

DECISIONS

Resources and Information for the Safety Manager

Spring-Summer 2015

THE POWER OF ONE

Risk Management Information system to seamlessly link multiple sources of data

PAGE 6



COVER STORY

- 6 RMI Consolidates Disjointed Reporting Systems**
The fleet will transition to a single point of entry for managing data and sharing lessons learned by spring 2016.
By Evelyn Odango

FEATURES

MOTORCYCLE SAFETY

- 20 12 Days of Riding**
From preparation to limitations, motorcycle rider shares tips for enjoying a catastrophe-free journey. By CDR Jason Bragg

HOME SAFETY

- 23 One Step Down to Injury**
Failed self-supervision and inattention land a home-do-it-yourselfer in pain. By Armando "Mondo" DeGuzman

HEALTH AND FITNESS

- 24 On Death's Doorstep**
Intense workout routine nearly kills this otherwise healthy pilot while deployed. By LT Rob O'Donnell

HOME IMPROVEMENT

- 27 ORM and DIY Tree Cutting**
Knowing the risks and making thorough calculations keep consequences way low for this homeowner.
By LTJG Jim Webb

RECREATION

- 28 Could Have Been Worse**
Self-assessment and PPE buffer a Sailor from serious harm in a bike-ride-gone-bad incident.
By LT Tabitha Kingensmith and AEAN Adam Ballard
- 29 A Lifejacket Buys You Time**
Cold-water drowning can happen in the summertime. Not wearing a flotation gear narrows your survival time.
By Paul Newman

LIFE MATTERS

- 31 Will You Get Skin Cancer?**
Melanoma is a disease afflicting not just the elderly. If you're out in the sun often, know the risks. By Wayne Rudolph

2 EDITOR'S NOTE

4 LEADERSHIP PERSPECTIVE

Factors That Influence Risk Acceptance

As a leader and safety professional, you can positively influence the risk decision making of your Sailors.

By CMDCM (AW/SW) Paul Kingsbury

IN THIS ISSUE

3 NEWS BRIEFS

Mishap Reporting Module Facelift

Special-Issue "Funnies" Magazine

Rider Down

DEPARTMENTS

MOTORCYCLE

- 8 Notable Changes to Rider Training**
New contract affects potential motorcycle riders, California requirements and installation-level courses. By Alicia Harkins
- 10 MSR and Mentorship Boost Awareness**
Programs help riders improve risk-management skills and prevent mishaps. By Stanley Jones

TACTICAL AND GROUND

- 12 Not Enough Use of HFACS**
Expanding scope of data analysis training beyond classroom sessions could improve risk-mitigation strategies.
By Capt. Andrew Gay, USMC
- 14 Getting Schooled**
Investigation course focusing on root-cause analysis plays a big role in improving mishap rates.
By Capt. Ryan Carlson, USMC

WEAPONS

- 16 Top 5 Explosives Mishap Concerns**
Training and awareness are crucial to preventing ordnance-related injuries and property damage. By Boyzie Hayes

ORM PLAYBOOK

- 18 AED: Is It Part of Your Survival Kit?**
The AED has become an important factor in the chain of survival. Do you know how to get to this life-saving device when needed? By CAPT Bob Frick, MC, USN (FS)

COVER PHOTO ILLUSTRATION: *4-designer.com*

THIS PAGE: Choose a sunscreen with a sun protection factor (SPF) of at least 15. Remember, clouds do not block UV rays, so make sure you use sunscreen even if it is cloudy outside. *Photo: safety.lovetoknow.com*

Managing a Headache

This spring, I discovered that I am allergic to just about anything that contains synthetic scents. Well, that is everything I encounter everyday!

One of the major reactions I have when exposed to excessive fragrance and strong cleaning agents is a massive migraine headache. Before my neurologist and I worked on establishing the pattern of culprits, I suffered.

In examining my symptoms, I almost felt like the character in the comedy, "Bubble Boy." The story was about a boy named Jimmy Livingston who was born without an immune system. I laughed so hard when I saw that movie and thought "poor Jimmy."

Well, my condition is not as bad as Jimmy's but I sometimes feel I need to be protected from the world. Of course, I can't do this quest for protection by myself so I constantly enlist the help of doctors, family, friends, and supervisors.

Short of becoming the "Bubble Girl," I implement some controls on a daily basis to make my day bearable. Yep, I "ORM it." I know ... you must be thinking ORM and a headache?

You must have heard about the five steps of ORM by now. I'll abbreviate them as identify, assess, decide, implement, and supervise.

I know that if I don't manage my exposure to risks, several things can happen: I will get sick to my stomach when in a room next to someone wearing strong cologne or perfume. I will start feeling the early symptoms of a migraine headache (sensitivity to food, light, noise and ... drum roll ... scents!). My head will feel like it's going to explode and I won't be able to concentrate (sometimes I get cranky, too). Then I will need to take a few

days off from work because I won't be able to tolerate anything or anyone. If I don't implement stringent controls over this condition, it would eventually have a domino effect on my work and performance.

Since applying the five-step process, my headaches have not been as frequent, and when I have a spell, it's not as bad as in the past. Since I get these headaches mostly when I'm at work, here's a breakdown of what I do to minimize the risk:

Identify the areas of worst exposure: restrooms (yes, we have air fresheners in there) and small-space meeting rooms.

Assess the probability and severity of exposure and consider the consequences. Notifying supervisors about the need to leave the room or work in isolation if necessary.

Make risk decisions based on controls that are present and acceptable (oscillating fan, windows, exit access). Do I proceed and suffer through the day or excuse myself?

Implement controls by using a mask (disposable kind), telling supervisor of affliction, avoiding sources of exposure when possible.

Supervise condition and review effectiveness of controls with continued monitoring, exploring need for further assessment, and capturing lessons learned and best practices from previous episodes.

It's not a perfect science, but having a risk-management plan helps me get through a day without pain. Like myself and our featured writers in this issue, I hope that when you encounter risk, using ORM will literally save the day.

Have a good summer!

LETTERS TO THE EDITOR



Decisions magazine invites letters from readers. Send your letters via e-mail to evelyn.odango@navy.mil; fax to (757) 444-4791; or mail to ATTN: Decisions Editor, 375 A St., Norfolk, VA 23511. Please include your contact information. We reserve the right to edit letters.



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public.navy.mil/comnavsafecen

WEB UPDATES AND NOTICES

FY14 Annual Mishap Overview

The Naval Safety Center has published its analysis of Navy and Marine Corps mishaps. This report focuses on areas of elevated risk that require increased or renewed prevention efforts. The 60-page report is available as a downloadable PDF.

► /Documents/media/FY14_Annual_Report.pdf

Sleep/Fatigue Videos

This latest series of videos demonstrates how lack of sleep and fatigue reduce performance and increase the risk of mishaps. Collaborators include OPNAV, COMNAVSURFLANT, Naval Personnel Command, the Naval Postgraduate School.

► </Pages/video/sleep-fatigue.aspx>

Safe Tips for Work and Off Duty

Download quick and easy summaries with topics ranging from automotive, driving/riding/traffic, electrical, fire, health and personal safety, summer and water activities, and much more. Share these PDFs as printed or digital training resource for your next safety stand-down.

► </Pages/media/index-safetips.aspx>

Seasonal Resources

To help you prepare for your next safety briefing or standdown, we have stocked the spring/summer safety resource page with downloadable PDFs and presentations.

► </Pages/media/seasonal/summer.aspx>

Mishap Reporting Module Facelift

The Naval Safety Center (NAVSAFECEN) has revised the module used for reporting shore ground mishaps. In its effort to update all mishap modules and phase out legacy WESS entirely, NAVSAFECEN began implementing these changes in 2014.

The change also supports the ensuing transition to Risk Management Information (RMI) system, which is now in progress. Personnel who use the revised module will notice significant improvements. When filling out reports, users will experience faster navigation between pages. Reports are also easier to fill out with separate areas for event description, causal factor narratives, and recommendations.

The DoD human factors and analysis classification system, or HFACS, has been incorporated into the analysis of causal factors. This will provide more insight for analyzing, tracking and trending causality.

Special-Issue 'Funnies' Magazine

This first-ever compilation features highlights from the usual range of risk-mismanagement opportunities, involving drunks, balconies, snakes, lawn mowers, cars becoming alarm clocks, and the popular "Rocket Scientist of the Week."



GOT NEWS? SHARE IT!

Let us help you spread the word about your safety-related events and tidbits of information. Deadline for the 2015 fall-winter issue of *Decisions* is July 31.

If reporting material damage, a property equipment identification code will provide a consistent and reliable method of tracking specific property involved in a mishap.

WESS applications that are currently being used for reporting other mishaps remain as they are. The motor vehicle reporting system (MVRS) is used for reporting government and private motor vehicle mishaps. The WESS aviation mishap and hazard reporting system (WAMHRS) is used for aviation mishaps. All other mishaps, including dive mishaps, are reported using legacy WESS. Dive mishaps will be added to the shore ground module in the future.

For more information, contact the NAVSAFECEN WESS help desk at (757) 444-3520, ext. 7048 (DSN 564), Monday – Friday, 8 a.m. to 4:30 p.m. (EST). Email for support to nrfk_safe_wesshelp@navy.mil.



Contact safe-mediafdbk@navy.mil to request a copy.

'Rider Down'

Since December 2014, the Naval Safety Center's shore safety team has been sharing actual mishap information with the motorcycle safety representatives (MSRs) listed in ESAMS. In an effort to stimulate discussion and bring awareness to motorcycle accidents and the frequency that two-wheeled mishaps occur, the MSRs receive a weekly e-mail report every Friday.

With a subject line, "Rider Down," the e-mail contains factual information pulled from the weekly accident reports the Naval Safety Center receives through naval message and WESS. Individual PII and command information are redacted but the details of each accident – type of bike and injuries – are shared. By sharing some of these details, riders can identify how the situations went from safe to unsafe and how they might have been prevented.

Rider Down is intended to get the riding community to openly talk about accidents. It promotes discussions on how each rider would have handled the situation and about the unnecessary risks riders take every day. The shore safety team also provides general information, and guidance for MSRs and their riders to consider for future safety discussions and presentations.





Factors that Influence Risk Acceptance

By CMDRCM (AW/SW) Paul Kingsbury
Command Master Chief, Naval Safety Center

Far too often safety gets a bad rap. The “products” of safety are narrowly seen in terms of policies that slow down work or require unwieldy or unattractive PPE. Who really digs wearing that glow-belt during PT or wearing a hard hat and safety glasses in the shipyard? These perceptions can distract us from truly thinking about risk-taking behaviors that we should understand and strive to influence.

Consider that in the course of a typical workday, our people literally make millions of risk decisions. From the time we wake up, we are engaged in activities that involve hazards and risks. The risk-decision-making process involved only takes a matter of seconds but can result in outcomes that have significant financial, operational, and emotional cost for the individual and organization. Safety leaders can positively shape the decisions their people make. Leaders must understand that although their people may identify hazards and understand the outcomes, a variety of factors can influence them to take more risk than they should.

Before we explore the factors that influence risk acceptance, we have to understand the fundamental process of making risk decisions. Figure 1 outlines the process that occurs and how the outcome of each step can lead to a safe or unsafe behavior.

We’ve done a good job at identifying hazards, labeling them and training on them. However, we must also identify the new hazards presented by new missions and evolving technologies. We’re OK at ensuring our people understand the outcomes that can result from failure to implement hazard controls, but we must continue to educate in order to pass on the corporate memory of mishaps. The area we fail to effectively understand and influence is how individuals make the decision to acceptance or reject risk once the hazards are known and understood.

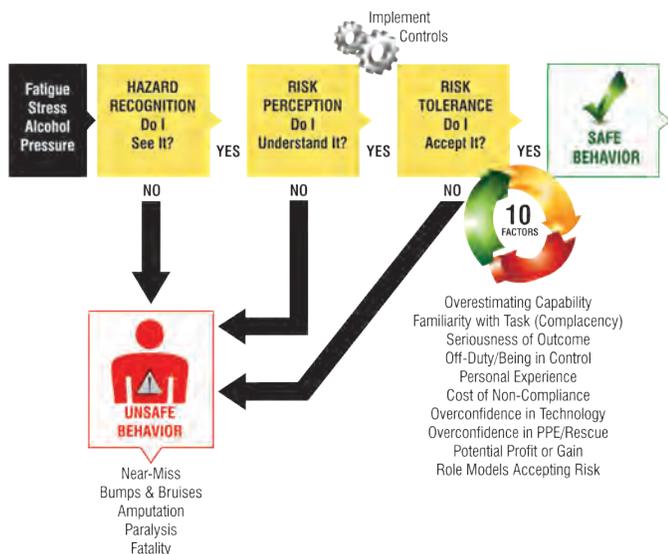
What the model does not capture are the factors that can skew the decision-making process from the start, including stress, fatigue, and alcohol use. These can all affect our ability to identify hazards and understand outcomes; they influence how much risk we accept. We’ve constructed an entire risk-management model around this decision-making process. Supervision is the important last step of our five-step deliberate risk management process for a reason: it’s the element that is key to identifying weaknesses in the individual decision-making process and provides the opportunity to stop at-risk behavior before it occurs.

We often hear the mantra of “management by walking around,” but do we consider it in the context of shaping the risk decision-making process? For example, we supervise maintenance evolutions to identify where our people are taking too much risk by not following procedures, not using PPE or falling victim to a lack of experience. We also supervise lower level leaders to ensure they are not modeling poor behaviors and are helping look for these 10 factors as well. (See next page.)

Understanding these 10 factors reinforces the value of knowing our people so we can identify behavioral changes that occur when they are distracted, tired or inebriated. In turn, we make better management decisions and don’t put them in situations where they are unable to make effective risk decisions.

Sometimes the most important concepts to understand about leadership are the ones we take for granted. Taking time to understand how our people think about risk and the ways that you can influence that decision-making process will go a long way to making you a more effective leader while improving organizational performance. **D**

Fig. 1: The risk-decision-making process





The 10 Factors of Risk Tolerance

As a safety professional, you can positively shape the risk decision making of your Sailors. Although they may identify hazards and understand the outcome, a variety of factors may still influence them to accept more risk than they should. Let's take a look at what can influence risk tolerance and what safety leaders can do to shape those behaviors.

Adapted from "Strategies for Understanding and Addressing Risk Tolerance," Exxon Mobil, 2011. *U.S. Navy photos*



1 Overestimating capability (younger people) and experience (role models). Reflect on your role as a mentor, admit that despite your experience the exposure is still there. Acknowledge skill but reinforce policies and procedures.



2 Familiarity resulting in complacency. Encourage Sailors to focus on the task like it's the first time they have done it. How would I teach this to a new person? Stop and think. Draw from knowledge, skill and techniques.



3 Underestimating seriousness of the outcome. A hazard could involve a "pinch point" but the outcome actually results in amputation or crushing. Hazard identification should better define the outcome. Get people to ask, "How bad could it really be?" Apply the ABCD process. Teach Sailors worst-case scenarios.



4 Voluntary actions and being in control. Key factor in off-duty risk (people are 28 times more likely to be hurt off the job). Overconfidence and false sense of control may lead to underestimating risks. Integrate "stop and think" moments into personal activities. Use checklists to improve situational awareness.



5 Personal experience with an outcome. If you've seen a mishap or a near-miss that ended badly, you will be less tolerant of the risk. However, as incident rates improve, fewer leaders will have had these experiences resulting in scepticism. Know what incidents have occurred and point out the consequences. Tell sea stories.



6 Cost of non-compliance. Identify the cost of non-compliance and increase where necessary. As the actual or perceived cost increases, the risk tolerance decreases. Remove barriers and reward those who gauge risks and mitigate the factors that increase the potential for error.



7 Confidence in equipment. Overconfidence in technology increases risk tolerance. Ensure technical training captures the limits of equipment and engineering. Promote the ABCD process and on-the-spot risk assessment. Make sure Sailors know how to gauge risk. Teach them to ask, "What if it fails?"



8 Confidence in PPE and rescue. Relying solely on PPE and rescue efforts increases risk tolerance. Emphasize the limits of protection and rescue measures. Ensure Sailors understand these as "last line of defense" or "not to be relied upon" controls. Provide appropriate ORM and TCRM training.



9 Potential profit or gain. Perceived or actual (fiscal, emotional, physical) gains increase or decrease risk tolerance. Remove rewards for risk taking. Eliminate barriers to doing it the right way. Bring these concepts into leadership discussions to increase awareness.



10 Role models accepting risk. Leaders' actions influence the mindset, behavior and decision-making abilities of their workers. Identify and address risk-taking leadership (in the appropriate situations). Recognize perceived pressure that could lead to erosion of standards and address immediately.

RMI Consolidates Disjointed Reporting Systems

Incident reporting solution coming to the fleet spring 2016

By Evelyn Odango
Naval Safety Center

The Navy enterprise's newest mishap-prevention strategy, risk management information (RMI), is paving the way for an integrated capability of reporting, accessing, and sharing mishap data. RMI will help Navy and Marine Corps command leaders focus on preventing injuries, fatalities, illnesses, and property loss.

All Department of the Navy personnel (military and civilians) are required by policy to report injury and mishaps through the web-enabled safety system, or WESS, the DON's incident-reporting system. This process is complicated by the fact that a number of other incident-reporting systems have emerged over the years. Nonetheless, there is still inadequate reporting of incidents, resulting in a significant number of preventable repeat occurrences across the enterprise.

These multiple systems result in data entries (for multiple systems) that differ in functionality and design. Information overlaps, becomes

redundant and proves ineffective for analyzing mishap trends.

To improve the quality and accessibility of risk management information, the Assistant Secretary of the Navy (Energy, Installations and Environment) has endorsed the RMI initiative to integrate the functionality of the existing legacy systems into a single program. Governed by the DON's executive level, the RMI Decision Board is chaired by the Naval Safety Center.

Rear Admiral Christopher J. Murray, Commander, Naval Safety Center, believes RMI will remove barriers to reporting and will dramatically improve safety across the enterprise.

While the number one goal is to reduce the number of preventable mishaps, injuries and illnesses through rapid sharing of lessons learned, RDML Murray is confident that RMI will accommodate ease of reporting.

"With RMI replacing WESS, ESAMS and other fragmented systems, ease of reporting is key to getting people on the computer. Collecting data is an IT-driven environment and we must leverage technology, best practices, new data, as well as old data. This improvement in reporting will make us better predictors of trends."

Studies conducted by the DoD

Inspector General and the Naval Audit Service concluded that some units report less than 20 percent of mishaps below the level of Class B. Class C and D mishaps occur far more frequently than Class A and B

The largest-of-its-kind effort within the DoD, the RMI implementation phase has already begun. Technical experts are now designing the user interfaces for Navy and Marine Corps communities to ensure a smooth transition to streamlined incident reporting.

mishaps with similar causal factors. This under-reporting has prevented the Navy from accurately collecting and analyzing mishap trends.

During the initial phase of transition, RDML Murray wants to demonstrate the improvements RMI will bring: information sharing, better data collection, streamlined reporting processes, and advanced analysis capability. This advancement in safety management will deliver key information necessary to focus on total loss prevention, control and data analysis.

"This is certainly a good transition to any good safety management system," said RDML Murray. "But we are just scratching the surface. If we can show early on how easy it is to input and retrieve data, people will see that RMI has a lot more work equity than WESS or ESAMS."

The evolution to RMI will not only save costs but will also increase employee productivity and warfighter readiness. RDML Murray stresses the long-term value of keying in hazard reports and Class C and D mishaps, as they will help examine possible leading indicators to more severe mishaps.

RDML Murray expects that when RMI rolls out, people will ask more questions. Dialogue across communities will be extremely important. "It's powerful when people feel more tied to their community, like they're in the system," RDML Murray added.

[Naval Safety Center] Command Information Officer Joe McMahon is the lead for the implementation plan. McMahon, who has been working very closely with key players within DON, cites several reasons for the change: data consistency, process improvement, and cost savings. Perhaps the most significant motivation for embracing RMI is the ability to rapidly identify issues and conduct trend analyses.

McMahon believes that RMI will provide a critical business service to warfighters and the safety community. "RMI will enable command leaders to quickly influence habits, processes and procedures vital to preventing injuries, illnesses, and property loss," he said.

In the months ahead, affected organizations will start seeing

changes in terms of training and requirements.

"The application itself should provide intuitive user interfaces," said McMahon. "Safety managers will quickly learn and adapt to managing command information and identifying trends and causal factors."

By the third quarter of FY16, commands will begin the transition process. Echelon II organizations are assisting in the priority order for migrating to RMI. Once streamlined incident reporting is established, RMI will continue to deliver capability improvements for analysis and dissemination as well as safety-program management.

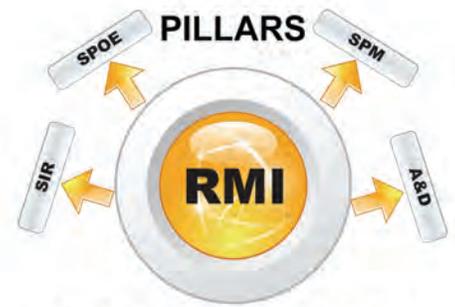
"By FY18, RMI will serve as the single point of entry for all DON safety management," said McMahon.

By consolidating the capabilities of current disjointed safety databases and systems, RMI is expected to significantly reduce the number of fatalities and save the Navy hundreds of millions of dollars lost each year because of mishaps.

Will you be affected by the change? If you're one of the thousands of Navy, Marine Corps and civilian stakeholders in the following organizations, expect a significant impact:

U.S. Fleet Forces and Pacific Fleet Commands, TYCOMs, Naval Air Systems Command, Naval Sea Systems Command, Navy Installations Command; and all Navy, Marine Corps and OSH communities that report incidents, injuries and occupational illnesses. The Naval Safety Center will continue to provide updates and information via the web and magazines.

Ms. Odango is the editor of Decisions and Sea Compass magazines.



The Power of One

DON calls for modernization of the incident reporting process by integrating functionality to provide a single program of record for safety and occupational readiness.

RMI's Four Pillars (Capability Areas)

- SIR Streamlined Incident Reporting
- SPOE Single Point of Entry
- SPM Safety Program Management
- A&D Analysis & Dissemination

Current Environment

- Under-reporting, outdated system(s)
- Redundant reporting systems
- Connectivity challenges
- Stove-piped data systems
- Non-networked systems
- Inability to retrieve data
- Inability to aggregate data
- Lack of awareness of data available
- Safety management inconsistent
- Lack of safety management systems (SMS)

RMI End State

- Full reporting, streamlined system
- Enterprise reporting system
- Solutions within available bandwidth
- Comprehensive data environment
- Single networked system
- Full data access
- Data analytics
- Enterprise-wide trending analysis
- Data transparency
- Enterprise "best practice" sharing and use
- 100% of commands have SMS





Notable Changes to Rider Training

By Alicia Harkins
Navy Installations Command

If you're a rider or a trainer, you may already have heard of changes to the Navy motorcycle rider safety training and the American Automobile Association Driver Improvement Program (AAA/DIP). Commander, Navy Installations Command (CNIC) has implemented a new training contract that affects potential riders, California state requirements, and installation-level training and driver improvement courses.

Class-Attendance Minimums and Cancellations

1. Six-student class minimum. Previously, motorcycle class offerings had a maximum of 12 students for the Basic Rider Course (BRC) and six students for the other classes. The new class-size maximum is now six students for all classes. Two BRC classes can be run simultaneously, since most of the motorcycle ranges can accommodate 12 riders.

When potential students read the class schedule posted online or on ESAMS, they might see two classes listed for the same day, time and location to get the maximum of 12. Students are to register for only one

of the classes. At a minimum, one of the two classes will be held.

2. No cancellation due to "no shows." Students who arrive for class will receive the training regardless of the number of students enrolled in that class.

3. Class-cancellation procedure. If less than four students are enrolled in a class scheduled for that week, the class instructor will cancel and reschedule that class. Cancelling the class ahead of time will prevent unnecessary travel and lost work time for Sailors.

The Navy traffic safety contractor, Information Sciences Consulting, Inc. (ISCI), will provide training motorcycles as required for the BRC.

The contractor may use contractor-owned motorcycles or use a third-party vendor to provide motorcycles. At some smaller or remote locations, ISCI may subcontract all motorcycle training to a third-party vendor, such as a community college or a Total Control school. The government will no longer provide government-owned motorcycles (these are being transferred to the Defense Reutilization and Marketing Office).

California's Motorcycle Rider Requirements

California changed its state motorcycle-license training requirement from the Motorcycle Safety

Foundation (MSF) courses to the Total Control motorcycle training courses. As of Jan. 1, 2015, a motorcycle rider in California who wants to get his or her first motorcycle rider license (or a new license) must take classes from Total Control; MSF classes are no longer accepted by the California Department of Motor Vehicles. ISCI is providing MSF classes only nationwide except in California where Total Control classes will be offered.

Navy policy currently requires MSF courses, but allows Total Control courses as an equivalent option when approved by the Naval Safety Center.

The Navy is required to provide motorcycle rider training to Sailors per the Navy Traffic Safety Program instruction (OPNAVINST 5100.12J). The Navy is not required to provide motorcycle rider licenses or to provide motorcycle rider training to meet state requirements. This means that in California, and possibly other states, Sailors might have to fulfill two sets of requirements (Navy and state) to get a new/first motorcycle license. Sailors will have to take additional state-mandated training on their own and at their own cost.

Motorcycle riders who already have their motorcycle licenses are not affected by the change in the California law (unless California has a recertification requirement) because they only have to meet the Navy's training requirement.

in paragraph six of OPNAVINST 5100.12J. CNIC region and host installation commanders are also resourced to provide traffic safety program services to tenant commands and other Navy commands within the region at the installation level.

Currently, CNIC HQ provides motorcycle training via a centrally managed Navy contract. The current contract targets motorcycle safety training and not AAA/DIP training. A few Alive @ 25 driver-improvement classes were included in the Navy contract, but they are not the primary focus of the contract. The Alive @ 25 class provides driver improvement information pertinent to Sailors 25 years old and under. If the Alive @ 25 training does not meet the needs of the individual Sailor, then it is up to the Sailor's host installation command to provide the resources for the Sailor to obtain the eight-hour AAA/DIP training.

As stated in the Navy Traffic Safety Program instruction, CNIC regional and host installation commanders shall coordinate, manage, and provide resources for an effective overall traffic safety program. Where CNIC resources are limited at the installation command level, then region commanders can submit a resource allocation management issue to request additional funding from CNIC headquarters.

CNIC provides general traffic safety services Navy-wide for all Navy military and Department of

the Navy (DON) civilian personnel. These services are specifically directed for government motor vehicle operators, drivers operating private motor vehicles on a Navy installation, and operators who have been determined to be at fault in a traffic mishap while on a Navy installation. OPNAV policy does not specify that CNIC provide non-motorcycle training as part of the Navy motorcycle contract. OPNAV policy also does not specify that CNIC provide individual training as a result of a moving violation received off base. Individuals who receive a ticket or are in an accident off base are responsible for correcting any violation themselves.

The Navy does have a resource for DIP training through the Naval Safety Center. Mike Borkowski, a traffic safety specialist, is a certified master trainer for AAA/DIP and can train employees to become AAA/DIP instructors.

Installation commanding officers can use this resource by designating at least one person to be the AAA/DIP instructor for the installation. The designated person can be a member of the command training team, force protection, fleet and family readiness, or from any department within the organization. **D**

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Ms. Harkins works for CNIC as a safety and occupational health program manager. She is also the traffic safety program contracting officer representative.

Clarification of Traffic and Motorcycle Rider Safety Training Management

CNIC's responsibility to provide traffic safety training is shared throughout the chain of command. Specific responsibilities are stated

RESOURCES

OPNAVINST 5100.12J: "Navy Traffic Safety Program"

Navy Motorcycle Rider: www.navymotorcyclerider.com

ESAMS: https://esams.cnic.navy.mil/esams_gen_2/loginesams.aspx

MSR and Mentorship Boost Awareness

Motorcycle safety representatives (MSRs) and mentorship programs help commands improve hazard awareness and increase command commitment, thus helping riders boost confidence, improve skills, and prevent mishaps.

By Stanley Jones
Naval Safety Center

In 2009, the Navy saw a drop in motorcycle fatality rates, but the rates have been steadily climbing since. From fiscal years 2012 through 2014, the Navy lost 57 Sailors. Naval Safety Center data show that the average experience of these riders was less than three years. Inexperience, lack of training, poor situational awareness, and inaccurate decisions contributed to these fatalities. These deaths have had significant impact on Navy and Marine Corps readiness.

The Navy Traffic Safety Program (OPNAVINST 5100.12J) requires a command to have an MSR and a motorcycle mentorship program. Although designated as a collateral duty, the MSR position is critical to the success of a command's motorcycle safety program.

The MSR's Role

The MSR has a wide range of responsibilities, including administrator, record keeper, liaison, and program manager. Using the motorcycle module in the Enterprise Safety Applications Management System (ESAMS), the MSR maintains the training records and list of command riders. The MSR works very closely with the commanding officer and the safety officer to ensure that all riders acquire and maintain the required training for the type of motorcycle they ride.

Managing the command motorcycle mentorship program is the



Chief Culinary Specialist Luis Siguenza, assigned to the Los Angeles-class attack submarine USS *San Francisco* (SSN-711), participates in a cornering exercise during the Military Sport Bike Rider Course at Naval Air Station North Island. The one-day course provides specialized training tailored to military sport bike riders and focuses on the critical skill sets and decision making incumbent with riding high-powered sport motorcycles. Photo by MC3 Bradley J. Gee

MSR's biggest responsibility. In addition to scheduling mentorship meetings and non-formal motorcycle training, the MSR also identifies motorcycle riders and assigns mentors as needed.

Motorcycle Mentorship Program

The program helps riders maintain hazard awareness and avoid mishaps through continuing education and skills development. This program provides a means for riders to enhance their knowledge and skills through formal and informal instruction, mentorship and practical application exercises, and events. Each motorcycle rider is required to actively participate and support the objectives of the Navy's motorcycle safety program. Command involvement has great influence on the success of this program. The CO, safety officer, and MSR must ensure that all personnel can get the assistance and

training they need to be successful and safe as riders.

Get your experienced riders with your junior riders, whether it's during group outings or one-on-one rides. If you don't have enough riders in your command — or even if you do — partner with other commands so that you can provide the most experienced riders as mentors.

An example of a command directive delineating the process and responsibilities of the above may be found on the Naval Safety Center's website motorcycle page. Browse an extensive collection of downloadable tools and guidelines, such as an 11-chapter mentorship guide and mentorship program examples. For more information you can contact the Naval Safety Center Traffic Division at SAFE_Code42@navy.mil. **D**

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Mr. Jones is a traffic program analyst with the shore safety team.

WHAT YOU NEED FOR A MOTORCYCLE MENTORSHIP PROGRAM

- ▶ Complete list of riders and their experience level.
- ▶ Exercises for the mentor to work with riders that target their particular needs.
- ▶ Risk-assessment worksheet to provide information and feedback for the rider and the mentor on unnecessary risks that a rider may be assuming.
- ▶ A formalized checklist for group rides approved by the commanding officer that provides information on who's going, what's required, where rides will take place, timeline, safety brief, mentors (a.k.a., ride captains), and route.
- ▶ Get your "plan-to-own" riders involved early. Have them attend the motorcycle meetings where you discuss techniques for turns, riding in traffic, what to do at intersections, and other safe practices. Involving new riders will help them adopt the safe mindset early. This will also allow for discussing the type and size of motorcycle they will purchase. Many new riders are not ready for the motorcycles they buy (for example, a Ninja 259 vice a 1000RR sport bike). Ensure there are no artificial barriers to a member who wants to train and ride (for example, not allowed training until qualifications are completed). Far too many times this can drive a new rider "underground," and the command will not know about them until something happens.
- ▶ Ensure operational risk management is incorporated into the program. Make ORM part of the overall command picture.

RESOURCES

The Department of Motor Vehicles and state and local police are good resources to provide speakers for standdowns and safety fairs. Contact them for information related to that area (e.g., high-mishap areas, dangerous areas). Below is a list of training and information resources including presentations, statistics, campaigns, planners, programs, and much more.

Naval Safety Center

- **Motorcycle** – http://www.public.navy.mil/comnavsafecen/pages/ashore/motor_vehicle/motorcycle.aspx
- **YouTube Videos** – www.youtube.com/navalsafetycenter

Military Safety Resources

- **Base/Installation Safety Office (Contacts for regional base safety)** – <http://www.cnic.navy.mil/>
- **Marine Corps** – <http://www.marines.mil/>
- **US Army Combat Readiness Center** – <https://safety.army.mil/>
- **USAF Safety Center** – <http://www.afsc.af.mil/>
- **US Coast Guard** – <http://www.uscg.mil/>
- **Navy & Marine Corps Public Health Center** – <http://www.med.navy.mil/sites/nmcphc/health-promotion/Pages/health-promotion-toolbox.aspx>
- **Navy Knowledge Online "Drive for Life" (Driver Improvement Course)** – <https://www.nko.navy.mil/portal/home/>
- **Keep What You've Earned** – http://www.public.navy.mil/bupers-npc/support/21st_Century_Sailor/nadap/campaign_events/drinkresponsibly/Pages/default.aspx
- **NADAP E-Grams** – http://www.public.navy.mil/bupers-npc/support/21st_Century_Sailor/nadap/policy/Pages/NADAPE-Gram.aspx

National Safety Agencies

- **National Highway Transportation Safety Administration** – <http://www.nhtsa.dot.gov>
- **U.S. Department of Transportation (Distracted Driving)** – <http://www.distracted.gov/>
- **National Institute on Alcohol Abuse and Alcoholism** – <http://www.niaaa.nih.gov/>

▶ GET MORE RESOURCES ONLINE

<http://www.public.navy.mil/comnavsafecen/pages/media/magazines/decisions/index.aspx>

DATA ANALYSIS TOOL

Not Enough Use of HFACS

By Capt. Andrew Gay, USMC
Naval Safety Center

We're improving our abilities to analyze mishaps, but we can do better. Our safety experts have been analyzing mishaps for years and have concluded that human error is the largest single hazard in both civilian and military environments, acknowledged as a causal factor in 80 to 90 percent of all mishaps.

To mitigate this risk, you must understand what causes human errors and how to detect trends across an organization. If you have a piece of machinery that has a systematic failure, you will have quantifiable data with which to isolate the cause of the failure and

fix the problem. Before 2005, no such system existed for conducting trend analysis on human components.

In 2005, the Department of Defense Human Factors Analysis and Classification System (DoD HFACS) became a required process for all mishap investigations. The system has helped safety professionals analyze trends and produce data with which to identify trends. However, the system is still significantly underused within the Navy and Marine Corps.

Training for DoD HFACS is not widely implemented in the DON and is currently limited to safety and aviation personnel. Understanding

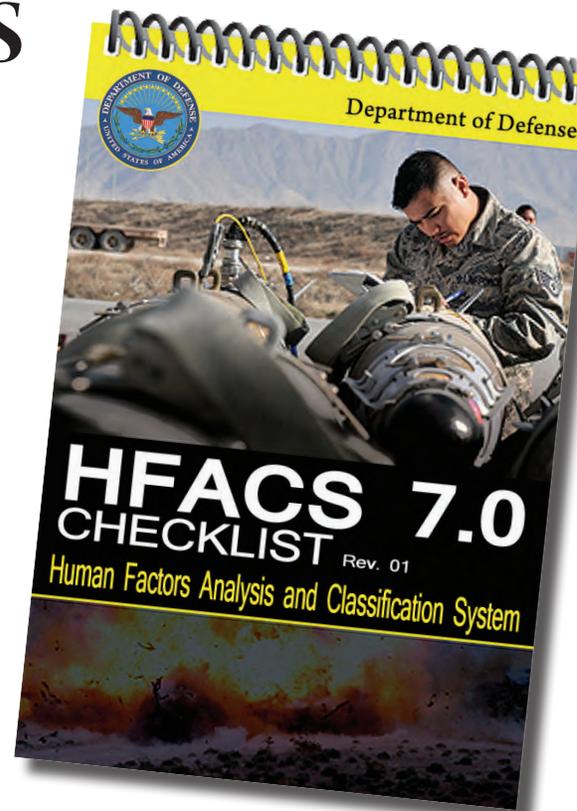


Image courtesy of QuickSeries Publishing

DoD HFACS: A Mishap Investigation and Data Analysis Tool

Through a series of studies published from 1997 to 2003, Dr. Scott Shappell and Dr. Douglas Wiegmann developed the Human Factors Analysis and Classification System, which created the process to quantify elements of human errors. The HFACS organization that they developed is built heavily upon the 1990 "Swiss cheese" model of human error proposed by James Reason.

Reason specified four levels of human error that resemble four slices of Swiss cheese:

- Unsafe acts of operators
- Preconditions for unsafe acts
- Unsafe supervision
- Organizational influences

Each of these levels has either active or latent failures that allow for holes in the defenses. When holes on all four levels align, mishaps result. Reason's explanation revolutionized accident causation theories by taking the focus off of the user and forcing the observer to analyze and fix the failures on multiple levels.

Shappell and Wiegmann retained Reason's four tiers and titles for each slice of cheese, but provided a much more in-depth description of what constitutes a failure at each level. Within the first tier (unsafe acts), Shappell and Wiegmann break it down by errors and violations and then further subdivide those categories until you are left with single elements of failure such as "omitted checklist item" or "violated training rules." These single elements are associated with a nanocode that can be easily used to detect trends across a series a mishaps. Trending errors identify where focus needs to be placed in order to prevent future mishaps or plug up the holes.

When DoD adopted their own variant of the HFACS in 2005, they also organized a human-factors working group, which meets on a semiannual basis to discuss revisions to the organization of the DoD HFACS. In the spring of 2014, the group published version 7.0 of the DoD HFACS. This most recent version contains 109 nanocodes that cover possible failures in all four tiers of the system.

Read more about the study: https://www.nifc.gov/fireInfo/fireInfo_documents/humanfactors_classAnly.pdf

human factors is not a skill set that can be effectively learned through computer-based training. Without consistent training and proper immersion, safety professionals are missing out on the full potential of the system. There are a number of reasons why DoD HFACS should be taught to a wider audience, but its most instrumental element is that the system forces you to go through the analytical process, which can be used in any number of environments.

As an assistant instructor for the Marine Corps ground mishap investigation course, I've seen first-hand that the students who gain the most understanding of this system are the ones who engage in the classroom discussions and debates. I also serve as an advisor to several safety investigation boards. Oftentimes, board members who get a dose of DoD HFACS training come away with an appreciation of the process after recognizing the value of how it forces you to look beyond "user error."

During a session of the mishap investigation course, a gunnery sergeant was adamant that the cause of every mishap scenario was user error by the mishap victim. As the course continued to the section on HFACS, this student began to be less vocal about his opinions. In the end, he shared that better understanding of the system had changed his outlook on mentorship and counseling.

HFACS had helped him look at the latent failures beyond the unsafe act and made him question his instincts to find the Marine or Sailor at fault. He began thinking about the effectiveness of supervision, publications, and other potential areas. The most effective time to use the DoD HFACS in a preventive

manner is during deliberate operational risk management (ORM). Deliberate ORM helps identify all potential hazards during an operation and develop measures of control to mitigate the hazard down to an acceptable risk level.

Combining HFACS with ORM ensures that you are considering all potential hazards. Some ORM worksheets are templated products from previous operations, so they have been vetted and cover most environmental factors. However, I have rarely seen one that discusses human factors other than fatigue or lack of nutrition contributing to a heat or cold injury.

An HFACS-based ORM would include potential hazards such as "negative habit transfer" if the ORM is for a training exercise with a newer version of equipment, or "pressing" to mitigate potential hazards arising from a high op-tempo.

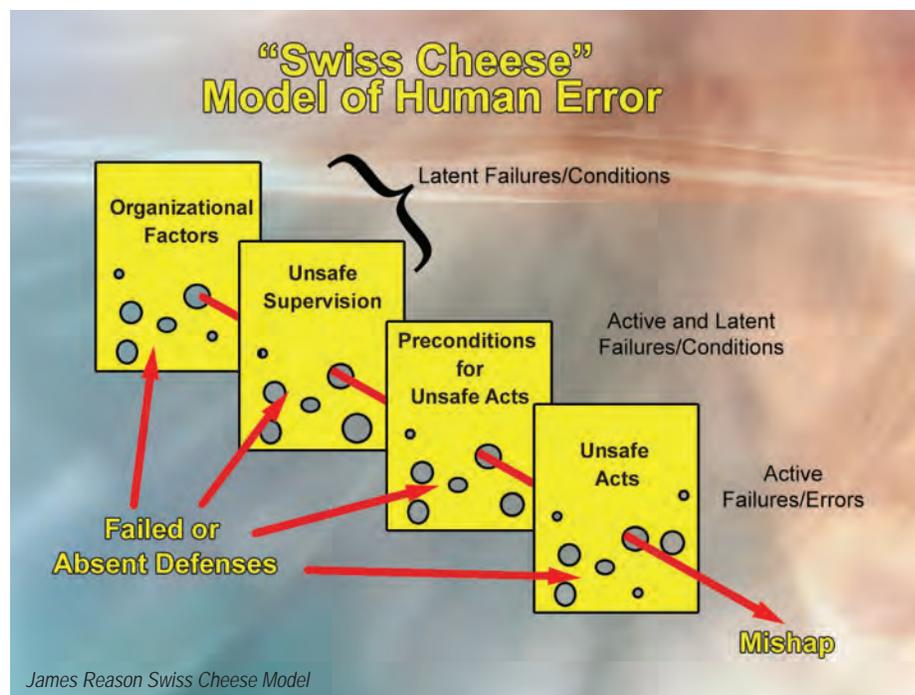
The applicability of HFACS to multiple communities is one of its major strengths, but also is the most

Combining HFACS with ORM ensures that you are considering all potential hazards.

underused aspect of the system. While the use of DoD HFACS has improved the safety community's ability to conduct thorough analyses and identify trends among the human element of mishaps, there are other processes that could be improved upon by adapting the same system.

Broadening the scope of training beyond the occasional safety class and the five members of a safety investigation board is a manpower-intensive prospect. Yet, the return on investment could potentially give the safety community a wider range of options for risk-mitigation strategies.

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Capt. Gay, an artillery explosives analyst, serves as a mishap investigator.



MISHAP INVESTIGATION

Getting Schooled

By Capt. Ryan Carlson, USMC
Naval Safety Center

In FY14 the Navy and Marine Corps lost \$1.28 billion and 112 lives to mishaps. Although overall trends are decreasing, we still need to improve mishap rates and eliminate the potential for another spike.

Identifying and analyzing root and contributing causes play a big role in achieving this goal. However, many safety professionals don't understand root-cause analysis.

In 2008 II MEF (Marine Expeditionary Force) hired retired Navy Corpsman Chief Christopher Acord as a civilian tactical safety specialist to manage the command's mishap investigation and prevention program. He instantly identified a significant problem: the quality of safety investigation reports lacked detailed root-cause analysis and failed to identify long-lasting corrective actions.

In 2010, while serving as a Marine Corps Safety Division [CMC(SD)] instructor at a joint services safety and occupational health training program, Acord developed the ground mishap investigation course to address these issues and improve the quality of analysis. Students learn to go beyond the previous requirement of merely

collecting evidence for the purpose of submitting a report.

Students learn how to use multiple tools to understand all of the elements involved in a mishap. These methods consist of barrier and change analyses, cause and effect (or fishbone) analysis, and event and causal factor analysis (commonly referred to as "cause-mapping").

As the event is analyzed, the entire situation is examined as a process eliminating blame from individual people and, instead, looking at how circumstances and regulations influenced their behavior. This analysis is known as the Human Factors Classification and Analysis System or HFACs. (Read the article, "Not Enough Use of HFACS" on page 12.)

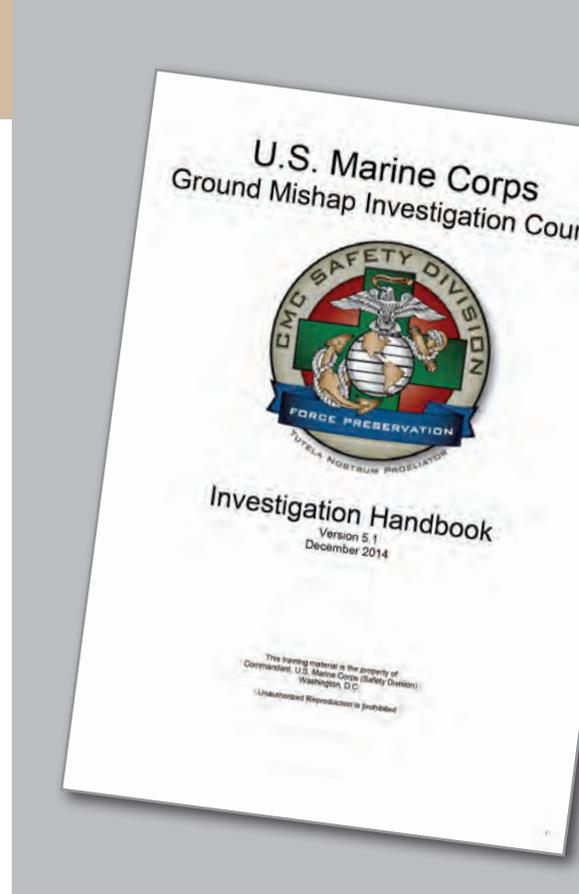
With these changes in effect, there has been a significant increase in the quality of mishap reporting and analysis. These changes enable mishap investigators and unit safety officers to identify the best possible control for the causal factors and recommend salient changes to the organization in order to prevent mishaps.

As the curriculum advanced to focus on the identification and analysis of causal factors, the course grew rapidly. Instructors and courses weren't available to meet demand. Tactical-mishap investigators from

CMC(SD) joined the instructor pool, helping expand the technical knowledge provided to the students (military safety officers, civilian safety and occupational health technicians and practitioners, systems safety engineers, and other subject-matter experts within the naval safety community). The new investigators improved the quality of classroom discussion as they brought first-hand lessons learned from recent investigations.

Identifying the strengths of the course and the need for further expansion of this training, CMC(SD) has partnered with the Naval Safety and Environmental Training Center to bring this course to the Navy fleet. Augmentation and instructor preparation are underway. The new curriculum's first course is scheduled for October 2015. **D**

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Capt. Carlson, an artillery explosives analyst, serves as a mishap investigator.



The Course

Section 1: Defines a mishap and gives a brief history of the necessity of mishap investigation.

Section 2: Describes the mishap classification process based on specific cost and human-impact metrics, reporting requirements and requirements for a formal safety investigation board. This section is critical for fleet safety officers as it outlines the investigation and reporting requirements associated with each mishap classification.

Section 3: Breaks down the process of mishap investigation into six phases: preparation, site management, evidence gathering, reconstruction, analysis of evidence, and conclusions and recommendations. While each of these phases is important, the primary emphasis is placed on analysis of evidence.



Naval Safety Center Illustration

Mishap Reporting Matrix

APPENDIX - A Mishap Classification & Reporting Matrix

Class	Mishap Severity	MISHAP CLASSIFICATION AND REPORTING MATRIX				Required Reports				References
		On/Off Duty	Applicable Personnel	SIB Ref (S-1)	IC/IRIS (S-3)	IC/IRIS (S-3)	IC/IRIS (S-3)	IC/IRIS (S-3)	IC/IRIS (S-3)	
A	≥ 2 million or greater in property damage	ON Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 1, 2004-4E (Reporting)
	Or Fatality	ON Base	Anyone injured or personnel property damaged as a result of DOD activity, operations, or evolutions	See Ref 2	See Ref 2	See Ref 2	See Ref 2	See Ref 2	See Ref 2	Ref 2, 2004-4E (Reporting)
B	Injury or Occupational related illness causing Permanent Total Disability (PTD)	OFF Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 3, 2004-4E (Reporting)
	Or \$500,000 to \$2M in property damage	ON Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 3, 2004-4E (Reporting)
C	Hospitalization of 3 or more personnel in 15 days (On or Off Duty status)	ON Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 3, 2004-4E (Reporting)
	Or Injury or Occupational related illness causing Permanent Total Disability (PTD)	OFF Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 3, 2004-4E (Reporting)
D	\$20,000 to \$49,999 in property damage	ON Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 4, 2004-4E (Reporting)
	Or Injury or Occupational related illness resulting in medical treatment beyond first aid, LIMITED DUTY, or work restriction	OFF Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 4, 2004-4E (Reporting)
Other Reportable	Loss of one training day or setback in flight status	ON Base	On-Duty Military, DOD Contractors under direct supervision	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	See Ref 1	Ref 4, 2004-4E (Reporting)



DOWNLOAD THE REPORTING MATRIX

<http://www.public.navy.mil/comnavsafecen/pages/media/magazines/decisions/index.aspx>

Top 5 Explosives Mishap Concerns

Human factors have caused most of the explosives-related mishaps during the past five years. Although mishap-reporting instructions are clear, there still seems to be a problem with under-reporting, coupled with confusion of when and where to report explosives mishaps.

By Boyzie Hayes
Naval Safety Center

Mishap-reporting systems are the core of risk management, and every ordnance program is subject to mishap-reporting requirements.

Two different instructions govern reporting requirements for explosives mishaps and deficiencies. Sometimes reporting is required by both instructions for the same incident. This results in duplicating and/or under-reporting when usually only one system receives the report. This affects both the attempt to mitigate risks and correct equipment deficiencies.

To improve reporting, the Naval Safety Center (NAVSAFECEN) and Naval Air Systems Command have collaborated to use the new Risk Management Information (RMI) system, which is coming to the fleet this fall. Using RMI will eliminate user-input duplication and will seamlessly share information between the two systems. (Read the article “RMI Consolidates Disjointed Reporting System” on page 6.)

Naval Safety Center mishap data from this five-year period shows that although ordnance programs demand the use of instructions, trends demonstrate the need for better risk-management efforts. These are the top-five explosives and ordnance

safety concerns, along with the actions necessary to prevent injuries and property damage.

SMALL ARMS

Small-arms negligent discharges, both on- and off-duty, remain a serious problem. Training for preventing on-duty mishaps is focused on specific requirements, ensuring that all military weapons are covered during the training of personnel involved with the mission.

Off-duty weapons-handling involves many types of weapons. Training should cover basic weapon-safety rules and recommend all personnel review the weapon manufacturer’s owner’s guide. Ensure personnel are familiar with their personal weapon prior to loading or firing. Mishap data shows that personnel who handle a shipmate’s weapon often don’t understand the functions or safety features of that weapon. Personnel under the age of 25 who drink and clean their personal firearms are most likely to have a negligent discharge.

GRENADES

NAVSAFECEN sends ALSAFE messages about suspected or potential defective or misused ordnance items, or when analysis indicates

such issues. Incidents involving grenades have increased in the past five years; the most common occur during training. Most grenade incidents have involved the use of tape to hold the safety pin and/or hold the “spoon” in place. Ensure personnel receive adequate briefings on safety and operations for grenades. It is critical that only the authorized and approved standard operating procedures are used.

QUALIFICATION/CERTIFICATION

Mishap trends reveal the involvement of personnel who are either working outside their task area or not proficient in the task area. Remember that the use of live ordnance to obtain certification is prohibited for a team-member level certification. Ensure personnel obtain proper qualification and certification as directed by the “Navy Personnel Conventional Ammunition and Explosives Handling Qualification and Certification Program” (OPNAVINST 8023.24C or MCO 8023.3B).

MISHAP REPORTING

Some of the problems we’ve found include: incomplete reports, under-reported or unreported mishaps, duplication, and noncom-



This photo: GM2 Andrew Thomasy and FC1 Waylon Clement, assigned to Surface Warfare Detachment 3, load high-explosive incendiary tracer rounds into the ammunition feeder-can of a 30mm weapons system. *Photo by MC2 Antonio Turretto*

Top: Ship Weapons Department Sailors transport ordnance in a hangar bay. *Photo by MC2 Scott Fenaroli*

Right: Line coach GM2 Brittany Payne directs AT1 Jacob Stephens to fire three to five shot bursts on an M240 machine gun at a firing range. *Photo by MC3 Patrick Enright*



DID YOU KNOW?

A safety investigation board, or SIB, is required for any Class A, B or C incident involving explosives; a reportable injury (fatality, disability, lost work time); and all ordnance landing off-range (whether there is an injury or not). A unit investigation must be conducted for all other explosive mishaps.



REFERENCES:

The “Navy and Marine Corps Mishap and Safety Investigation, Reporting, and Recordkeeping Manual” (OPNAVINST 5102.1 series) requires that all explosives mishaps, hazards and near-misses be reported in the Web-Enabled Safety System (WESS) database.

The “Naval Ordnance Management Policy Manual” (OPNAVINST 8000.16 series) requires all explosives events and ordnance deficiencies be reported into the All-Weapons Information System (AWIS) deficiency reporting system database.

pliance with instructions. Deficiencies in reporting directly affect the trending and analysis of explosives incidents. NAVSAFECEN analysts rely on the data to improve programs that could mitigate mishaps, share lessons learned and improve mission readiness. In addition to refining explosives mishap/deficiency reporting, there are efforts to establish data sharing between reporting systems (WESS/AWIS/RMI).

FATALITIES

Thanks to all of the qualifications and certifications required for personnel to be involved in ordnance evolutions, there are few fatalities. However, lapses in judgment and failure to pay close attention to details

still result in fatal mishaps. In the past five years, there have been 19 ordnance-related fatalities. Seven of the fatalities occurred during a single incident.

Identifying areas for improvement is an all-hands effort. Risk management increases awareness to potential risk in a routine task. Follow your SOPs, checklists, weapons assembly and loading manuals to the letter. They are the only approved instructions for ordnance handling. Ninety-nine percent of the time, the weapon(s) involved in a mishap worked as advertised from the manufacturer. **D**

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Mr. Hayes is a weapons analyst in the shore/ground safety programs directorate.

AED: Is It Part of Your Survival Kit?

By CAPT Bob Frick, MC, USN (FS)
Naval Safety Center

Sudden, non-traumatic death is relatively rare in our active-duty population. It has been attributed primarily to cardiac-related events. Data show that one of the most significant risk factors is age.

A 10-year review (1998-2008) of all non-traumatic sudden deaths of service members age 18 years and older was conducted by the San Antonio, Texas-based Brooke Army Medical Center’s Cardiovascular Division in 2011.

The study found that sudden death was attributed to a cardiac condition in 715 (79.3 percent) and was unexplained in 187 (20.7 percent). The overall annual incidence rate for sudden cardiac death (SCD) in males was 6.7 per 100,000 and 1.4 per 100,000 for females during this 10-year period. The risk of SCD increased from an annual incidence of 2.44/100,000 in the 20-24 year old male age group to 111.45/100,000 in the 50 and over male age group. Some of the activities noted at the time of sudden death are listed in Table 1.

SURVIVAL

An automated external defibrillator (AED) has become an important factor in surviving sudden cardiac arrest. Bystander participation a critical factor in the

success of its operation. However, individuals often ignore pre-arrest symptoms such as chest pain until it’s too late. People near the victim may be reluctant to intervene due to lack of training and experience or fear of legal issues.

Training in the use of an AED is available and can be found through the education and training department of your local military treatment facility. EMS and fire and emergency services (F&ES) groups also teach classes. The AHA has established a website link to search

for basic life support and AED training classes (“Heart Saver CPR AED”) by zip code.

“Good Samaritan” laws exist in all 50 states and have been successful in shielding first responders and bystanders from legal problems if they try to save a person in cardiac arrest. Public access defibrillation is important to improving survival rates in out-of-hospital cardiac arrest. According to the AHA, the earlier defibrillation occurs, the higher the survival rate. A website sponsored by the University of Washington

Table 1 Specific Activities at Time of Exertional Sudden Death in 361 Young Adults

Recreational sports	186 (51.5%)
Running	114 (31.6%)
Basketball	20 (5.5%)
Walking	14 (3.9%)
Swimming	11 (3.0%)
Weightlifting	5 (1.4%)
Baseball	4 (1.1%)
Biking	4 (1.1%)
Military training	150 (41.6%)
Organized physical training*	138 (38.2%)
Road march/land navigation	7 (2.0%)
Miscellaneous	5 (1.4%)
Miscellaneous	17 (4.8%)
Not specified	8 (2.2%)

*Organized physical training defined as group-level activity to include performance of physical fitness testing (sit-up, push-ups, and timed distance running). Additional recreational sports representing <1% included football (n = 3), racquetball (n = 3), soccer (n = 3), volleyball (n = 2), hiking (n = 1), paintball (n = 1), and tennis (n = 1). Miscellaneous causes included moving furniture and/or equipment (n = 8), mowing lawn (n = 4), dancing (n = 2), fighting (n = 2), and sexual intercourse (n = 1).

Source: *Journal of the American College of Cardiology*

is available to assist persons with AEDs or those who are considering purchase of an AED. This site is not intended to replace formal training.

INSTALLATION

Public-access AEDs currently cost \$1,300-\$3,000, with a yearly estimated operating cost of \$50-\$390. New AEDs must be approved by the installation AED coordinator

to ensure standardization and compatibility of AED devices for training, operation and maintenance purposes. Tenants are encouraged to place AEDs within their AOR on an installation (Table 2).

The installation AED coordinator works with the tenant to select an AED, batteries and supply equipment compatible with the installation AED program. The tenant is responsible

for funding the purchase of the AED, batteries and supply equipment. F&ES will incorporate the tenant AED unit into the AED inventory tracking system. **D**

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 CAPT Frick is a flight surgeon assigned to the aeromedical division. Read the full version of his article at: <http://www.public.navy.mil/comnavsafecen/pages/media/magazines/decisions/index.aspx>.

Table 2 Where to Install Your AED?

The “Navy Installation Automated External Defibrillation Program” (OPNAVINST 5100.29) recommends the following priority placement list on Navy installations for AEDs:

▶ **Gymnasiums and indoor athletic facilities:**

- (a) By the main desk
- (b) Consider placing additional AED courtside if location is in a high-occupancy facility (i.e., stadium or arena)

▶ **By the main desk at staffed fitness centers**

▶ **Swimming pools:**

- (a) In a visible location inside of a publicly accessible lifeguard office
- (b) If there is no lifeguard office, then in a location that is out of the sun and safe from the elements

▶ **By the front checkout counters of main commissaries**

▶ **By the front checkout counters of main exchanges**

▶ **Schools:**

- (a) By the gymnasium
- (b) By the main office or reception desk

▶ **Administrative buildings having more than 250 adults over 50 years of age present for more than 16 hours per day:**

- (a) By public elevators of a central floor if the building has multiple stories
- (b) Outside of centralized restrooms if the building is single story

▶ **High-risk training areas.** Locations to be determined by operational risk management review (i.e., high-intensity physical training, high-risk training activities and areas where hazardous work environments exist).

Tenants and organizations not within the scope of priority locations listed above are encouraged to participate in the program. AEDs should be placed in any high-occupancy areas or other locations deemed appropriate and necessary by the AED coordinator, tenant commands, medical director and or F&ES chief.

THE CHAIN OF SURVIVAL



Since its inception in the late 1980s by Mary Newman, the “chain of survival” concept has been used and improved by the American Heart Association. This concept emphasizes that a series of interdependent interventions enhances the chances of survival of individuals suffering from a cardiac arrest.

However, the chain is only as strong as its weakest link and that each link is dependent on the other for the overall success of the interventions. A lack or weakness of any of these links will lead to a failure in the chain of survival.

Illustration courtesy of the American Heart Association

▶ ONLINE

American Heart Association “Heart Saver CPR AED” by Zip Code

<http://ahainstructornetwork.americanheart.org/AHA/ECC/classConnector.jsp?pid=ahaecc.classconnector.home>

AHA Chain of Survival

http://www.heart.org/HEARTORG/CPRAandECC/WhatisCPR/ECCIntro/Chain-of-Survival_UCM_307516_Article.jsp

University of Washington Learn AED

<http://www.learnaed.org>

12 Days of Riding

A mishap-free motorcycle journey

By CDR Jason Bragg
HSM-40

Let me tell you about my June adventure from Florida through South Dakota, Wyoming, Colorado, and back. During this 12-day, 5,200-mile ride, two other motorcyclists and I rode through 14 states. We saw sun, wind, and rain, humid woodlands, arid plains, and the Rocky Mountains with temperatures ranging from 35 to 95 degrees. All three of us returned home safely, without an injury, mishap, or mechanical failure.

Motorcycling can be hazardous, so how is it that we went over 15,000 combined miles in under two weeks and came home unscathed? We had mostly good weather, no tire punctures, and not one of our lodging reservations got bungled, but it had to be something more. Years of experience and a lot of planning were mixed with countless individual risk decisions to yield a spectacular trip. I hope my experience helps you plan your riding adventure.

PREPARATION. We carefully planned our locations for overnight stops, with a close look at mileage and how far we could realistically ride in a day, as well as lodging availability. Being on a budget, we stayed with a friend one night, used some hotel points for a couple free nights, and found a \$39 room at a casino. We also went about six weeks prior to peak season, which simplified finding lodging but meant weather was less predictable. We estimated total mileage so we could budget for fuel (which adds up over thousands of miles even on fuel-efficient motorcycles). On a ride this long, we also considered when to get the oil changed and if the tires would last the whole trip. Anticipate changing weather and tempera-

tures. Plan your luggage space for gear you are going to need. If planning and preparation are not your strong suits, either take the time to do it right or just take a car — at least you can sleep in the back seat at a rest stop if things don't quite come together on that rainy night out on the plains of Kansas.

EQUIPMENT. The right riding equipment is more complicated than just getting a proper helmet and jacket. There are suits that are versatile enough to cover all conditions, but the ones that truly work for everything cost a fortune. I wore a \$200, three-season, CE-armored jacket that is just big enough for extra layers underneath and packed an inexpensive rain suit that fits over jacket and riding pants. This arrangement can get stuffy if it is rainy and warm, but we all choose our compromises. I did ride in steady rain for about five hours on a 45-degree day and was content (except my feet got cold since I didn't bring ski socks — lesson learned for next time).

Riding gear is important, but you're probably going to get some equipment for your motorcycle, too. You probably don't need as much stuff as you think, but it depends on which bike you have and your personal

tolerance for discomfort. If you buy luggage, windscreen, seat cushions, cruise control, tie downs, pegs, grips, crash protection, or other equipment, don't use your big trip as a trial run for any of it. If you add lights, GPS, or heated grips/seat, make sure the bike's electrical system can power them and that you know how to use them. Whatever gear you choose, mount it all ahead of time and take it out for at least a few hours of riding to make sure it's all functional and secure.

I bought a very large windscreen for my trip, and when I was trying it out I noticed that my motorcycle felt less stable at highway speeds, particularly in the turbulence of 18-wheelers. The wind protection was excellent and I felt like it was still safe so I kept the windscreen, but it was nice to make that decision a few weeks before the trip and know what to expect. You might even consider packing the entire bike up ahead of time to make sure you have enough luggage space and aren't overloading the motorcycle; they can handle differently with all that weight.

LIMITATIONS. Six hundred miles in one day is about all I want to do, but that is me on my particular bike. I don't recommend that for everyone, and it only works for me under ideal conditions. I also have personal limits on speed, passing, ride time between stops, hydration, caffeine intake, and many other factors throughout a day of riding. It is important that riding companions have similar limits, or at least provide an honest assessment so

everyone knows what to expect. Anything more than 500 miles is a long day of riding and can be exhausting even if conditions are good. I didn't ride that far most days and definitely not on the last couple days of the trip.

I rode during daylight almost exclusively thanks to long summer days; the sightseeing is better. Riding in the dark is even more taxing and lack of sleep increases risk. Fatigue degrades reaction time and decision making in a comparable way to intoxication — don't ride drunk, don't ride tired! On long trips you should plan for a day completely off the bikes to rejuvenate; I didn't do that on my trip, but we did have at least two days of low mileage which served us well. You will probably be riding in unfamiliar areas and for long periods of time, so if you have to change the plan to manage the risk, then you must change your plan.

BE FLEXIBLE. This is hard when you've had a plan developed over months and you are on track. Know that you will, at some point, have to deviate from that plan. I really wanted to ride to the top of Pike's Peak, but I knew that it would depend on the weather. Snow, sleet, fog, and sub-freezing temperatures were common there in the weeks leading up to my trip. It turned out to be a clear and sunny day when I went, and the view from the 14,000-ft peak was glorious. On a different day, however, we were riding into some ominous looking thunderheads. We tried to wait them out, but as night fell the lightning in the distance was like a fireworks show.



The group takes a brief pause in Custer State Park, South Dakota. Photo courtesy of the author

Instead of continuing to our planned hotel, which was only 30 miles away, we doubled back to another place and stayed dry and safe. Riding even a short distance in hail, wind, and lightning was on our list of things to avoid, so we changed our lodging plan even though it was too late to get a refund on the reservation we had. Risk decisions should not become financial decisions. Budget some emergency funds for when your plan changes, or just break out a credit card if that's what it takes to ensure you'll be around to ride another day.

A simple way to build-in flexibility is to stay at the same lodging for multiple nights. Initially, we were considering travelling all the way to western Wyoming to see Yellowstone National Park. This would have added many miles more and would have meant that we were staying at a different place every night. It was too aggressive a riding schedule for our time constraints so we chose to skip Yellowstone. Instead, we stayed three nights in the Black Hills of South Dakota. The first day we were there was cold, wet and very foggy, so we did not get to see Mount Rushmore on the day we had planned, but we went to tour Wind Cave (since the weather doesn't matter when you are underground) and still had time to visit the presidents the next morning. I also planned to be home on a Saturday, with Sunday as a flex day just in case I was delayed. I always like to have a day to unpack and get organized before work on Monday, but it also builds in additional flexibility in case of an unplanned delay.

JUST IN CASE. I packed a first-aid kit and a tire-repair kit, which I didn't have to use. Space is at a premium on a motorcycle, so you have to make good choices on what to pack. If you are going alone, especially in the mountains, a personal GPS tracker/transmitter is something to consider since cell phone towers can be few and far between. I recommend paper maps for the same reason, or at least some written directions; it is surprisingly easy to stump a GPS and have no service for smartphone apps. One item I brought that was surprisingly useful was an empty backpack. It was handy for picking up snacks and drinks when our luggage was still packed full. I highly recommend a tool kit with such things as spare fuses, zip ties and a tire gauge.

MAINTENANCE. Your bike needs to be in tip-top condition before you depart. T-CLOCS is only a start if you are prepping for a multi-day trip. Have your machine serviced at a dealer and/or review your owner's manual service intervals to ensure the machine is ready to go. Also anticipate what normal maintenance would be required along the way. At a bare minimum I had to bring everything necessary to keep my KTM's drive chain

clean, lubed, and adjusted properly. We all rode modern, reliable machines, but I still brought a substantial tool kit. I replaced a fuse just once — it was for the power outlet I used to charge my cell phone. We brought cleaner for visors and windscreens, and some WD-40 came in handy when my luggage lock had collected enough road crud that the key wouldn't turn.

My friend's Victory has a 5,000-mile service interval. Part of the planning he did was to locate a Victory dealer in Boulder, Colorado, and make an oil-change appointment for the day we would be there. My other riding partner had a front tire wearing faster than expected, so



The highlight of the trip was riding Colorado and Rocky Mountain National Park. *Photo courtesy of the author*

he found a dealer in South Dakota and got a new one (tires aren't cheap, but as I said earlier, risk decisions should not become financial decisions).

Out of 12 days, we rode together for 10, and I spent the other two riding on my own. Riding in a small group is enjoyable, and we had helmet communicators which made it even better. Splitting up for a day, however, was also great. It was refreshing to be on my own pace, schedule, appetite, and fuel range, and there were no hard feelings about it — we simply had different priorities for the day and when we all met up in the evening we had something new to talk about.

Some motorcyclists ride around town, some ride around the world. Some of us cruise, some commute and some race. Motorcycling is an individual adventure and no two rides or riders are identical. Stay within your limits and ride your own ride. **D**

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CDR Bragg is the training officer for HSM-40.

One Step Down to Injury

By Armando "Mondo" DeGuzman
HX-21

Photo: safety.lovetoknow.com

After completing projects around the yard, I entered the front door of the house and noticed the sun's rays on the floor shining through the windows located 20 feet above the door. I noted how dingy the windows were and decided to clean them before my wife and kids returned from soccer practice.

Given the height of the windows, I recognized the hazards of me climbing an extension ladder or apex ladder without someone to help support the ladder. I decided to use an extension pole with a sponge attachment, along with my two-step ladder that I've had for decades.

Progress was going well – stepping on and off the ladder – as I moved it into position to reach the majority of the windows. The ladder and extension were shy of reaching the last window apex by about four feet. Since I had decided not to use the tall apex ladder, I thought I'd just buy a new four-step ladder, which had four steps that were 16 inches apart. It would take some getting used to. For years I'd stepped down

from a two-step ladder that had steps eight inches apart.

As I was putting the finishing touches on the windows, the sun's warm rays shone through the glass. I started thinking about playing golf. I stepped off the ladder as I had always done in the past. Unfortunately, I had stepped down from the top step of the new ladder!

I was still in the middle of my mental checklist for golf when I realized that my step down took seemingly longer to touch the ground. I realized, mid-fall, "This is not good." I'm guessing my right leg hit the floor fully extended with a left body twist continuing to rotate and then hitting the floor on my back and the back of my head.

I sat up, unable to move or bend my right leg. I looked at my right knee and noticed a void depression where my knee cap should be. I flexed my right quadriceps and noticed the knee cap up the middle of my thigh. The tendon that attached to my knee cap was severed and, to make things worse, the fall tore the left and right collateral knee liga-

ments. From a simple fall!

Four days later, I had a five-hour operation on my knee. The orthopedic surgeon drilled four holes (extending from the lower to upper part of the knee cap), threaded strands of the tendon through the knee cap holes and cross-stitched the tendon back to the knee cap.

I thought I had adequately ORM'd my original task. I'd identified the hazard of falling from a high, unsupported ladder. I'd assessed that I would not use my high-apex ladder and implemented some control by using a much smaller step ladder and an extension pole to clean the windows. However, I failed to supervise myself. I was inattentive to one of the tasks at hand and the steps (literally) I should have taken until I had both feet on the ground.

Take it from me. Apply the ORM process, levels and principles to help you avoid that one step down to injury. It will keep you healthy, wealthy and wise. **D**

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Mr. DeGuzman is a safety manager and platform coordinator with HX-21.

ON DEATH'S DOOR

By LT Rob O'Donnell
HITRON Jacksonville

I'm a healthy person: I work out often, eat a balanced diet, and get plenty of sleep. However, on my latest deployment with the Helicopter Tactical Interdiction Squadron (HITRON) Jacksonville, I had the scare of my life, the kind that almost ended it, and I wasn't even in the aircraft!

It started with what I thought was a simple workout. It landed me in a hospital, and the cause was rhabdomyolysis, commonly referred to as "rhabdo." It occurs when you overwork your muscle tissue to such an extreme level that it basically shreds, explodes and dies.

During my deployment, I had promised myself to work out as much as I could and shed a couple of pounds. When members of the aviation detachment (AVDET) asked me to join them on the flight deck for



Photo illustration by Allan Amen

RSTEP

a workout, I said, "Heck, yeah! Let's do it!"

It was going to be my first experience with CrossFit, a workout regimen developed by a fitness company. I'd always wanted to try the high-repetition, high-intensity program and this was the perfect opportunity.

Flights for the night were cancelled, so we met at about 1600. The instructor used a CrossFit app to

The body is an amazing thing. It will let you know when it has had too much of a positive motion, causing your muscles to fail and give out. However, you can overrule your muscular system during the negative portion of the movement by "cheating" your way into a position and then making it fight to resist a movement. Even if your muscles have given out on you, they'll still contract

up to the same symptoms and was slightly concerned that I wasn't feeling better. The red flag was my urine being the color of cola; never a good sign. I freaked out, and did what any logical person would do: I Googled it. I had every symptom, except one, for rhabdo: extreme soreness, darkened urine, but no substantial muscle swelling (that would come). After reading this information, I visited

I had every symptom, except one, for rhabdo: extreme soreness, darkened urine, but no substantial muscle swelling (that would come).

create the workouts, which consisted of 100 burpees (full-body exercise) for about 15 minutes, farmer's carry of about 70 pounds, 90 sit-ups, 120 crunches, and the plank for 60 seconds. I was told that this was an average workout of the day.

I took my time, but did push myself with the burpees, which would be the culprit and would eventually send me to the hospital. Burpees are considered a positive and negative movement. The physical action of completing the upward motion of the push-up is positive and the dropping to your hands and completing the downward motion of the push-up is the negative motion. "Jumping" or "kipping" pull-ups are another negative movement that can be notorious for leading to rhabdo.

beyond their actual capacity through the negative portion of the movement – until they literally explode.

After completing the workout I felt tired. It wasn't the hardest workout I'd done, but I was satisfied. I was excited that I had done it and was looking forward to continuing and committing myself to do more. The next morning I woke up sore and had a hard time moving my arms. I didn't think much of it. Maybe I just had a good workout and would get over the soreness in a day or so. I even went out that morning and flew on a three and a-half hour interdiction; unfortunately there were no drugs on board the panga.

That night the soreness and stiffness worsened, but again, I figured I just had a great workout. I woke

the cutter's health services technician (HS). She had me complete a urinalysis that yielded high amounts of protein and an extreme amount of blood.

My overstressed muscles had released myoglobin into my bloodstream, which was then routed to my kidneys. Kidneys are designed to be internal scrubbers. They remove toxins from your blood, send your clean blood on its way, and then will route the toxins into your urine so it can be evacuated from your body. Being the good scrubbers that they are, they went into overdrive trying to remove all of the myoglobin from my blood. When kidneys try to break down other compounds they emit an enzyme called creatine phosphokinase (CPK). *Continued next page.*

The HS (to whom I am forever indebted for saving my life) quickly initiated an IV. My body absorbed two liters of IV fluid in about 40 minutes. I was then placed on a steady drip for the rest of the night, while the cutter altered course and made best speed for Panama (I was going to be taken off by medevac in the morning).

Ashore, I was quickly swept into an ambulance while the other pilot had to fly back solo to the cutter. At the hospital, medical personnel immediately performed a blood test. I figured I would get the results quickly and was already making dinner plans for the evening that didn't include a hospital. Four or five hours later the results arrived, and so did more IVs. The doctor explained that they had to dilute my blood 10 times because it continuously measured off their scales. Ten times! Normal CPK levels are between 80-360 u/ml. Mine was 129,000 u/ml and was probably around 150,000 u/ml the night before my medevac.

With levels that high, kidney failure is almost guaranteed. Having kidney failure on the ship would have been catastrophic, especially since there is zero chance for dialysis to clean out my sickened kidneys. What saved me was the eight bags of IV I had on the cutter that saturated my system and opened up my clogged kidneys. I was admitted to the ICU (where I spent three days) and had two IVs dripping into me simultaneously. I was eventually moved to the general ward but remained on IVs for another two days and would spend six days in the

hospital. In total, I'm guessing I had upwards of 35 IVs in the hospital and at the time of my discharge, I was still at about 12,000 u/ml CPK.

Who would think that a workout would nearly kill me? The scariest thing about this is that minus the sore arms and pee, I felt fine. It is still hard for me to believe exactly how bad of a place I was in.

WHERE DID IT ALL GO WRONG?

First, I should have known better. My goal to get some good workouts during the deployment changed my normal workout routine. I am mostly a runner, but I wanted to try something new and I had been curious about CrossFit. It was the perfect time, especially since members of my AVDET were pretty experienced (one being a certified CrossFit instructor and the other having an earlier bout with rhabdo). I urge anyone that has had a similar experience to alert your crew and make sure they understand what could happen. While operational on a deployment, I should have reduced the amount of risk I was physically being exposed to and stuck to the elliptical.

Second, I should have observed the outside conditions. I set myself up nearly perfectly for contracting rhabdo, and the weather could have played a major role in it. We were on a Caribbean patrol, and it was about 85 degrees with nearly 95 percent relative humidity. This combination could have made me more dehydrated than I expected. I was sucking down water all day, during, and post workout, but I underestimated how much water I was losing. Dehydrated

muscles are literally like beef jerky – easy to shred.

THE TOUGH-GUY MINDSET

Not realizing it, perhaps my attitude made me more susceptible to rhabdo. I felt that I could do 100 push-ups and I would have a pretty good cardio, so 100 burpees should be no problem.

Some people, such as athletes and folks in the military or law enforcement, are naturally more mentally tough and can push through a higher level of discomfort than others. This, however, may also make them be more susceptible to rhabdo. Scale back a workout to match your experience level. In my case, 30-40 burpees would have sufficed to give me the introduction to CrossFit, while ensuring I was still getting some good work-in. Would you attempt to run 15 miles without ever running a mile?

My CPK levels have finally returned to normal, but my liver is still working hard to rid my body of the remaining toxins.

If you plan to start a high-intensity, functional movement-type program, whether on deployment, in a gym, or at home, find a program that focuses on (in order): 1) form, 2) consistency, and 3) intensity. Not adhering to that fundamental framework can land you in a hospital. **D**

Editor's Note: Portions of this article were constructed by the author from his own research via online resources, scientific articles and blogs.

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LT O'Donnell flies with the U.S. Coast Guard's Helicopter Interdiction Tactical Squadron.



ONLINE RESOURCES

Symptoms of Rhabdomyolysis – Crossfitimpulse.com/rhabdo-and-crossfit

US National Library of Medicine – Ncbi.nlm.nih.gov

The Netherlands Journal of Medicine – Njmonline.nl

ORM and DIY Tree Cutting

By LTJG Jim Webb
VAW-125

This past year, I cut down seven large pine trees in my backyard. Several of the trees were old and had begun to drop large branches on my car, house, and neighbor's house.

First, I called the insurance company, which was unwilling to help. Second, I called a professional who quoted, based on the size and proximity to the house, \$3,500 to cut all of the trees. I just didn't have this cash lying around, but I needed to act. If I cut the trees myself and one fell on the house, it could have easily done \$50,000 worth of damage. The chance of a tree falling on the house was small; but the consequences were large, and this risk was simply too high.

This is where ORM came into play. I realized that if I were to free-cut the trees, the benefit would not outweigh the risk. I asked myself the question, "Can I reduce the risk to tip the ORM scale in my favor?" I began to look at ways that I could reduce the risk of a tree falling on my house. I discovered that I might be able to cut each tree with an acceptable level of risk if I used straps to pull the tree in the direction I wanted it to fall. Testing this method would still introduce a lot of risk, so I needed to implement controls to reduce the risk during testing as well. The solution was to cut small low-risk trees first, then progressively work up to high-risk trees.

My wife and I came up with a plan. It involved a lot of elements, including climbing trees, cutting with a chainsaw, felling trees, and coming up with contingencies in case things started to go wrong.

All of the elements required planning, research, and training. I used lineman gear to climb, 10,000-lb straps and come-alongs to pull the tree down; backup straps to change the direction if the tree started to move sideways; additional crew to help; briefings; and plenty of PPE. I was not about to cut anything myself unless I could make the risk infinitely small, otherwise the \$3,500 option would have been more attractive.

By pulling the tree with straps, we could stop at any point and analyze the situation to see which way the tree would fall. By the time we were complete with the last tree, we had learned all of the difficult lessons on the low-risk trees, and had perfected a method that would

nearly guarantee success with a small amount of risk on the larger trees. After each tree cut, we would talk about what went wrong, and what we could do better on the next tree. I wasn't happy with the tree just falling where I wanted it to; I had to see the strap pull the tree to a lean so that I could stop the process at any point.

Let's look at the four principles of ORM:

Four Principles of ORM

1. Accept risk when benefits outweigh the cost. Did the benefits of cutting the trees myself outweigh the cost (risk of hitting the house)?
2. Accept no unnecessary risk. Did I need to cut the trees down? Could I have done more to reduce the risk or would the cost have been too high?
3. Anticipate and manage risk by planning. Did I plan appropriately?
4. Make risk decisions at the right level. Who is responsible? Who needs to know?

How would you have handled the situation differently? ORM is a fluid concept, and it is not always black and white. Assessing risk tends to be the hardest and most important aspect of ORM. To make it harder, every person places different weight on different hazards. What one person views as a low-risk hazard, another person may view as a high-risk hazard.

While most Sailors may never find themselves in a position to cut down 100-foot pine trees, the principles in this example can be applied to any off-duty activity. Next time you find yourself about to take on a risky evolution, stop yourself and think about the forces driving you to do what you are about to do. Think about what may go wrong and how it would affect you, then find ways to make what you are doing safer. Communicate what you are doing and ask for help. Ask yourself if the risk is worth it. Most importantly, realize risk is present in everything you do — the goal is to manage and mitigate it.

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LTJG Webb is the VAW-125 ground safety officer.

Could Have Been Worse

By LT Tabitha Klingensmith and AEAN Adam Ballard
HSL-49

On a sunny autumn day in San Diego, a group of Sailors from one of our maintenance divisions took advantage of a Saturday afternoon to spend some quality time together. Their activity of choice was mountain biking; and unlike most of the events in the weekly “Friday Funnies,” this story begins and ends with using ORM.

The group had mixed experience levels and chose an easy trail with gradual slopes and plenty of room. They all wore helmets. Despite these precautions, one of the Sailors hit a small rut that launched him into the air. He landed face-first in the dirt.

His friends rushed him to a local hospital. The emergency room docs diagnosed his injuries as mild concussion, black eye, lacerations requiring stitches, and general bruising.



Photo courtesy of the authors

A black eye was among the injuries AEAN Ballard sustained during his mountain biking accident.

The fact that he was wearing appropriate PPE, assessed his experience level honestly, and rode with a group buffered this Sailor from much more serious harm.

No matter what outdoor activity you choose, there will always be a potential for mishap. Using the principles of ORM, you should be able to step back and ask if you have

mitigated the probability and severity of a mishap. Do your best to reduce the occurrence of mishaps and make sure their severity is minimized. Constantly evaluate the way you approach your off-duty time. **D**

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LT Klingensmith (ground safety officer) and AEAN Ballard are with HSL-49.

A photograph showing a yellow and black lifejacket and a wooden paddle resting on a rocky, light-colored surface. The lifejacket is partially unzipped, revealing its interior. The paddle is positioned horizontally across the middle of the frame. The background consists of large, light-colored rocks.

A Lifejacket Buys You Time

By Paul Newman
11th Coast Guard District

It was a beautiful summer day on Lake Tahoe. The air temperature was 75 degrees and the water about 60 degrees on the surface. It was his first time on a stand-up paddleboard, or SUP, and he knew he was supposed to carry a lifejacket. So he tied it to the top of the board with the leash that should have gone around his ankle. About 50 yards off the beach, he lost his balance, fell off the SUP and drowned, seemingly in an instant.

How can someone drown so quickly without even struggling to swim on the surface? Witnesses said he didn't hit his head. What he likely experienced was "cold shock response," the first stage of cold water immersion. The sudden fall into cold water made him gasp underwater. He aspirated water and began choking. He probably panicked and started sinking into colder, deeper water. He made ineffective, frantic movements with his arms, which had been momentarily stunned by the cold water.

That "gasp reflex" is one we all have experienced either in a cold shower or jumping into a cold pool ("cold" means water less than 70 degrees). According to

the U.S. Water Fitness Association, swimming pool water should be 80 to 90 degrees. Our body temperature is 98.6 degrees — it's no wonder we gasp when the water is 60 degrees! In winter these symptoms are only made worse by colder water. Research has shown that this is probably why many boaters, fishermen, hunters, and others drown so quickly.

Cold Water Boot Camp USA was a 2008 research project of the National Water Safety Congress, funded by a Coast Guard grant to understand what happens in the first few minutes of being exposed to cold water. They took eight volunteers, including a Coast Guard rescue

swimmer, and had them jump into 45-degree water to see what happened.

They all experienced the symptoms of cold shock response: an initial gasp, hyperventilation, and extreme difficulty swimming. Since they knew they were going in the water they were prepared, but some couldn't even swim the length of a 25-foot Coast Guard boat without needing help.

If they calmed themselves and stayed in the water a few minutes longer, they experienced the second phase: cold incapacitation (not to be confused with hypothermia, which takes much longer). After about 10 minutes, their fingers and arms stopped working and they couldn't climb back onboard a boat or help themselves. They also succumbed to swim failure: their arms and legs couldn't make effective swimming motions to keep them afloat. They would have drowned if they hadn't had rescuers nearby to hold them up.

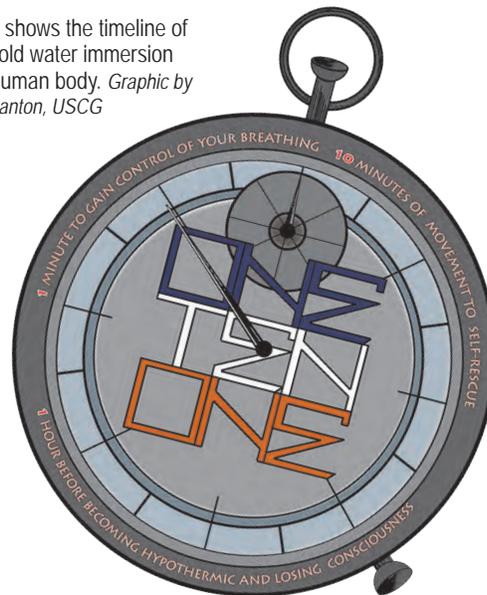
The test involved seeing how long it took people – wearing lifejackets – to suffer mild hypothermia. That took a lot longer than most people think. It takes an hour or more for hypothermia to take full effect (depending on water temperature and body composition) and another hour after you lose consciousness for your heart to stop. Without a lifejacket or something to keep you afloat, you'll drown long before you die of hypothermia.

The Cold Water Boot Camp USA website summarized the three stages of cold water immersion with the 1-10-1 Principle:

Three Stages of Cold Water Immersion Using the 1-10-1 Principle

<p>1: Cold Shock (first minute)</p> <ul style="list-style-type: none"> • Gasp reflex (inhaling or aspirating up to a quart of water if underwater). • Hyperventilation (rapid, uncontrolled, ineffective breathing). • Drowning if you can't calm yourself 	<p>Cold Shock (lifejacket buys you time to catch your breath)</p>
<p>10: Cold Incapacitation (in the 10 minutes or more, if able to survive cold shock)</p> <ul style="list-style-type: none"> • Loss of muscle dexterity (can't get back in the boat, operate radio). • Swim failure (can't swim, no longer a "strong swimmer"). • Possible drowning if not rescued. 	<p>Cold Incapacitation (lifejacket buys you time to rescue yourself)</p>
<p>1: Fatal Hypothermia (assuming you haven't drowned)</p>	<p>Hypothermia (after an hour or more — lifejacket buys you time to wait for rescue)</p>

This graphic shows the timeline of the effects cold water immersion has on the human body. *Graphic by PO3 Adam Stanton, USCG*



Still not convinced? A week after the man on the SUP drowned on Lake Tahoe, a 17-year old boy drowned on the same lake. He was with a bunch of friends who all begin to panic in the cold water while swimming 25 yards back to their boat from a small island. While rescuers from the boat tried to get lifejackets to the boys, the 17-year old drowned. He experienced swim failure caused by cold incapacitation.

So let's change the conversation about lifejackets using what we know about cold water immersion: "That water is cold and will make you gasp if you fall in. Wear a lifejacket because a life-jacket buys you time."

- Time to catch your breath (1 minute).
- Time to rescue yourself (10 minutes).
- Time to wait for rescue (1 hour or more). **D**

Editor's Note: Original blog posted by LTJG Katie Braynard, Tuesday, Jan. 6, 2015, Coast Guard Compass (Official Blog of the U.S. Coast Guard) <http://coastguard.dodlive.mil/2015/01/a-lifejacket-buys-you-time/>

Mr. Newman is a recreational boating safety specialist with the 11th Coast Guard District.

Will You Get Skin Cancer?

By Wayne Rudolph
Special to the Naval Safety Center

Every day Sailors and Marines are out in all kinds of weather. They sweat, overheat, freeze, and get soaked. They have on protective gear, double hearing protection, float coats, cranials, flight-deck boots, and gloves. Every inch of their bodies is covered with gear, except ... their noses! The sun is constantly shining on the nose.

The skin is the largest organ of the human body and has an amazing ability to repair itself. Every time someone is sunburned, the skin grows new cells to replace the ones that the sun has killed. Sunburn is just that, a first-degree burn, possibly second degree if exposure lasts long enough. However, if damage to the skin occurs constantly, the skin can wear out or become defective. If you

stay out in the sun long enough without protection, the day may arrive when a funny spot appears on your nose. Maybe it is a little darker than the surrounding skin. As the days and weeks go by it gets bigger. The shape starts to appear unusual. You trot to sickbay and discover that you may have melanoma.

What is melanoma?

People hear about it for years but some do not pay attention. It is something that worries old people. In a sense that is true: the median age for melanoma is 61. However, what Sailors and Marines do now can determine if they get a melanoma in their golden years or not. According to the National Cancer Institute, two percent of men and



Photo: Microsoft

women alive today will be diagnosed with melanoma in their lifetime. For a typical aircraft carrier, it equates to 90 crewmembers acquiring melanoma in their lifetime; an LHD with embarked troops, 70 cases; a small boy, six Sailors; and a submarine crew would have about three melanoma cases.

Melanoma contributes to less than five percent of the skin cancer cases, but the vast majority of deaths. Of the seven most common cancers, melanoma is the only one whose numbers are growing. It is the most common form of cancer for young adults 25-29 years old and the second

the off-duty hours when you're on the beach, swimming, hiking or just lazing around the backyard? Sun protection products can be confusing – there is “sunscreen” and “sun block” with varying sun protection factors (SPF), sun-protective clothing, and a host of others.

Sunscreen or Sun Block? Sunscreen reacts with the ultraviolet rays and filters them to attenuate the effect of those UV rays. Sun block creates a physical barrier to the sun's rays.

Waterproof or Water Resistant? Waterproof sunscreen must maintain the SPF protection after 80 minutes

- One person dies of melanoma every 57 minutes.
- An estimated 73,870 new cases of invasive melanoma will be diagnosed in the U.S. in 2015.
- 1 in 50 men and women will be diagnosed with melanoma during their lifetime.
- An estimated 6,640 men and 3,300 women in the U.S. will die from melanoma in 2015.

Skin Cancer Foundation

most common form of cancer for young people 15-29 years old. The four most common sites for malignant melanoma are: head/neck, upper limb/shoulder, trunk, and lower limbs. Melanoma is the type of skin cancer that is most likely to spread to other tissues and possibly cause death.

There are a number of risk factors for acquiring skin cancer. Sunlight, which is a source of the known carcinogen ultraviolet radiation (UVR), is the most important risk factor. Other risk factors include a blistering sunburn, lifetime sun exposure, family history of skin cancer, skin that burns easily, certain medications, and tanning.

Many times the first sign of melanoma is a change in a pre-existing mole. The shape, color, size or feel of that existing mole may change. It may be a quick change; it may take place over a period of weeks. Melanoma may also appear as a new mole. Whether it is new or old, it is changing. The best way to keep on top of this is to perform a monthly head-to-toe self-assessment. Look for the A-B-C-D-E of melanoma (see table). Melanoma can vary greatly in appearance. Some may show all of the typical characteristics and some may just have a couple. No matter what the change seems to be, have it checked if there are any concerns.

How do you protect yourself during times when PPE is not a requirement and the job entails being out in the sun for many hours of the day? How about during

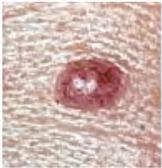
of exposure to the water, while “water resistant” only requires 40-minute protection. If you are planning on swimming, participating in sports or just sweat a lot, go for the waterproof sunscreen. Remember to reapply after the 80-minute contact time.

What to Wear? Clothing, including hats, can go a long way toward protecting the skin from UV rays. The tightness of the weave, the type of fiber, density of the cloth, and color of the cloth are all items to consider when planning your summer wardrobe. People typically think less is more when it comes to summer clothing. To protect the skin from the sun, nothing could be farther from the truth. Long-sleeved, tightly woven synthetic fibers that are dark provide the most protection. Alternatively, there are garments that have a UV protection factor assigned to them. There are also laundry supplements that add sunscreen to your clothing. Hats with a three-inch brim all the way around extend the most protection to the head, face, ears and lips.

Cancer research and studies show that the incidence of melanoma is rising. Equally as concerning is the fact that melanoma is becoming the major cancer of young people. Protecting against UV radiation is the best prevention. **D**

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Mr. Rudolph, a retired Navy chief hospital corpsman, worked as a researcher in the Naval Safety Center's aeromedical division.

THE A-B-C-D-E CHARACTERISTICS OF MELANOMA

NORMAL MOLE	MELANOMA	SIGN	CHARACTERISTIC
		A Asymmetry	Half of the mole does not match the other half.
		B Border	The border (edges) of the mole are ragged or irregular.
		C Color	The color of the mole varies throughout.
		D Diameter	The mole's diameter is larger than a pencil's eraser.
		E Evolving	The mole has changed over the last few weeks or months.

Source: Skin Cancer Foundation



There is another risk factor related to a popular pastime: tanning in the sun or in a tanning bed. Understanding that tanning is bad for your skin's health is one thing. How to protect the body from the effects of tanning bed radiation is another. Here are some facts to consider:

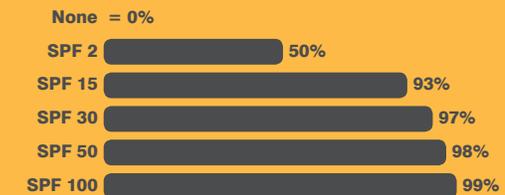
- People who use tanning beds once a month before the age of 35 increase their melanoma risk by 75 percent.
- The more you tan and the younger you start tanning, the more likely it is that you will get melanoma.
- Using a tanning bed for 20 minutes is equivalent to spending one to three hours a day at the beach with no sun protection at all.
- Tanning beds put out three to six times the amount of radiation given off by the sun.

Source: Melanoma Foundation New England

WHAT IS AN SPF?

SPF indicates how well that product blocks ultraviolet rays. There are two types of UV rays that sunscreens are designed to block: UVA and UVB. SPF describes the sunscreen's ability to block UVB rays. The Federal Drug Administration does not have a UVA protection rating system at this time. UVA radiation penetrates deeper and contributes to premature aging and wrinkling.

SPF RATING = UVB PROTECTION



Source: Beyond Coastal Suncare

SPF CHART: WHICH LOTION IS FOR YOU?

Each time your skin burns in the sun, it accelerates aging. The SPF acts as a sunburn time meter allowing tanning without getting burned from UVB light.

	1 Hour	2 Hours	3 Hours	4 Hours	5 Hours
Type 1 Very Fair Skin Never Tans Always Burns	SPF 15	SPF 30	SPF 30	SPF 60	SPF 60
Type 2 Fair Skin Slowly Tans Burns Easily	SPF 15	SPF 30	SPF 30	SPF 60	SPF 60
Type 3 Light Skin Gradually Tans Initially Burns	SPF 8	SPF 15	SPF 15	SPF 30	SPF 30
Type 4 Medium Skin Tans Well Minimal Burns	SPF 4	SPF 8	SPF 8	SPF 15	SPF 15
Type 5/6 Dark Skin Easily Tans Rarely Burns	SPF 4	SPF 4	SPF 4	SPF 8	SPF 15

Source: Therapeutic Derma Limited

ONLINE RESOURCES

National Cancer Institute
<http://www.cancer.gov>

Skin Cancer Foundation
<http://www.skincancer.org>

American Cancer Society
<http://www.cancer.org>

American Melanoma Foundation
www.melanomafoundation.org

Heat Index Charts
http://www.public.navy.mil/comnavsafecen/pages/ashore/off-duty_rec/RODSResources.aspx



Time-Critical Risk Management

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

Experience is the result of all learning events.

The ABCD Model provides a common language and structure for a measured response when an individual, team or crew is executing a routine task or when they are under duress from a more complex situation resulting from additive conditions, crew factors, or task loading. Training to the ABCD Model will embed a set of patterns that will help personnel recognize and recall a set of actions to counter risk even when distracted. This simple and easy-to-remember mnemonic provides individuals with a means to evaluate risks and formulate mitigation strategies on-the-run and can easily be applied in both on- and off-duty situations.



- 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 Naval Safety Center ORM page. Data rates may apply.
<http://www.public.navy.mil/navsafecen/pages/orm/ORM.aspx>

About the photo: A U.S. Navy explosive ordnance disposal technician places C4 explosives on Chinese 82mm Type 65 recoilless rifles, and 82mm High Explosive Anti-Tank (HEAT) recoilless rifle rounds. *Photo by PH1 Ted Banks*