. **SC**

MC2 Canales is a communications specialist with Naval Special Warfare Command.

Casualty Drills in Korea: Cooperation and

Story and photos by CEC (SCW/MDV) Terence Juergens

As a Sailor, Seabee and diver, I believe that safety is at the forefront of any operation. Seabee divers face inherent risks, doing tasks fraught with dangerous outcomes. As a result, divers on Underwater Construction Teams (UCTs) go to great lengths to mitigate unnecessary risks at all times.



Constant training, both in the classroom and on the dive side, prepares everyone for diving casualties. Before any of the three Construction Dive Detachments (CDDs) deploy, all divers—from the most senior to the most junior—form a cohesive team. Members are expected to know what to do and what role they play in any situation. On the dive side, being free from danger is not an option. Preventing mishaps is a step-by-step process that every Seabee diver understands and is trained on.

During Exercise Foal Eagle 2012 in South Korea, U.S. and Republic of Korea (ROK) divers were put to the test. During this 10-day, bilateral exercise, U.S. and ROK divers trained side-by-side during various scenarios in support of Humanitarian Assistance/ Disaster Recovery (HA/DR).

Each day a new supervisor would take the reins and essentially be dubbed the “Sup of Day,” which in diver terms means “Stand by and be ready for anything.” Divers practiced emergency casualty drills simulating an unconscious diver in the water caused by arterial gas embolism (AGE) and decompression sickness (DCS). Each drill was evaluated by the on-site master diver and diving officer and then briefed back to the members of the dive side.

During the unconscious diver drill, two divers (Red and Green) entered the water to do underwater cutting and welding on steel projects at a depth of approximately 40 feet. Afterward, divers ascended to the surface. Once on surface, the Red diver became unresponsive. The diving supervisor sprang into action,

Top photo: Divers from Underwater Construction Team Two and the Republic of Korea perform topside checks prior to entering the water to conduct underwater cutting and welding operations. Divers operated side-by-side in support of Exercise Foal Eagle 2012, a bilateral fleet exercise. Left: Republic of Korea (ROK) diving supervisor looks on as U.S. and ROK divers perform simultaneous cutting and welding operations.

“Constant training, both in the classroom and on the dive side, prepares everyone for diving casualties.”

Safety Abroad

saying “OK Red, OK Red.” He quickly told Green diver to maintain an open airway while the tenders readied the extraction line.

“Is he breathing?” Green diver could feel the rise and fall of the chest and hear the audible signs that Red diver is breathing.

“One-two-three, pull.” Red diver was hoisted onto the deck and moved away from the water’s edge. The diving supervisor directed the diving officer to get Green diver out of the water and onto the bench.

“Get that hat off him.” Tenders quickly removed the KM-37 dive helmet.

“Doc, is he still breathing?”

“Still breathing, got a solid pulse too,” said HM1 Eric Ketelsen, CDD Bravo’s diving corpsman. Tenders, without prompting, quickly removed the stricken diver’s integrated diver’s vest and stabilized him on the stretcher for the 100-yard walk to the recompression chamber.

“Ready, lift.” Tenders lifted the diver with ease and at steady pace rushed him to the transportable recompression chamber system (TRCS). Without missing a beat, the dive sup already had the internal stretcher of the TRCS out and ready for transfer. Tenders quickly transferred the stricken diver to the TRCS stretcher and muscled him in the chamber. The inside tender donned hearing protection and notified the sup that he was ready to travel.

“OK in the viewport, traveling.” The outside tender quickly opened the pressurization valve and the chamber left surface traveling at 100 feet per minute.

“One-zero feet, two-zero feet.” The sup quickly acknowledged the tender. “Understand, stopping at six-zero feet.” HM1 Ketelsen saw the diver starting to come to.

“Sup, the patient is starting to open his eyes.”

“Understand,” said the sup. “Tender, what’s my depth?” He quickly replies, “five-zero feet.”

The sup acknowledged the tender and directed him to continue traveling to 60 feet. Once at treatment depth, the sup started to orchestrate the side, giving direction to every able body. Then, as the master diver, I ended the drill.

During all emergency casualty drills, supervisors are evaluated on such things as response time, management of the dive side, diagnosis and the course of action for treatment. Whether it’s a drill or the real thing, the diving supervisor has to take in to account many factors: diving platform, diving dress, weather, and the proximity of the dive side to a recompression chamber. As with all diving operations, planning is essential and takes place months before. From day one, the phrase “plan the dive and dive the plan” is constantly preached to every diver. The importance of constantly testing and evaluating diving supervisors is an important function that prepares the dive side for the worst-case scenario and is a driving force for mission readiness.

CDD Bravo’s most recent deployment included visits to countries around the Pacific Ocean and Indian Ocean. During their six-month rotation, they did training, inspections and repairs in Thailand, the Philippines, Japan, Diego Garcia, and South Korea, as well as missions in San Diego and Oregon. Throughout this demanding, six-month deployment, divers logged 115 hours of bottom time with zero diving mishaps—a direct result of constant training and strict adherence to safety guidelines. **SC**



Chief Steelworker (SCW/DV) Meko Kaprelian, CDD Bravo Officer in Charge, demonstrates the use of the TRCS to Republic of Korea ship salvage unit commanding officer. The TRCS is used for emergency recompression in the event of any diving-related casualty and is also used to support surface decompression when conducting surface-supplied diving operations.

New Hose Improves Fire-Fighting Response Time

Story and photos by Brian McNeal, Norfolk Naval Shipyard

In fire fighting, the first few moments of response can mean a world of difference in the outcome. Getting fire-fighting agent on a fire as soon as it is detected, can minimize smoke, fire and water damage; and more importantly minimize the risk of injury.

To enhance its fire-fighting response, Norfolk Naval Shipyard (NNSY) and the crew of USS *Newport News* (SSN 750) have developed a non-collapsible fire hose. It weighs one pound per foot when filled with water, a fraction of the weight of a collapsible canvas hose. Stored topside on a winch, it is easily deployed and operated by one person.

“This system is an extinguishing bridge. There are about 15 fire extinguishers on the whole boat and if the first couple don’t cut it, the crew is stuck running up and down ladders with fire extinguishers,” said ship safety officer Lt. Jeremy Young. “This hose allows us to get an unlimited amount of water onto the scene quickly until the fire-fighting team in FFE (fire-fighting ensemble) can get a larger hose onto the scene.”

The original idea was to replace and eliminate the collapsible hose, but the requirement for water volume was not achievable with a non-collapsible hose. The project team decided to instead augment the system and improve upon the first-response system.

Working with ship’s force, the hose took less than three months to go from idea to deployment. “The first hose [we came up with] was too big, but it was the 90 percent solution,” said Young. “We worked with a local vendor and told them our needs and after a couple of iterations we were able to come up with this 1-inch-diameter hose. It’s very light and affordable. The project has deployed two hoses nicknamed *Zeus* and *Neptune*.”

USS *Newport News* Commanding Officer Cmdr. Jasper Hartsfield, who initiated the project, is extremely happy with the results. “My Sailors and our project team have been recognized time and again for their dedication, teamwork, and aptitude. The creation of *Zeus* and *Neptune* are just one example, and I am proud to say there are many more.”

NNSY, a field activity of the Naval Sea Systems Command, is the oldest industrial facility belonging to the U.S. Navy, and specializes in repairing, overhauling and modernizing ships and submarines. **SC**

Mr. McNeal is a public affairs specialist at the Norfolk Naval Shipyard.





Norfolk Naval Shipyard and USS *Newport News* project team develops this non-collapsible fire hose to enhance fire-fighting capability.



Lt. Jeremy Young demonstrates how easily the new non-collapsible hose deploys by pulling the nozzle with only two fingers.

"This hose allows us to get an unlimited amount of water onto the scene quickly."

— Lt. Jeremy Young,
Ship Safety Officer

Time to Get Familiar

New Shipboard Electrical Safety Bible

By EMCM (SW/AW) Jim Burke and
EMCM (SW) Matt Kerridge

It's here! The *Naval Ships' Technical Manual* (NSTM 300), the afloat bible of electrical safety, has undergone a full revision to align more closely with civilian electrical safety rules and regulations.

The three-year revision process eliminates outdated practices and terminology, establishes safety criteria for future high-voltage systems, implements new PPE (personal protective equipment), and addresses several gaps left out of the previous revision. Both Atlantic- and Pacific-based ships were directed by their respective type commands (TYCOMs) to implement Revision 9 in August 2012.

A working group of more than 150 people from surface, submarine, shipyard, nuclear and technical support communities met monthly both by teleconference and in person. They worked every section based on fleet feedback and technical support weigh-in. The result is streamlined and user-friendly.

Although we have used 4,160-volt systems on CVNs since the 1960s, voltages above 450 volts were not seen in the conventional surface fleet until the delivery of USS *Makin Island* (LHD 8) in 2009. Future deliveries of higher voltage ships include LHA-6, LHA-7, CVN 78 and DDG 1000. Higher voltage designs on the horizon dramatized the need for updated safety requirements reflecting new PPE, boundary distances and other criteria necessary to protect personnel.

The revision contains easy-to-read charts for energized gear work, circuit breaker rack-out procedures, IVV (initial voltage verification), fuse removal/replacement and more. These charts spell out exactly required PPE, number of personnel, boundary distances, permissions, tag-out requirements and several other criteria. Previous revisions had Sailors bouncing paragraph to paragraph, causing misinterpretation and frustration along the way.



30-1000 volt face shield

NCS file photo.

A major emphasis focuses on arc-flash theory, new PPE introduced to the fleet in the form of 12 cal/cm² face-shields and coveralls. The face-shields replace the old blue/black band face-shields used for voltages above 30 volts, and the coveralls will be required for energized gear work and IVV checks between 300-1000 volts. The initial set of PPE for all units was funded by OPNAV. TYCOMs will deliver these to the ships in early FY13.

OTHER MAJOR CHANGES

- ▶▶ The way electrical safe workbenches are downgraded (new criteria for disconnect switches and a full list of workbench supply information and drawing numbers).
- ▶▶ “Breaking the plane” clearly defined with diagrams.
- ▶▶ Portable, personal and mobile electrical gear clearly explained.
- ▶▶ Requirements for hard-wiring vs. plug on newly acquired electrical gear.
- ▶▶ Circuit-breaker rack-out procedures for all voltages.
- ▶▶ An appendix listing current stock numbers for all PPE and safety equipment.
- ▶▶ Removed the term “deranged gear” in favor of “damaged gear” and added “wetted gear.”
- ▶▶ Risk categories within charts determining level of PPE and isolation.
- ▶▶ Visual inspection safety criteria for electrical panels/controllers.



USS Makin Island (LHD 8). Photo by MCSC John Lill.

Note that the new revision comes with no change page as this is a full line-by-line revision. Also, the previous version was Revision 7; Revision 8 lasted about 30 days until an observant reader noticed a typo in one of the charts. That was considered serious enough to warrant a new revision instead of an advance change notice.

Shipboard electrical rates should become familiar with the new Revision 9 as soon as possible. Electrical officers should bounce the new information off of their existing electrical safety instructions and make necessary changes. Training should be conducted across the enterprise to include shipboard and submarine Sailors, as well as inspection teams, training teams and support teams. As with all new manuals, if inconsistencies are found, NAVSEA 05Z welcomes all feedback via the TMDER (Tech Manual Deficiency/Evaluation Report) in the back of the manual. **SC**

Table 300-2 for ENERGIZED EQUIPMENT WORK REQUIREMENTS

ANSWER NUMBER FROM "and"	FOR TABLE 300-2	FOR TABLE 300-3	FOR TABLE 300-4	FOR TABLE 300-5
1.1.1.1	YES	YES	YES	YES
1.1.1.2	YES	YES	YES	YES
1.1.1.3	YES	YES	YES	YES
1.1.1.4	YES	YES	YES	YES
1.1.1.5	YES	YES	YES	YES
1.1.1.6	YES	YES	YES	YES
1.1.1.7	YES	YES	YES	YES
1.1.1.8	YES	YES	YES	YES
1.1.1.9	YES	YES	YES	YES
1.1.1.10	YES	YES	YES	YES
1.1.1.11	YES	YES	YES	YES
1.1.1.12	YES	YES	YES	YES
1.1.1.13	YES	YES	YES	YES
1.1.1.14	YES	YES	YES	YES
1.1.1.15	YES	YES	YES	YES
1.1.1.16	YES	YES	YES	YES
1.1.1.17	YES	YES	YES	YES
1.1.1.18	YES	YES	YES	YES
1.1.1.19	YES	YES	YES	YES
1.1.1.20	YES	YES	YES	YES
1.1.1.21	YES	YES	YES	YES
1.1.1.22	YES	YES	YES	YES
1.1.1.23	YES	YES	YES	YES
1.1.1.24	YES	YES	YES	YES
1.1.1.25	YES	YES	YES	YES
1.1.1.26	YES	YES	YES	YES
1.1.1.27	YES	YES	YES	YES
1.1.1.28	YES	YES	YES	YES
1.1.1.29	YES	YES	YES	YES
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1.1.1.37	YES	YES	YES	YES
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1.1.1.39	YES	YES	YES	YES
1.1.1.40	YES	YES	YES	YES
1.1.1.41	YES	YES	YES	YES
1.1.1.42	YES	YES	YES	YES
1.1.1.43	YES	YES	YES	YES
1.1.1.44	YES	YES	YES	YES
1.1.1.45	YES	YES	YES	YES
1.1.1.46	YES	YES	YES	YES
1.1.1.47	YES	YES	YES	YES
1.1.1.48	YES	YES	YES	YES
1.1.1.49	YES	YES	YES	YES
1.1.1.50	YES	YES	YES	YES

RELATED ARTICLE:
 "Protection, Safety of Fleet Electricians Reach New Heights" by EMCM (SW/AW) Jim Burke, Sea Compass, Fall 2011.

EMCM Burke is the leading electrical analyst of the survey team and EMCM Kerridge is the fleet electrical analyst in the Naval Safety Center's Afloat Safety Programs Directorate.

Mishap & Hazard Reporting System GOES TO SEA



By Edward Hobbs

“The Web Enabled Safety System (WESS) is not user friendly.”

“It takes too long to enter a mishap into WESS.”

“I’m too busy with my primary duties to spend hours entering a WESS mishap report.”

“Why are they asking for height, number of dependents and other useless information?”

If you have served in a safety billet, you probably have heard comments similar to these. You may have even voiced them yourself. Well, help is on the way.

During the first quarter of calendar year 2013, the Naval Safety Center introduced the Afloat Mishap & Hazard Reporting System (AMHRS). This reporting system was upgraded to assist users in submitting afloat on-duty mishap reports. AMHRS has significantly reduced the number of required data fields.

Only data mandated by the Office of the Secretary of Defense or data that is frequently requested by the fleet or senior leadership has been included. Almost 50 percent of the data fields have been eliminated depending on the type of afloat mishap. AMHRS has also reduced the number of web pages to complete an afloat report from about 70 pages to 13 or fewer pages.

Other Improvements:

▶ Mishap causal factors have been completely overhauled. AMHRS uses the DoD Human Factors and Analysis Classification System (HFACS), an enhanced method of analyzing, tracking and trending the human element in mishaps.

▶ Instead of making them all fit in a single narrative block, AMHRS now contains separate areas for event description, cause factor narratives and recommendations.

▶ As the Equipment Identification Code (EIC) provides a consistent, reliable method of tracking specific property that has been involved in a mishap, property will be submitted using the involved property’s EIC as opposed to using a type-in field.

▶ AMHRS will provide three permission levels for additional command oversight of mishap reporting. Customers with draft permissions may enter a report in the system but cannot submit it to the Naval Safety Center. Customers with release permissions may enter and submit reports. Customers with notification permissions may receive redacted copies of mishap reports submitted by other afloat commands.

▶ AMHRS has been designed to be used by ships with limited bandwidth. After log-in, the initial load of the module may still take several minutes. Once it loads, the code structure has been designed to greatly improve speed and performance. Many customers will be able to navigate from page to page with only a few seconds delay. Since AMHRS is saved to the computer’s memory, additional reports can be initiated without having to reload the module.

Mr. Hobbs is an operations research analyst at the Naval Safety Center. If you would like more information about AMHRS, please contact the Naval Safety Center WESS help desk at 757-444-3520, ext. 7048 (DSN 564), Monday-Friday, 8 a.m. to 4:30 p.m. EST or email NRFK_SAFE_WESShelp@navy.mil.

You've Gotta See This

Story and photos by LCDR Dave Williams

While serving as safety officer aboard USS *Makin Island* (LHD 8), I became quite close to the staff in our medical department. We shared a relationship on many different levels. We worked on common programs such as heat stress, sight conservation, and respiratory protection.

We also shared mishap reports so that we could track injuries and trends. I was rarely surprised by medical reports, but this particular day was different.

We were just about to pull in from a two-week workup when I was contacted by our duty doc. He said, "Dave, you've gotta come down here and see this. Oh, and bring your camera."

I thought, "This can't be good."

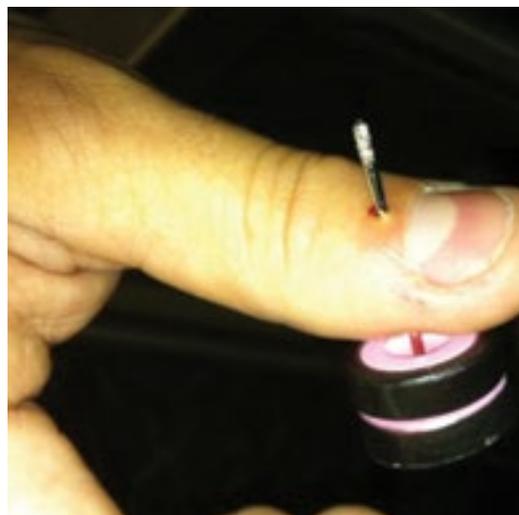
I made my way down to medical, and it seemed as though everyone was expecting me. The corpsmen were smiling. They directed me to the treatment room and said I was going to enjoy it.

I glanced through the doorway of the treatment room and saw a fire controlman second class (FC2) standing there with all the doctors deliberating their next course of action. The doctor who had called me earlier pulled me into the room and had the FC lift his right hand. A strange object protruded from his right thumb. I had no idea what it was, but it had clearly gone all the way through. It appeared to be some sort of metal pin.

The doctor led me to the X-ray room and showed me the X-ray. Surprisingly, the pin had missed everything on this FC's thumb, including the bone and the fingernail.

So the doctors sat the petty officer down on the treatment table to extract the pin. The problem was that one end of the pin was knurled. It was too rough to just pull out in the opposite direction. The doctors decide to cut off the knurled end of the pin and slide the rest out.

Enter the leading chief petty officer. He reassured the young petty officer that everything will be alright. The doctors were set on the plan and discussed it with the FC. It would be quick, painless, and result in little to no damage. As the cutter came out, the doctors heard a



loud thump and a crashing sound. The LCPO was out like a light.

Now keep in mind that this chief has witnessed the birth of all five of his children. That is not an experience for the faint of heart. However, the thought of cutting a metal pin that had skewered a shipmate's thumb was apparently too much to bear.

Both parties made a full and quick recovery. The chief came to a few moments later and went on with his day. It turned out that the metal object wasn't a pin at all but rather an axle from a toy car that the petty officer was trying to put together for his daughter. The wound needed only a band-aid and a cleaning.

You never know what you're going to see from one day to the next. **SC**

LCDR Williams, a student at the Army Command and General Staff College, Fort Leavenworth, Kansas, is a regular contributor. His articles have also appeared in Decisions magazine.

No Need For That

Midnight Oil

By LTJG Aaron Getty

U.S. Navy photo by MC3 Scott Pittman

During its 2012 deployment, USS *Arleigh Burke* (DDG 51) increased watchstander focus and alertness by replacing the conventional method of rotating underway watches with a circadian rhythm watch routine.

This new routine substitutes the daily rotating watch schedule of five hours on-watch followed by 10 hours off with fixed daily watches that rotate weekly.

An internal survey of watchstanders shows that the circadian rhythm rotation ensured watchstanders were more alert and better focused while on-watch and, at the same time, able to conduct more work while off-watch.

The rotation has four sections, where three of the four sections stand two three- or four-hour watches each day.

- Section 1: 0600-0900 and 1500-1800
- Section 2: 0900-1200 and 1800-2200
- Section 3: 1200-1500 and 2200-0100
- Section 4: 0100-0600 (stands one longer watch)

Watch stations with sufficient qualified personnel have a fifth section. Section 5 stands the 1800-2200 everyday and removes that requirement from section 2. Those Sailors on the late watch are authorized crew-rest time to compensate for the early morning watch.

Arleigh Burke's watch routine incorporates more watches throughout the day with more down time between watches, in an effort to combat fatigue and increase alertness. It puts the watchstanders in a position to stand the same watch every day. This allows each watchstander to develop a daily routine that easily accounts for sleep, meals, exercise, training, and divisional work. For balance, the watch schedule rotates every week on Saturday evening.

Implementation of this routine would not be possible without two things: qualified watchstanders and chain of command support.

In addition, meal hours were changed to support the new rotation. Breakfast occurs at 0500-0630, lunch at 1100-1230 and dinner at 1700-1830. This new schedule allows all watchstanders time to eat before or after watch.

The implementation of crew rest has created an environment that promotes forceful watch team back-up. Junior officers and enlisted Sailors alike must assume duties normally assigned to just one Sailor or even their immediate superior. This allows junior officers to fill department head roles at times and creates opportunities for additional professional development. First class petty officers are allowed to step into a more senior role and become aware of the chief's responsibilities on a deployed ship. The chain of command fully accepts a suitable and knowledgeable substitute to conduct the duties of their shipmates on crew rest.

Implementation of this routine would not be possible without two things: qualified watchstanders and chain of command support. *Arleigh Burke* has both. This adjustment challenged young officers and Sailors to qualify aggressively in order to provide the flexibility of a four-section underway routine. Because of the Sailor's hard work, *Arleigh Burke* fully implemented this routine in the two months of deployment.

Overall, the circadian rhythm rotation allows Sailors to stay alert on watch and to develop healthy sleep patterns. Implementation of this simple routine alone improves the culture of safety throughout the ship. 

LTJG Getty serves as Arleigh Burke's first lieutenant.

BEST PRACTICE: DON'T GET COMPLACENT

Lessons for a Long Cruise

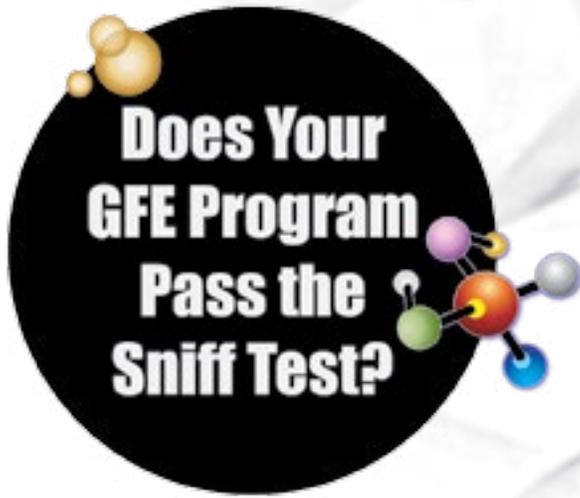
By Sam Fellman, *Navy Times* Staff Writer
(As first appeared in *Navy Times*, Aug. 6, 2012)

Your greatest risk on deployment—especially one that stretches beyond what the crew expects or is used to—comes from succumbing to the sense that dangerous things aren't. The key to combating complacency as a cruise stretches on is asking yourself before each hazardous event, "What's different this time?" said Capt. Erik Ross, CO of USS *Bataan* (LHD 5). "We've done this 39 times. This is time No. 40. Do we have different watchstanders? Do we have different environmentals?" Ross studied the crew's most common mishaps, typically mundane things like falling down ladders or bumping into knee-knockers.

Each week, during a 30-minute videotaped session, a chief reminded the crew about these hazards and others to avoid. That chief dressed as "Complacency Cow" and occasionally had skits to make the lesson more fun for viewers. "I think we pay more attention and have heightened awareness when we're doing more dangerous things and when we're in the middle of an operation," Ross said. "But when you do things so often that they become routine, that's where the danger of complacency is the greatest." During a 10½-month deployment, there are more opportunities for complacency to set in. The *Bataan's* workload, for example, included recovering hovercraft 123 times, running 10 Close-In Weapon System gun shoots, and conducting 39 underway replenishments and 18,404 flight deck evolutions, according to figures compiled by the ship.

Ask the Experts

questions, mysteries and unclear issues answered by Naval Safety Center analysts
Send your questions to safe-seacompass@navy.mil.



Recent surveys have shown that not all ships are complying with the Naval Ships' Technical Manual (NSTM 074 Vol. 3) with regards to the Gas-Free Engineering Program requirements. Some of the recurring issues we are finding are listed below.

By LT Kevin Ginter

▶ **Gas-free engineer (GFE) designation:** Sounds simple enough, but with turnovers happening every day, it is your responsibility to ensure that your program is up-to-date and that includes letters of designation. Ensure that you have continuity in your program.

▶ **Improperly issued gas-free chits:** Chits are issued in maximum eight-hour increments, with two recertifications of eight hours (max) each, for a total of 24 hours. We are finding chits that are being issued for 24 hours during the initial certification. Additionally, if there is a possibility of circumstances changing in the space being gas-freed, the chits should be updated more often. An example of this is work within a potential IDLH (immediately dangerous to life or health) space, or work on a system that has the potential for IDLH conditions (for example, work on a collection, holding and transfer (CHT) system where piping or equipment is being opened up). For work within a potential IDLH environment, the commanding officer must approve the gas-free certification.

▶ **Expired Draeger tubes or missing stickers on tubes:** Draeger tubes must have the expiration sticker clearly visible on the cases, or the case must be stamped from the manufacturer with expiration date. If the expiration date is missing, then the tubes are considered expired and unsafe for use. Ensure that your GFE personnel are taking care to protect the tube cases and expiration date stickers. Order replacement tubes early to ensure no gaps in coverage due to expired tubes.

▶ **Expired calibration gasses:** There has been an upward trend in expired calibration gas cylinders. If your calibration gasses are expired, then your entire program comes into question. How and what are you using to calibrate your analyzers?

▶ **Safety officer evaluation:** There is an annual requirement for the safety officer to evaluate the GFE program. What we are finding is that the evaluations are either not being conducted, or the ones that are being conducted are not being documented correctly. Something as simple as a date missing from an evaluation can keep you from meeting the annual requirement.

▶ **Training and proficiency:** Training is required for all hands at indoctrination, annually and prior to entering shipyard training (specific training is required for all hands prior to entering a shipyard environment). There are many differences between civilian marine chemist programs and ship's force programs. All hands must be familiar with the differences and ensure that they know what to look out for with regard to open tanks and voids, and the certificates required before entering any space.

▶ **CPR training and certification:** GFE personnel are required to be CPR-qualified. Training is not a qualification, however. Do not place a muster sheet in your GFE binder for CPR training and use this as your proof of qualification. GFE personnel must be qualified in CPR and have copies of certificate on file. Remember, training documented is training conducted.

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LT Ginter is a damage control analyst in the Naval Safety Center's Afloat Safety Programs Directorate. 

RELATED ARTICLE:

"Gas-Free Engineering," *Safety Training Gouge#6*, March 2012, Naval Safety and Environmental Training Center.

The Silent Killer

By DCC (SW/AW) John Ralston, USN (Ret.)

Over the years, hydrogen sulfide (H_2S) gas has severely injured some Sailors and killed others. In most cases, the mishaps were caused by a lack of awareness and a failure to use operational risk management.



While performing routine maintenance on a waste drain fitting in the galley, a Sailor was overcome by hydrogen sulfide. The Sailor was not aware that the level of hydrogen sulfide surrounding the waste drain pipe was nearly three times the permissible personnel exposure limit. In this incident, the maintenance was not being done in an enclosed tank or void. However, the hydrogen sulfide gas that surrounded the waste drain was sufficient to cause serious respiratory injury. This incident brings to light the importance of adherence to precautions whenever working around potentially toxic atmospheres.

Hydrogen sulfide gas is a toxic gas that is associated with stagnant and decomposed organic matter that exists in and around enclosed tanks and piping systems. This gas has a distinct smell of rotten eggs. Collection and holding transfer (CHT) systems normally come to mind when Sailors think about hydrogen sulfide gas; but, other systems such as AFFF, seawater, fuel/oil, and plumbing systems can emit this toxic gas as well. The hydrogen sulfide detection alarm system will assist with keeping Sailors safe during an H_2S leak. This system requires proper maintenance and a log kept with the dates the sensors were calibrated and replaced.

Supervisors must ensure that maintenance personnel have a thorough knowledge of the maintenance and system on which they are working. Survey the work area and ensure it is well-lit and ventilated. A safety observer should be assigned and safety procedures reviewed. Treat any openings to piping systems the same as a confined space with regards to gas-free requirements. The ship's gas-free engineer (GFE) should determine when a hazardous area is safe for personnel to perform work. COMFLTFORCOMINST 4790.3, Joint Fleet



Maintenance Manual (JFMM), has included some changes with the ship's gas-free responsibilities. The important point to remember is to notify the GFE of all work that will be performed on and around toxic gas systems. OPNAVINST 5100.19E, JFMM (COMUSFLTFORCOMINST 4790.3, REV B CH 5), *Naval Ships' Technical Manuals—Gas-Free Engineering* (NSTM 074 V3), Pollution Control (NSTM 593), and Piping System (NSTM 505)—outline procedures that ensure safety for working in and around confined spaces and piping systems.

Our Sailors are doing a lot of great work, but as with anything you do, remember to take a few minutes to consider the hazards and risks involved before jumping in and going to work. Don't let the "silent killer" claim you as the next victim! **SC**

DCC Ralston was the chief damage control analyst in the Naval Safety Center's Afloat Safety Programs Directorate at the time of this writing.

Breathe Easy

By HMC (SW/AW/FMF) Randahl S. Benson

Based on our fleet surveys, the respirator program seems to be one of the most overlooked. Respirators play an important role in our safety and health; yet they are poorly understood. They protect us from damage to our bodies that may not present itself for many years into the future.



If you work in an environment where you must wear a

respirator, ask yourself the following questions.

- Are you doing your part to keep yourself safe?
- When was the last time you cleaned your respirator?
- Do you keep your own respirator, or do you return it to the respirator program manager after each use?
- Are you using the right type of respirator for the job you are doing?
- Do you know the difference between an organic vapor filter and a particulate filter?

These are just a few of the things that you need to be thinking about before, during and after using a respirator.

HMC Benson is the medical/independent duty corpsman analyst in the Naval Safety Center's Afloat Safety Directorate.

RELATED ARTICLES:

“ORM Playbook: Respiratory PPE & Industrial Hygiene Surveys” by Joseph Perfetto, *Decisions Magazine*, Fall-Winter 2012.

“What Is an IH Survey?” by CDR David S. Horn, *Ships' Safety Bulletin*, January-March 2011.

9 tips to keep you safe when using a respirator

- 1 Inspect your respirator prior to each use, even if it is brand new.
- 2 Wearing anything on your head to keep sweat out of your eyes may interfere with a full-face mask.
- 3 Check the fit of your respirator every time you put it on. Your face may not have changed during lunch; however, something (like a piece of pizza on your chin) may be breaking the seal.
- 4 If you can smell traces of detergent, then your mask wasn't rinsed well enough the last time it was cleaned. Skin irritation or dermatitis may result if you wear it.
- 5 There's no need to pull the straps so tightly that the mask leaves a permanent ring around your face.
- 6 Dust masks do not protect against vapor and gases (including paint vapors). They are not authorized for use except by medical personnel.
- 7 Facial hair does interfere with the seal of a full or half-face filter respirator, even though the mask may seem to fit perfectly.
- 8 Always check the cartridge(s) on an air-purifying mask to verify they are screwed in securely.
- 9 Don't trust the color-coding on the cartridge. Read the label and ensure it is the proper type for what you are doing.

If you follow the steps above, you can continue to breathe easy knowing that you are protected.

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Approved by the Undersecretary of the Navy on behalf of the Defense Department, in accordance with DEPSECDEF memo of Sept. 29, 2012.

What's That You Say?

By GMC (SW) Ramiro Salas

I remember when I was a young torpedoman 3rd class aboard USS *Theodore Roosevelt* (CVN 71). We were setting up for my first UNREP (underway replenishment). That morning I had been assigned to work under instruction, firing lines to the UNREP ship. Now, mind you, I had never fired a gun and didn't know what to expect or prepare for.

My counterpart was less than helpful and didn't tell me that I needed hearing protection. I thought, "It can't be that loud." I didn't want to seem like a fool asking for things I may not need. I stood next to my shooter, anxious to see those lines fly over. The order was given. "Fire!"

I heard the loudest bang I had ever heard in my life. Then things went silent. Seconds later, the silence was followed by a loud ringing in my ear. It was very painful.

Looking back, it was probably the stupidest thing I'd ever done in my career.

A typical gunshot rates at 140 decibel (db), roughly comparable to jet-engine noise and able to cause immediate hearing damage. Single hearing protection (either muffs or plugs) is required when noise levels are above 85dbs, and double hearing protection (ear muffs and plugs used simultaneously) when noise levels reach 104db.

Know your working environment and ask questions if you're unsure. Some hearing damage will repair itself in time, but extreme exposure to high noise or severe damage to hearing can make it completely gone. **SC**

GMC Salas is a weapons analyst in the Naval Safety Center's Afloat Safety Directorate.



Torpedoman's Mate Seaman Jerimiah Street fires an M-14 rifle with MK-87 line throwing adapter toward Military Sealift Command fleet replenishment oiler USNS John Lenthall (T-AO 189) in order to exchange lines during a replenishment at sea with Nimitz-class aircraft carrier USS *George Washington* (CVN 73). (U.S. Navy photo by MC2 Michael D. Blackwell II)

Managing Hearing Loss:

The Military Paradox

Adapted from Hearing Health Magazine, Summer 2011

By LTCOL Mark Packer, M.D.

The sense of hearing is important for communication. In the military, hearing is crucial for the instruction, teamwork, and reporting that are necessary to accomplish missions. Hearing is also a critical defense for the warfighter, warning against threat and danger and promoting self-preservation.

Hearing loss is truly a silent disability. It often has no visible external manifestation of injury and has low priority for care in the trauma setting. Hearing loss and auditory system injury often confound other injuries, presenting a barrier to communication and understanding, which is especially dangerous in life-and-death war situations. This barrier can delay recovery and rehabilitation of our wounded warriors. The scope and magnitude of the effects of war and military service on today's soldier warrants a vigilant, focused effort to combat the negative impact on the auditory system.

The U.S. Department of Defense Hearing Center of Excellence (HCE) is leading this focused effort. The collaborative culture of the Center includes active participation by the Veterans Health Administration. The Air Force Medical Service is the lead Department of Defense component, operating the HCE as a hub from the Wilford Hall Medical Center at Lackland Air Force Base in San Antonio, Texas. The HCE was formally established in 2010 and will achieve initial operational capability this year, with full operational capability scheduled for December 2013.

To foster unity and consistency throughout the collaboration, staffing of the HCE includes clinicians and researchers across the Department of Defense and the Veterans Health Administration.

THE TROUBLE WITH TINNITUS

Compounding the scope of the noise-related hearing loss problem, the effects of improvised explosive devices—which military personnel face regularly in

Iraq and Afghanistan—expand the threat and damage to the audio vestibular (hearing and balance) system. In our current military conflicts, the two most common diagnoses in the field are hearing loss and tinnitus (which is usually a symptom of an underlying hearing loss, most likely acquired in the field).

Tinnitus was the most prevalent service-connected disability for veterans receiving compensation in 2010, affecting nearly 750,000 servicemen and women. Hearing loss was the second, affecting 675,000. Impairment of auditory acuity—which includes hearing loss and tinnitus—rose 15 percent from 2009 to 2010, the largest jump among 15 disabilities.

Service members may also endure traumatic brain injury that damages the hearing senses and the ability to process sound efficiently and effectively. Dizziness is a nearly universal symptom in mild traumatic brain injury, and a significant number of service members complain of vertigo following blast exposure. Other direct effects, related to the spreading acoustic radiation centered around blast injuries, are also common.

Blasts can disrupt how sound travels through the ear canal by introducing blood, debris, or foreign bodies. Fluid or blood accumulating behind the ear drum can tear the eardrum, separate the ossicles (middle-ear bones), and cause leakage of fluid from the inner ear. Other injury, infection and inflammation can result. These injuries result in symptoms of pain, hearing loss, tinnitus, dizziness, and disorientation, any of which degrade personal and unit effectiveness on the battlefield.

Even though some of these injuries are transient and resolve spontaneously, most cause some degree of permanent disability. Each ear-related injury can indicate deeper, more ominous brain injury. The HCE's goal is to offer comprehensive, state-of-the-art care for every wounded warrior, and commit to leading the way toward prevention and restorative technologies for all of our service members and veterans. **SG**

LTCOL Packer is the interim director charged with developing the congressionally mandated DOD Hearing Center of Excellence at Lackland Air Force Base in San Antonio, Texas. He is also co-director, Neurotology and Cranial Base Surgery, at the San Antonio Uniformed Services Health Education Consortium at Lackland.

 Read more in the **Web Extra** section online.



B2BPMS is your basic guide on how to not fall a victim of complacency. It is a common-sense approach to keeping your ship on the right course. Have you ever taken a short-cut to save time, but instead, cost you and your ship time, resources or people? Share your short story with our readers so they might learn from your experience. Submit your article to safe-seacompass@navy.mil.

SHIP PROPULSION

Tracking Your Refrigerant

By MMC (SW/AW) Esters Wright

Releasing refrigerant into the atmosphere is illegal. If refrigerant is unintentionally released into the environment or during a mishap, you would need a “get-out-of-jail” form to stay out of trouble. Sailors working on air condition and refrigerant systems must document any and all refrigerant released into the atmosphere. Unfortunately, while conducting shipboard safety surveys, I find personnel who are responsible for refrigerant-leak repair and record-keeping still don’t have a good handle on this critical task. The two most common refrigerant used on Navy air-condition and refrigeration system are R-134a and R-236. No matter which refrigerant your system uses, record-keeping requirements are the same. Source documents for these tasks are paragraph 516-1.11 of *Naval Ships’ Technical Manual* (NSTM 516 Refrigeration System) and on maintenance requirement cards (MRCs) MIP 5161 M-2 and 5140 M-4.

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MMC Wright is the main propulsion/diesel analyst in the Naval Safety Center’s Afloat Safety Directorate.



MM3 Joe Dickinson transports refrigerant bottles in the hangar bay of the aircraft carrier USS *George H.W. Bush* (CVN 77). (U.S. Navy photo by MCSN K. Ashley Lawrence)

BASIC REQUIREMENTS

Any air-conditioning or refrigeration system with an installed refrigerant charge of 50 pounds or more will adopt the following performance goals:

- A) Make sure annual leakage for air condition systems does not exceed 15 percent of the system’s total charge.
- B) Ensure the annual rate for refrigeration system does not exceed 35 percent of its total charge.
- C) Calculate allowable monthly leakage rate using the follow formula below:

Max Monthly Leakage rate = $RC \times .15$ for A/C
or $.35$ for reefers

Document all refrigerant addition, removal, and consumption on a refrigerant usage log (sample logs are in the NSTM and MRC). Refrigerant can be lost through either accidental or unintentional release, or from leakage. Determine whether or not refrigerant added to your system compensated for accidental release, or for leakage. Apply the definitions as follows:

Accidental or unintentional release: Refrigerant which is lost through accidental release, purging air and non-condensable, routine maintenance, and as documented on the accidental, or unintentional release form.

Conduct monthly PMS (M-2 and M-4 of reviewing the refrigerant usage log. Make sure all accidental releases are documented. Compare the refrigerant leakage with the allowable monthly leakage rate. If it doesn’t exceed the allowable leakage rate, then PMS is done and no further action is required. If the leakage exceeds the allowable leakage rate, the system has to be leak-tested and all leaks must then be repaired.



Parasense refrigerant monitor common discrepancies

1. No power.
2. Sounder alarm switch is in the off position.
3. System operating under faulty condition blinking green light.



What to look for when standing watch

1. A steady green light on the front panel indicates system is healthy and operating correctly.
2. When a fault is detected, the green light will flash and indicate on main screen the system is faulty.
3. After 18 months of operation, the monitor will report one of the following messages:
 - a. Calibration Check Required,
 - b. Recalibration, or
 - c. Service Required

These faulty messages can only be cleared by replacing the STYX module.

4. If any other messages are observed on the monitor's display screen indicating either a refrigerant leak or any other problem, exercise appropriate personnel protective measures and notify supervisor as required by the following:
 - a. PMS: MIP 4361/028
 - b. Technical Manual: NAVSEA TM S9514-FL-MMA-010 Parasense Leak Monitoring System



DID YOU KNOW?

By GSCS (SW) Esworth Carty

Most main reduction gears (MRGs) have dehumidifiers installed to reduce the humidity levels inside of the gear casing when the oil system is secured. High levels of humidity in the gear casing can lead to rusting of the sump pump walls and the casing. This can lead to pitting of the reduction gears.

Moisture inside the gear casing develops when the internal gear casing temperature is lowered to space ambient temperature after the propulsion system is secured. This difference in temperature will lead to condensation developing on metal surfaces. To prevent this moisture from happening, the dehumidifier is placed on line. As it draws the saturated air from inside the gear casing, the moisture is removed by the desiccant wheel and the dehydrated air is recycled back throughout the gear casing. By maintaining the humidity level in the casing at 30 to 35 percent humidity, dehumidifiers effectively reduce the chance of rust damage to reduction gears and casings. If your MRG dehumidifier doesn't work or if one wasn't installed in your system, then the MRG lube oil system must be operated periodically to prevent moisture buildup in the gear casing. **SC**



GSCS Carty was a main propulsion analyst in the Naval Safety Center's Afloat Safety Directorate.

DECK

Recall of Defective Life Preservers

By LT Edward Alexander

Naval Surface Warfare Center (NSWC) Panama City is recalling inherently buoyant life preservers (NSN 4220-01-485-1135) currently in the supply system.

The cover on the distress marker light and whistle pocket is supposed to have a hole to allow users to see the light when pocket is closed. The defective life preserver has the hole over the whistle instead.

Users should inspect their life preservers to make sure the hole is in the right place. Ships that have defective life preservers should take them out of service



immediately and submit a quality deficiency report (QDR). NSWC Panama City is working with Defense General Supply Center to remove the rest of the life preservers from the supply system.

LT Alexander was a deck analyst in the Naval Safety Center's Afloat Safety Directorate at the time of this writing.

Ready, Aim ...

LT Richard Ray

This is a story about someone learning the hard way that he wasn't as prepared as he thought.

Short on measurement

The archer placed the arrow on the bow and drew the arrow back, preparing for the shot. The arrow fell from the rest. It was pointed at his hand when he released the trigger.

The root cause: The arrow had been cut too short. The result: he required assistance from an emergency-room doctor to let go of the bow. The arrow (and the rest of the arrows in his holster) was too short for the archer's length of pull on the bow.

Lesson on ORM

So anyone who uses the basic principles of operational risk management (ORM) would say ... "Pffft, that's totally preventable!" If ORM was implemented in this situation, one would simply have asked, "What if?" before proceeding with the task.

ORM affords you to have a questioning attitude. What could go wrong? Be deliberate in your planning. Consider your scenario. If you are going shooting, how will you prevent mishaps? Is it possible that someone could be shot? Who could get shot? How do you keep everyone safe, including yourself? What PPE do you need? What steps can you take to prevent damage to equipment and injury to people? Does everyone involved know how to properly use the equipment? In this scenario, a technical specification was not met. Someone could have asked, "What is the required length of the arrow for the given make and model of the bow?" and "What is the size of the operator?"

Time is critical

As soon as the archer realized that something was wrong—and had he managed risks previously—he would have engaged into time critical risk management (TCRM). This component of ORM applies to complex



Ouch!

Photo courtesy of the author.

situations that put people under pressure. The first step of TCRM is to assess the situation. If the archer would have determined that things were falling apart quickly, he probably could have prevented the arrow from being shot into his hand and finger. He could have slowly let the string back down. He then should have moved the trigger finger away from the trigger, then slowly let the bow relax. He would obviously have to get re-measured for proper fitting. TCRM steps are as simple as ABCD. **Assess** the situation, **Balance** resources, **Communicate** to others, **Do** and **Debrief**.

ORM is an effective tool. Use it. OPNAVINST 3500.39C is a very easy read. ORM works 24/7. Not just at work, but at home, off-duty and during recreation. Learn more about ORM and TCRM by contacting your safety officer or visiting the Naval Safety Center's ORM web page at <http://www.public.navy.mil/navsafecen/pages/orm/ORM.aspx>.

Food for thought: What would the extent of injuries be if the arrow had a broad head? **SC**

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LT Ray is the submarine division head in the Naval Safety Center's Afloat Safety Directorate.

VAQ-139 Riders Get Back to Basics

By A01 (AW/SW) Marlon Blackmon

Three motorcycle riders from among the VAQ-139 Cougars decided to get back to basics after attending the August 2012 NAS Whidbey Island Motorcycle Safety Representative (MSR) meeting. CMDCM (AW/SW) Brian D. Wenrich, AM1 (AW) Ramiro Alaffa and AT1 (AW) Joshua N. Cook hosted a Cougars motorcycle rally in September.

News about the rally quickly spread throughout the community and gained the interest of eight Sailors and Marines, bringing the total to 11 riders.

The Cougars' riders explained the basic operations of the motorcycle and then challenged the riders to find discrepancies on each other's bikes. The training resulted in finding a sticky throttle, improperly adjusted clutch lever and a loose chain.

The coaches corrected the discrepancies, and each member performed the following exercises: cone weave, U-turn maneuver, stop check, obstacle swerve and the peanut drill.

This provided the riders important skills that are critical while operating on the highways. After the training exercises, the riders were ready for a safe group ride around the island. Everyone completed a successful ride and returned to the starting point for a debrief.

"I learned that I needed to improve my ability to ride in a group," said AME3(AW) Daeshawn Tidwell from Buffalo, N.Y. "But I had a lot of fun and look forward to more Cougar rider rallies."

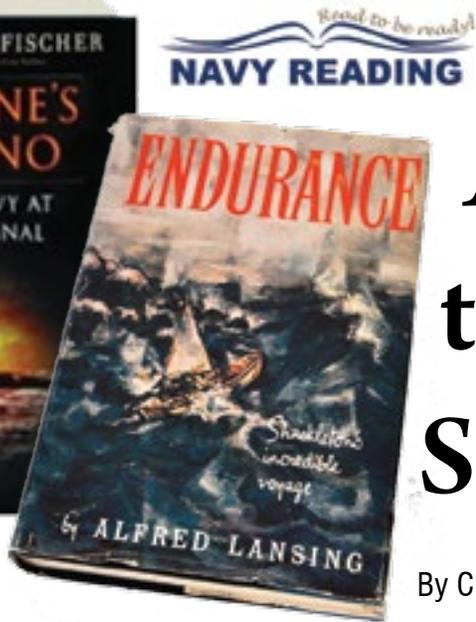
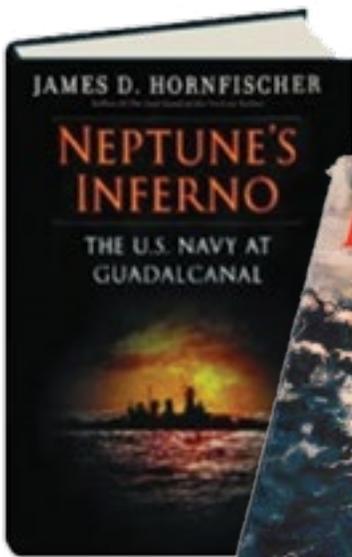
Getting this training helps the riders get smart about their bikes and prepares them for the coming winter months. Whidbey Island is known for its breathtaking Deception Pass and beautiful scenic views.

But the winters in Washington are long and cold. Roadways can be covered with black ice, also called clear ice—a thin coating of glazed ice on a road surface. It is barely visible and can be treacherous if riders and drivers aren't prepared. **SC**

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A01 Blackmon is the VAQ-139 safety petty officer.

The volunteers include (from left): AO2 (AW) Kraig Ekstein, AME3 (AW) Daeshawn Tidwell, PR3 Cory Lynch, AT1 (AW) Joshua N. Cook, ADCS (AW) Bobby Lym, SSGT John F. Kiner, LSSN Huy Q. Ly, and AT1 (AW) Michael C. Riordan. (Photo courtesy of the author)





A Novel Way to Align Your Safety Compass

By CDR Daniel Dolan

Can reading a great book make you a safer operator? It can—there is much to be learned from both great works of fiction and non-fiction. Understanding how others found their way out of sticky situations gives us knowledge to draw upon that extends well beyond the bounds of our own experience. Great books allow us to experience the thinking of great leaders and relive situations in our mind's eye that have no boundaries of time, culture or space. When we are faced with an emergency, we can better align our own safety compass if we draw on the vast well of knowledge placed between our ears when we read great books.

The Chief of Naval Operations Professional Reading Program (CNO-PRP) was recently revised along the lines of Admiral Greenert's three tenets: *Warfighting First, Be Ready* and *Operate Forward*. The program's new motto "Read to be Ready" is a fitting addition to all of those things that we do in the fleet to be at our best when duty calls. We train to be ready, we drill to be ready, and we stay fit to be ready. We can add reading to be ready to those activities that keep us ready to respond when the klaxon rings and the IMC announces, "This is not a drill!"

The CNO-PRP includes great books like James Hornfischer's *Neptune's Inferno*, a gripping account of the five major surface engagements that were fought during the battle for Guadalcanal. This book is a great study in leadership and courage in battle. I have never read a book that so vividly recreated the terror of fighting a night-surface engagement. In *Neptune's Inferno* you will learn of the many bad decisions that had disastrous consequences that left far too many U.S. Navy ships and Sailors beneath the waters of Iron Bottom Sound. You will also learn how our Navy adjusted tactics and procedures, allowing us to eventually win the battle

for the Solomon Islands and put our Navy on a course to win the war in the Pacific.

My own experience as an aircrewman and naval flight officer were greatly enhanced by reading great books. Early in my Navy career, a shipmate loaned me a copy of *The Endurance* by Alfred Lansing. This book details the harrowing story of survival of the British Antarctic crew of the HMS *Endurance*. Every chapter provides vivid examples of innovative problem solving, the challenges of leadership under duress and the importance of teamwork. The story of HMS *Endurance* is detailed in *Shackleton's Way* by M. Morrell and S. Capparell, is one of the 24 recommended books in the current CNO Professional Reading Program. *Shackleton's Way* draws out key lessons of leadership from the experiences of the expedition's leader Sir Ernest Shackleton.

Like every aircrewman and aviator I felt it was important to be prepared for the unlikely event where my crew and I might have to ditch or parachute out of our aircraft. As an aircrew we often drilled and trained but I wanted to be ready to always make the right decision, and those books I loved to read on my spare time gave me great leadership models to follow. Fortunately, I never had to test my survival skills to the degree of Sir Ernest Shackleton and his crew, but in those more routine emergencies that I did have to respond to, I'd like to think I was guided by the reservoir of knowledge I had stored up by making reading part of my readiness plan.

Reading is indeed a novel way to be ready. Pick up a great book and read to be ready! For more on the CNO-PRP, visit <http://navyreading.dodlive.mil/>. 

CDR Dolan, a faculty of the U.S. Naval War College, serves as the Deputy Director of the CNO Professional Reading Program.

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