MECH

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The Dirty Dozen

A deep dive into the top *12 human factors that contribute to aviation maintenance mishaps*

TRUE GRIT: COLD WORLD BLUES

How winter operations present many unique challenges

AVIATION ORDNANCE MANAGERS CAREER PROGRESSION COURSE

Learn how to expand the knowledge of senior ordnance personnel through training

Marjorie M. (McKenney) Stone:
A Centennial Celebration of Courage and Change

By Lt. Cmdr. Charles Hiett, VR-55

Marjorie M. Stone, an esteemed veteran, reached a remarkable milestone on July 4 as she celebrated her 100th birthday in Pensacola, Florida. As a former aviation machinist's mate 3rd class in the Navy WAVES (Women Accepted for Volunteer Emergency Service), Marjorie embodies a legacy of strength, resilience and unwavering dedication that serves as an inspiration to us all.

Marjorie's time in the WAVES holds a special place in her heart. "It was a little thing we did, but it brought about so much change," she reflected. Alongside her fellow WAVES, Marjorie played a pivotal role in shaping history, breaking barriers, and paving the way for future generations of women in the military.

Recognizing her outstanding contributions, Marjorie was honored as a Living Legend at the Military Women's Memorial induction ceremony in Washington, D.C. Retired Army Col. Susan Sowers presented Marjorie with this achievement at her birthday celebration. The occasion was made even more special with a birthday note from Chief of Naval Operations Adm. Mike Gilday, acknowledging her remarkable journey and unwavering commitment to service.

Lt. Amanda Lee, the first female Blue Angels pilot, also expressed her admiration for Marjorie in a personalized birthday message video, highlighting their shared dedication to breaking barriers and pushing boundaries. Their connection serves as a testament to the lasting impact Marjorie has made on the path of progress.

Marjorie's journey began in 1943 when she joined the WAVES, inspired by her brother's service in the then-U.S. Army Air Forces. As an aircraft mechanic, she tirelessly worked in hangars, disassembling and overhauling aircraft. From thrilling flights in PBY seaplanes to participating in WAVES basketball games and socials, Marjorie's time in the service shaped her life and led to a serendipitous encounter that resulted in a lifelong partnership with her husband, Harry H. Stone, also an aviation machinist's mate.

Marjorie's unwavering dedication to her country and her strong sense of patriotism are deeply ingrained. As a member of the Daughters of the American Revolution, she takes great pride in her ancestors' involvement in the Revolutionary War. Marjorie finds joy in present-day events and projects centered around patriotic themes, reinforcing her enduring love for America. Marjorie's indomitable spirit and trailblazing achievements have left an indelible mark on those she has inspired. One high-ranking service woman expressed her deep gratitude, stating, "Because of you, I was able to do the things that I did."

Looking back, Marjorie acknowledges the profound impact women like her had in the face of initial uncertainty about their capabilities. Their remarkable contributions were quickly recognized, paving the way for future generations of women to excel.

Residing in Pensacola, Marjorie continues to make a difference in her community through selfless volunteering at Baptist Hospital. Her compassion and commitment to helping others have touched countless lives. Additionally, Marjorie's personal achievements in swimming, including setting a national women's record for the 50m breaststroke in the 85-89 age group in 2012, have garnered well-deserved recognition.

As we celebrate Marjorie M. Stone's incredible life on her centennial birthday, we honor her courage, resilience, and unwavering dedication to making a difference. Her legacy reminds us that even the smallest actions can bring about significant change. Marjorie's remarkable journey will continue to inspire and guide us as we strive to break barriers, embrace progress and create a better future for all.

Courtesy Photo

From the Maintenance Officer

Greetings from the Naval Safety Command. Sadly, this will be my final MECH Magazine introduction, as later this year I transfer to the Navy Personnel Command in Millington, Tennessee. I've had an incredible tour with first the Naval Safety Center and later as part of the newly designated Naval Safety Command. My time during the last three years has seen an enormous change in the way the Safety Management System is administered, assessed and reported upon. I'd like to thank each and every one on my team here and all the outstanding fleet maintainers for their support of the Navy's safety program, and their receptiveness to the Naval Safety Command team when we show up for a Tier III assessment.

As we all continue to engage on supporting the Chief of Naval Operations' "Get Real, Get Better" initiative, it is paramount that we continue to be self-aware, learn even further to self-assess, and most importantly, self-correct. Supporting this initiative will be the cornerstone of success from the deck plate all the way to the highest levels of the Navy and Marine Corps chains of command and into the future.

At the time of this writing, the Naval Safety Command is starting its 16th Tier III local area assessment, so it has been an extremely busy last 12 months. During that time, my team and I have had the opportunity to witness some real change. From our reported discrepancies, Aqueous Film Forming Foam systems are starting to get repaired, hangar bay doors are increasingly becoming operational again and senior enlisted leaders are understanding much better how to mitigate day-to-day risks that occur during normal operations. Senior officers, O-5 and above, are creating risk registries and reporting risks up the chain of command by those senior officers is becoming a reality. Risk is starting to be assumed at the appropriate level. Senior Navy leaders have fully embraced our assessments and are working hard to resource badly needed equipment, infrastructure and manpower. This edition of MECH Magazine will primarily focus on the Federal Aviation Administration (FAA) program called the Dirty Dozen, which identifies the top 12 human factors that lead to accidents and incidents in aviation and aviation maintenance.

As I close this chapter in my career and move on to my next duty assignment, I can look back on my time at the Naval Safety Command and truly see honest communication that drives real change is taking place. Junior and senior Sailors and Marines alike, we are all in this together, and now it's more important than ever to know we cannot let our guard down and we must continue to "Get Real, Get Better" in everything we do personally and professionally.

Take care and stay safe. I'll see you around the fleet.

Gary M Shelley

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Mishaps cost time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces, cause injuries and damage equipment and weapons. Mishaps diminish our readiness.

The goal of *MECH* magazine is to help ensure personnel can devote their time and energy to the mission. We believe there is only one way to conduct any task: the way that follows the rules and takes precautions against hazards. *MECH* (ISSN 1093-8753) is published semiannually by Commander, Naval Safety Command, 375 A Street, Norfolk, VA 23511-4399 and is an authorized publication for the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. gvovernment, the Department of Defense or the Department of the Navy. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Department of the Navy endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission; please credit the magazine and author.

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Aviation Structural Mechanic (Safety Equipment) 3rd Class Kaylen Hughes, left, and Aviation Structural Mechanic (safety equipment) 1st Class Bradley Marshall, both assigned to the "Blacklions" of Strike Fighter Squadron (VFA) 213, install an ejection seat into an F/A-18F Super Hornet, in the hangar bay of the first-in-class aircraft carrier USS Gerald R. Ford (CVN 78) U.S. Navy photo by Mass Communication Specialist 2nd Class Jennifer A. Newsome

In This Issue

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Aviation Boatswain's Mate (Handling) 2nd Class Jynishia Wilson, assigned to USS Gerald R. Ford's (CVN 78) air department, directs a T-45C Goshawk, attached to Training Air Wing 1, to hold its position on Ford's flight deck. U.S. Navy photo by Mass Communication Specialist Seaman Jackson Adkins

Lack of Communication

By Gunnery Sgt. Louis Tiberio

The Federal Aviation Administration (FAA) regulates and oversees aviation safety in the United States. As part of its oversight, the FAA has a program called the Dirty Dozen, which identifies the top safety issues that lead to accidents and incidents in aviation. One of the recurring themes on the Dirty Dozen list is a lack of communication, which can have severe consequences for safety in the aviation industry.

Communication is critical in aviation because many different entities are involved in each flight. Pilots, air traffic controllers, maintenance crews and ground personnel must be in constant communication to ensure everyone is aware of what's happening and can take appropriate action. When communication breaks down, accidents can occur.

One of the most high-profile examples of communication issues leading to an accident occurred in 1977 when two Boeing 747s collided on the runway at Tenerife's Los Rodeos Airport in the Canary Islands. The accident resulted in the deaths of 583 people, making it the deadliest aviation accident in history.

A combination of factors caused the accident, but a lack of communication between the air traffic controllers and the pilots was a significant contributing factor. The air traffic controllers were dealing with a heavy workload and didn't have a good understanding of where the aircraft were on the runway. Meanwhile, the pilots were operating in a language they were unfamiliar with and may have misunderstood the air traffic controller's instructions.

In Navy and Marine Corps aviation, we are not impervious to a lack of communication. As an organization, we must come together and find ways to mitigate lack of communication to prevent wasting man-hours, materiel, damage to equipment and aircraft and a potential loss of life. Below are consequences of a lack of communication and steps to help prevent it.

Consequences of a lack of communication

1. **Missed opportunities:** Lack of communication can lead to missed opportunities, delays or missed deadlines, causing a loss of time and resources.
2. **Misunderstandings:** Can lead to errors and mistakes.
3. **Conflict:** Lack of communication can lead to disagreements and conflicts between individuals or teams.
4. **Low morale:** When communication is poor, team members may feel disconnected and disengaged, leading to low morale.
5. **Poor decision-making:** A lack of communication can result in poor decision-making, as team members may not have access to all the information needed to make informed decisions.

Steps to prevent a lack of communication:

1. **Establish clear communication channels:** Multiple forms of communication may be necessary to reach all audiences so it is important to ensure all individuals feel communication is adequate and effective.
2. **Set expectations:** Establish clear expectations for communication, such as response times and frequency of updates.
3. **Encourage open communication:** Encourage team members to communicate openly and honestly and create a safe environment for them to express their opinions and ideas.
4. **Provide regular updates:** Keep everyone informed about progress, challenges and changes.
5. **Foster collaboration:** Encourage collaboration and teamwork and provide opportunities for team members to work together and communicate effectively.

Poor communication can have significant consequences, personally and professionally. However, as individuals and as an organization, we can improve relationships, increase productivity and achieve better outcomes by preventing poor communication. Be clear, choose the right medium, listen actively, be timely, use feedback to improve communication and watch as your relationships and results improve.

Aviation Boatswain's Mate (Aircraft Handling) 2nd Class Dakota Montoya and Aviation Boatswain's Mate (Aircraft Handling) 1st Class Michael Flosi, assigned to Navy Region Northwest Fire and Emergency Services, puts out a fire during an aircraft mishap drill. U.S. Navy photo by Mass Communication Specialist Seaman Jackson Adkins

Complacency:
Don't Get Too Comfortable

By Senior Chief Aviation Machinist's Mate Harold Mack

Complacency is one of the Dirty Dozen – aircraft maintenance human factors contributing to maintenance problems. Complacency is at the top of the list and it can be particularly problematic in aircraft maintenance operations.

Complacency is strange. It's not complete laziness, but it does have some characteristics. It's not exactly apathy, but it's close. When things are going well and you start to relax, you experience complacency. It's when you assume you've arrived and might begin to unwind a little that disengagement sets in, resulting in a lack of interest in yourself or others. There is also a need for more interest in your task; disinterest in alternate opportunities or advancements and a failure to think before acting are also signs of complacency.

The problem with complacency is it sneaks up on you. It approaches you gently and discreetly, much like a robber in the night. Before you realize it, you've lost your edge. Complacency on the job is quite risky. You become so accustomed to doing things the same way that you become blind to the dangers in your environment.

Dealing with complacency

First, we must understand why it happens. We develop complacency when we become too comfortable with the status quo. We start to believe we have it all figured out, fall into a routine and stop challenging ourselves.

Complacency can manifest in all facets of life, from relationships to careers. For example, it's easy to become complacent at work after establishing a comfortable routine. Complacency leads practical matters to lose priority in favor of dull or prosaic routines, making it harder to focus on what is vital. As a result, our energies wane, resulting in burnout at work.

As the adversary of advancement, complacency causes maintainers to overlook checklists, fail to monitor closely and sometimes fail to use proper maintenance processes and publications. It can induce a workforce to take shortcuts, make poor decisions and engage in other malpractices that signify the difference between hazardous and professional performance. If we let it take hold, we risk stagnating and falling behind, losing our competitive advantage and becoming irrelevant.

Among aircraft maintainers, complacency can arise when they become too familiar with their tasks or overconfident in their abilities. This behavior can lead to a lack of attention to detail, a failure to follow standard procedures and an increased risk of errors and accidents. Complacency can also lead to a reduced sense of urgency, which can be particularly dangerous when dealing with time-sensitive tasks or critical systems.

To combat complacency in aircraft maintenance operations, it is important to understand the factors contributing to it. Factors can include a lack of training or experience, inadequate supervision, a lack of accountability and a poor safety culture. Once these factors are identified, measures can be implemented to address them and promote a culture of vigilance and attention to detail.

One effective approach to combating complacency is to use a structured approach to maintenance operations, such as a checklist or standard operating procedure. This approach can help ensure all necessary steps are followed and important details are not overlooked. It is also important to provide ongoing training and education to maintainers, reinforcing the importance of safety and professionalism and keeping maintainers updated with the latest procedures and technologies.

Another important factor in combating complacency is promoting a culture of reporting and feedback. Maintainers should be encouraged to report any safety concerns or near misses. A culture of continuous improvement encourages maintainers to learn from mistakes and strive for excellence in their work.

By taking proactive steps to prevent complacency, maintainers can help mitigate this serious threat to aircraft maintenance operations, ensuring the safety and effectiveness of naval aviation operations.

Lack of Knowledge

By Gunnery Sgt. Alex Thomason

What is a lack of knowledge? Any competent human factors instructor will tell you it is when one does not possess the requisite knowledge to complete a task correctly. Many new employees may have a lack of knowledge, experience, proficiency or all three. You don't know what you don't know because you need the experience to learn the information.

In this ever-changing world, a lack of knowledge is often a common cause of an error in judgment. Lack of knowledge means a shortage of training, information or ability to perform the tasks successfully. It becomes even more probable when coupled with the can-do attitude of most maintenance personnel. A lack of knowledge when performing aircraft maintenance can result in a faulty repair that could produce catastrophic results.

U.S. Navy photo by Mass Communication Specialist Seaman Ethan J. Soto

A U.S. Sailor assigned to Helicopter Sea Combat Squadron (HSC) 4 conducts maintenance on an MH-60S Sea Hawk helicopter on the flight deck of aircraft carrier USS Carl Vinson (CVN 70) in the Pacific Ocean.

Two maintainers were recently given a task to force-cure sealant on a panel. A few bubbles appeared on the adjacent windscreen only a few minutes from finishing the task, followed shortly after by a large crack. The interior technician frantically looked around to see through the degraded windscreen to find out what happened, but he had to get out of the aircraft to investigate. Once out of the aircraft, that maintainer noticed the exterior technician had left the heat gun on, pointed toward the windscreen and was on his phone. The interior technician immediately unplugged the heat gun, but the damage to the aircraft had already been done. The composite panel was burned and showed signs of damage and the windscreen had been heated to the point of bubbling and cracking. The aircraft was severely damaged, but fortunately, the technicians working on the task were not injured.

Why did this happen?

When questioned, the maintainer on his phone said he didn't know he was not supposed to apply direct heat toward the windscreen. Nothing in the aircraft manual stated there was an associated hazard with using the heat gun to speed up curing, even though the panel was near the windscreen.

In this mishap, knowledge and proper supervision was not present to ensure the technician outside the aircraft was focused and understood what he was supposed to do. If properly trained, the maintainer would have known that the heat gun should be kept a specific distance away from heat-sensitive areas. Along with proper tool use, proper publication use is essential and general basic aviation maintenance practices covered in basic Naval Air Systems Command (NAVAIR) publications, such as the NA-01-1A-1, are often not known. Technicians also often overlook cautions and warnings in the maintenance instruction manual (MIM). Hopefully, if the warning was not in the applicable work package of the MIM, it has been added to all applicable areas of the publication and any corresponding training taught informally in-house and formally at "C" schools. Regardless, the damage was done due to a lack of knowledge.

Understanding each task step is the key to countering the lack of knowledge as a human factor. Where better to find the correct information than the publications that govern the maintenance being performed? The technical writers who write these publications can answer technicians' questions.

The regulatory requirements for training and qualification can be comprehensive, and organizations strictly enforce these requirements. However, lacking on-the-job experience and specific knowledge can lead workers to misjudge situations and make unsafe decisions. Aircraft systems are so complex and integrated that it is nearly impossible to perform many tasks without substantial technical training, current relevant experience and adequate reference documents. Furthermore, systems and procedures can change substantially, and employee knowledge can quickly become outdated. The complexity of aircraft systems and frequent updates and changes to technical directives demand frequent informal and sometimes formal training and strict adherence to maintenance publications.

No matter the rank, everyone can learn more and do a better job if they continue to search for up-to-date publications. It should not be taken as a sign of weakness to ask someone for help or information. This research should be encouraged. As we continue to discuss human factors that affect our judgment, lack of knowledge seems to be a growing problem in our industry. All while the aircraft become increasingly complex and training needs to be accomplished quicker and at lower costs.

Gone are the days when aviation maintenance technicians could maintain an aircraft with no other technical training than on-the-job training. Today, we face complex and integrated aircraft systems that make it next to impossible to maintain these aircraft without substantial technical training and reference resources. Three of the most critical resources that should be used are the manufacturer's maintenance manuals, the expertise of others and integrated diagnostics systems. Today's highly complex aircraft often have deficient maintenance publications due to information being considered the

manufacturer's intellectual property. As a result of this withheld technical data, Navy and Marine Corps units are constantly reaching out to NATEC or field service representatives, who then must reach out to engineers at the manufacturer to troubleshoot and repair complex and persistent problems.

Naval aviation maintenance is a rapidly changing environment, and all of us who support it must leave our egos at home to succeed in our profession.

MAINTENANCE MANUALS

Unfortunately, no single manual holds ALL of the information we must learn and comply with. I suggest starting with the aircraft manufacturer's maintenance manuals. You must also be familiar with our aircraft certifications, general maintenance manuals like the NA 01-1A-1, service bulletins, flight manuals and our Naval Aviation Maintenance Program (NAMP).

There's an old saying, "It is strange how much you must learn before you know how little you really know." This saying has never been more true than in the aviation maintenance industry. To avoid falling victim to the human factor of lack of knowledge, commit to spending a small part of each day reading about subjects that affect your job daily. Military aviation units MUST also ensure they hold frequent and effective unit-level informal training to produce highly knowledgeable, experienced and qualified technicians. This process will also help ease the risks induced by our unique military summer, winter, post-deployment and pre-deployment personnel transfer waves.

Throughout our careers, we have periodically participated in structured technical training to brush up on basics and maintain uniformity in maintenance procedures. As previously mentioned, troubleshooting has become more complex than ever before. Additional and frequent training typically produces a great return on investment if the training is tailored to reach different types of learners and relevant to what the technicians deal with and commonly struggle with. Many type/model/series aircraft in our Navy and Marine Corps aviation arsenal have thorough self-diagnostic systems. NAVAIR program offices are investing more in these systems to help troubleshoot and repair aircraft quicker and with more reliability. If units are not taking the time to train personnel on new codes, improved capabilities and processes, those units most likely will not perform as well as units that make time for training.

Modernizing aviation professionals is a must and technological advancements in today's aircraft are continuing to evolve. The Navy is working with the Federal Aviation Association to incorporate more cutting-edge technology into the training, including artificial intelligence, virtual reality and even drones, making the profession more engaging to prospective maintainers. Incorporating these advancements into our training will further the readiness of our aircraft and more importantly, help create more technically proficient aviation maintainers. More technically proficient maintainers will improve readiness while simultaneously decreasing factors that lead to mishaps and increasing mitigation and safety awareness.

Remember: Training = Knowledge = Safety

BRAVO ZULU

SAILORS AND MARINES PREVENTING MISHAPS

Aviation Machinist's Mate Airman Dominique Mendez-Lopez

Following the recovery of an MH-60S aircraft attached to Helicopter Sea Combat Squadron TWELVE (HSC-12) to precision landing spot four while deployed aboard USS Ronald Reagan (CVN 76), catapult number three caught fire in the immediate vicinity of the aircraft and ground support crew. As the Landing Signalman Enlisted (LSE), Mendez-Lopez remained calm, took charge and responded. Without delay, she notified the pilots of the imminent danger, led four line division members in the expeditious and safe removal of chocks and chains and signaled the aircraft for immediate launch. Following clearance from the control tower, the aircraft safely departed the flight deck within a minute of the fire being recognized. Mendez-Lopez's timely and effective leadership directly contributed to the safety of aircrew and flight deck personnel.

Bravo Zulu is a naval signal originally sent by semaphore flags and in English, simply means "Well done."

Distractions During Maintenance

By Senior Chief Aviation Structural Mechanic Todd Brown

Originally coined by aviation accident investigator Gordon Dupont, the "Dirty Dozen" is a term used to describe 12 human factors that can result in an accident if not properly managed. These factors are now used by the Federal Aviation Administration (FAA) for training, and one of the 12 factors the FAA trains to mitigate is distraction.

According to Merriam-Webster, distraction is defined as "an object that directs one's attention away from something else."

> *"Distractions are the number one cause of forgetting things, including what has or has not been done in a maintenance task."*

In the Naval Aviation Enterprise, it is vital to ensure we aren't distracted while performing maintenance. The FAA states:

What potential distractions could divert our attention while performing maintenance?

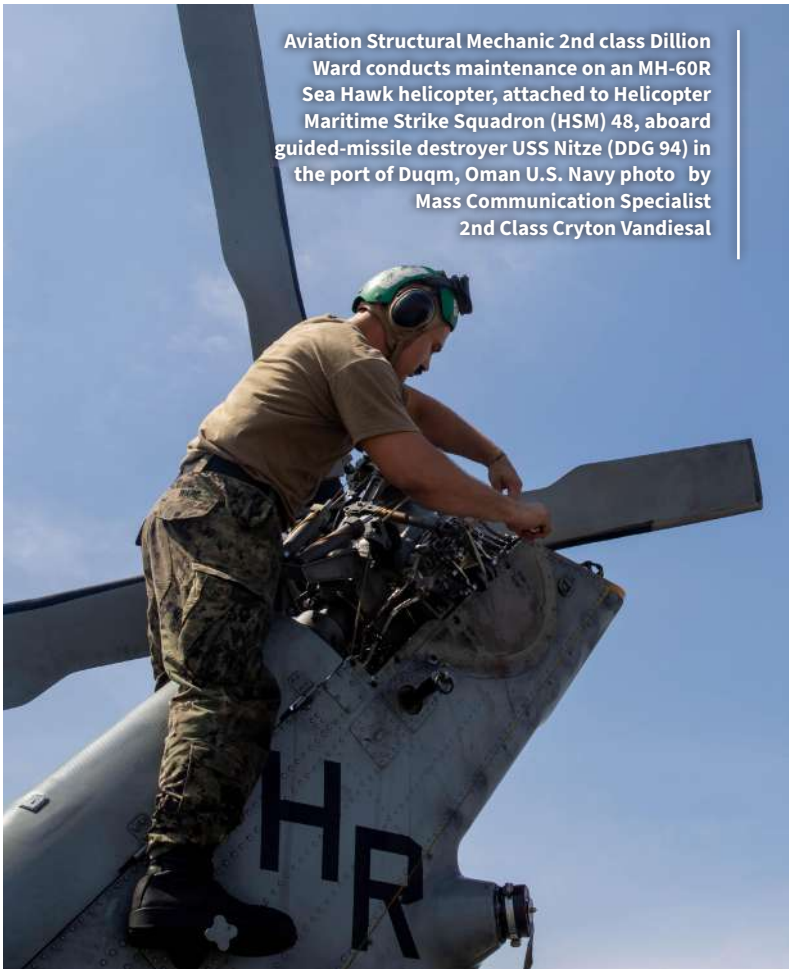
One of the most common areas that can sidetrack our attention from work is challenges in our personal life, which can include issues with family, finances, car trouble or even our significant other, to name a few. In our professional life, distractions might involve thinking about an upcoming deployment, workplace issues or something as simple as focusing on the weather – these can all distract our attention from the maintenance task and affect performance. In short, anything that distracts our attention from the maintenance task at hand needs to be dealt with because it greatly increases the chances of a mishap occurring. In the naval aviation enterprise, we must mitigate or eliminate any risk that could lead to a mistake.

What actions can we take to help ensure we aren't distracted while performing maintenance?

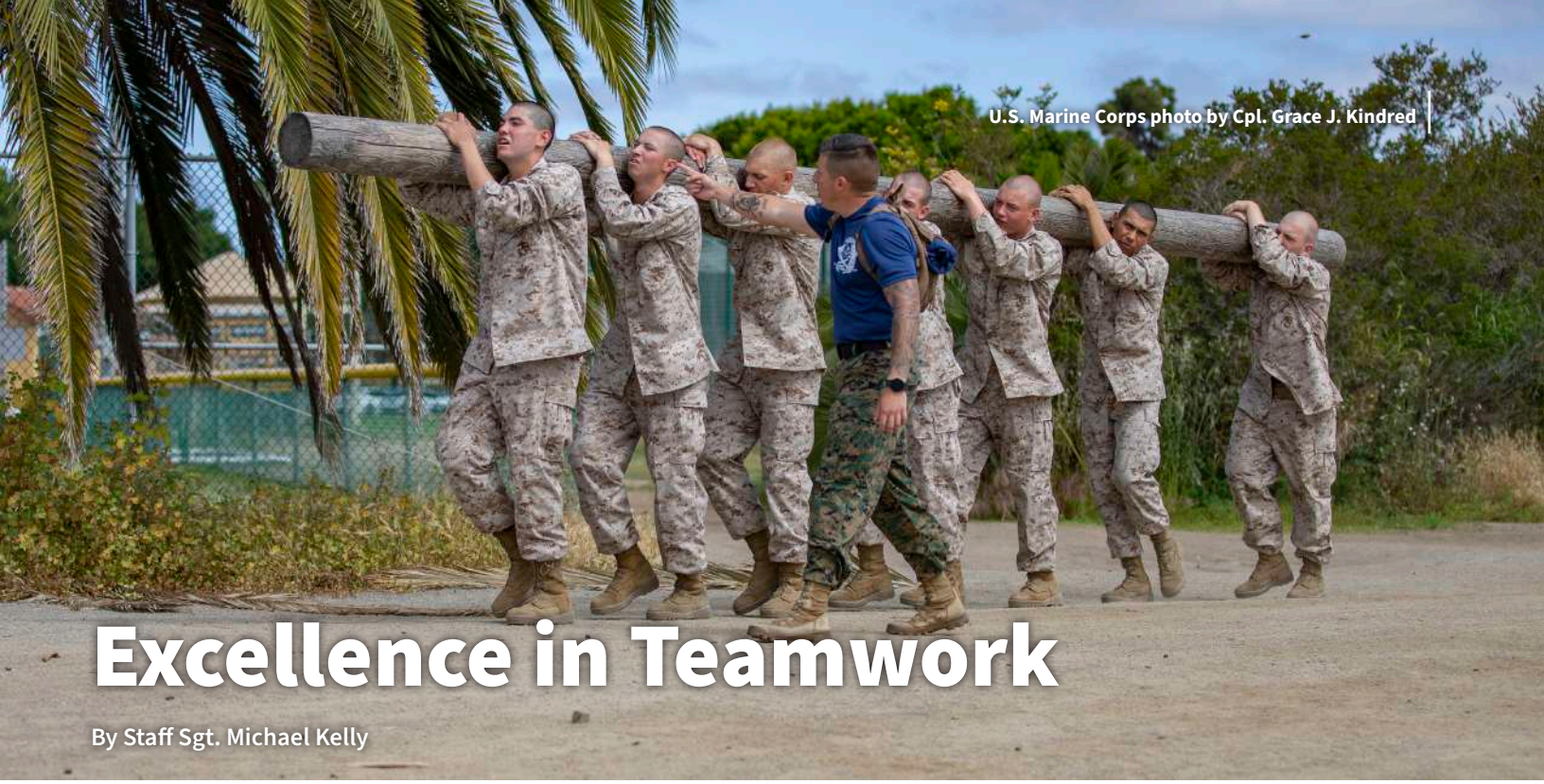
First and foremost, leaders need to know their people, which aids in recognizing when a Sailor or Marine isn't behaving normally or seems distracted. If you notice unusual behavior, find an appropriate place and ask if everything is okay. If they are not okay, help them to the best of your ability and ensure you provide them with the resources required to get the help they need. This help could be someone else in the command, the Fleet and Family Support Center or one of the many programs the Navy offers to assist Sailors and Marines in need. The goal should be to help them work through whatever issues distract them and negatively impact their performance.

Second, we must ensure we're using our maintenance publications while performing maintenance. Publications give step-by-step instructions on how to perform the maintenance. Enforcing the use of publications can greatly help reduce mistakes caused by distractions. If you get distracted while performing maintenance, figure out the last step you remember performing, then go back a couple more steps to ensure no steps were missed. Most importantly, collateral duty inspectors, quality assurance representatives, chiefs and maintenance control, should not expect what we don't inspect. Get out and about to ensure maintenance is being performed correctly.

As individuals, we must first be able to recognize when something is distracting us and then address the distraction so we are fully focused. In Warrior Toughness training, we learn about mindfulness, which happens when we are fully aware of the present moment – not only what's going on around us or our situational awareness but also what's going on internally. In some cases, it may be hard to admit what is distracting us, but we have to recognize when we need help. We all deal with issues that distract us at some point in our lives, but we can't let our distractions result in injury to ourselves, to others or damage to equipment. The aviation industry is very unforgiving and requires our full attention when performing maintenance. Stay focused and limit distractions – lives depend on it.



Aviation Structural Mechanic 2nd class Dillion Ward conducts maintenance on an MH-60R Sea Hawk helicopter, attached to Helicopter Maritime Strike Squadron (HSM) 48, aboard guided-missile destroyer USS Nitze (DDG 94) in the port of Duqm, Oman U.S. Navy photo by Mass Communication Specialist 2nd Class Cryton Vandiesal



U.S. Marine Corps photo by Cpl. Grace J. Kindred

Excellence in Teamwork

By Staff Sgt. Michael Kelly

U.S. Marine Corps recruits with India Company, 3rd Recruit Training Battalion, march during log drills. Recruits carried a 250-pound log, executing various teamwork exercises to strengthen their bodies and minds.

One of the most important pillars in achieving mission success is teamwork, and it is imperative we embrace and implement it throughout the Navy and Marine Corps. Teamwork is something we learned the very first day of entering service, and it's something we continue to build on and teach to future generations: the importance of teamwork within the work center and command.

As we discuss the topic, we continually see trends supporting a lack of teamwork across the board, which has been a root cause of many mishaps. This article will look at different ways to help us strive for excellence in teamwork, and we'll discuss determining how to complete tasks, ensuring everyone understands and agrees, and more importantly, trusting the person to your left and right.

One of the building blocks of teamwork is an open line of discussion on how to conduct tasks and what each team member will do to create an efficient and effective process. Leaders should understand each other's strengths and weaknesses and build off that understanding before tasking a team with a job. Good leaders can delegate teams in such a manner that team members' weaknesses become their strengths. When everyone is working together, team members who are stronger in certain areas help others who may not be as strong.

In order for the team to succeed, members should clearly understand their job, responsibilities and how they contribute to the task at hand. Daily morning meetings are helpful in answering questions or concerns from the maintenance department or work center. The same holds true for a maintenance evolution, aircraft move, aircraft turn or operational check. A pre-evolution meeting with the team can foster trust and ensure everyone understands their roles and responsibilities.

If you don't have trust within your team, it may be very difficult to move forward with tasks. One of the best ways to establish trust is by having open lines of communication between ALL team members to discuss issues, concerns and suggestions for improvement. A noticeable lack of trust amongst team members can create a toxic environment, and leadership should be mindful of asking continuous questions, micromanaging and overriding team members. If there are trust issues, leaders and team members can use the "trust but verify" method. It is best to address concerns upfront by providing clear expectations and creating open communication channels where issues undermining trust, safety, quality or reliability can be addressed before they fester, negatively affect the team and overall work climate.

Teamwork and team building are essential for any work center, department, command and community. In the aviation community, it takes a village to complete the mission, and we can only achieve success with teamwork. There is never a case in naval aviation where one individual completes a task alone. As a diverse Navy and Marine Corps, we have the resources to succeed through the diversity of people within our teams –and we should take full advantage of that. We want teamwork to grow everywhere – throughout our jobs and community because we need each other to be successful. Rely on the person to your left and right and trust that they are there to help – not to see you or the command fail.

BRAVO ZULU

SAILORS AND MARINES
PREVENTING MISHAPS

Aviation Electrician's Mate 3rd Class Trevion Richardson

In the early morning hours, an MH-60S attached to Helicopter Sea Combat Squadron 12 (HSC-12) deployed aboard USS Ronald Reagan (CVN 76) was towed to precision spot four in a folded condition. Aviation Electrician's Mate 3rd Class Trevion Richardson and his ground support team were tasked with a blade spread evolution to ready the aircraft for flight. As the blades began to spread, he noticed that only the starboard blades were moving. Using quick judgement, he immediately stopped the blade spread evolution. His actions prevented what could have been a dangerous imbalance of the main rotor, possibly leading to catastrophic aircraft rollover. After stopping the rotor blade spread, Richardson climbed atop the aircraft and assisted in manually unfolding each blade using the appropriate ground support equipment. His swift and decisive action helped prevent a possible aviation ground mishap.

Bravo Zulu is a naval signal originally sent by semaphore flags and in English, simply means "Well done."

Mapping Naps

By Albert Budaszewski

It's often been said that military personnel can sleep almost anywhere. Let's face it – they often have to – due to the circumstances surrounding worldwide travel, deployments, combat and extended watchstanding requirements. Men and women in uniform have been answering the call to duty and sleeping wherever and whenever for as long as our services have existed. We've all seen groups of Marines or Soldiers waiting at airports asleep during a layover or seen images on the news of them catching a nap surrounded by sandbags and wooden crates. However, there are circumstances where sleeping is prohibited in certain areas because the consequences can be severe. Seasoned aviation ordnancemen know very well what I'm referring to here – bundles of rags and a nice, flat missile container.

The Magazine Environment

Magazines can be large spaces below decks accessed by vertical trunks, also known as completely vertical ladders, that are not particularly fun to transit under the best conditions. Spaces quickly become a maze of palletized weapons encased in banding, tie-down chains, numerous battens, assembly tables and hoists when multiple levels, stacks of bombs, missiles, ammunition and various components are present. These spaces can be challenging to navigate with lighting but become trickier in the dark. Fortunately, there are battle lanterns that should work when positioned throughout the magazine, and hopefully, they are where they should be when needed. Most magazines are also equipped with aggressive sprinkler systems with many sprinkler heads both in the overhead, along bulkheads (walls), and in places Sailors or Marines can easily encounter one if they unaware of their surroundings. These sprinkler heads have sharp edges that can leave a nasty cut if you bump your head on one or drag your hand the wrong way along the edge.

A Quick Nap. What's the Worst That Could Happen?

Imagine you're out to sea, and you've been working 12 on and 12 off for months. You managed to work extra hours in addition to your regular duties to get your qualifications, and there is a break in the action during your shift. Since things have quieted down in the magazine and your supervisor is busy with administrative duties, you decide to nap on a missile container around the corner from the entrance to the magazine. Some time goes by, and you have a very peaceful nap, but unfortunately, an engineering casualty causes the magazine to lose power, so the lighting goes out. You wake up to find yourself alone, in the dark, struggling to find a battle lantern to leave and discover you've been locked in. Stay calm, you think, because someone will be down soon, and no one will find out you slept in the magazine, right? Wrong. Ventilation has gone out, and you notice the temperature getting hot and the smell of smoke in the air. The 1 Main Circuit blares general quarters and announces a fire in the space adjacent to the magazine you're in. You hear a loud banging sound as the sprinkler system

kicks in, and you struggle to breathe as water rapidly fills up this dark, inhospitable place that was so peaceful just a few hours ago. Now, you're disoriented, scared and wondering how things went so wrong so fast. Fortunately, a magazine sprinkler alarm triggered a muster of all personnel, and help is on the way. Imagine if you had hit your head, got trapped underneath something, and drowned or bled to death. The darkness, rising water and numerous obstacles make the possibility of serious injury more likely.

Senior Chief Aviation Ordnanceman Robert Hodor, weapons handling supervisor, addresses Sailors during an ordnance handling evolution in the lower cargo ammunition magazine aboard amphibious assault ship USS Makin Island (LHD 8) U.S. Navy Photo by Mass Communication Specialist 3rd Class Noël O. Heeter

Rescued, but Facing the Music

The sprinklers stopped, the lighting was restored and you're standing in chest-high water. Personnel accessed the magazine to check for damage and discovered you there. There is no hiding, only explaining how you got locked in and why. Not only will you be dealt with for sleeping in the magazine, but those who locked you in without verifying that everyone made it out will also have to explain their actions. From an accountability and safety standpoint, this isn't good. Depending on what ordnance was stored in that magazine, a wall-to-wall inventory would likely ensue to ensure nothing was missing. The safety concern is that you could have been trapped, and if the ship had suffered battle damage, you might have even been killed. Now you must face the chain of command and those implicated due to poor decision-making as you receive nonjudicial punishment.

Bottom Line

This scenario may not happen to the degree I mentioned, but many Sailors have been locked in magazines over the years. Ask any salty gunner's mate or aviation ordnanceman what it's like to experience a sprinkler going off and they'll probably tell you how surprisingly fast a space can fill with water and how bad the visibility can be. Ask anyone that's experienced a ship going dead in the water or an electrical casualty for an extended period what can happen. Those battle lantern batteries don't last all that long. Imagine all those things happening simultaneously, and you can understand why it's so important to react, escape and respond to whatever threat or tasking comes along. Make it a point to stay awake in the magazines and not let personnel sleep down there. Don't let people work alone and always thoroughly sweep each level of a magazine before locking it to prevent someone from becoming trapped when the magazine trunk is secured. Being safe in a magazine involves taking responsibility for yourself and those around you to ensure everyone is prepared for whatever may happen and everyone is accounted for at all times. Look out for each other and take time with your crew to review what actions you'll take during emergencies in a magazine, including fires, flooding, egress, power loss or any other casualty that may happen. This process will ensure the crew stays ready on a routine basis. And if you're still tired, try going to bed a little earlier.

Let's next talk about fatigue. Fatigue, which is defined as tiredness resulting from mental or physical exhaustion or illness, is one of the top 12 "dirty dozen" human factors associated with all recorded aviation mishaps. The scenario described above happens a great deal throughout naval aviation due to numerous factors, such as lack of resources, including people – particularly experienced ones, the high pace of operations (typically flying more than 12 hours a day with constant launches, recoveries, deck respots and maintenance in all types of weather conditions) environment of operations that do not support good sleep (living under a flight deck with constant catapults, traps and aircraft moves directly above berthing spaces), etc. The previous scenario could easily have been a technician sleeping inside an E-2's "hell hole" in the back end of the aircraft while the aircraft gets pushed back tail over the water or a plane captain sleeping in the cockpit of an F/A-18 Super Hornet in the six-pack area of the flight deck, and an E-2 lands at night off to the right of centerline and its starboard wing slices through canopies of parked Supers in the six-pack. There have even been instances of Sailors and Marines sleeping in areas of catwalks and getting aircraft chocks or chains dropped on them. Working while heavily fatigued can get you injured or killed, especially in the shipboard environment.

In aviation, working while fatigued has also led to other people getting hurt, killed or damaged equipment because someone was too tired to perform their duties correctly, resulting in a lack of proper thought processes or reaction time. Studies on fatigue often compare fatigue levels to intoxication or blood alcohol content levels. Do an internet search on fatigue compared to blood alcohol content and you will find numerous scientific studies by reputable organizations and academia comparing things like being awake for 20 straight hours (something that can easily happen on deployment) to having a .08 to .1% BAC. Without getting into a novel here, Sailors and Marines, especially within the aviation enterprise, need to ensure they get the proper rest in the proper place – not in a magazine, aircraft or catwalk. If a Sailor or Marine is so exhausted that sluggishness sets in and the mental thought process is affected, the chain of command needs to know. The Sailor's or Marine's responsibility is to ensure they get the correct amount of sleep when off work or duty hours – clinical studies support seven to eight hours at minimum. Physical and mental health are also a huge part of getting adequate rest, so Sailors and Marines should also be sure they are taking care of those life aspects. Balancing work, physical and mental fitness, and rest each day will help combat fatigue and help prevent mishaps that could damage aircraft or equipment or put one's self or others in danger.

Lack of Resources

By Senior Chief Aviation Machinist's Mate Anil Ramdeen

Many units throughout the Navy and Marine Corps develop deviations and assume extra risks without any mitigation due to a lack of resources to accomplish the mission. Each maintenance evolution requires a specific number of people, time, tools, parts and equipment to maintain aircraft in a ready-to-fight status. Let's look at how the lack of any of these five resources can increase risk, interfere with one's ability to complete a task correctly or cause damage to equipment.

People

Understaffed units' most experienced personnel often juggle important maintenance tasks leading to confusion and mistakes. There is also a significantly higher probability of making an error while performing high-risk evolutions without required personnel. Staffing shortages are often attributed to gapped billets, but medical appointments, leave and standing duty aggravate the already heightened risks. Less properly trained personnel can affect aircraft moves, engine turns, refueling aircraft, loading and downloading ordnance on aircraft, jacking and lowering aircraft, engine removal and installation and fuel cell maintenance. Deliberate and purposeful risk management must be performed for high-risk evolutions and all naval aviation evolutions should have the proper experience, qualifications and maturity oversight, such as the required flight line/flight deck chief and a separate hangar/hangar bay chief to oversee tasks in each leaders' assigned area of responsibility.

Time

Time may not be sufficient to complete the required maintenance task due to a heavy workload and a short deadline. With this pressure, personnel can skip procedural steps or decrease the quality of maintenance to make a deadline. For example, one aircraft returned from flight with a down discrepancy and is expected to be up for the next event. Mission changes on an assigned aircraft in the middle of a flight schedule drives ordnance teams to download and load the aircraft with the new loading plan for the mission in minimal time. Realistic time must be allotted to accomplish each task with quality and safety in mind to ensure no harm to people or damage to equipment. When unforeseen things change the dynamic of what was planned, they must be clearly communicated to management, including realistic extended time frames. Management must support completing the task correctly and safely without any recourse to the people trying to accomplish the task.

Tools

Not having properly designed, calibrated or correct tools for the task at hand has led to improper maintenance, injuries, damage to aircraft and support equipment, slower repair times and missed defects. For example, technicians in the H-60 community have ruined million-dollar-plus main gear boxes by not using bridge removal tool kits during scheduled inspections and support equipment technicians forced to use a standard wrench to remove mounting bolts that require a specially designed and manufactured wrench. Program offices, maintenance leaders and managers, fleet readiness centers and supply systems should ensure technicians have the correct tools to perform the assigned tasks and the tools are in good working order and properly calibrated.

Parts

Lack of spare repairable and consumable parts not only drives units to do more work through cannibalizations, extra inspections to extend something not intended to be reused or dealing with corroded or stripped hardware, but it also increases the time it takes to complete a task. When parts are needed to make an up jet and they are unavailable in the supply system, a cannibalization action might be initiated because waiting for a few hours or several days is not an option. This action may lead to a quick turnaround for an aircraft, but cannibalization increases the workload and stress on personnel. For example, a hydraulic actuator may take several days to come in through the regular supply system, but since the unit has another aircraft down for special inspections and maintenance, the required part for the flight schedule aircraft gets cannibalized. The cannibalization action now drives personnel to perform double removals, installations and operational checks, as well as recording movement and ensuring tasks for that part are set correctly in the Naval Aviation Logistics Command Management Information System. Lack of parts can increase the risk to personnel and damage to equipment due to additional work, stress, skipping procedures and re-use of degraded consumable parts.

Equipment

Not enough equipment available due to being down for maintenance or awaiting new contracts for repair parts is a fleetwide issue from all assessments conducted this year. For example, squadron A needs to move an aircraft to the wash rack to complete their 14-Day Special Inspection, but their tow tractor is turned in and the installation Fleet Readiness Center did not have another ready-for-issue tow tractor to check out. A supervisor sends personnel to find a tow tractor for the aircraft move. Often, these "tasked" tow tractor drivers find one parked on the flight line and take it without properly checking it out and, even worse, without performing the required pre-operational inspection because it was a quick move to the wash rack. A lot can go wrong without a proper pre-operational inspection for a tow tractor. Available and working equipment is needed to mitigate risk of injury or damage to equipment.

Good risk assessment, planning, communication, supervision, execution and debriefing must be practiced, to minimize risks to personnel and damage to equipment when resources are lacking, but the mission must be completed.

U.S. Marine Corps photo by Cpl. Nicolas Atehortua

U.S. Navy photo by Mass Communication Specialist 2nd Class Malcolm Kelley

Internal & External Pressures

By Senior Chief Aircrew Survival Equipmentman William Morgan

The Federal Aviation Administration has determined 12 human factors can result in an accident if not properly managed. They refer to these 12 common causes of human factor errors as the "Dirty Dozen." One of the 12 human factors the FAA trains maintainers to is pressure.

Merriam-Webster defines pressure as the burden of physical or mental distress as it pertains to the constraints of circumstances. In naval aviation, pressure is a part of our everyday lives, and if managed, it can energize and motivate one to perform. On the other hand, too much pressure can tip the scales and produce negative results. The consequences of too much pressure can lead to other Dirty Dozen human factor errors if not controlled.

In the scope of aviation maintenance, multiple responsibilities are tasked daily. This responsibility can leave one feeling overburdened by the perceived expectations of others and wondering where to begin. The trick to managing pressure is to find the optimal place between having too much or too little, enabling the pressure to work for you and not against you.

To manage pressure, we must first understand it. There are two types of pressure: internal and external. Internal pressures originate from worrying about one's ability to meet others' expectations or pushing oneself too hard. External pressures stem from the circumstances or people surrounding the circumstances. For example, a large workload that exceeds one's capacity would be considered an external pressure. In extreme cases, too much pressure may lead one to take unnecessary risks or use questionable techniques. Another aspect of pressure that can be confusing is not knowing whether the pressure is perceived or actual. This expectation should be clear when tasks are assigned and expectations are communicated; if not, ask for clarity.

As leaders, we must identify the signs and know when the pressure has negative effects, including deteriorating work quality or job dissatisfaction. If excessive pressure is sustained, one may run the risk of burnout. Too much pressure can lead to illness, psychological or emotional issues, and behavioral problems. We mustn't confuse pressure with stress. As previously mentioned, pressure can be positive, and if controlled, it can motivate one to do great things. However, when pressure builds, a sense of calm is replaced with feeling out of control.

After understanding what pressure is and accepting that it is not only part of aviation maintenance but also a necessity, we can develop the tools to help us thrive under pressure. Living sensibly is a key aspect of coping with pressure. This means exercising regularly, maintaining a healthy diet, ensuring plenty of sleep and moderating alcohol intake. These are the first steps in managing pressure, but they will not alone guarantee that pressure will not have a negative impact. Below are some additional strategies.

- **Manage your response.** A positive mental attitude goes a long way in managing pressure.
- **Stay on top.** Try to tackle responsibilities as they arise – they will unlikely go away on their own. Remember that pressure is a positive force when you're in command.
- **Organize yourself and your tasks.** An organized and prioritized workload helps to manage it when the pressure starts to build.
- **Ask for help.** In the Navy and Marine Corps, we are our support network and we should NEVER be afraid to ask for help.
- **Put safety first.** Do not compromise the integrity of the job to meet a deadline.

It is also important to be aware of the many resources available to help us cope with the numerous pressures we encounter. The Fleet and Family Support Center has a wealth of services designed to help service members achieve their potential.

Managing pressure is essential for Sailors and Marines to stay healthy individually and continue to accomplish the mission as a team. To manage pressures, choose a positive approach with a confident attitude and ask for help if you find yourself or someone else feeling pressured. By doing this, you can avoid excessive pressure that can lead to physical, emotional, psychological and behavioral issues.

Lack of Assertiveness

By Senior Chief Naval Aircrewman (Helicopter) Erica Gibson

Mishap trend analysis in our Risk Management Information (RMI) system shows that in the past five years, nearly 70% of all aviation-related mishaps are aviation ground. In every report, more than one human factor contributed to a mishap. Lack of assertiveness is one of the contributing human factors, and it's also listed by the Federal Aviation Administration as one of the top 12 human factors that makes human error a causal factor in aviation maintenance-related mishaps. Let's dive deeper into what assertiveness is, what causes a lack of assertiveness and how our warfighters can become more assertive.

Assertiveness is "an individual's willingness to actively participate, state, and maintain a position, until convinced by the facts that other options are better. Assertiveness is respectful and professional, used to resolve problems appropriately, and to improve mission effectiveness and safety" (CNAF M-3710).

Assertiveness is a learned behavior and communication style developed over time. It actively develops from the front matter of our brain, called the prefrontal cortex, through life experiences. "The prefrontal cortex intelligently regulates our thoughts, actions and emotions through extensive connections with other brain regions. It creates a 'mental sketch pad' (to use a phrase coined by Alan Baddeley) through networks of neurons that can maintain information in the absence of environmental stimulation" (Arnsten, 2009). How much an individual is willing to actively participate and display assertiveness falls on the organization, its culture and people we engage with on a day-to-day basis.

Causal Factors

As a professional organization with dangerous jobs, how is it possible that our warfighters lack assertiveness?

Studies and surveys have shown that we lack assertiveness through inexperience of our predominantly young workforce, inadequate training or not using the tools at hand to properly train. Additionally, little to no feedback, loopholes and stigmatisms created in military hierarchy communication, hostile or negative work environments, burn out – or not knowing how to say no – and not understanding a task also contribute to lack of assertiveness.

Lack of resources in the form of personnel, time, parts, tools and equipment also contribute to the unassertive and undertrained Sailor in the aviation community. Naval Safety Command assessment team members have seen and documented these specific issues across the fleet time and time again while conducting Tier III local area assessments. When we lack the essentials to do the job correctly, it results in missed or skipped training, gundecking, not finishing a job or task and moving on to a different tasker, which often results in incorrectly performed maintenance.

All these factors then lead to the domino effect of a hostile or negative work environment, Sailor burnout, a break in trust felt throughout the organization and the mishap that could have been prevented. How do we combat the elements that are given to us in the aviation community? We start by going back to the basics and improving the organizational culture through training, mentorship, self-evaluation, self-correction and being assertive.

The Basics of Learning the Job and Working as a Team

Any job or task in the military is built on the required knowledge, skills and abilities to perform a specific job or task, and in the Navy, we start this process in basic training. It's the first exposure to being a U.S. Navy Sailor, combating shipboard elements during battle stations in a high-stress environment and learning how to work together as a team. After basic training, we gain our apprenticeship through formal training at schools with classroom instruction and usually some type of static simulators before reporting to our duty station. It is the first duty

Chief Warrant Officer 2 Tony Statam, aviation training team supervisor, gives feedback after an aviation training team exercise in the hangar bay aboard amphibious assault ship USS Makin Island (LHD 8). U.S. Navy photo by Mass Communication Specialist 3rd Class Analice C. Baker

station where we become skilled in our jobs. For example, inspecting, testing, maintaining, preserving, repairing and troubleshooting are key tasks for an organizational level E-4 rated aviation machinist's mate (AD3). The more exposure an AD3 gets in performing these tasks, along with feedback and supervision, the more skilled and able the AD3 will become in maintaining aircraft. The Sailor will gain confidence and competence and become more assertive in the job. As we qualify in rank and rate over time, we are entrusted to inspect, monitor, train, mentor, evaluate and manage our juniors and peers. We are trusted to complete the job or task assigned to us correctly and report daily to those above us. At what point will our skilled AD3 be assertive enough to communicate issues that arise or speak up about an unsafe event or evolution?

Increasing Communication Efforts

Getting our warfighters to speak up and be more assertive requires effective communication and positive behavioral adjustments. This communication effort and behavioral adjustment must occur up and down the chain of command when performing day-to-day duties. It must be flexible and adapt to all personnel performing an event or evolution based on their experience level. If we take a step back and look at our organizational structure, Sailors and Marines E-5 and below are entrusted to do the majority of work in the shop, hangar and on the flight line or flight deck while still being trained and supervised. When Sailors and Marines bring up issues or have questions, we must listen and respond with positive and productive feedback, not ignore their communication efforts. On the other hand, feedback or constructive criticism must be welcomed to adjust our thought processes and change our behavior.

Self-Evaluate and Self-Correct: What Communication Style Are You?

Princeton University identifies four common communication styles: passive, aggressive, passive-aggressive and assertive. Someone who *passively* communicates does not express feelings or needs. They defer to others to make decisions to avoid tension and conflict. Being passive can lead to misunderstandings, built-up anger and resentment. *Aggressive* communicators express feelings, needs and ideas at the expense of others. They can become defensive or hostile during confrontation. They will often alienate and hurt others but can meet needs quickly. A *passive-aggressive* communicator can appear to be passive but will randomly act out in anger. They will try to control others using sarcasm and indirect communication while trying to avoid conversations. A passive-aggressive communicator lacks consideration of others' rights, needs and feelings. *Assertive* communicators are honest and direct with their thoughts and feelings. They respect others' feelings, ideas and needs. Although the assertive communication style is one that builds trust and long-term relationships, sometimes other communication styles are warranted to handle specific situations that undermine the safety and welfare of others.

Being assertive is recognizing a problem and having the courage to speak up about it while offering solutions. A person who is assertive emanates confidence and good judgement. An assertive person does the right thing the first time every time and maintains positive connections while communicating clearly in the organization. An assertive individual gains credibility and builds trusting relationships, establishing an open line of communication. Being able to openly communicate issues helps to promote a safe and productive work environment. A safe and productive work environment builds assertive warfighters. An assertive Sailor lives by and represents the Navy core values of honor, courage and commitment.

Combating Stress

By Master Chief Aviation Maintenance Administrationman Arlene Williams

All leaders, regardless of employment sector, are responsible for ensuring their subordinates can perform duty tasks optimally. A critical role in job performance optimization today includes awareness of, and support for, the Sailor, Marine and leader challenge of stress. Military leaders and members are responsible for protecting our nation and its interests, often with less than the required resources, knowledge and experience. Without adequate preparation, mission completion and warfighting readiness will suffer. The Federal Aviation Administration recognizes stress as part of the Dirty Dozen.

Stress can place immense demands on the physical and mental health of Sailors and Marines, which can affect behavior, performance and coworker relationships. Stress is also a major cause of long-term absence from work. According to an American Institute of Stress study, 80% of employees feel stressed at work and 60% of missed workdays are associated with stress. Although stress comes from various causes, work stress leads to burnout. Knowing how to manage factors causing work-related stress is critical for optimal health.

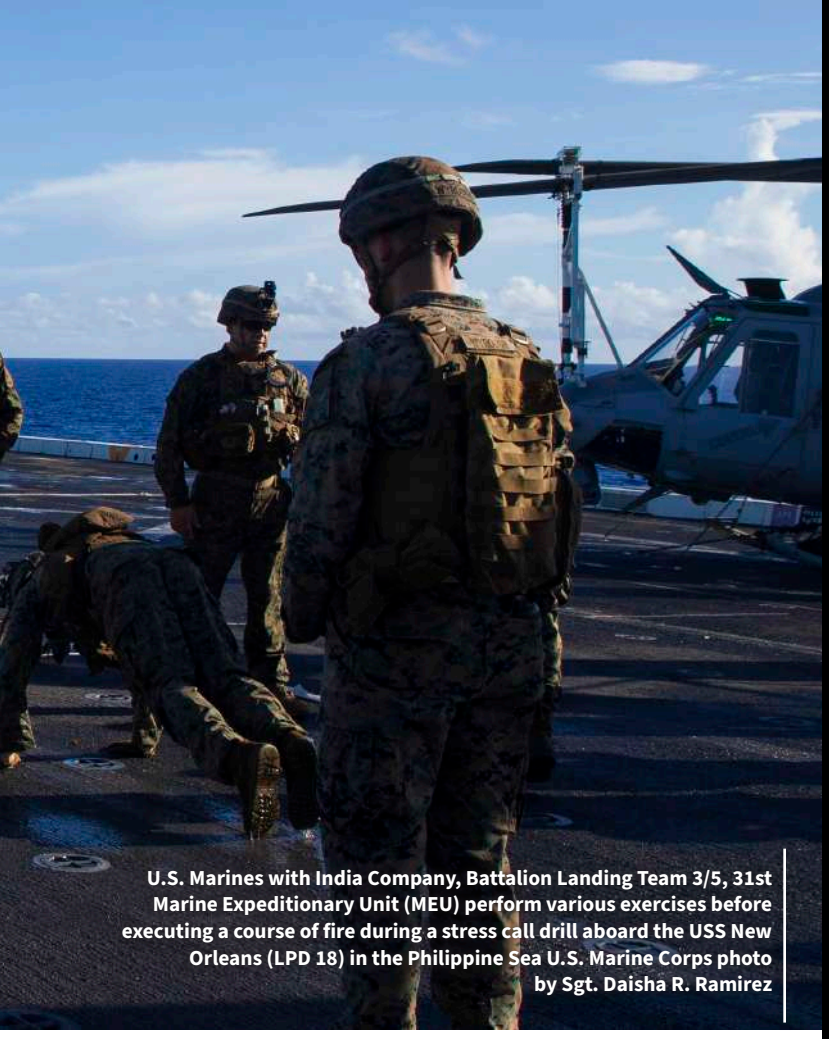
Because stress can affect the ability to complete duties, it is imperative for leaders to know the signs of stress, how to deal with stressed Sailors and Marines, and refer them for appropriate treatment. Managing stress before it is an issue, such as referring the Sailor or Marine to a trusted professional who can help, and taking a rational, problem-solving approach is essential.

Stress makes the Dirty Dozen list because there have been instances where it has been a factor in causing aviation maintenance technicians or pilots to lose concentration and make mistakes during the performance of their duties. Stress is inherently a part of all aviation operations due to pace, criticality to safety, constant pressure, sophistication of operations and equipment. This stress increases when applied to military operations, especially aboard ships and in hostile areas of operation. We cannot afford to let stress get to the point that it distracts us, clouds our judgement, slows our reaction time, prevents us from focusing on what matters or causes us to be unreliable.

Stress defined, FAA Dirty Dozen – although there are many types of stress, in the aviation environment there are two types most often cited – acute and chronic.

Acute stress arises from real-time demands placed on senses, mental processing and physical body; for example, dealing with emergencies or working under time pressure with inadequate resources.

Chronic stress is accumulated from long-term demands placed on physiology by life demands, i.e., family relations, finances, illness, bereavement, divorce, work, even winning the lottery. When suffering from persistent and long-term life events, reaction threshold to demands/pressure (stress) is lowered. Early visible signs of stress include changes in personality/



U.S. Marines with India Company, Battalion Landing Team 3/5, 31st Marine Expeditionary Unit (MEU) perform various exercises before executing a course of fire during a stress call drill aboard the USS New Orleans (LPD 18) in the Philippine Sea U.S. Marine Corps photo by Sgt. Daisha R. Ramirez

mood, judgement errors, lack of concentration and poor memory. Individuals may have difficulty sleeping, increased fatigue and digestive problems. Longer-term signs of stress include susceptibility to infections, increased use of stimulants and self-medication, absence from work, illness and depression. Coping with daily demands may be achieved with simple breathing and relaxation techniques.

Having open communication channels readily available to discuss issues and rationalize perceptions, along with getting rid of stigmatisms that people are "weak" if they need to talk about work and life stressors has been cited as an even more effective method to effectively manage and lower stress. Some channels involve social interaction with peers – factors helping to reduce stress and build stressor resilience. If stress is chronic, lifestyle changes are required and should be achieved with military unit support.

Leaders must foster an environment in which people can come forward and let people know that stress in their life is starting to feel overwhelming and may affect their work negatively. There have been too many aviation mishaps in which technicians, line personnel, air crews personal stress has affected their ability to perform their duties correctly leading to lapses in reliability (quality and safety). Aside from that, leaders need to take care of their people because people are the military's most important asset.

BRAVO ZULU

SAILORS AND MARINES PREVENTING MISHAPS

Aviation Structural Mechanic Airman Gregory Blandon

While performing a turnaround inspection on an MH-60S attached to Helicopter Sea Combat Squadron 12 (HSC-12) deployed aboard USS Ronald Reagan (CVN 76), Aviation Structural Mechanic Airman Gregory Blandon found excessive water contamination in the fuel sample. He proceeded to drain one gallon of fuel from each tank in compliance with the proper procedure. Upon taking a second fuel sample, he discovered the water contamination persisted. Blandon expeditiously notified maintenance control because the fuel filters in the aircraft do not filter water and an excessive amount of water contamination would likely lead to engine failure. His actions led to the discovery of two fuel probes out of capacitance limits caused by water in the fuel cells, which required immediate replacement and a flush of the fuel tanks to remove the water. His keen attention to detail and devotion to safety identified a major hazard and averted a potential mishap.

Bravo Zulu is a naval signal originally sent by semaphore flags and in English, simply means "Well done."

Lack of Awareness

U.S. Marine Corps photo by Gunnery Sgt. Chad J. Pulliam

By Senior Chief Naval Aircrewman (Helicopter) Aaron Hutchinson

While operating in dynamic environments, aircrews and maintenance personnel are often placed in dangerous situations due to the nature of the job. Some critical elements to safe and successful operations link back to planning, briefing and communication, supported by a strong sense of situational awareness and an effective debrief. Failure to recognize a situation and understand what is happening around you can impact the ability of Sailors and Marines to predict the possible results of their actions. Aircrew and maintenance personnel need to understand the entire picture of their environment. This awareness will help mitigate the development of tunnel vision, ensure there are no conflicts with existing tasks and that they fully understand the procedures needed to complete a task.

U.S. Navy photo by Mass Communication Specialist 2nd Class Lake Fultz

Sailors assigned to the Nimitz-class aircraft carrier USS George H.W. Bush (CVN 77) walk behind the shot line before an F/A-18E Super Hornet aircraft taxis forward to the catapult.

For mishaps across various classes in fiscal year 2019 through FY 2022, a lack of situational awareness accounted for about 20% of the factors linked to the incidents. This statistic shows the grave reality being seen every day in the fleet. The impact on the Navy and Marine Corps extends beyond monetary value to the health and well-being of our most precious resource, our Sailors and Marines, as well as the readiness of our fleet. Identified by the Navy and Marine Corp Crew Resource Management Program COMNAVAIRFORINST 1542.7B, situational awareness is defined as "The degree of accuracy by which one's perception of the current environment mirrors reality. Maintaining a high level of situational awareness will better prepare crews to respond to unexpected situations."

Situational awareness requires you to know who is responsible for specific activities, what is happening, when are events supposed to occur and where you are operating within a three-dimensional space.

To better maintain an accurate image of reality, personnel should detect and comment on deviations, provide information in advance, identify potential problems, demonstrate awareness of task performance of self and others, state a course of action, and demonstrate an ongoing awareness of the mission or evolution status.

Factors that can reduce situational awareness can include, but are not limited to insufficient communication, fatigue or stress, task overload, task underload, group mindset, "press on regardless" or "make it work" philosophy and degraded operating conditions.

Common methods to maintain or recover situational awareness are to start with a comprehensive brief, acknowledge potential problems, communicate, use all information sources, maintain a good scan, critically update and revise perception of evolution and be alert to implications of info received.

Conducting a post-mission review provides an opportunity to evaluate how your tasking was performed and identify mission effectiveness, crew performance, individually, collectively, coordination, and areas for future improvement.

Effective debriefs are critical in the self-assessment and self-correction process, and every squadron in the fleet should be conducting them. This means debriefs should be interactive, valuable, selectively reviewed and timely.

While it can be fair to say everyone makes mistakes – it's just human nature, the reality Sailors and Marines face daily is that the naval aviation enterprise is unforgiving of human error. Even a slight mistake can cause a fatal accident, so we must put safety first and minimize the risk to the best of our ability. While command leadership is traditionally responsible for establishing and incorporating safety policies and risk management processes into squadron operations, it falls on all hands to remain vigilant and hold themselves accountable to the safety standards on and off duty. From commanding officers down to the most junior service members, everyone needs to be able to recognize the warning signs, and most importantly, learn how to avoid the impacts that can result from a lack of awareness in the unique operating environments we encounter every day.

U.S. Navy photo by Mass Communication Specialist 1st Class Tom Tonthat

Bad Norms

By Staff Sgt. DeMario Hargrove

Norms are the unofficial rules that dictate how Marines and Sailors are expected to act. These norms depend on the culture within and are vastly different depending on who and where we are. They also set the tone for the environment in which we conduct aircraft maintenance. The environments we create as work centers and squadrons have a more significant impact than most of us care to admit, and adopting norms in these environments can be both conscious and unconscious. Norms tend to work implicitly; a newly arrived maintainer observes other maintainers' behaviors and shapes them by mimicking what they perceive. But norms can also be explicit and direct, and we can either be specifically told how to act or shamed for not conforming to norms within the work center. However, if they are written down, these expectations move from norms to procedures and policies, such as standard operating procedures. Unit and work center norms, the guiding principles for maintainer conduct in the workspace, provide a standard set of behaviors and attitudes that allow each unit member to know – and understand expectations. Establishing norms within your organization provides the following benefits:

- Encourages unit cohesion
- Sets and maintains the unit culture
- Maintains fair and straightforward expectations
- Allows peer-to-peer and self-corrections
- Provides a framework for adapting to new situations
- Helps new joins understand expectations quickly

Norms usually develop gradually and through mutual agreement across a large part of the group. Still, norms can also be established quickly through higher influential unit members, such as a maintenance controller or collateral duty quality assurance representative within the unit. Norms are not universal; location, operational tempo and aircraft type/model/series are some examples of factors that can affect norms. It's up to leaders within the unit to ensure members are practicing positive norms to help maintain a positive environment with good attitudes and work habits.

When leaders establish and communicate those norms, they can encourage the behaviors and attitudes that best help the work center, maintenance department and unit thrive. It should be noted that existing norms don't make procedures right. As policies and procedures change, leaders must identify and eliminate negative norms. There may also be a need to adjust in order to meet the intent of new directives and procedures to ensure safe aircraft maintenance. When leaders do not scrutinize existing norms, they can negatively impact unit members and the aircraft, ship, gear, and anything else attached to the unit.

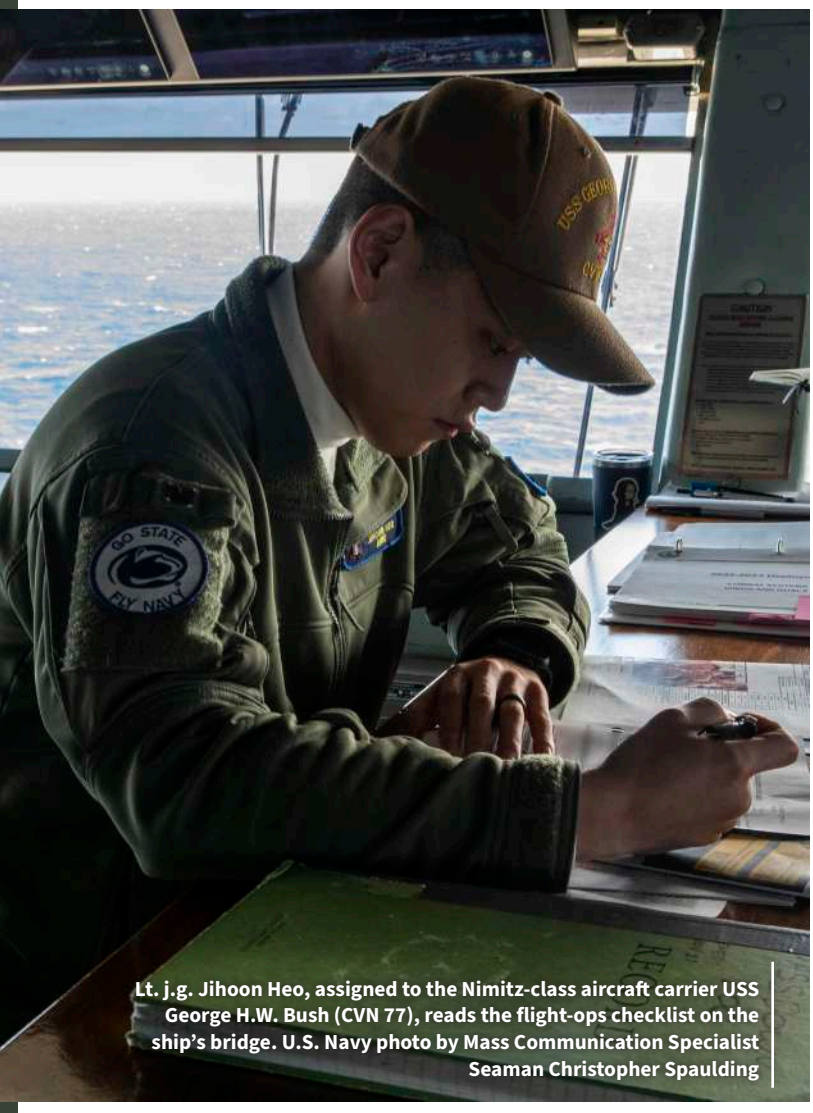
Every unit is not only required to uphold the foundation of our core values of honor, courage and commitment, but also foster an all-around workplace culture that supports and engages each squadron member. Leaders should consider how they want unit members to treat one another and conduct daily aircraft maintenance. Leaders should also consider norms for themselves, which include how to reward excellent performance and decision-making. These incentives can act as positive reinforcement for maintainers to follow the positive norms. Consider their accountability expectations for individuals and the work center. Think about the best ways to encourage professional conduct and safe maintenance practices. This process will ensure safe maintenance practices within the work center, maintenance department and squadron or unit.

Deliberate Process Improvement

Promoting a Culture of Aviation Safety

By Lt. j.g. Jihoon Heo, CVN 77

The phrase "written in blood" is commonly used in aviation and aviation maintenance about procedures in publications to underscore the importance of following each step in sequence, and heeding notes, cautions and warnings. Even when maintenance is completed correctly, there may be room for error.



Lt. j.g. Jihoon Heo, assigned to the Nimitz-class aircraft carrier USS George H.W. Bush (CVN 77), reads the flight-ops checklist on the ship's bridge. U.S. Navy photo by Mass Communication Specialist Seaman Christopher Spaulding

This was the case aboard the Nimitz-class aircraft carrier USS George H.W. Bush (CVN 77) on multiple occasions during pre-deployment training and an eight-month deployment to U.S. Sixth Fleet area of operations.

While moving an aircraft in the hangar bay, a SD-1D aircraft spotting dolly failed during the strike group's final deployment certification exercise. The arms of the dolly separated from the nose gear causing the aircraft to drop. When it dropped, it struck the dolly operator on the head which was protected by a cranial. Although the Sailor walked to medical under their own power, they were flown off the ship later for further evaluation.

An investigation into the incident found the arms of the dolly failed due to a loss of hydraulic pressure. After reviewing the publications, including the pre-operational checklist, there was no step in the procedures to check the emergency spread valves. Had those been checked on the SD-1D dolly that struck the Sailor, it would have prevented the incident.

A few months later, the ship was rocking due to heavy seas and winds. A squadron checked out a utility crane to perform maintenance on a horizontal stabilizer. While performing a pre-operational check, the crane tipped over, fell, causing damage to the boom cable. Thankfully, no Sailors or aircraft were injured.

Again, an investigation into the incident found that Sailors performed required pre-operational checks. However, they hand-cranked the crane above the recommended height before the legs of the crane were spread. This caused the crane to tip over. The investigation concluded that the pre-operational checklist did not mention using tie-down chains with the crane when spreading the legs and bringing the crane at full height, despite the maintenance publication outlining the requirement.

Investigators and Sailors alike thought, "If the maintenance publication says that, why didn't the pre-operational checklist say it as well?"

After discussion with engineers and subject matter experts from Naval Air Warfare Center Aircraft Division (NAWCAD) Lakehurst, they learned that this was not a first-of-its kind incident. The engineers and subject matter experts mentioned that it had occurred on several other afloat commands.

In both cases, George H.W. Bush's Aircraft Intermediate Maintenance Department (AIMD) submitted Category 1 Technical Publication Deficiency Reports (TPDR) which were immediately approved.

The moral of the story? Maintainers and leaders across the fleet need to be familiar with and use the Navy's deficiency reporting programs when issues arise. It is the only way that we become more safe and efficient as an organization. The next time you are performing maintenance or conducting a pre-operational check, remember every step, note, caution or warning was written in blood.

U.S. Navy photo by Mass Communication Specialist 3rd Class Javier Reyes

Hiking: Moving Without a Hitch

By Chief Aviation Structural Mechanic Nicholas Lemus, VRM-30

Aviation Structural Mechanic (Safety Equipment) Airman Aiden Hunt, assigned to the "Titans" of Fleet Logistics Multi-Mission Squadron (VRM) 30, directs a CMV-22B Osprey on the flight deck of the Nimitz-class aircraft carrier USS Abraham Lincoln (CVN 72).

On Sept. 23, 2022, a CMV-22B Osprey landed aboard USS Abraham Lincoln (CVN 72). While spinning on deck, the aircrew noticed a popped latch on the right hand (RH) nacelle. Pilots had to shut down the aircraft engines to secure the popped latch. The maintenance crew went to get a ladder and position it next to the RH nacelle so it could be secured. Upon restart of the CMV-22B, the plane received multiple faults from systems associated with the RH nacelle. Maintenance worked on the problem for 15 minutes and determined that more in-depth troubleshooting was needed to figure out what was wrong with the aircraft. The flight deck coordinator requested the aircraft remain on deck but required tail-over-deck to troubleshoot the issues. The handler told the flight deck coordinator that he wanted the aircraft moved down into the hangar bay to finish the troubleshooting.

To allow the aircraft to maneuver in the hangar bay, the nose landing gear needs to be raised to fit the spotting dolly around the nose landing gear to not damage the aircraft's forward-looking infrared (FLIR) camera or gear doors. This is called "hiking" the aircraft. The procedure requires nitrogen to be put into the nose landing strut to raise the strut and then a hike pin to be installed to ensure the strut does not fail. The maintenance crew did not bring the required licenses to operate the nitrogen cart to raise the strut. In addition, the maintenance crew did not bring the hike pin to ensure the strut would stay in place. On top of those issues, the crew didn't notify ships' personnel that the aircraft was not hiked before moving it from the flight deck to the hangar. The maintenance crew provided a brake rider and no one else for the movement.

The maintenance chiefs went to their shop so they could communicate the situation with VRM-30. After a phone call with VRM-30, one of their maintainers came into the shop and said a chief was needed in the hangar because a mishap had occurred. The spotting dolly hit the FLIR while moving the aircraft in the hangar bay. Due to the aircraft not being hiked by the maintenance crew, the spotting dolly could not fit under the aircraft with an adequate amount of space.

U.S. Navy photo by Mass Communication Specialist Seaman Apprentice Jett Morgan

Sailors repair a panel from an CMV-22B Osprey, assigned to the "Titans" of Fleet Logistics Multi-Mission Squadron (VRM) 30, aboard the Nimitz-class aircraft carrier USS Abraham Lincoln (CVN 72).

Looking back at the whole evolution, the squadron failed before even stepping onto the ship. Not bringing the appropriate licenses and support equipment was a mistake from the beginning. In the squadron's publications, it references moving the aircraft in the hangar and one of the requirements is to hike the aircraft before moving it to the hangar bay. The ship's publications also state to ensure the aircraft is hiked before moving with their spotting procedures. The squadron should have had leadership stay with the aircraft throughout the whole movement. The CMV-22B aircraft is fairly new to the fleet, bringing a lack of knowledge and experience with aircraft movements around the carrier. VRM-30 will hold multiple trainings before underway periods to mitigate occurrences of this type in the future and will interface with CVN flight and hangar deck crews to ensure they understand the unique requirements of the CMV-22B.

BRAVO ZULU

SAILORS AND MARINES
PREVENTING MISHAPS

Cmdr. Stephen Bruner, then-skipper of VP-45, presents Aviation Machinist's Mate 2nd Class Alia Teamer with a certificate for a job well done.

Aviation Machinist's Mate 2nd Class Alia Teamer

While detached to Kadena Air Base, Japan, Aviation Machinist's Mate 2nd Class Alia Teamer noticed fuel excessively dumping out of the port wing surge tank vent during aircraft 168848's preflight. Without regard for her safety, she immediately ran into the aircraft to inform the crew of the situation and then notified VP-10's maintenance control, sparking the rapid response for the entire maintenance team. Her quick actions allowed the response team to contain the fuel spill, preventing contamination from entering the storm drains. If it weren't for her situational awareness and keen attention to her surroundings, fuel would have continued to pour out of the aircraft.

AD2 Teamer's steadfast awareness broke the chain of events that may have led to a more significant mishap and also ensured the safety of the aircrew, maintenance team and aircraft. Her outstanding performance has justly won the admiration and respect of the Pelican and Red Lancer Maintenance Team!

Bravo Zulu is a naval signal originally sent by semaphore flags and in English, simply means "Well done."

True Grit: Cold World Blues

By Lt. Mark Burkholder, VP-40

Winter operations in Keflavik, Iceland, present many unique challenges to deployed Maritime Patrol and Reconnaissance Force aviators and maintainers. For many, it is a deployment filled with "firsts" - high winds, contaminated runways, ice-covered aprons, white-out conditions and de-ice evolutions are a few of the many challenges P-8A aircrew and maintainers must be cognizant of when operating out of Keflavik International Airport. In preparation for a winter 2022-2023 deployment, the Fighting Marlins of Patrol Squadron 40 needed to be well-versed on the many P-8A Poseidon Naval Air Training and Operating Procedures Standardization (NATOPS) considerations for cold-weather operations. Studying old lessons learned and frequently reviewing cold-weather procedures during pilot training meetings proved crucial to safe operations and mishap prevention. Despite all the preparation, one event that sparked our curiosity wasn't found in NATOPS or any other publication.

During a routine aircraft launch for an Anti-submarine warfare mission flight out of Keflavik, the plane captain, flight deck chief and flight line safety rover noticed sparks coming from the fan blades of both engines as the P-8A began to pull out of its parking spot. This event quickly got the attention of numerous safety observers, and the plane captain directed an immediate stop and shutdown. Following careful coordination between the pilots and maintenance, an inspection of the engines revealed no damage and no abnormal indications. Then, after consulting with the aviation machinist's mates and maintenance control, the aircrew and maintenance team proceeded cautiously and noted no further abnormal engine indications. After a short taxi the sparking stopped, and the mission continued uneventfully.

Immediately following the event and perplexed by the sparks, the maintenance team began researching potential causes. After contacting the local airport authorities, it was discovered that

U.S. Navy photo by Lt. Drew Ketcham

during cold-weather airport operations, local airport authorities do a procedure known as "gritting the apron." Grit can be made up of many different materials, but typically, it is a fine sand meant to improve traction and prevent ice buildup. Most cold-weather airports, including Keflavik International Airport, use a compound comprised of sifted and washed fine gravel and coarse sand 2-4 millimeters in diameter. This compound helps improve traction on the apron without the corrosive side effects of salt. During cold weather operations with icy ramp and taxiway conditions, airport officials apply the grit on the airport surfaces. They treat high-priority areas such as the international terminal ramp, taxiways and the east apron, where the majority of private air traffic park. Then they treat the other areas on the airfield, including the military east apron and hot cargo apron, which is where our military aircraft were parked. It just so happened that the sparking event occurred after grit was just applied to the apron because of recent snowfall.

Quality assurance contacted Boeing's fleet support team to determine if grit could cause sparking or harm to the P-8A engines. The Boeing team provided a lot of information and said another engine-sparking incident had previously occurred to a P-8A engine. On Dec. 14, 2020, VP-45 observed sparks on their No. 1 engine on a routine flight out of Jacksonville, Florida. As a result of this event, extensive research was conducted, and a request engineering instruction (REI) was submitted with Naval Air Systems Command engine experts, CFM56 operators, CFM International and Boeing to help determine the cause of the issue. It was found that the flashes or sparks are typically caused by particles striking the fan blades. Some particulates commonly found on the ground and suspended air, such as sand, are harder than the titanium fan blades and create a flashing effect when the particles strike the fan blades. This phenomenon is known as "pyrophoric oxidation." The REI further states that the "flashes are caused by a form of electrical static discharge characterized by the triboelectric effect or precipitation static (P-static)."

Based on the REI information and the feedback from CFM and Boeing, it was determined that the grit on the aprons of Keflavik International Airport hit the fan blades on the taxiing aircraft, causing the sparking phenomenon. Just days after this flight, the plane entered a Phase D inspection, where the engines were analyzed in greater detail. The fan blades were removed and inspected and the internal components of the engines were also analyzed. While no damage was discovered, more data is needed to see why sparks were noticed this time but not others. Some of the probable reasons are the amount of grit laid down since it was the first application of the year and the amount of thrust used initially during initial taxi to get out of spot. Since the event, maintenance has been very cognizant of the amount of grit on the apron and asked airport authorities not to use as much grit immediately in front of the aircraft on the parking apron.

This event has two main takeaways, the first revolving around maintaining a positive safety culture. When the plane captain and flight deck chief observed something abnormal, they immediately halted the evolution and communicated with the appropriate personnel. The second takeaway is the importance of lessons learned during fleet swaps and squadron turnover. As one squadron returns from deployment, the next squadron comes out to replace them. Lessons learned need to be documented and discussed to improve as a community. The VP-45 REI proved helpful, but it didn't occur in a cold-weather environment and wasn't discussed before this deployment. Our hope is that this article can provide further information to other squadrons that operate out of cold weather environments so they, too can be prepared for a situation like this.

U.S. Navy photo by Mass Communication Specialist 3rd Class Caylen McCutcheon

Reminders for Safe Maintenance

By Anonymous, VAQ-114

Aviation Ordnanceman 2nd Class Jana Harris removes an ALQ-99 pod from the wing of an E/A-18G Growler, from the "Cougars" of Electronic Attack Squadron (VAQ) 139, in the hangar bay aboard the aircraft carrier USS Nimitz (CVN 68).

In January 2023, my avionics technician team worked on configuring a newly received ALQ-99 pod with a V-POL antenna in the forward position. This was perceived to be a standard task; however, time constraints, assumptions and a newly modified V-POL would end up causing further issues leading to broken brackets.

First, we started working on the pod without completing any documentation. We rushed into working on the pod because there was a plan in place to move the aircraft out to perform a fuel leak check and low power turn as soon as possible. It wasn't until a chief walked through the hangar and noticed we were conducting maintenance that I went to the aviation maintenance administrationman shop to fill out the paperwork to reflect the maintenance being performed. The first takeaway from this incident is to always properly document maintenance tasks before executing.

While attempting to put the forward starboard side fasteners into the radome of the ALQ-99 pod, the holes were too low to line up. I had someone push up on the radome to attempt to line them up, and we heard a crunch. We immediately stopped and assessed the situation by removing the ALQ-99 radome to see what was in the way and found the four forward brackets that hold the antenna in place were broken. These were small angled brackets made of fiberglass with five mounting holes on them. After breaking the brackets, we further reviewed the installation instructions and noticed a caution that we had missed. The caution stated to remove the four brackets when configured as the newly modified V-POL. The prior V-POL did not require the brackets be removed, but the newly modified version required them to be removed due to an impact issue. We removed the four brackets and installed the radome. This incident is a perfect example of why it is imperative to read all procedures thoroughly, regardless of time constraints, to ensure proper maintenance is performed.

Afterward, I returned to the shop and put the brackets and hardware in a bag in our parts bin. I didn't report the broken brackets to maintenance control because, at my previous command, we had a lot of replacement brackets. At the end of the day, I went through the system we use to track pod assets and realized the V-POL we were issued wasn't showing as received. I emailed the ALQ-99 pod asset manager, and he said we weren't supposed to receive the V-POL; however, he wanted us to leave it installed on the aircraft. He was notified that we crushed brackets and wanted us to order more. I immediately went to maintenance control to notify them of the situation and got the price of the brackets. Each broken bracket was worth a shocking $7,200. Due to my previous experience with these brackets, I did not anticipate that they would cost so much. Assuming that the broken brackets weren't a big deal based on my previous experience caused squadron leadership to think I was attempting to hide something. While this was not my intention, I was reminded that the practices of one wing or squadron might not match another. As maintenance professionals, we must continue asking ourselves: Am I still performing this maintenance correctly? Especially when relying solely on your past experiences.

Regardless of any type of maintenance you may find yourself performing in the future, it is always important to properly document, thoroughly prepare and not assume the practices of all commands are the same.

Check Your Fit

By Senior Chief Aviation Structural Mechanic Renzo Nuñez

If personal protective equipment (PPE) were a fashion statement, then maybe it wouldn't be a causal factor in many mishap reports involving personnel injury. The flight deck's most common phrase is "Check my fit." Unfortunately, we don't walk around bragging about PPE. Although we should, because no other apparel is primarily intended to preserve personal safety, and for this reason, PPE is dope!

There are inherent dangers in any industrial work environment, and aviation maintenance is no different. Our everyday tasks also have inherent dangers which cannot be eliminated entirely. An effective safety management system has four desired outcomes: a safe place, safe people, safe property and materials, and safe processes and procedures.

We want to prevent personnel injury to meet the desired outcome of safe people. Controlling exposure to occupational hazards is the primary method of protecting maintainers. These exposure controls are implemented via a process called the hierarchy of controls. The hierarchy of controls can be divided into three parts, with the first being the most effective at protecting the technician from occupational hazards. The first part, elimination and substitution, is when the hazard is eliminated or replaced by a suitable alternative that does not pose a hazard. The second part, engineering controls, consists of design changes to limit exposure to hazards. The third, administrative controls and PPE, consists of issuing policy, changing procedures and processes, posting signs, etc., and mandating PPE. At the supervisory and technician level, we control the execution portion of administrative controls and PPE. In just the F/A-18 Hornet community from April 2022 to April 2023, 54 aviation ground mishaps were reported involving personnel injury; the actual mishap quantity could have been greater. In most mishaps, not wearing PPE contributed to the severity of injuries. A study of that one year's worth of data supported that Hornets have stingers, and we can prove it.

From the 54 reported mishaps, there were eight lacerations caused by Door 68, seven falling from the top of the aircraft, four eye injuries from hazmat, two eye injuries from hard foreign object damage (FOD) and two fractured wrists from items. Yes, hard FOD in the eyeball – ouch!

The category that surprised me the most was head injuries, which came in at 32. From the 32 head injuries, only seven maintainers were wearing a cranial. Analysis of these 32 reports reveals that a Hornet's stinger is more likely to cause lacerations than concussions. By the way, lacerations totaled 19, with plenty of staples and stitches, while concussions only totaled nine. Of all stingers on a Hornet, the biggest adversary, according to the analysis, are pylons, which scored 8 eight headaches, closely followed by horizontal stabilators, which scored five headaches. Nose landing gear doors and slipping tools while working on Hornets also made the stinger list accounting for three headaches each.

How do you react to a safety poster depicting blood and gore? Do you think that it's something that happens to "other people"?

Aviation maintenance is dangerous, and we operate in a dynamic and extremely hazardous environment. As I see it, we are always just one decision away from a mishap. However, only you can control the exposure to the hazards. When you think the PPE is a pain or uncomfortable and you don't want to wear it, think of those injured who wished they had worn it.

Personnel Specialist Seaman Fatima Caballero, left, and Hospital Corpsman 2nd Class Keith Williams, both assigned to the Nimitz-class aircraft carrier USS George H.W. Bush (CVN 77), wrap the head of a Sailor with a simulated injury during a mass casualty drill, April 18, 2023.

From the 32 mishaps reviewed, the most concerning headache to me involved a young, highly motivated maintainer who eyewitnesses said was running quickly and repeatedly between the hangar and flight line. The mishap maintainer was operating in poor lighting conditions and unfamiliar terrain, which degraded his situational awareness. Nonetheless, the maintainer continued to run at full speed between stationary ground support equipment and aircraft. At no point did any supervisor or peer attempt to stop the seemingly reckless maintainer from self-harm. After multiple runs and a few hours into the shift, the mishap technician ran to the hangar one last time, and then a plane captain heard an audible thud from the aft fuselage of the aircraft he was working on. When the plane captain investigated the noise, he discovered the maintainer lying unresponsive under the horizontal stabilator. Further observation revealed the maintainer had a chin laceration caused by running face-first into the horizontal stabilator. Once he impacted the stabilizer, he was knocked onto his back, as evidenced by a left temporal skull fracture from tarmac impact. The intracranial injury pattern, including right and left cerebral contusions and blood clotting around the brain, earned the maintainer an all-expenses-paid date with plus 60 days at the local hospital. The injuries could have been more severe without a cranial.

Although PPE may not be the "fit" you can't wait to wear, wear it to protect yourself. Be proactive by making choices within your control. Wear your PPE, and encourage others to do the same – it could save you and your peers from the next Hornet sting.

Ensuring Safe Operation of Mobile Cranes

By Senior Chief Aviation Support Equipment Technician Joseph Hippolyte

Mobile cranes are essential in the U.S. Navy for completing critical maintenance tasks that require heavy lifting. However, these machines can pose many significant risks to personnel and equipment if not operated correctly or adequately maintained. In recent years, there have been several crane mishaps in the Navy, resulting in costly damage to aircraft and equipment and even fatal injuries to operators and bystanders.

One such mishaps occurred when a crane tipped over and caused significant damage to an aircraft. The investigation found the mishap was due to the crane lift evolution being performed on tires vice outriggers.

Another mishap occurred when the ship's aircraft crash crane impacted the ship's overhead structure during a maintenance test. The resulting impact caused minor damage to the crane and ship's island structure above the crane. No personal injuries occurred. The Navy's investigation revealed the test representative incorrectly raised the boom when the director gave the proper signal to lower the boom.

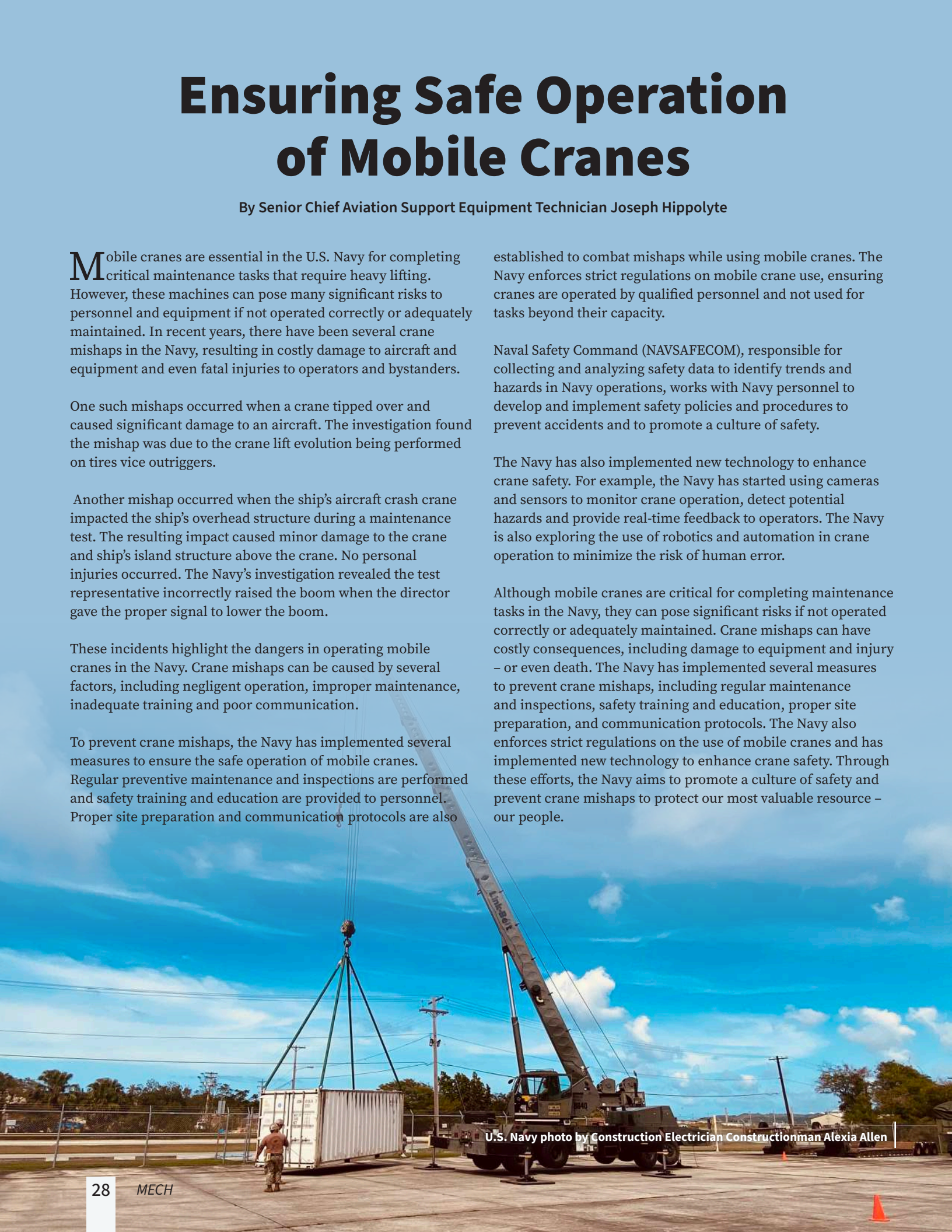
These incidents highlight the dangers in operating mobile cranes in the Navy. Crane mishaps can be caused by several factors, including negligent operation, improper maintenance, inadequate training and poor communication.

To prevent crane mishaps, the Navy has implemented several measures to ensure the safe operation of mobile cranes. Regular preventive maintenance and inspections are performed and safety training and education are provided to personnel. Proper site preparation and communication protocols are also established to combat mishaps while using mobile cranes. The Navy enforces strict regulations on mobile crane use, ensuring cranes are operated by qualified personnel and not used for tasks beyond their capacity.

Naval Safety Command (NAVSAFECOM), responsible for collecting and analyzing safety data to identify trends and hazards in Navy operations, works with Navy personnel to develop and implement safety policies and procedures to prevent accidents and to promote a culture of safety.

The Navy has also implemented new technology to enhance crane safety. For example, the Navy has started using cameras and sensors to monitor crane operation, detect potential hazards and provide real-time feedback to operators. The Navy is also exploring the use of robotics and automation in crane operation to minimize the risk of human error.

Although mobile cranes are critical for completing maintenance tasks in the Navy, they can pose significant risks if not operated correctly or adequately maintained. Crane mishaps can have costly consequences, including damage to equipment and injury – or even death. The Navy has implemented several measures to prevent crane mishaps, including regular maintenance and inspections, safety training and education, proper site preparation, and communication protocols. The Navy also enforces strict regulations on the use of mobile cranes and has implemented new technology to enhance crane safety. Through these efforts, the Navy aims to promote a culture of safety and prevent crane mishaps to protect our most valuable resource – our people.



U.S. Navy photo by Construction Electrician Constructionman Alexia Allen

U.S. Navy photo by Mass Communication Specialist 2nd Class Roland Ardon

Aviation Ordnance Managers Career Progression Course

By Gunnery Sgt. Samuel Lee

Aviation Ordnanceman 2nd Class Shaquille Brown and Aviation Ordnanceman 3rd Class Demonta Martin inspect an adjustable weapons adapter ADU-514 in the Armament Weapons Support Equipment storeroom aboard USS Boxer (LHD 4).

We've all heard it before: training is continuous. Throughout our careers, we undergo initial training, sitting through classroom lectures and performing practical exams; informal training involving lectures and on-the-job training and endless syllabuses on various qualifications or licenses for equipment. These programs and courses are developed to ensure you're proficient on the job and can perform safely.

As ordnance technicians come up through the ranks, you may look up and see your senior enlisted ordnance staff and officers performing tasks such as planning and organizing, filling out various required reports and managing the division. Predecessors are hopefully passing on these skills to their junior Sailors and Marines. Fortunately, there are courses you can attend even after you reach the rank of gunnery sergeant or chief in the ordnance community that will help your transition to a leadership role.

Ordnance senior enlisted, E-7 and above, officers and civilians currently working within the ordnance field can attend the Aviation Ordnance Managers Career Progression course (AOMCP) at Whiting Field, Florida. This course was previously known as the Aviation Ordnance Officers Career Progression course, and the recent name change was to be inclusive of the senior enlisted aviation ordnance managers since the course was initially designed for ordnance officers and is now offered to senior enlisted, according to Lt. Manuel Penas. The AOMCP course is designed to expand the knowledge of senior ordnance personnel to prepare them for the many diverse ordnance programs and responsibilities they may be assigned to in the future. To do this, AOMCP is split into three levels of training.

Level I is a four-week course focusing on ordnance management, explosive safety quantity distance, logistics and operational challenges that a newly commissioned ordnance limited-duty officer, chief warrant officers, Marine warrant officers and senior enlisted will encounter as they start to perform their duties as ordnance managers. The coursework includes classroom instruction, labs and evaluations.

Level II is another classroom-instructed, two-week course aimed more toward ordnance officers and senior enlisted midway through their careers. During this course, students focus on explosive safety inspections and programs. Students also receive training from explosive safety program managers with briefs from our own personnel from the Naval Safety Command. If you are already serving in or are ready to rotate to G-3 weapons, station weapons officer, or a CVN or LHA/LHD (amongst many others), then this course will be very useful to help familiarize you with your new or current duties.

Finally, we have Level III, where senior ordnance officers and enlisted personnel, E-9s, get together for two weeks and discuss the current state of affairs within the ordnance community. All attendees should be prepared to give a brief pertaining to their current billet. Along with current affairs within the community, they also discuss the direction the community is heading and address fleet issues.

If you have recently found yourself within the ranks of senior ordnance personnel or have been here for some time and are ready to progress to the next step, attending these courses is necessary to help with your professional development. For course quotas and descriptions, visit the Catalog of Navy Training Courses site:

Catalog of Navy Training Courses site

Navy personnel can be enrolled via the Enterprise Navy Training Reservation System and Marine Corps Training Information Management System for Marines.

There Is a WAM for That!

By Lt. Cmdr. Charles Green III

Have you ever reported onboard a ship or squadron after school but quickly realized there were several aspects of the job you didn't know how to perform? To some degree, we have all experienced this in our military careers. The good news is that there is a message, publication or instruction for almost everything we do in the military. The professionals working around ordnance are taught from day one about the inherent dangers of building, testing, and moving munitions. One of the ways to ensure personnel who handle, stow, assemble, load, arm and test munitions are appropriately trained and prepared to perform their jobs correctly is through the ordnance qualification and certification process.

U.S. Navy photo by Mass Communication Specialist 2nd Class Lake Fultz

Aviation Ordnanceman 3rd Class Nataly Lopez and Aviation Ordnanceman Airman Isaac Parmley, prepares an LAU-61 G/A Digital Rocket Launcher for mounting onto an MH-60S Seahawk helicopter.

Aviation ordnanceman and several other Navy and Marine Corps rates must be qualified and certified under the OPNAVINST 8023.24 series before handling live munitions. Depending on training, experience, and proficiency, an individual can be certified as a team member, team leader or quality assurance/safety observer (QASO). A team member must know the basic safety precautions for the task, including appropriate requisite training. A team leader demonstrates knowledge and proficiency to direct others in performing the work task safely and reliably. This skill includes a thorough understanding of the publications and how to navigate them. To be qualified and certified as a quality assurance/safety observer, a person must validate that those technical directives, work tasks and procedures that require quality assurance verification are completed correctly. Furthermore, they must possess sufficient knowledge and experience of safety procedures, safety device functions and a solid understanding of work task policy to determine potential risks and outcomes if guidelines are not followed.

An ordnance board member's recommendation is critical to becoming qualified and certified to handle live munitions at any level. In addition to ensuring informal (unit-level) training has been completed correctly, board members evaluate the skills and proficiency of personnel they recommend for certification or recertification. This responsibility is critical to the safety of ordnance-certified personnel and the crew. As a board member, I remember sitting on an ordnance qualification and certification board when the board chairman told us that if any team member, team leader or QASO messed up, he would hold us accountable because we were the ones who signed their training jackets. While I had always taken my job seriously, it was at that moment I realized the tremendous trust and accountability that came with being an ordnance qualification and certification board member.

During any ordnance evolution, qualified team members should be the **ONLY** people handling, assembling, moving or loading munitions. This process ensures the unit has the right people doing the job and allows Sailors and Marines to expand their knowledge and skills vital to personal growth and development. While an ordnance evolution should never be performed without a team leader or QASO, the ordnance team lead and QASO should never be hands-on in performing tasks. Almost every ordnance mishap I have witnessed or investigated involved a team leader or QASO being too involved in the evolution and losing the big-picture situational awareness necessary to perform their job safely and correctly.

A team leader uses the knowledge gained through on-the-job training and weapons assembly manuals (WAMs) to direct their team members on what to do and how to do it. The format of every WAM is similar for ease of use: Chapter 1 is the introduction, Chapter 2 is the description, Chapter 3 is configuration, Chapter 4 is built-in testing and reprogramming, and Chapter 5 is common procedures. Failure to follow established procedures in the correct area of the WAM could result in a component's improper torque, increasing the chances of damage to equipment or aircraft and injury or death to personnel. For these reasons, team leaders must refrain from attempting to memorize assembly, loading steps or torque requirements, as these could change. To be successful, ordnance professionals must work as a team and look out for one another.

Bottom Line

A lot of training must happen to become a proficient ordnanceman. Qualification and certification board members are critical in ensuring only competent and proficient team members, team leaders and QASOs are qualified. This training is not just another paperwork drill; it holds our Sailors and Marines to a standard that should never be waivered from. Once qualified as a team leader, ensure you always have the correct publication or checklist – even if no one is watching. Doing so

will prevent relying on tribal knowledge that may or may not be accurate. Just because you have heard something for years does not always mean it is true. **GET IN THE BOOK AND CONFIRM!**

As ordnance-certified personnel continue to increase their repetitions and sets on loading aircraft and building on bomb tables, QASOs and senior leadership must verify their teams are developing good habits that support the safe movement of munitions throughout a ship or shore station. Establishing this early means when it's game time, doing the right thing during extended working hours or high-stress situations becomes muscle memory and the team is prepared.

These basic principles apply to all aviation maintenance and operations support personnel. Having the right people, the right tools for the job and the correct publication open greatly decreases the chances of things going wrong holds true for the success and reliability of ALL naval aviation maintenance evolutions. Leaders must know their people well enough to know when they might not have the requisite knowledge and experience, and those leaders MUST provide the extra oversight when lack of sufficient experienced and knowledgeable personnel weighed against operational requirements dictates. No matter how senior they may be, Sailors and Marines put in those situations must speak up and acknowledge that something they are tasked with may be out of their scope or stretching them to the ends of their talents. Even using publications, the environmental conditions are not always perfect, tools might not be perfect and support equipment might not be perfect, therefore, we MUST have those questioning attitudes and pre-assess assigned tasks. Everyone throughout the command should be asking questions like: What is different today? What is different about this evolution? Is everyone's head in the game? What can go wrong with this evolution? Is everyone clear on the roles they will play in completing the task?

It is important to conduct post-task assessments and briefs to ensure problem or weak areas such as knowledge, unclear instructions or unfit/poor equipment/tools are captured and there's a plan of action to counter them in the future and they are dealt with. These are some ways to counter lack of knowledge and experience, along with the quality assurance oversight called for in the Naval Aviation Maintenance Programs (NAMP) Instruction, COMNAVAIRFORCES Instruction 4790.2D and proper E-7 or above oversight both in the hangars and on the flight line as called out in the Organizational-Level Maintenance Management (OLMM) Policy, COMNAVAIRPAC/COMNAVAIRLANT Instruction 4790.43. If units do not have the requisite knowledge and experience in house for something that has to get done, the units MUST have the honor, courage and commitment to go outside of their command and request help either from their Type-Wing, Marine Air Group, Naval Aviation Technical Engineering Command (NATEC) or if dealing with a new aircraft or weapon system, reach out to the field service representative or NAVAIR. At no time should Navy Sailors or Marines be performing aircraft, ordnance or support equipment maintenance that they are not clear on because lives, expensive equipment and quite possibly national security are at stake.

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