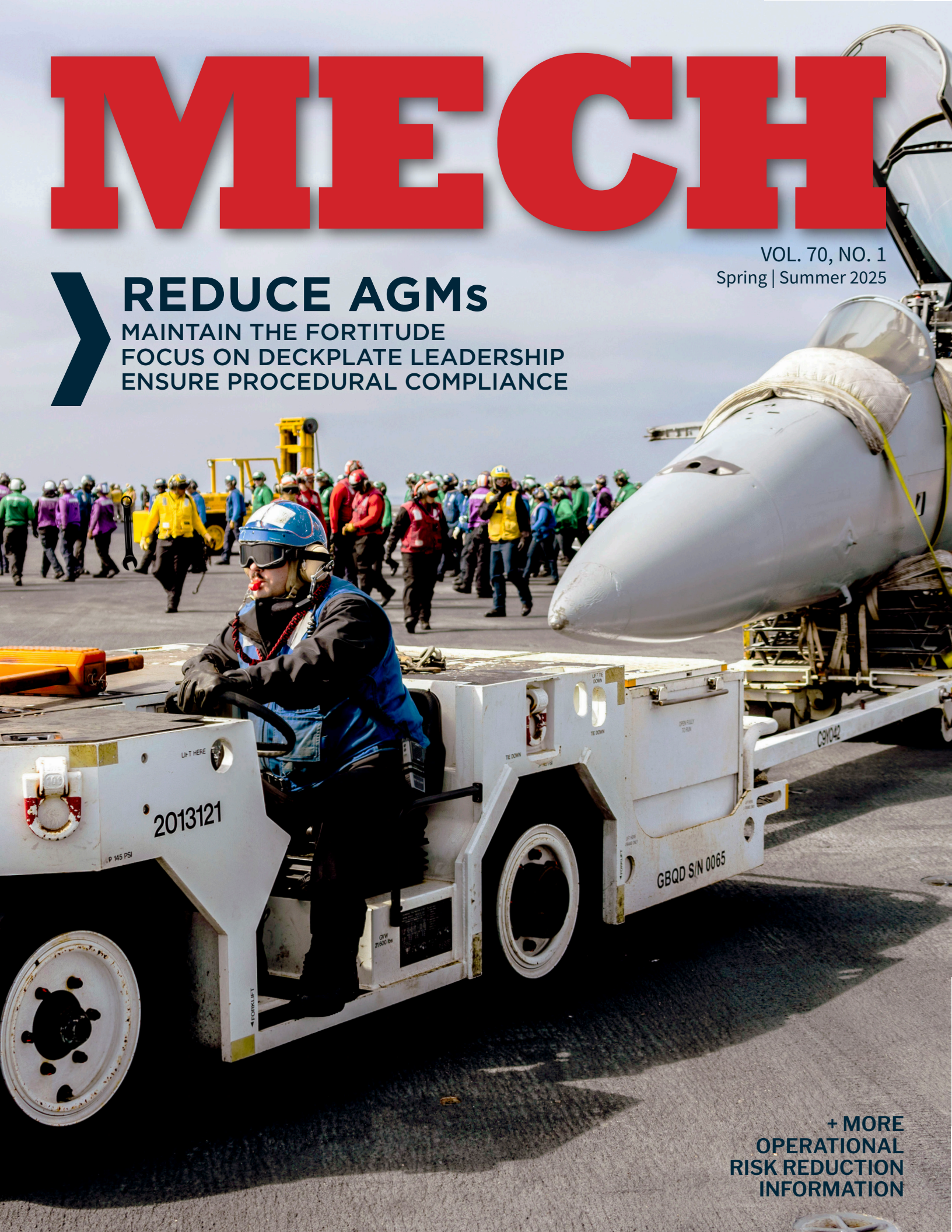
MECH

VOL. 70, NO. 1
Spring | Summer 2025

REDUCE AGMs

MAINTAIN THE FORTITUDE
FOCUS ON DECKPLATE LEADERSHIP
ENSURE PROCEDURAL COMPLIANCE



+ MORE OPERATIONAL RISK REDUCTION INFORMATION

THE COLOR-CODED FLIGHT DECK

ENSURING ORDER AND SAFETY

The first aircraft carrier, USS Langley (CV-1), started the tradition of color-coded jerseys in the early 1920s. Each color represents a different responsibility for the maintainers on the flight deck and in the hangar bay. This visual communication of color helps to ensure coordination and the safety of the equipment and crew.

GREEN – Maintenance
Operate and maintain all catapult and arresting equipment, perform maintenance safely on aircraft. Landing signals for helicopters and photographers also wear green.

BLUE – Chock and Chain
Safely operate and maintain the motorized gear i.e. elevators, tractors that pull aircraft and chock and chain aircraft gear.

PURPLE - Fuel
Refuels all aircraft and monitors all fuel onboard for quality and safety.

WHITE - Quality Assurance
Handles safety-related jobs, including final inspections of aircraft. Medical, administrative personnel and VIPs also wear white.

YELLOW – Aircraft Handling
Directs aircraft launch and movement on the flight deck and the safe handling of aircraft in the hanger bay.

RED - Ordnance
Move and load weapons, ammunition, missiles, etc., safely onto aircraft. Responsible for aircraft firefighting, rescue and salvage operations.

BROWN - Plane Captain
Upholds the safety and integrity of aircraft, takes position in the cockpit during repositioning as they prepare and inspect aircraft for flight.

THANK YOU AVIATION TEAM

U.S. Navy photo top to bottom: Mass Communication Specialist 3rd Class Nate Jordan, Mass Communication Specialist 3rd Class Jordan Jennings, Mass Communication Specialist 3rd Class August Clawson, Mass Communication Specialist 1st Class Greg Johnson, Mass Communication Specialist 2nd Class Moises Sandoval, Mass Communication Specialist 2nd Class Hunter Day, Mass Communication Specialist 3rd Nate Jordan

Commander, Naval Safety Command

Maintainers,

In the last issue of Approach Magazine, I wrote about the 2024 Aviation Safety Summit, where VADM Cheever, our AIRBOSS, set an aggressive goal to reduce aviation mishaps by 50%. We achieved a 27.3% mishap reduction in the second half of the fiscal year. Aviation ground mishaps (AGMs) made up 63% of the 2024 mishap rate.

In 2025, we will pursue this initiative even further. One such effort is focused on reducing aircraft handling mishaps while embarked, and this is one effort where we need each of you out on the field ensuring each aircraft is moved safely and efficiently. Although we have seen a downward trend in reducing ground mishaps, which is a success story, we must maintain the fortitude to go further by focusing on deckplate leadership and procedural compliance.

Mishaps, while deployed, take players off the field when 'fighting the fleet' is a requirement. To succeed, we must overcome the easy way out of cutting corners and recognize the hidden dangers in what we consider well-performing operations. This practice requires leadership from the Chief's Mess to Maintenance Control to the CO, to ensure maintenance procedures are executed properly. Everyone is a safety professional.

In this issue of MECH, primary topics hit on procedural compliance, noted discrepancies from recent local area assessments and employing risk management principles. Take these best practices and lessons observed and have a discussion with your fellow maintainers. Never hesitate to speak out when you see something wrong. Maintain that questioning attitude.

Motorcycle safety: We have lost 20 Sailors and Marines to motorcycle crashes between October 1 and March 1, and numerous non-fatal mishaps which takes the form of lost workdays by our trained professionals, which directly affects our readiness. This trend hurts the Fleet. Poor decision making, reckless behavior and excessive speed dominate the underlying factors that lead to these crashes. Our riders, while qualified, desperately need mentorship from our NCOs.

At the Naval Safety Command, we focus our efforts to preserve lives and enhance the well-being of our USN/USMC members by protecting the equipment they need to accomplish their mission. Ultimately, safe operations equal effective operations which preserves combat readiness. Our expensive equipment is useless without our qualified Sailors and Marines that maintain it.

RADM Dan "Dino" Martin, USN
CO, NAVAL SAFETY COMMAND

MECH

Priscilla Kirsh
Public Affairs Officer

Sarah Langdon
Deputy Public Affairs Officer

Ani Pendergast
Editor, Layout and Design

Rebecca Coleman
Writer and Editor

Ken Goss
Writer and Editor

MAINTENANCE SAFETY TEAM

Main Phone Number: 757-444-3520

Cmdr. Kevin Duncan
Aircraft Maintenance and Material Division Head, kevin.g.duncan.mil@us.navy.mil, ext.7265

Major David Abma, USMC
Assistant Aircraft Maintenance and Material Division Head, david.j.abma.mil@us.navy.mil, ext.7203

Cmdr. Andrew Gallousis
Assessments Team Lead, andrew.g.gallousis.mil@us.navy.mil, ext. 7280

Chief Warrant Officer Randy Jackson
Aircraft Maintenance Assessments Branch Head, randy.b.jackson@us.navy.mil, ext.7278

Master Gunnery Sgt. Jerod Williams, USMC
Systems Maintenance Branch Head, jerod.w.williams.mil@us.navy.mil, ext. 7276

Master Chief Aviation Maintenance Administrationman Arlene William
Aviation Maintenance Administration, arlene.l.williams2.mil@us.navy.mil, ext. 7285

Senior Chief Aviation Machinist's Mate Kevin Hall
Fixed Wing Power Plant Analyst, william.k.hall1.mil@us.navy.mil, ext. 7199

Senior Chief Aviation Machinist's Mate Harold Mack
Fixed Wing Power Plant Analyst, harold.mack.mil@us.navy.mil, ext. 7304

Senior Chief Aviation Structural Mechanic Bryson Boyd
Airframes Safety Analyst, bryson.c.boyd.mil@us.navy.mil, ext. 7058

Senior Chief Aviation Structural Mechanic Joey Cabrera
Airframes Safety Analyst, joey.l.cabrera.mil@us.navy.mil, ext. 7058

Senior Chief Aviation Structural Mechanic Anthony Abraham
Egress, Environmental Systems, anthony.a.abraham2.mil@us.navy.mil, ext. 7058

Senior Chief Aviation Ordnanceman Niels Mygind
Aviation Weapons Analyst, niels.e.mygind.mil@us.navy.mil, ext. 7242

Senior Chief Aviation Electronics Technician Kenneth King
Avionics Safety Analyst, kenneth.b.king1.mil@us.navy.mil, ext. 7290

Senior Chief Aviation Electronics Technician Adam Terrell
Avionics Safety Analyst, adam.l.terrell3.mil@us.navy.mil, ext. 7293

Senior Chief Aviation Support Equipment Technician Dexter Ronquillo
Support Equipment Analyst, dexter.g.ronquillo.mil@us.navy.mil, ext. 7171

Senior Chief Aircrew Survival Equipmentman Matthew Olsen
Life Support Systems Analyst, matthew.l.olsen4.mil@us.navy.mil, ext. 7171

Senior Chief Naval Aircrewman Erica Gibson
Aviation Safety Analyst, erica.d.gibson4.mil@us.navy.mil, ext. 7154

Senior Chief Naval Aircrewman Rabia Shaiboon
Aircrew Safety Analyst, rabea.e.shaiboon.mil@us.navy.mil, ext. 7247

Gunnery Sgt. Daniel Buchanan, USMC
Airframes Safety Analyst, daniel.j.buchanan8.mil@us.navy.mil, ext. 7219

Gunnery Sgt. Alex Thomason, USMC
Airframes Safety Analyst, alex.s.thomason.mil@us.navy.mil, ext. 7292

Gunnery Sgt. Samuel Lee, USMC
Aviation Weapons Analyst, samuel.a.lee6.mil@us.navy.mil, ext. 7215

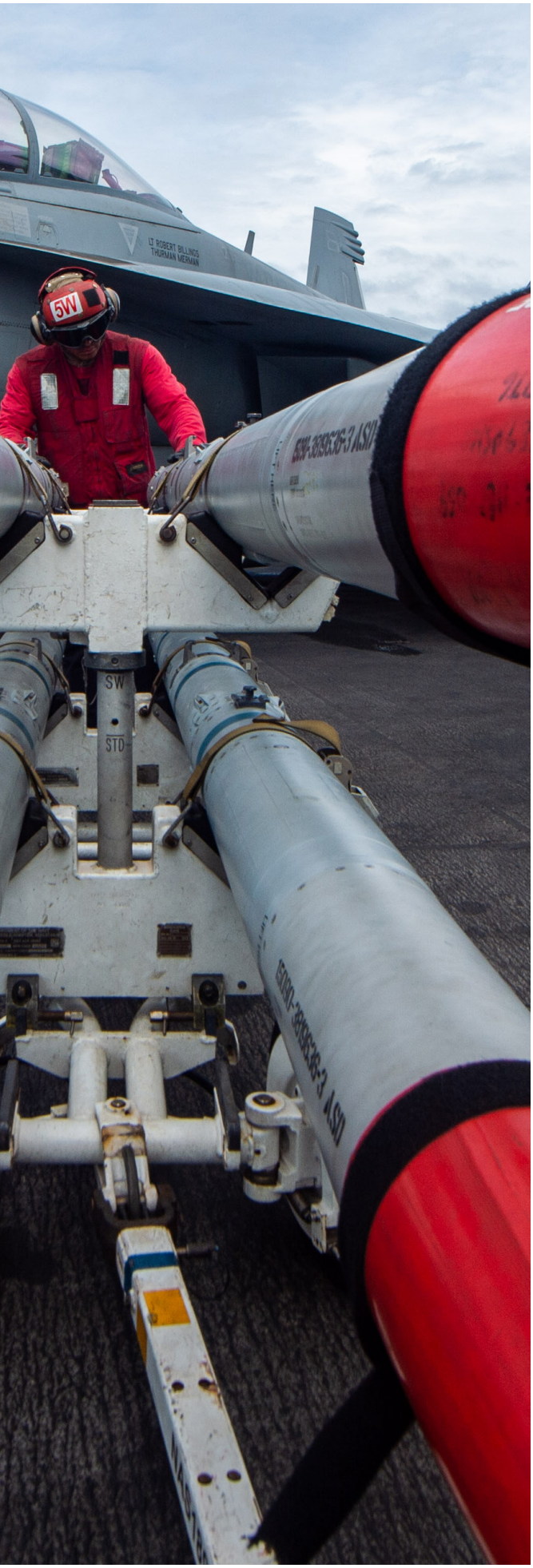
Gunnery Sgt. Anthony Curless, USMC
Aviation Weapons Analyst, anthony.c.curless.mil@us.navy.mil, ext. 7224

Gunnery Sgt. Louis Tiberio, USMC
Avionics Safety Analyst, louis.r.tiberio.mil@us.navy.mil, ext. 7140

Staff Sgt. Michael Kelly, USMC
Airframes Safety Analyst, michael.j.kelly495.mil@us.navy.mil, ext. 7239

Staff Sgt. DeMario Hargrove, USMC
Maintenance Administration Analyst, demario.t.hargrove.mil@us.navy.mil, ext. 7058

Aviation Ordnanceman Airman Jon Anderson Aquino, moves ordnance
Vinson (CVN 70) in the South China Sea, Jan. 7, 2025. (U.S. Navy photo



on the flight deck of the Nimitz-class aircraft carrier USS Carl
by Mass Communication Specialist 3rd Nate Jordan)

MECH
VOL. 70, NO. 1
Spring | Summer 2025

IN THIS ISSUE

THE WORST CONTROL DISCREPANCIES FY23

BY SENIOR CHIEF ELECTRICIAN'S MATE WILLIAM DAVIS

ASSESSMENTS KEY FINDINGS & HOW TO FIX THEM

Naval Safety Command's fiscal year 2023 local area assessments discovered the most common maintenance control discrepancy was failing to brief or debrief high-risk evolutions. This discrepancy accounted for 49% of the total discrepancies found during maintenance control assessments across the Fleet. The main reason was the Type Wings/Marine Air Wings (MAW) hadn't identified or defined high-risk evolutions as per the Naval Aviation Maintenance Program (NAMP). Chapter 10, paragraph 10.41.5.1.b. of the NAMP directs Type Wings and MAWs to identify and define high-risk maintenance events, such as aircraft moves and dynamic events, unique to their Type/Model/Series (T/M/S) aircraft and operational environment and publish Aviation Maintenance Evolution Risk Management (RM) worksheets.

HIGH-RISK EVOLUTIONS

High-risk evolutions in aviation maintenance are tasks involving significant potential danger to personnel or equipment. These tasks include aircraft towing, engine runs and ordnance handling. Properly briefing and debriefing these evolutions increases the awareness of all personnel involved on understanding the risks, procedures and safety measures required to conduct the tasks safely.

KEY ISSUES

- Lack of definition: Many Type Wings/MAWs are not identifying or defining what constitutes a high-risk evolution for their specific aircraft and operational environments.
- Inadequate documentation: Failing to publish aviation maintenance evolution RM worksheets led to a lack of standardized procedures.
- Training deficiencies: Insufficient training on recognizing and managing high-risk evolutions contributed to the discrepancies.

RECOMMENDATIONS

- Standardize definitions: Each Type Wing/MAW must develop clear definitions and criteria for high-risk evolutions tailored to their specific aircraft and missions.
- Enhance training programs: Implement comprehensive training programs focused on identifying high-risk evolutions, briefing and debriefing.
- Regular reviews: Conduct regular reviews and updates of high-risk evolution procedures to ensure they remain relevant and effective.

OPTIMIZED ORGANIZATIONAL MAINTENANCE ACTIVITY (OOMA) REPORTS

The second most common discrepancy found in maintenance controls across the fleet was controllers not using OOMA reports properly to track maintenance, accounting for about 8% of the discrepancies found. The Outstanding Transaction Report (OTR) is a vital tool to help controllers manage equipment and flight gear. All maintenance controllers must understand how to retrieve reports and ensure all maintenance actions are initiated properly, especially scheduled inspections.

KEY ISSUES

- Missed inspections: Controllers failing to update and track inspections properly, leading to out-of-compliance equipment.
- Data entry errors: Entering incorrect data in OOMA resulting in inaccurate tracking of maintenance actions.
- Lack of training: Inadequate training on how to use OOMA reports effectively.

RECOMMENDATIONS

- Comprehensive training: Provide in-depth training on using OOMA reports, including the OTR, Components Near Due and Outstanding Technical Directive reports.
- Regular audits: Conduct regular audits of OOMA entries to promptly identify and correct discrepancies.
- Improved oversight: Increase oversight by senior maintenance personnel to ensure accurate and timely data entry.

COMPONENTS NEAR DUE AND OUTSTANDING TECHNICAL DIRECTIVES

These reports are crucial in managing the maintenance effort and ensuring safe flight operations. During assessments, NAVSAFECOM assessors found instances where maintenance controllers failed to correctly screen the Outstanding Technical Directive report and continued to fly aircraft past the due date for technical directives.

KEY ISSUES

- Overdue components: Not tracking overdue or high-time components correctly.
- Missed technical directives: Not executing technical directives on time, leading to non-compliance and potential safety risks.
- Incomplete reports: Missing pages or tasks in OOMA, leading to incomplete tracking of maintenance requirements.

RECOMMENDATIONS

- Systematic screening: Implement systematic procedures for screening Components Near Due and Outstanding Technical Directive reports.
- Regular updates: Ensure OOMA and Naval Aviation Logistics Command Management Information System (NALCOMIS) databases are regularly updated with the latest maintenance data.
- Enhanced accountability: Hold maintenance personnel accountable for tracking and completing all technical directives and component due dates on time.

UNQUALIFIED PERSONNEL AND SPECIAL MAINTENANCE QUALIFICATION VERIFICATIONS

The next two major discrepancies consistently found were unqualified personnel signing off maintenance actions and Special Maintenance Qualification (SMQ) verifications not being screened properly. Both discrepancies are related and should be caught by quality assurance (QA) and maintenance control.

KEY ISSUES

- Unauthorized sign-offs: Non-qualified personnel signing off on maintenance actions.
- Inadequate verification: Failing to verify SMQs for personnel performing specific tasks.
- Lack of oversight: Insufficient oversight by QA and maintenance control to catch and correct these issues.

RECOMMENDATIONS

- Strict verification procedures: Implement strict verification procedures for all maintenance actions, ensuring only qualified personnel sign off on tasks.
- Enhance training: Provide thorough training on SMQ verification processes and the importance of qualification checks.
- QA checks: Increase QA checks to ensure compliance with SMQ requirements and prevent unauthorized sign offs.

GENERAL OBSERVATIONS

The bottom line is most discrepancies discovered by NAVSAFECOM can be associated with poor training, lack of understanding established instructions or general negligence.

Verifying reports and ensuring documentation is accurate only takes a few minutes. Maintenance controllers are the last line of defense to ensure documentation is correct and procedures are followed. Following established procedures saves lives.

KEY ISSUES

- Training gaps: Significant gaps in training programs leading to a lack of understanding critical maintenance procedures.
- Negligence: Instances of general negligence of personnel failing to follow established protocols.
- Documentation errors: Frequent errors in maintenance documentation due to oversight or lack of attention to detail.

RECOMMENDATIONS

- Continuous training: Implement continuous training programs to address gaps and reinforce the importance of following established procedures.
- Promote accountability: Foster a culture of accountability where personnel understand the impact of their actions on safety and compliance.
- Streamline procedures: Simplify and streamline maintenance procedures to reduce the likelihood of errors and improve compliance.

Effective maintenance control is essential for the safety and success of aviation operations. By addressing the common discrepancies found during FY23 assesments, such as failing to brief high-risk evolutions, improper use of OOMA/NALCOMIS reports, overdue components, unauthorized sign offs and general negligence, aviation units can improve their maintenance processes and ensure compliance with regulations. Implementing recommended best practices will enhance the safety, efficiency and reliability of naval aviation maintenance operations, ultimately saving lives and preserving assets.

A Sailor prepares for flight operations on the flight deck of the aircraft carrier USS Nimitz (CVN 68) in the Pacific Ocean, Feb. 10, 2025. (U.S. Navy photo by Mass Communication Specialist 2nd Class Hannah Kantner)

DUAL CONCURRENCE

SENIOR CHIEF NAVAL AIRCREWMAN (HELICOPTER) ERICA GIBSON

Dual concurrence, a term commonly used by flight crews, requires two members to verify the correct control is selected before it is moved. Engine power control levers (PCL) are a prime example of a system necessitating dual concurrence. In an engine emergency, pulling the wrong PCL could be catastrophic to the aircraft and crew.

Improper maintenance can also lead to catastrophic events often stems from a lack of oversight and quality control and checks. How can the dual concurrence approach align with aviation maintenance objectives? Following a checklist is straightforward if we know what we are looking at, understand the maintenance requirement and have the correct tools and personnel qualifications. Unfortunately, this ideal scenario is not typical in naval aviation as jobs aren't reviewed until the work order requires sign-off. Maintenance crews face a heavy flight schedule, multiple aircraft requiring maintenance, limited manpower, lack of qualified personnel and insufficient tools or resources daily.

Anyone can provide dual concurrence for work currently in progress because this is simply an agreement between two people performing a task. A Sailor may not be qualified to do the job but can use the Portable Electronic Maintenance Aid to read off tasks. The qualified maintainer performing the task then responds in a challenge-action-response manner: receive a task, repeat it, complete it and respond with the task's status.

Other dual concurrence examples include all tools being accounted for, pre-/post maintenance checks and high-visibility maintenance tasks like spindle build-up on helicopter platforms. Spindle build-up requires qualified personnel throughout the evolution due to the job's in-depth maintenance requirements.

Dual concurrence creates consistency throughout a series of tasks, ensuring verification or validation at every step. Missing checklist steps can potentially cause a hazard, or worse, result in a mishap. Checklist omissions have significantly contributed to ground and aviation mishaps. We can avoid reaching that point by verifying we understood the task, performed the correct steps, used the correct tools, completed the work correctly, aided by an additional set of eyes. Dual concurrence upholds quality assurance standards in naval aviation maintenance.

Sailors concur on pre-flight checks on the flight deck of the aircraft carrier USS Nimitz (CVN 68) in the Indo-Pacific region, March 18, 2023. (U.S. Navy photo by Mass Communication Specialist 2nd Class Joseph Calabrese)

A QUESTIONING ATTITUDE

BY MASTER CHIEF AIRCRAFT MAINTENANCEMAN CHRISTOPHER SNOW

In the realm of aviation maintenance, where safety is paramount and precision is imperative, the importance of a questioning attitude cannot be overstated. From ensuring the integrity of aircraft to maintaining the highest standards of operational efficiency, the ability to ask critical questions lies at the heart of effective maintenance practices.

UNDERSTANDING THE QUESTIONING ATTITUDE

A questioning attitude is more than just a habit. It is a mindset characterized by curiosity, skepticism and a commitment to continuous improvement. At its core, this mindset involves the willingness to challenge assumptions, seek clarification and explore alternative perspectives. In aviation maintenance, this means going beyond simply following procedures and standards to actively questioning them when necessary. By embracing a questioning attitude, maintenance personnel can identify potential risks, uncover hidden issues and ultimately enhance safety and reliability.

In an environment where small oversights can have catastrophic consequences, the ability to ask the right questions can mean the difference between life and death. By encouraging maintenance personnel to question assumptions, procedures and decisions, organizations can create a culture of vigilance and accountability that permeates every aspect of their operations. This, in turn, leads to improved safety outcomes, reduced errors and increased operational efficiency.

PRACTICAL STRATEGIES FOR FOSTERING A QUESTIONING CULTURE

Building a culture of inquiry within aviation maintenance requires a concerted effort from both leadership and frontline personnel. Here are some practical strategies for fostering a questioning attitude:

TRAINING AND EDUCATION

Provide training programs emphasizing the importance of critical thinking, problem solving and effective communication skills. Encourage Sailors and Marines to ask questions and professionally challenge established norms.

LEAD BY EXAMPLE

Leaders should set the tone for a questioning culture by actively soliciting input from their team, welcoming dissenting opinions and demonstrating a willingness to reconsider decisions based on new information.

ENCOURAGE OPEN COMMUNICATION

Create channels for open communication where members feel comfortable raising concerns, reporting errors and sharing insights. Foster a culture of psychological safety where individuals aren't afraid to speak up.

REWARD CURIOSITY

Recognize and reward Sailors and Marines who demonstrate a proactive approach to problem-solving and inquiry. Highlight success stories where questioning attitudes led to positive outcomes.

CONTINUOUS IMPROVEMENT

Emphasize the importance of continuous improvement and encourage personnel to seek out opportunities for learning and growth. Foster a culture of experimentation and innovation where new ideas are welcomed and explored.

Cultivating a questioning attitude is essential for ensuring the safety, reliability and efficiency of aviation maintenance operations. By fostering a culture of inquiry and curiosity, squadrons can empower their people to identify potential risks, challenge the status quo and drive continuous improvement.

Ultimately, it's through the collective efforts of each individual within the organization to build a culture of vigilance and accountability, leading to safe skies and even safer Navy and Marine Corps aircraft.

Aviation Boatswain's Mate (Handling) 1st Class Jaquan Morgan, assigned to the forward-deployed amphibious assault ship USS America (LHA 6) supervises the flight deck while conducting flight operations in the Philippine Sea, Feb. 15, 2025. (U.S. Navy photo by Mass Communication Specialist 2nd Class Cole Pursley)

RISK MANAGEMENT IS TIME-CRITICAL

BY LT. CMDR. PAUL SHEN AND LT. CLAYTON FARLEY

Mishaps are a constant threat in naval aviation. The fleet has encountered many types and severities of mishaps throughout the Navy's history, especially in aviation. We use the term "written in blood" to describe some of our publications, indicating our procedures are written due to preventable mistakes, some of which result in injury or death.

We reduce mishaps by breaking down and studying past mishaps and close calls. The naval aviation community's process takes these findings and creates entries in our publications to reduce the probability of these events happening again. But what if we focused on the more proactive solution that already exists? This solution is risk management (RM), a process just as inculcated in naval aviation as "writing rules in blood."

Mishaps occur due to many factors. Some cannot be anticipated. However, with better RM skills, many could have been avoided. Many commands preach RM at all levels but how many take the time to practice and teach the application of RM skills? Common phrases you will hear at maintenance meetings across the fleet include "slow down," "take your time" and "do it right the first time." While this is good advice, it isn't beneficial when you think about it from a wider perspective. Naval aviation preaches "by-the-book" maintenance 100% of the time which should make these platitudes unnecessary as they naturally flow from our maintainer's actions. Refocusing RM training on improving the process from the ground up will yield more positive results in the long run.

The following are two recent mishaps at Strike Fighter Squadron (VFA) 22 where the better application of time-critical RM could have prevented or mitigated a mishap:

The first mishap occurred Dec. 5, 2023. Two maintainers were removing a seized component from a leading-edge flap. This maintenance action was highly uncommon at the organizational maintenance level. The senior maintainer, acting as a trainer for the more junior maintainer, ensured they had a Portable Electronic Maintenance Aid with the Interactive Electronic Technical Manual (IETM) open for the entire work order. They followed each step to the best of their ability and as it was published in the IETM. When they encountered the seized pin, they used a tool specially checked out from the local Fleet Readiness Center, a slide hammer. Using what they thought was the correct spot to brace the slide hammer, both maintainers worked together, attempting to remove the seized pin. It was only well into their efforts the senior maintainer noticed the slide hammer was also impacting the inner wing structure of the aircraft each time they reset it. Unfortunately, at this point, it was too late. The damage was done.

The second mishap occurred one week later. On Dec. 12, 2023, a maintainer at VFA-22 on Naval Air Station Lemoore, California, pulled a crane out to the flight line in preparation for maintenance. The maintainer parked the 19-foot, 1,500 lb. crane 10 feet behind a F/A-18F Super Hornet. The "preop" card stipulated the crane should be parked at least 10 feet behind the parked aircraft, with all four wheel brakes set and all four casting wheels locked forward and aft. The only step the maintainer missed in this evolution was locking the wheel castors of two of the crane's four wheels after setting the wheel brakes.

Sailors perform maintenance on an F/A-18F Super Hornet, assigned to the "Black Knights" of Strike Fighter Squadron (VFA) 154, on the flight deck aboard the Nimitz-class aircraft carrier USS Theodore Roosevelt (CVN 71) in the Indo-Pacific region, June 14, 2024. (U.S. Navy photo by Mass Communication Specialist 2nd Class Christopher J. Crawford)

The Redcock flight line is oriented with our aircraft beneath aircraft protective enclosures facing south and another line of aircraft facing north 119 feet behind our aircraft. On this day, the crane was parked between the mishap jet and another jet from the neighboring squadron.

Approximately one hour after the crane was parked the neighboring squadron started engines on the aircraft parked behind the mishap aircraft. Startup was expected and the aircraft's pilot indicated he was ready to taxi. The pilot received clearance to start moving and advanced the throttles. The force exerted by the F/A-18E's twin turbofan engines caused the crane to shimmy and eventually rotate. This continued until the crane struck one of the aft flight controls on VFA-22's parked aircraft. There was nothing maintenance personnel could do to stop the crane or tell the other squadron's jet to reduce power once the crane began to shake.

These mishaps could have been avoided with situational awareness, foresight and RM. These mishaps are an excellent example of the value of using time-critical RM. Several actions would have taken just another minute to complete and prevented, or lessened, the severity of these mishaps.

The first mishap presented is especially pointed as both maintainers believed they were doing everything right. However, they adhered so closely to a poorly written procedure usually performed at intermediate or depot levels that never stopped to ask if they should be doing the steps precisely as presented in the IETM. Additionally, they knew they were using an unfamiliar tool yet never stopped to discuss its specific risks. Indeed, the simplicity of the slide hammer made them overconfident in its usage.

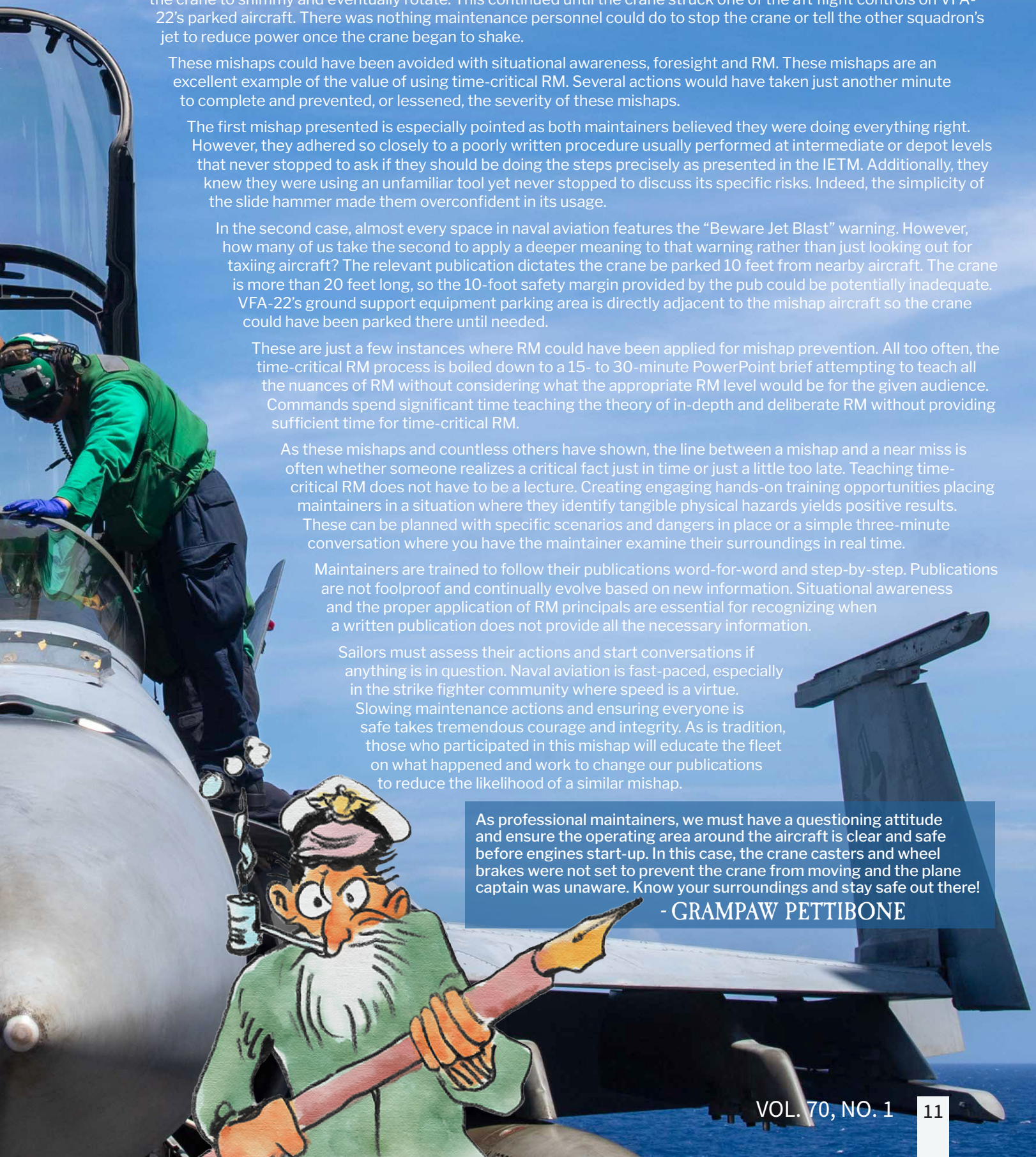
In the second case, almost every space in naval aviation features the "Beware Jet Blast" warning. However, how many of us take the second to apply a deeper meaning to that warning rather than just looking out for taxiing aircraft? The relevant publication dictates the crane be parked 10 feet from nearby aircraft. The crane is more than 20 feet long, so the 10-foot safety margin provided by the pub could be potentially inadequate. VFA-22's ground support equipment parking area is directly adjacent to the mishap aircraft so the crane could have been parked there until needed.

These are just a few instances where RM could have been applied for mishap prevention. All too often, the time-critical RM process is boiled down to a 15- to 30-minute PowerPoint brief attempting to teach all the nuances of RM without considering what the appropriate RM level would be for the given audience. Commands spend significant time teaching the theory of in-depth and deliberate RM without providing sufficient time for time-critical RM.

As these mishaps and countless others have shown, the line between a mishap and a near miss is often whether someone realizes a critical fact just in time or just a little too late. Teaching time-critical RM does not have to be a lecture. Creating engaging hands-on training opportunities placing maintainers in a situation where they identify tangible physical hazards yields positive results. These can be planned with specific scenarios and dangers in place or a simple three-minute conversation where you have the maintainer examine their surroundings in real time.

Maintainers are trained to follow their publications word-for-word and step-by-step. Publications are not foolproof and continually evolve based on new information. Situational awareness and the proper application of RM principals are essential for recognizing when a written publication does not provide all the necessary information.

Sailors must assess their actions and start conversations if anything is in question. Naval aviation is fast-paced, especially in the strike fighter community where speed is a virtue. Slowing maintenance actions and ensuring everyone is safe takes tremendous courage and integrity. As is tradition, those who participated in this mishap will educate the fleet on what happened and work to change our publications to reduce the likelihood of a similar mishap.



As professional maintainers, we must have a questioning attitude and ensure the operating area around the aircraft is clear and safe before engines start-up. In this case, the crane casters and wheel brakes were not set to prevent the crane from moving and the plane captain was unaware. Know your surroundings and stay safe out there!

- GRAMPAW PETTIBONE

SAFE ARMS, SAFE AMMUNITION & SAFE EXPLOSIVES

BY SENIOR CHIEF AVIATION ORDNANCEMAN NIELS MYGIND

The security of our arms, ammunition and explosives (AA&E) is a high priority and something we must take seriously and handle correctly. Through my assessments with Naval Safety Command (NAVSAFECOM), I've found AA&E security, record-keeping and personnel designations are often inconsistent.

The main issues and deficiencies encountered during NAVSAFECOM assessments are:

- Ready Service Locker (RSL) Key Control: Issuing keys to unauthorized personnel, issuing keys to themselves and not signing for keys returned.
- Issuance and Custody Receipt for Small Arms: Issuing keys to unauthorized personnel, not signing for firearms when returned and unauthorized handling of firearms.
- Access Lists: Outdated access lists, and access lists not posted or not kept in the proper location.
- Inventories: Munitions and firearms not properly accounted for after use or at the end of the day.
- Recordkeeping: Logs not retained for the required length of time, such as RSL key logs which require three years of records retention.

We must improve our security, inventories and recordkeeping through training and mutual accountability. Senior leadership needs to conduct frequent spot checks to ensure we perform our duties properly and safely.

DESIGNATION OF AA&E ACCOUNTABILITY ROLES

The commanding officer must designate, in writing, an AA&E accountability officer and a key-and-lock custodian or access control officer. These individuals assist the commanding officer in ensuring security, access to ammunition and recordkeeping are following current directives. For AA&E, OPNAVINST 5530.13D and MCO 5530.14A are the instructions mandating the requirements when AA&E is held within command spaces.

RESTRICTED AREAS AND KEY STORAGE

Squadron spaces and RSLs must be designated as restricted areas when storing risk category AA&E. Typically, this ammunition falls into security-risk category three or four, as stated in the squadron's security plan. The RSL keys must be stored in a separate key container from non-AA&E keys. This container must be made of 12-gauge steel and secured with a General Services Administration (GSA)-approved, built-in three-position changeable combination lock or a built-in combination lock with an approved locking device. If a command has security risk one or two ammunition, the keys must be stored in a GSA-approved, Class Five container.

ANNUAL SECURITY SURVEYS AND INVENTORIES

The commanding officer must appoint a person to conduct an annual security survey, which must be retained for three years. Magazine key and lock inventories must be performed semi-annually and retained for three years. Whenever there is a change in the key and lock custodian, a complete inventory of ammunition and explosives must be completed.

ACCOUNTABILITY OFFICER AND KEY CUSTODIAN ROLES

It's often found the AA&E accountability officer and key and lock custodian are the same person, which is against regulations. OPNAVINST 5530.13D states the duties of the key and lock custodian cannot be assigned to a person responsible for AA&E storage facilities. Access lists must be maintained for people who have unescorted access to AA&E and these lists must be kept out of public view. Anyone with AA&E duties is required to have an annual screening and this form must be kept for six months after the person leaves the command.

KEY CONTROL REGISTER AND ACCESS LISTS

The key control register and the RSL access lists provide continuous accountability of AA&E keys. The register must be completely filled out and the log must be kept for three years after the date of the last entry.

OPNAVIST 5530.13D COVERAGE

The OPNAVINST 5530.13D is applicable to all ships and embarked units, shore stations, contractors and all other organized entities within the Navy that possess or manage Navy conventional AA&E. The instructions cover AA&E and doesn't apply to:

- Nuclear weapons
- Devices charged with chemical agents
- Blank, inert training ammunition or rim-fire ammunition
- Non-lethal ammunition and other inert, non-explosive munitions
- Liquid pepper spray used for law enforcement or security that is available as a commercial off-the-shelf product
- Commercially procured AA&E

AA&E security is serious business. The procedures found in OPNAVINST 5530.13D must be followed to ensure ammunition and explosives remain secure. It doesn't take a lot of explosives in the wrong hands to cause death, injury or damage. By improving our practices in key control, issuing and receipt of small arms, access list maintenance, inventory accuracy and recordkeeping, we can significantly enhance AA&E security and accountability. Leadership must take an active role in training, oversight and compliance to safeguard these critical assets and ensure the safety of our personnel and operations.

.50 caliber ammunition is staged on the aft missile deck aboard the Arleigh Burke-class guided-missile destroyer USS Higgins (DDG 76) during a small-arms live fire exercise in the Philippine Sea, Oct. 26, 2024. (U.S. Navy photo by Mass Communication Specialist 3rd Class Trevor Hale)

Workload Reports

BY STAFF SGT. DEMARIO HARGROVE

Maintaining operational efficiency is paramount. Using advanced tools and reports is essential for effective resource management and mission readiness. Among these tools, the Work Center Workload Report (WCWR) stands out as a vital instrument for optimizing productivity, enhancing maintenance planning and ensuring aircraft readiness.

UNDERSTANDING WORK CENTER WORKLOAD REPORTS

The WCWR provides insight into the workload distribution and status of tasks within a specific work center. These reports offer a comprehensive overview of maintenance activities, including scheduled inspections, repairs and component replacements. The items listed on the WCWRs include aircraft/component, serial number, maintenance level, maintenance control (MC) number/job control number, aircraft status, job status, equipment operational capability (EOC), work unit code/unified numbering system (WUC/UNS), system reason, document date and serial number, project code, supply status and received date. By analyzing these reports, aviation maintenance workers can efficiently allocate resources, prioritize tasks and streamline workflow processes.

ENHANCING MAINTENANCE PLANNING

Effective maintenance planning is essential to minimize aircraft downtime and ensure mission success. The WCWRs provide valuable data facilitating long-term maintenance planning and forecasting. By analyzing historical maintenance trends and upcoming workload projections, aviation maintenance planners can develop comprehensive maintenance schedules and allocate resources accordingly. This proactive approach minimizes disruptions to flight operations and maximizes aircraft availability.

The WCWRs serve as a roadmap for streamlining workflow processes within maintenance organizations. By identifying bottlenecks, inefficiencies and potential resource constraints, aviation maintenance personnel can implement targeted process improvements. Whether it's optimizing task prioritization, streamlining inspection procedures or enhancing communication protocols, WCWRs provide actionable insights driving continuous improvement initiatives. This results in enhanced productivity, reduced turnaround times and improved operational efficiency.

USING WORK CENTER WORKLOAD REPORTS

Outlined in the COMNAVAIRFORINST 4790.2D, here's how various roles use these reports:

- Maintenance Officers/Maintenance Material Control Officers: Review hard copies of the current Naval Aviation Logistics Command Management Information System (NALCOMIS) WCWRs to verify work orders are coded with the EOC codes, WUC/UNS and Up/Partial/Down (U/P/D) indication.
- Maintenance Control (MC): Review the work order for correct and complete annotation before approving it for automatic population in the Aircraft Automatic Discrepancy Book and WCWR.
- Maintenance Master Chiefs/Aircraft Maintenance Chiefs: Monitor MC for accurate subsystem capability impact reporting documentation by performing a daily review of the NALCOMIS WCWR for correct U/P/D indication, EOC coding and WUC/UNS.
- Work Center Supervisors: Responsible for the accuracy of work orders generated by their work center. At the start and end of the work shift, work center supervisors will review the NALCOMIS WCWR for correct EOC codes and WUC/UNS coding to ensure errors are corrected. For contingency recovery procedures, a new WCWR is validated with the old Workload Report. Notify MC of all completed Visual Information Display System/Maintenance Action Forms to be backfitted into NALCOMIS Optimized Organizational Maintenance Activity. Notify MC of all changes annotated on the WCWR.

FACILITATING DECISION-MAKING AND ENSURING AIRCRAFT READINESS

In fast-paced operational environments, timely and informed decision-making is critical. WCWRs serve as decision support tools, providing commanders and maintenance officers with real-time visibility into maintenance activities and resource use. Whether it's reallocating manpower to address emerging priorities or expediting critical repairs to meet mission requirements, these reports empower decision-makers to respond swiftly and effectively to evolving operational needs.

At the heart of Navy and Marine Corps aviation is the imperative to maintain aircraft readiness. WCWRs play a pivotal role in achieving this objective by facilitating proactive maintenance management and resource optimization. By monitoring the status of maintenance tasks, tracking compliance with maintenance schedules and identifying potential maintenance delays, these reports enable aviation maintenance personnel to take preemptive actions to ensure aircraft readiness. This proactive approach enhances mission readiness, improves operational tempo and enhances overall fleet effectiveness.

In the dynamic and demanding environment of naval aviation, WCWRs are instrumental in optimizing operational efficiency, enhancing maintenance planning and ensuring aircraft readiness. By leveraging these reports to allocate resources effectively, streamline workflow processes and facilitate informed decision-making, aviation maintenance organizations can achieve higher levels of productivity, reliability and mission readiness. As technology continues to advance and operational requirements evolve, WCWRs will remain indispensable tools for maintaining the highest standards of excellence in naval aviation maintenance operations.

Photo courtesy of Shutterstock.

FIRE SUPPRESSION

BY SENIOR CHIEF
AVIATION SUPPORT
EQUIPMENT TECHNICIAN
DEXTER G. RONQUILLO

The Navy has lost millions of dollars in equipment due to afloat and shore fire-related incidents. Many of these losses stem from poorly maintained fire suppression systems, lack of proper training or failure to follow standard procedures.

Here are some common issues identified in recent local area assessments of fire suppression systems across various commands:

- Fire Extinguishers: Units do not conduct portable fire extinguisher inspections on a routine basis, with an expectation the portable fire extinguisher will function in an emergency. One assessment revealed a broken tamper seal, with the nozzle missing from the hose, making the extinguisher unusable.
- Blocked Fire Prevention Access Points: Maintenance gear obstructed access to fire extinguishers and hangar fire suppression systems.
- Inadequate Fire Suppression in Hazardous Material Storage: Hazardous materials were stored in an office space without an automatic fire suppression system. No fire extinguishers were available nearby.
- Obstructed Egress Routes: Pneumatic hoses blocked a primary fire exit in a hangar bay.
- Unfamiliar Rover/Fire Watch: Fire watch personnel were unfamiliar with hangar fire suppression procedures and did not know how to use fire extinguishers or fire bottles.

These issues can prevent fire suppression systems from working properly during an emergency. According to Occupational Safety and Health Administration regulations (29 CFR 1910), fire suppression system components, like manual actuation devices, must be accessible and free of obstruction. Fire extinguishers must be maintained and tested regularly.

Transition from Aqueous Film Forming Foam Use

Recent data shows frequent, costly mishaps with foam-based fire suppression systems, leading to over $24.5 million in damages, one death and multiple injuries. To address this, Commander, Navy Installations Command Notice 11320 requires all foam components of fire suppression systems in hangars to be secured in such a manner that no foam may intentionally or inadvertently release into hangars by March 31, 2025.

To manage this transition:

- Update Standard Operating Procedures: Type wings must revise their fire watch procedures to account for the inactivation of foam-based systems in hangars.
- Training: Fire watch personnel need specific training on manual system actuation, fire extinguisher operation and how to alert fire and emergency services.
- Squadron Requirements: A 24/7 roving fire watch is required when fueled aircraft are present in hangars without a functional fire alarm system.
- Regular Spot Checks: Squadrons must conduct periodic checks to ensure fire watch personnel are familiar with fire suppression procedures.
- Additional Safety Measures: Installation, type wing and squadron leaders must apply other effective measures to protect personnel, equipment and facilities.

As noted above, guidance and procedures stem from lessons learned. While some of the requirements may seem basic, complacency or lack of awareness can still lead to dangerous oversights.

Safety is everyone's responsibility. If something is not right, report it to your chain of command. Taking ownership of your space and following procedures can prevent accidents and protect your team. The Navy's safety management system focuses on keeping people, property and processes safe.

A Sailor takes samples of aqueous film-forming foam during a flight deck wash on the flight deck of the aircraft carrier USS Nimitz (CVN 68), June 21, 2024. (U.S. Navy photo by Mass Communication Specialist 3rd Class Timothy Meyer)

PREPARED TO SAVE A LIFE?

BY SENIOR CHIEF NAVAL AIRCREWMAN (HELICOPTER) AARON HUTCHINSON

One critical aspect of operational safety is the availability and proper maintenance of automated external defibrillators (AEDs) to support CPR when needed. The Navy has stringent requirements to ensure AEDs are always not only present but operational. This article discusses CPR qualification requirements in the aviation community, guidelines for AEDs specific to Navy installations, the proper training and use of these life-saving devices and the essential maintenance protocols to keep them in optimal condition.

AED GUIDELINES FOR NAVY INSTALLATIONS

Navy installation requirements for AEDs are identified in OPNAVINST 5100.29A, outlining the Navy's comprehensive guidelines regarding AEDs. According to this 2019 instruction, there are over 255,000 cases of sudden cardiac arrest (SCA) in the United States each year. The American Heart Association states the combination of CPR, defibrillation delivered by an AED within the first three to five minutes and the early activation of emergency medical services can increase the survival rate in patients who suffer from SCA by over 50%. The Secretary of the Navy and Navy installation AED program instructions provide guidelines concerning key elements of development, implementation and maintenance for an AED program. These guidelines provide a foundation to implement and maintain an AED program based on each installation's specific requirements.

CPR AND AED TRAINING FOR AVIATION UNITS

Regarding CPR and AED training for aviation units, Commander, Naval Air Forces requires commands to strive for 100% CPR qualification to the maximum extent practical. If 100% is not possible, then at a minimum, 75% of maintenance department people who work in a high-risk environment must be CPR qualified. This includes 50% of personnel from all electrical and electronic-associated ratings or equivalent Military Occupational Specialty, personnel identified by the command's Industrial Hygienist survey, personnel with qualifications or duties under the Aircraft Confined Space Program (ACSP), ACSP managers, entry supervisors, safety observers and fire watch personnel. Along with CPR, properly using AEDs can make a significant difference in saving a life. Having AEDs readily available is crucial but it is equally important to ensure personnel are trained in their proper use.

Proper AED usage involves a simple sequence of steps:

1. Assess the situation and ensure the safety of the surroundings.
2. Determine if the individual is unresponsive and not breathing normally.
3. Call for medical assistance and initiate CPR, if necessary.
4. Retrieve the nearest AED and power it on.
5. Follow the visual and audio prompts provided by the AED for electrode placement and shock delivery.
6. Administer shocks as instructed and continue CPR until medical help arrives.

AED STORAGE AND MAINTENANCE

Proper AED storage is essential to protect the device from environmental factors such as moisture and extreme temperatures which could compromise its effectiveness in an emergency. Regular maintenance is imperative to ensure the AED's reliability. OPNAVINST 5100.29A mandates AEDs undergo regular inspections and maintenance checks to verify their functionality and accessibility. These inspections should be completed and documented on a routine basis and incorporated into a tracking system maintained by the facility AED warden.

These inspections typically include:

- Visual inspections to ensure the device is free from damage or signs of wear.
- Regular testing of battery levels and functionality to ensure the AED is operational.
- Inspection of electrode pads to ensure they are within their expiration date and properly sealed, along with additional equipment identified in OPNAVINST 5100.29A.

In summation, AEDs play a crucial role in saving lives and are a critical asset to people onboard Navy installations. Adhering to the requirements outlined in OPNAVINST 5100.29A helps leaders ensure these life-saving devices are present, properly maintained and accessible when the need arises. By prioritizing training, maintenance and regular inspections, the Navy and Marine Corps can fulfill their commitment to ensuring the safety and well-being of their personnel in all facets of shore-based operations. For more information on CPR and AED qualifications, maintenance or inspection requirements, contact your command CPR instructor or facility AED warden.

Photo courtesy of Shutterstock.

SEE SOMETHING.

BY GUNNERY SGT. SAMUEL LEE

Safety is constantly emphasized in Navy and Marine Corps aviation. Despite having multiple safety programs, resources and billets, simple mistakes still lead to costly outcomes, including injuries or loss of life.

Many of you have served in safety billets, whether in the safety department, quality assurance (QA) or as safety observers for ordnance evolutions. These positions are crucial because they reflect a maintainer's level of knowledge, experience and maturity. Aviation operations often require skilled safety observers to ensure tasks are completed correctly and safely. However, junior maintainers involved in an evolution, walking by or in the area may not have the same experience. Do these Sailors and Marines know enough to recognize and point out potential mistakes that could lead to mishaps? Maybe they do, maybe they don't.

MENTOR AND SPEAK UP

We need to mentor junior service members, encouraging them to speak up if they see something unsafe, even if the reporting might be wrong. I attended aircraft towing briefs when I served in QA. I listened to the director brief Marines on the task and then I spoke. This is your chance to talk to your maintenance department QA reps. At any meeting or brief, when asked if you have anything to add, say something. Share recent information from QA, mention safety concerns, the day's weather or the importance of hydration – anything. Avoid saying, "I've got nothing," because later, when an incident occurs, you might have had the opportunity to provide valuable safety information or refocus the maintainers.

During these briefs, I spoke to the Marines, identified the first-time wing walkers and ensured each person understood their specific duty. I always ended with, "If you see something, say something, even if you might be wrong." I would much rather have a Marine or Sailor stop an evolution for a safety concern and be wrong than see something and keep it to themselves for fear of being wrong, which could lead to a mishap.

USE TEACHING MOMENTS

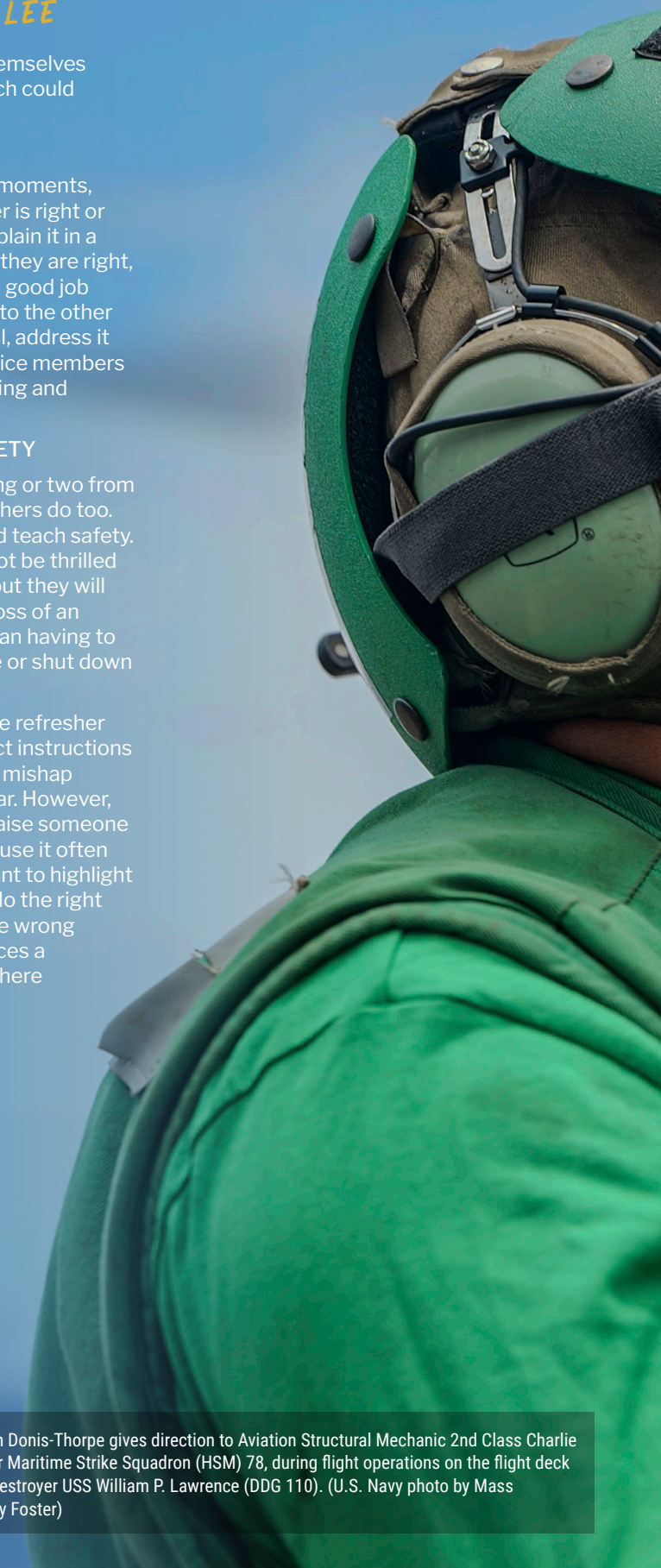
Use stoppages as teaching moments, whether the service member is right or wrong. If they are wrong, explain it in a way they can understand. If they are right, ensure they know they did a good job and explain what happened to the other maintainers. If time is critical, address it later, follow up with the service members and provide the same teaching and understanding.

BUILD A CULTURE OF SAFETY

Just because we know a thing or two from experience doesn't mean others do too. Take the time to instruct and teach safety. Some departments might not be thrilled with stopping an evolution but they will appreciate you preventing loss of an asset or personnel rather than having to reshuffle the flight schedule or shut down operations due to a mishap.

It is easy to punish or provide refresher training to those who neglect instructions and procedures leading to a mishap because the evidence is clear. However, it is harder to reward and praise someone who did the right thing because it often goes unnoticed. It is important to highlight and reward personnel who do the right thing, just as we focus on the wrong thing. This approach reinforces a positive culture and atmosphere where more personnel feel comfortable speaking up and working safely.

We can mitigate accidents and ensure a safer working environment for all by promoting vigilance and encouraging open communication. Let's create a culture where every service member feels empowered to voice concerns and act upon them.



Aviation Machinist's Mate 2nd Class Colton Donis-Thorpe gives direction to Aviation Structural Mechanic 2nd Class Charlie Padilla-Garcia, right, assigned to Helicopter Maritime Strike Squadron (HSM) 78, during flight operations on the flight deck of the Arleigh Burke-class guided-missile destroyer USS William P. Lawrence (DDG 110). (U.S. Navy photo by Mass Communication Specialist 2nd Class Bayley Foster)

SAY SOMETHING.

COMPLACENCY = DISASTER

BY AVIATION MACHINIST'S MATE PETTY OFFICER 1ST CLASS (AW) MARK SCHMIDT, AVIATION MACHINIST'S MATE PETTY OFFICER 2ND CLASS SEBASTIAN COLON AND AVIATION ELECTRONICS TECHNICIAN PETTY OFFICER 3RD CLASS HUNTER BERREY

The U.S. Navy operates an aerial force of more than 4,000 aircraft, supported by maintainers who rely on a single manual for guidance: COMNAVAIRFORINST 4790.2E, also known as the NAMP. Nicknamed the "maintainer's bible," the manual outlines standard operating procedures (SOP) for everything from daily tasks to major maintenance intervals. It defines the responsibilities of all maintainers, from program leads to individual personnel.

Our understanding of these responsibilities was tested during a routine inspection and launch of two C-2A aircraft supporting USS Dwight D. Eisenhower (CVN 69) and Carrier Strike Group Two in the Central Command area of responsibility. The pre-flight procedures appeared uneventful – tools were checked out, daily inspections completed and both aircraft were launched on time. However, a critical error went unnoticed: a flashlight from a tool pouch remained lodged in the starboard engine bay during the daily inspection.

This oversight was not discovered until the next shift's all-tools-accounted for check. For more than six hours, the flashlight had been lodged against a fuel line within the nacelle, enduring both an arrested landing and a catapult launch. A dislodgement could have resulted in catastrophic engine failure, putting the lives of all aboard at risk.

Fortunately, this was a "near miss" resulting in disciplinary actions for those involved rather than a tragedy. A Quality Assurance (QA) investigation revealed a chain of errors caused by complacency. During the daily inspection, the flashlight was missing from the tool pouch, which remained signed out. Subsequent checks failed to notice the tool was missing.

This incident highlights the critical importance of the NAMP and its associated programs, especially the tool control program. Failure to follow established procedures can have disastrous consequences.

Collateral Duty Inspectors (CDIs) and QA personnel are responsible to ensure tools are signed out and accounted for before and after each task. Proper tool control prevents foreign object debris (FOD) hazards, reducing the potential for considerable damage and injury.

The NAMP's FOD program emphasizes even small, misplaced objects can have catastrophic consequences. It outlines procedures to identify, eliminate and report potential FOD. Strict tool accountability, pre-operational inspections and regular FOD walk-downs are crucial to prevent FOD incidents.

The programs and processes in the NAMP are the foundation for safe aircraft operations and successful mission accomplishment in military aviation. Much like pilot manuals, they are built on lessons learned from past mistakes to prevent future tragedies. By following the clear guidelines – from tool control to FOD prevention – every maintainer plays a vital role in keeping our aircraft safe and ready for any mission.

From left Aviation Electronics Technician Petty Officer 3rd Class Hunter Berrey, Aviation Machinist's Mate Petty Officer 1st Class (AW) Mark Schmidt and Aviation Machinist's Mate Petty Officer 2nd Class Sebastian Colon, Dec. 20, 2023. (Photo courtesy CWO2 Autumn Florentino)

WE NEED CLEAR VISION

BY SENIOR CHIEF AVIATION MECHANIST'S MATE HAROLD MACK

Precision and safety are paramount in the intricate world of naval aviation maintenance. Every aircraft undergoes meticulous care and inspection to ensure optimal performance and readiness for duty. Amidst the complexity of maintenance tasks, protecting personnel from eye hazards is a top priority.

Eyewash stations are pivotal in this endeavor, providing immediate relief from chemical exposure or foreign particle contamination. Eyewash stations play an indispensable role in naval aviation maintenance, their significance and the importance of proper use and maintenance cannot be overstated.

Fire Controlman (Aegis) 3rd Class Vladimir Williams flushes his eyes during security training aboard guided-missile destroyer USS McFaul (DDG 74) in the Gulf of Oman, Sept. 5, 2023. (U.S. Navy photo by Mass Communication Specialist 2nd Class Juel Foster)

THE ROLE OF EYEWASH STATIONS IN MAINTENANCE

Naval aviation maintenance crews operate in environments where exposure to hazardous substances is an inherent risk. For instance, hydraulic fluids, cleaning solvents and even metal shavings from maintenance tasks can pose a threat to eyes.

However, eyewash stations counter these exposures and reduce the damaging effects. Employers must provide suitable facilities for quick drenching or flushing of the eyes and body in work areas where employees may be exposed to injurious corrosive materials, according to American National Standards Institute (ANSI)/ International Safety Equipment Association (ISEA) Z358.1 and Occupational Safety and Health Administration (OSHA) 29 CFR 1910.151(c). Eyewash stations serve as the first line of defense offering rapid relief to keep injuries from escalating into emergencies compromising both personnel safety and aircraft readiness.

MAINTENANCE PROTOCOLS

In naval aviation maintenance, reliability is non-negotiable. As part of this crucial process, maintenance personnel play a key role in ensuring the eyewash stations work and are accessible. ANSI/ ISEA Z358.1 states eyewash stations must be maintained in working condition and be readily accessible for immediate use. Routine maintenance checks are essential to ensure compliance with these regulations. Inspections should encompass every aspect, from ensuring the functionality of valves and nozzles, to verifying the integrity of flushing fluid. It also underscores the importance of providing clear signage and instructions which should be prominently displayed near eyewash stations to guide maintenance personnel in moments of crisis. As OSHA recommends in 29 CFR 1910.151(b), regular training sessions reinforce awareness and readiness, empowering responders to effectively handle eye emergencies immediately.

PROPER USE IN MAINTENANCE ENVIRONMENTS

Efficiency is critical in the dynamic world of naval aviation maintenance. In the event of an eye injury, immediate action is imperative. As professional aviation maintainers, understanding and adherence to the proper use of eyewash stations is vital to preventing further harm. Any delay in treatment may not only compromise personnel safety but also disrupt maintenance operations, highlighting the critical importance of the proper use of eyewash stations in a maintenance environment.

A focus on personnel well-being is necessary in the daily grind of naval aviation maintenance. Eyewash stations, per OSHA guidelines, stand as stalwart guardians of ocular health, ready to spring into action at a moment's notice. We must ensure these vital assets remain at the forefront of maintenance safety through meticulous maintenance, training and adherence to OSHA standards. It's important to note non-compliance with OSHA standards can lead to serious consequences, including fines and potential harm to personnel.

Let's continue to uphold the highest standards of eye safety in naval aviation maintenance, safeguarding the vision of those who work tirelessly to keep our aircraft soaring.

LI-ION SAFETY

BY GUNNERY SGT. LOUIS TIBERIO

Lithium-ion batteries have become essential, but concerns about their safe storage, disposal and emergency procedures have increased.

In fiscal year (FY) 2023, Naval Safety Command (NAVSAFECOM) assessors identified 47 discrepancies in the Battery Maintenance Safety (BMS) programs of 17 squadrons. Of these discrepancies, 57% were due to improper storage.

From the start of FY24 to January 2024, NAVSAFECOM had already identified 22 discrepancies in the BMS programs of 10 squadrons, with 81% of them being storage-related issues. This article aims to raise awareness about the protocols regulating lithium-ion batteries.

GENERAL LITHIUM-ION BATTERY STORAGE (NORMALLY GREATER THAN 21 VOLTS)

- Store batteries in a dry, cool (below 130° F/54 C) ventilated shelter or storage area out of direct sunlight.
- Use the shelter or storage area only for storing lithium-ion batteries and equipment containing lithium-ion batteries.
- Isolate the storage area or shelter from other hazardous and combustible materials.
- Based on mission requirements, keep battery quantities stored in an area to a minimum to reduce hazards.
- Lithium-ion batteries or battery-powered equipment with lithium-ion batteries installed shall not be stored in inhabited areas, such as offices or berthing areas.
- Segregate the battery storage area into sections for new and unused batteries, partially used batteries for reuse and batteries awaiting disposal. Store batteries in separate areas or shelves of the locker accordingly.
- The storage area or shelter shall be marked with signs indicating the storage status (e.g., "STORAGE OF NEW LITHIUM BATTERIES").

COIN CELL / CONSUMER OFF-THE-SHELF (COTS) BATTERIES

- For batteries removed for charging (such as power tools), ensure the battery and charger are manufactured by the tool manufacturer and the charger is identified for charging the intended battery pack.

LITHIUM-ION BATTERY DISPOSAL

- Establish a remote collection point and storage area for used or depleted lithium-ion batteries awaiting disposal. Separate these batteries from other combustible materials.
- Package used or depleted lithium-ion batteries with the battery terminals insulated.
- Store no more than 30 pounds of used or depleted lithium-ion batteries awaiting disposal for no longer than 30 days.
- Don't dispose or transport lithium-ion batteries with regular refuse. Turn in or offload all used or depleted lithium-ion batteries for disposal as soon as possible, but not during ammunition handling or fueling operations.

EMERGENCY PROCEDURES FOR LITHIUM-ION BATTERIES

LEAKING BATTERIES

- Use personal protective equipment when handling leaking batteries, including chemically resistant gloves, face masks, eye protection and overalls or coveralls. In extreme conditions, respirators may be required.
- Neutralize strong acids with baking soda or another suitable base. Cover the spill with baking soda, then layer an absorbent over the area until the liquid is completely absorbed.
- Collect the absorbent in a strong doubled plastic bag. Place the bag in an appropriate waste container.
- Don't package other batteries with a leaking lithium-ion battery. Place the leaking battery in a strong plastic bag and pack it in an appropriate container with enough absorbent to absorb all the liquid. Label the container as "HAZARDOUS LEAKING LITHIUM-ION BATTERY FOR DISPOSAL."
- If any lithium-ion battery electrolyte touches skin, eyes or mouth, flush with copious amounts of water for 15 minutes and report immediately to the medical department for treatment.
- Follow the instructions provided on the appropriate Safety Data Sheet (SDS).

SWOLLEN OR HOT LITHIUM-ION BATTERY

- A lithium-ion battery with signs of abuse, swelling or feeling hot may vent, catch fire or explode without warning. If a battery feels hot or exhibits signs of swelling, evacuate the area, contact explosive ordnance disposal personnel and follow the instructions provided on the appropriate SDS.

ACTIVELY VENTING OR BURNING LITHIUM-ION BATTERIES

- If there is evidence of a venting lithium-ion battery or a fire involving lithium batteries, immediately call the fire department.
- Ensure fire department responders know lithium-ion batteries are involved in the fire and provide details about the battery chemistry, size and volume.
- Secure the area and follow the instructions provided on the appropriate SDS after the area has been cleared by emergency services.

Lithium-ion batteries are vital to Navy and Marine Corps aviation but require stringent safety protocols for storage, disposal and emergency handling.

NAVSAFECOM assessments reveal numerous discrepancies, particularly related to improper storage, underscoring the importance of adhering to established guidelines. By raising awareness and following the regulations, we can ensure the safety and effectiveness of aviation operations.

For more detailed information, refer to the following publications:

NAVAIR 17-15BAD-1, Navy and Air Force Aircraft and Aircraft Support Equipment Storage Batteries Technical Manual on the Naval Air Technical Data and Engineering Service Center Official Website (Requires special access)

S9310-AQ-SAF-010 Rev 3 Navy Lithium Safety Program Responsibilities and Procedures Technical Publication

CMV-22B ELEVATOR

BY SENIOR CHIEF AVIATION STRUCTURAL MECHANIC DAVID EUGENE MEADOR

The CMV-22B Osprey is the Navy's newest aerial logistics warfighting platform. The aircraft's advanced mission set and long-range capabilities are modernizing the fleet's ability to sustain combat readiness over the horizon. However, as with any new technology, its implementation must be exercised cautiously; inexperience will lead to mistakes. This was the case for the Sailors assigned to Fleet Logistics Multi-Mission Squadron (VRM) 30 in San Diego, California, as they attempted a routine aircraft refueling operation late one evening.

During the night of the incident, three Sailors were directed by the squadron's maintenance control to refuel four CMV-22Bs in support of the following day's flight schedule. After a quick risk management brief and all-tools-accounted-for, the technicians left for the flight line to accomplish the tasking.

The first three refuel evolutions went according to plan. As the team approached the last aircraft, they observed two aviation structural mechanics using a maintenance stand near the aft portion of the aircraft. The mechanics were working on the aircraft's rudder system and had their stand positioned close to the aircraft's elevator assembly. The operation required the fueling team to operate the aircraft's auxiliary power unit (APU) to perform the required maintenance. The team of technicians approached the structural mechanics and asked for permission to start the APU to begin the refuel evolution. The request was approved and two Sailors manned the cockpit while one assumed duties as the plane captain and fire watch. The Sailors in the cockpit went through the APU start checklist and signaled to the plane captain for permission to start the system. The plane captain authorized the start, and the cockpit crew fired up the APU. This is where things took a turn for the worse.

In the CMV-22B, the APU powers the No. 3 hydraulic system, which, when active, automatically resets flight controls to the neutral position. Because of this, as the APU came online, the aircraft automatically activated its hydraulic system and began to reset flight controls. This resulted in actuation of the elevator assembly, causing it to move upward into its neutral position.

As the elevator moved, it impacted the stand the structural mechanics used as a platform to perform rudder maintenance. The structural mechanics quickly notified the plane captain of the incident and the plane captain signaled for the cockpit crew to manipulate flight controls to free the elevator of the stand. Once free of the stand, the Sailors shut down the APU, disembarked the aircraft, inspected the damage and contacted maintenance control.

This event resulted in damage to the aircraft and could seriously injure the structural mechanics working on the maintenance stand. Making matters worse is the fact that the APU operators were aware of the potential risk of flight control movement, and despite their hesitation to operate the system, they did so anyway.

This event could have been avoided if the Sailors had been more aware of their surroundings, communicated the potential risks of the evolution more clearly and prioritized safety over job completion. Had the maintenance crews decided to wait until work was completed on the rudder before activating the APU, they could have avoided this dangerous situation.

U.S. Marines with Marine Medium Tiltrotor Squadron (VMM) 161, Marine Aircraft Group 16, 3rd Marine Aircraft Wing, perform engine maintenance on an MV-22B Osprey on Naval Air Station Key West, Florida, Jan. 31, 2023. (U.S. Marine Corps photo by Cpl. Daniel Childs)

ON THIN AIR

BY GUNNERY SGT. ALEX THOMASON

Precision and reliability are paramount, even the tiniest maintenance oversight can lead to catastrophic consequences. From combat missions to humanitarian efforts, aircraft are critical in safeguarding nations and aiding those in need. But, behind the sleek exteriors and thunderous engines lie intricate systems requiring meticulous care. The dedication of our maintainers ensures these aircraft are maintained to the highest standards. Yet, despite rigorous protocols and advanced technologies, improper maintenance remains a persistent challenge, posing risks to personnel and mission success.

The Department of Defense (DoD) acknowledges improper maintenance practices can compromise aircraft safety and operational effectiveness. The DoD highlights instances where inadequate maintenance contributed to accidents, malfunctions and equipment failures in its annual reports. These incidents underscore the importance of adhering to strict maintenance standards and implementing corrective measures to mitigate future risks.

The MV-22 Osprey, a versatile tiltrotor aircraft used for troop transport and aerial refueling, has faced prolonged maintenance periods due to improper maintenance practices. Deviations from prescribed maintenance procedures have resulted in extended downtime and operational disruptions. However, these incidents have not been in vain. They serve as valuable lessons highlighting the importance of adhering to maintenance protocols and the critical role of oversight. As a result, the Navy has reviewed and reinforced maintenance procedures, enhanced training programs and bolstered oversight mechanisms to prevent future lapses and optimize fleet readiness.

During deployments when resources are limited and operational demands are high, aviation maintenance tasks are often completed under challenging conditions. In some cases, due to a shortage of specific materials or equipment, maintenance personnel may resort to using alternative hazardous materials to expedite the completion of critical tasks and ensure aircraft mission readiness. However, such actions pose significant risks as the use of improper hazardous materials can compromise aircraft structural integrity and safety. Regardless of the urgency to meet mission requirements, maintenance crews must prioritize safety and stick strictly to established protocols and regulations to mitigate potential hazards.

Budget constraints and resource limitations have compelled units to extend the service life of aging aircraft, imposing greater strain on maintenance teams to ensure their airworthiness. The C-130 Hercules, a transport aircraft relied upon for troop transport and general support missions by the Navy and Marine Corps, has encountered scrutiny due to its aging airframes and complexities of maintaining them to contemporary standards while enduring harsh maritime environments.

Combating improper maintenance practices requires a multi-faceted approach encompassing stringent oversight, comprehensive training and the integration of cutting-edge technologies.

Adopting forecast maintenance technologies, such as condition-based monitoring and health management systems, is one approach. These systems use sensors and data analytics to detect potential issues before they escalate, enabling preemptive maintenance actions and reducing downtime. This technology is integrated in F-35 Lightning and MV-22 Osprey platforms, while older legacy aircraft have systems to monitor their flight data after every flight.

Emphasis has been placed on training and professional development to cultivate a highly skilled maintenance workforce. Advanced training programs, simulations and cross-training initiatives equip personnel with the knowledge and proficiency to effectively tackle complex maintenance tasks, incorporating new-age technology such as augmented reality and virtual reality-assisted technical manuals.

Advanced coatings and surface treatments mitigate corrosion and wear on aircraft components. Corrosion, often exacerbated by exposure to harsh environmental conditions, can degrade structural integrity and compromise performance. Protective coatings and treatments can extend maintenance intervals, reducing the frequency of inspections and repairs.

Unmanned aerial systems advancements offer new opportunities for maintenance efficiency and effectiveness. Autonomous drones equipped with sensors and cameras can conduct routine inspections of aircraft exteriors, identifying signs of wear, damage or irregularities. These inspections can be performed more frequently and rapidly than traditional methods, allowing maintenance crews to detect and address issues before they escalate.

Integrating digital twin technology holds promise for optimizing maintenance processes and improving asset management. Digital twins are virtual replicas of physical assets, mirroring their real-world behavior and performance. By monitoring the health and status of aircraft through digital twins, maintenance teams can anticipate maintenance needs, optimize scheduling and streamline workflow, ultimately reducing downtime and costs.

The adoption of additive manufacturing, also known as 3D printing, enables on-demand production of replacement parts and components, reducing reliance on traditional supply chains and lead times. This technology empowers maintenance crews to fabricate complex parts quickly and cost-effectively, minimizing aircraft downtime and increasing fleet availability.

While these innovations hold great promise, they are not without challenges. Implementation barriers such as regulatory constraints, technological integration and workforce training must be addressed to realize their full potential. Additionally, cybersecurity and data privacy concerns underscore the importance of robust security measures to protect sensitive information and maintain operational integrity. Furthermore, transitioning to digitalized maintenance systems and technologies requires a cultural shift within the aviation maintenance workforce.

Collaboration with industry partners and research institutions has also yielded promising advancements in materials science, engineering and maintenance methodologies. For instance, the development of composite materials and additive manufacturing techniques has enabled lighter, more durable aircraft components requiring less frequent maintenance.

As military aviation continues to evolve, so too must its maintenance practices. Improper maintenance-induced challenges demand vigilance and proactive measures to safeguard personnel and assets. By fostering a culture of accountability, innovation and continuous improvement, the aviation maintenance force can overcome obstacles and uphold the highest standards of safety and readiness. Decreasing improper maintenance mishaps will ultimately lead to even fewer related flight mishaps.

In conclusion, the threat of improper maintenance is ever-present in military aviation, underscoring the need for vigilance, accountability and innovation. By addressing systemic issues, embracing technological advancements and investing in personnel development, the aviation maintenance force can chart a course toward a safer, more resilient future.

Aviation Electronics Technician 2nd Class Justin Douglas, participates in flight operations on the flight deck of the Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) in the South China Sea, Jan. 16, 2025. (U.S. Navy photo by Mass Communication Specialist 3rd Nate Jordan)

BRAVO ZULU

SAILORS, MARINES, & CIVILIANS PREVENTING MISHAPS

Lance Cpl. Blane Silcott

Marine Light Attack Helicopter Squadron (HMLA) 267
Marine Corps Base Camp Pendleton, California

During a daily and turnaround inspection of an AH-1Z helicopter while deployed for training with HMLA-267, Silcott discovered an issue that could have led to catastrophic results.

Operating in the summer heat of Marine Corps Air Station Yuma, Arizona, and late into the night shift, Silcott identified a severely worn rod end bearing in a pitch change link (PCL), a critical flight component.

Silcott immediately notified his shop leadership and Maintenance Control. Further inspection of the PCL revealed not only was the bearing severely worn, but the defect had started damaging the cuff adapter on the main rotor of the aircraft.

Silcott's dedication to safety, thorough inspection and superb attention to detail, even under stressful circumstances, likely prevented the failure of a critical flight component which could have resulted in a Class A mishap.

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

BRAVO ZULU

SAILORS, MARINES, & CIVILIANS
PREVENTING MISHAPS

Retired Aviation Electronics Technician
Senior Chief Bryan Burney

Northeast Fleet Support Specialist
Naval Air Systems Command (NAVAIR)
Air Systems Electromagnetic Interference
Corrective Action Program (ASEMICAP)

Bryan Burney was the lead troubleshooter on the MH-60S aircraft bonding issues that have led to electrical shocks to rescue personnel operating the MH-60S rescue hoist. Through investigations, multiple aircraft in Norfolk, Virginia, were found to have out-of-limit bonding measurements exceeding the limit of less than 1 ohm, measuring between 12 ohms and 4 mega ohms.

These findings yielded changes in aircraft bonding maintenance procedures, potentially saving the lives of rescue personnel and their survivors during search and rescue operations. Burney's substantial background in electromagnetic environmental effects as an experienced maintainer on the F-14, SH-60B, MH-60R/S, E-2D, P-8A, MQ-4C and MQ-8 aircraft is highly valuable.

The NAVAIR ASEMICAP team is currently assisting Naval Safety Command with troubleshooting and diagnosing other military service aircraft bonding discrepancies.

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

DO YOU KNOW YO

BY MASTER GUNNERY SGT. JEROD WILLIAMS

Naval Aviation Maintenance Program Standard Operating Procedures (NAMPSOP) are the backbone of ensuring the safety, efficiency and effectiveness of naval aviation operations. From self-assessment to active monitoring, every aspect of NAMPSOP play a crucial role in maintaining the highest maintenance standards within the naval aviation community.

SELF-ASSESSMENT

Self-assessment is the cornerstone of any effective maintenance program. It involves evaluating one's own performance, processes and procedures to identify strengths, weaknesses and areas for improvement. In the context of NAMPSOP, self-assessment enables maintenance personnel to proactively address potential issues before they escalate into safety hazards or operational disruptions. By fostering a culture of continuous improvement, self-assessment ensures NAMPSOP remain relevant, robust and adaptable to evolving challenges and technologies.

PROGRAM BATTLE RHYTHM

A well-defined program battle rhythm is essential for smoothly executing NAMPSOP. The battle rhythm encompasses the schedule, sequence and frequency of maintenance activities, inspections and reviews. A consistent battle rhythm enables maintenance personnel to anticipate and prepare for upcoming tasks, reduce downtime and enhance operational readiness. Whether it's daily checks, weekly inspections or monthly audits, adhering to a program battle rhythm fosters discipline, accountability and efficiency within the maintenance organization.

ACTIVE MONITORING AND SPOT CHECKS

Actively monitoring ongoing maintenance by supervisors, managers and quality assurance (QA) representatives is one of the most critical aspects of ensuring quality and safety. Spot checks serve as a proactive measure to identify and rectify discrepancies before they compromise mission readiness or jeopardize personnel safety. By conducting random inspections and audits, supervisors and QA reps can validate compliance with NAMPSOP, identify trends and promptly address systemic issues. This hands-on approach not only instills confidence in the maintenance program but also reinforces the importance of attention to detail and adherence to established procedures.

PROGRAM MANAGER TURNOVER

Program manager turnover poses a challenge to the NAMPSOP continuity and effectiveness. As key leaders transition in and out of roles, there is a risk of disrupting established processes, communication channels and organizational culture. However, proactive knowledge transfer, succession planning and documentation of lessons learned can mitigate the impact of program manager turnovers. By ensuring incoming managers are adequately briefed and mentored, and outgoing managers leave behind comprehensive records and guidance, the transition can be seamless, preserving the integrity and continuity of NAMPSOPs.

UR NAMPSOPS?

FINDING DISCREPANCIES

Maintenance procedure discrepancies are typically discovered during inspections, audits or post-maintenance checks. Whether it's a missed step in a routine procedure or a deviation from established protocols, these discrepancies highlight the importance of vigilance, thoroughness and adherence to NAMPSOP. By promptly identifying and addressing discrepancies, maintenance personnel can prevent potential safety incidents, equipment failures and mission delays. Moreover, leveraging data analytics and trend analyses can help identify root causes and systemic issues, enabling continuous NAMPSOP improvements.

Understanding and adhering to NAMPSOP is imperative for maintaining the highest standards of safety, reliability and readiness in naval aviation maintenance. From self-assessment to active monitoring, every aspect of NAMPSOP contributes to the overall effectiveness and efficiency of maintenance operations. By embracing a culture of continuous improvement, accountability and collaboration, naval aviation maintenance personnel can ensure NAMPSOP remains relevant, robust and responsive to the dynamic demands of modern warfare.

By fostering a culture of accountability, innovation and continuous improvement, the aviation maintenance force can overcome obstacles and uphold the highest standards of safety and readiness. Decreasing maintenance mishaps due to improper maintenance can ultimately lead to even fewer flight mishaps directly related to improper maintenance.

Understanding NAMPSOP deeply ingrains the principles of safety, reliability and readiness in naval aviation maintenance. By integrating self-assessment, maintaining a robust battle rhythm, conducting active monitoring and spot checks, managing program manager turnover effectively and addressing discrepancies promptly, naval aviation can maintain its high standards and ensure operational success.

Aviation Electrician's Mate Airman Apprentice Joseph Mendoza, reads a manual while conducting periodic maintenance on an MH-60R Seahawk, assigned to the "Blue Hawks" of Helicopter Maritime Strike Squadron (HSM) 78, aboard Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) while underway in the Indo-Pacific, Aug. 11, 2024. (U.S. Navy photo by Mass Communication Specialist 1st Class Marcus L. Stanley)

QUALITY ASSURANCE OVERSIGHT

BY SENIOR CHIEF AVIATION ELECTRONICS TECHNICIAN ADAM TERRELL

I learned early on in my career as a calibration technician the importance of quality assurance. When working with equipment operating under tight tolerance parameters, it is easy to identify something out of tolerance and ultimately get rejected from calibration.

While part of a maintainer's job is to put parts on the shelf, those parts must work right the first time and in accordance with all the applicable publications. If not, they need to be repaired or replaced. How good is a maintainer's work when equipment is constantly returned because it is not working properly? This has a trickle-down effect of wasting man-hours that could be spent repairing legitimately damaged gear.

Quality assurance (QA) oversight goes far beyond putting a collateral duty inspector's (CDI) approval on a ready-for-issue tag or signing for tools on a work request. Did the CDI inventory that toolbox? Unfortunately, while I was a quality assurance supervisor (QAS), I had to recommend CDI qualification suspensions due to failure to follow procedures. Therefore, what is QA oversight and whose responsibility is it?

THE QUALITY ASSURANCE ROLE

One of the main objectives of QA is applying QA from start to finish of each maintenance task to prevent defects before they occur. This means the concept of QA starts long before the technician puts a piece of equipment on the bench. Everything, from ensuring all the proper tools are available for the job, along with applicable procedures, to having the right number of people or proper training for a task, goes into quality assurance. From that point on, the maintainer should always have the mindset of quality over quantity when it comes to completing a task.

THE CHAIN OF RESPONSIBILITY

The next people in this chain are the work center supervisor and the CDI. Are they the kind of supervisors who are actively involved in the repair process or do they only interact when they look over the computer screen to make sure work is being done and stand by to sign off the supervisor block in the Maintenance Action Form (MAF)? Along the same lines, the technician should see the CDI more than just when tools need to be signed off or to have an in-process step completed. As a prior QAS, I expected my quality assurance representatives and all of QA to be out in the shops engaging, observing and, if necessary, intervening at the first sight of maintenance malpractice.

DOCUMENTATION AND VERIFICATION

Once maintenance is complete, the next group of people in quality oversight is production/maintenance control. Much like training, improper documentation means it did not happen. Just because the MAF validates an action it does not necessarily mean the information is accurate. Are the Maintenance Action Log and action taken codes correct? One thing I told my production desk is to have COMNAVAIRFORINST 4790.2D Appendix E at the ready to verify everything. Additionally, if something is incorrect, do not simply correct it and move on. Doing so can be a missed training opportunity to help someone get a better understanding not only of the Naval Aviation Maintenance Program (NAMP) but also correct maintenance practices.

LEADERSHIP AND SUPPORT

Leadership should have a forward-leaning approach to quality assurance. This involves everyone from the commanding officer down to the division officers, QA officers, maintenance master chiefs and all the leading chief petty officers and leading petty officers in the chain of command. Far beyond their administrative duties, these people should be the first and loudest supporters of quality assurance. This is why the NAMP says QA is the responsibility of every individual involved with naval aviation maintenance. A proactive QA division is an equal partner with maintenance control, divisions and work center supervisors in ensuring high-quality, safe maintenance. Any break in this chain could result in increased repair costs, fewer full mission capable aircraft or a loss of life.

In summary, QA oversight is a critical component of aviation maintenance ensuring reliability and operational safety. From the technician on the bench to the highest levels of leadership, every individual has a role to play in maintaining the highest standards of quality. We can prevent defects by fostering a culture of meticulousness and accountability, ensuring proper documentation and upholding the safety and reliability of our personnel and equipment

Aviation Machinist's Mate 2nd Class Julio Loera, from Sinton, Texas, assigned to aircraft intermediate department's power plant division, inspects the internal components of an F/A-18E Super Hornet afterburner in the jet shop aboard Nimitz-class aircraft carrier USS George Washington (CVN 73) while underway in the Pacific Ocean, Oct. 28, 2024. (U.S. Navy Photo by Mass Communication Specialist 3rd Class Kaleb C. Birch)

BRAVO ZULU

SAILORS, MARINES, & CIVILIANS
PREVENTING MISHAPS

Aviation Ordnanceman Petty Officer
1st Class James Wakeley

Patrol Squadron (VP) 45
Naval Air Station Jacksonville, Florida

Aviation Ordnanceman Petty Officer 1st Class James Wakeley was acting as a Quality Assurance representative on an aircraft during a towing evolution.

The towbar became partially disconnected while the aircraft was still moving.

He activated his airhorn which immediately stopped the evolution.

Wakeley's vigilance broke a chain of events which may have led to a mishap.

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

BRAVO ZULU

SAILORS, MARINES, & CIVILIANS
PREVENTING MISHAPS

Chief Aviation Structural Mechanic (Safety Equipment) Petty Officer Ulysses Zellous

Patrol Squadron (VP) 45
Naval Air Station Jacksonville, Florida

Chief Aviation Structural Mechanic (Safety Equipment) Petty Officer Ulysses Zellous was acting Flight Line chief when a mid-range tow tractor experienced brake failure while in motion, inside the safety diamond of aircraft 170014.

The tow tractor operator attempted to direct the tractor away from the aircraft but impact was imminent.

Zellous reacted quickly and activated the emergency stop on the outside of the tow tractor, preventing it from colliding with the aircraft.

His steadfast awareness and quick reaction prevented what would have been a significant and costly mishap.

Bravo Zulu is a naval signal originally sent by semaphore flags and simply means “Well done.”

It was an early Saturday morning, and the duty section for Fleet Logistics Multi-Mission Squadron (VRM) 30, was called to support flight operations for the USS Abraham Lincoln (CVN 72). VRM-30 has executed logistics operations with the CMV-22B Osprey aboard naval aircraft carriers since the squadron’s inception in 2018, and has successfully completed two separate deployments. This was a standard Saturday, nothing out of the ordinary.

The plan of the day was a single-aircraft launch and a single-aircraft recovery spanning from 9 a.m. to about 1 p.m. Once the morning maintenance meeting finished, all parties involved in the day’s evolutions were aware of their responsibilities. A group of maintainers were tasked to assist the line shack with completing a turnaround inspection before the first flight of the day on a backup aircraft. Everything was expected to be normal. The maintainers tasked with the daily inspection had done this time and time again, but that would soon change.

The aircraft was in the full stow configuration as maintainers went out to complete the inspection. For the maintainers to accomplish their tasking, they had to reconfigure the aircraft from full stow to flight-ready. To reconfigure a CMV-22B to flight-ready, you need a qualified auxiliary power unit (APU) operator, a qualified plane captain and a member qualified to clear the wing. All positions were properly filled and accounted for. Once the aircraft was online with auxiliary power, the operator signaled to the plane captain all systems were ready for the blade fold wing stow (BFWS) evolution. The plane captain gave the thumbs-up to the operator to reconfigure the aircraft, and once the operator started the BFWS evolution, the mishap occurred. About 30 seconds into the evolution, the left-hand green blade struck the top of the aircraft. The operator stopped the evolution knowing damage had occurred and maintenance control needed to be notified immediately. Once all appropriate parties were notified, the proper mishap protocols were followed, including the reports and pictures required to document the mishap.

There are more details previously unmentioned that help paint a bigger picture. The major detail left out was the use of publications. Many of our Sailors spent years training to become subject matter experts with the Marines on the MV-22B Osprey, which is similar to the CMV-22B with a few minor differences. Both maintainers and pilots in the VRM community currently go through the Marine Corps training pipeline. This is a major benefit, considering Marines have been flying this aircraft for more than 17 years. Many of the Marine Corps publications and training techniques carry over to the Navy’s CMV-22B; however, the publications are not perfect. As we encounter more situations, we have found many instances where the publications agree and many that contradict each other.

A prime example of the publication disconnect within this community is the mishap involving the BFWS evolution. In this instance, maintainers were performing a daily and turnaround inspection with all the proper publications provided. In these operations, qualified plane captains were using the maintenance requirement cards (MRC), which provide detailed procedures for the accomplishment of system, subsystem and equipment maintenance.

A CMV-22B Osprey, assigned to the “Titans” of Fleet Logistics Multi-Mission Squadron (VRM) 30, prepares to land on the flight-deck of Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) near the Hawaiian Islands, June 29, 2024. (U.S. Navy photo by Mass Communication Specialist Seaman Apprentice Christa Watson)

BLADE / FOLD / WING / STOW

BY AVIATION STRUCTURAL MECHANIC PETTY OFFICER 1ST CLASS JOSEPH AVALLONE

The MRC also identifies the safety precautions, personnel, tools, parts, materials and test equipment required to accomplish the maintenance task. For these inspections, the MRC directs you to configure the aircraft to flight-ready in order to perform a flight control surface check in accordance with the A1-V22AB-NFM-500 Naval Air Training and Operating Procedures Standardization (NATOPS), which is the aircrew manual instead of A1-V22AB-TIS-000 Interactive Electronic Technical Manual (IETM) and has been a normal requirement for both MV-22B and CMV-22B. In this manual, you go through the proper checks before "going hot" on auxiliary power with a full aircraft walk-around.

Once on auxiliary power, the aircraft goes through in-depth power and pressure checks. Once the operator gets to the BFWS step, it simply reads "execute BFWS." If the maintainer used the NATOPS manual instead of the IETMs to perform the BFWS step on the MRC for the daily/turn-around inspection, that maintainer wouldn't be able to see the cautions for the BFWS operation the same way the IETMs manual shows them. In IETMs, which is known as the maintainer's instructional manual on aircraft maintenance, there are cautions and advisories the NATOPS manual does not have. For example, IETMs includes a caution telling the operator to visually inspect the left-hand green blade and the distance beneath it to the topside of the wing. If this caution had been in the NATOPS manual, this incident most likely would have been avoided. Ours was a Class C mishap causing hours of avoidable maintenance. To correct this oversight, the IETMs and the BFWS section of NATOPS manuals and publications need updates to include:"Minimal clearance between the green blade and glide slope antenna during wing stow and unstow operations may cause blade to strike glide slope antenna. The tip of the green blade must be visually at or above the wing (de-ice) boots when observing the folded blade from the ground. Failure to comply may result in damage to the aircraft."

After this incident, the maintainers involved completed in-depth training on how to prevent future incidents like this from happening. VRM-30 instituted a command-wide safety pause to focus on and fix deficiencies regarding BFWS events. Command training was conducted between maintainers and aircrew in the simulators and on virtual maintenance trainers to review and refresh procedural knowledge regarding the BFWS checklist. Additionally, the maintenance department conducted a BFWS rodeo training event with an aircraft on the flight line, which showcased various warnings and cautions regarding BFWS. An engineering review was initiated to evaluate the reasons for a drooping blade to exist. It was found that the blades power module, while not displaying a fault or warning, was not providing the required amount of power to the blade to hold it in place; thus allowing the blade to "droop"; The fix is to replace this power module for a new one. Crews should now routinely check for this on visual walkarounds for the aircraft since there are no displayed cautions or warnings inside the aircraft to alert the maintainers or aircrew of this.

I recommend adjusting the BFWS and APU operator syllabus; specifically, a deeper look into currency requirements for operators, collateral duty inspectors and collateral duty quality assurance regarding APU and BFWS. Additionally, the prerequisites for APU and BFWS are slim. An expansion of the syllabus and the associated prerequisites will help create higher-performing and better-prepared personnel. Having a paint mark or indication on the wing de-ice boots of the aircraft where the blade is supposed to rest would be a great help to maintainers and standardizing the IETMs procedures with NATOPS procedures to eliminate any confusion or ambiguity.

That incident could have happened to anyone using the NATOPS manual to perform a BFWS that day; it just happened to be me. I applaud how the command responded by pausing maintenance safety to ensure training was done and also to improve the NATOPS manual by adding the BFWS caution to prevent mishap recurrence. The better Sailors we produce, the better the overall product will be. Overall, the CMV-22B is a great program for the Navy and will continue to do great things in the future.

MANAGING HAZMAT

BY SENIOR CHIEF AVIATION MACHINIST'S MATE ANIL RAMDEEN

Aviation units rely on hazardous materials (HAZMAT) for efficient operations, but their use comes with inherent risks. Proper HAZMAT management is crucial to ensure the safety of personnel and the environment. Let's take a look at HAZMAT management in aviation units, including shelf life, storage, handling, disposal, inspection, personal protective equipment (PPE), compatibility and associated responsibilities.

SHELF LIFE

HAZMAT items have limited shelf lives, after which their effectiveness diminishes or they become more dangerous. Adhering to manufacturer guidelines regarding shelf life is critical. *For example, solvents, lubricants and cleaners used in aviation maintenance can degrade over time, potentially becoming hazardous. During Naval Safety Command (NAVSAFECOM) local area assessments (LAA), expired items like sealing compound, bleach, sealant and grease were found in HAZMAT lockers, highlighting the importance of proper shelf-life management.*

STORAGE

Proper HAZMAT storage is essential for safety and compliance. Approved chemical storage cabinets should be used for flammable liquids, corrosive substances and other hazardous chemicals to prevent accidents, spills and environmental contamination

STORAGE BEST PRACTICES

- *Use Approved Cabinets: Store all hazardous materials in designated, approved cabinets specifically designed for the type of materials being stored, such as flammable or corrosive substances.*
- *Environmental Controls: Maintain appropriate temperature and humidity conditions in storage areas to prevent degradation of materials.*
- *Spill Containment: Equip storage areas with adequate spill containment systems to quickly address any accidental releases and prevent the spread of hazardous materials.*

INSPECTION AND HANDLING

Regular HAZMAT inspections are necessary to detect signs of degradation or damage. Trained personnel should conduct these inspections following established protocols. During a LAA, assessors discovered hazardous material supervisors weren't routinely conducting weekly HAZMAT locker inspections. Proper handling techniques, along with the use of PPE, help prevent accidents and unintentional exposure to hazardous materials. This lack of oversight can lead to materials deteriorating or destabilizing over time, potentially causing leaks or spills.

INSPECTION AND HANDLING BEST PRACTICES

- Routine Inspections: Conduct weekly HAZMAT storage areas inspections to ensure materials are in good condition and stored correctly. Use a standardized checklist to ensure all aspects of storage and material condition are reviewed.
- Training: Provide comprehensive training for all personnel handling HAZMAT, emphasizing proper handling techniques, PPE usage and emergency procedures.
- Immediate Reporting: Establish a protocol for immediate reporting and addressing any signs of damage or degradation to HAZMAT items.

DISPOSAL

HAZMAT items must be disposed of according to regulations and guidelines to prevent environmental contamination. Aviation units should have thorough disposal procedures in place to ensure compliance with the law. Proper disposal methods help reduce the risks associated with HAZMAT and demonstrate environmental responsibility.

DISPOSAL BEST PRACTICES

- Regulatory Compliance: Ensure all disposal methods comply with local, state and federal regulations. Stay informed about changes in disposal laws and guidelines.
- Waste Segregation: Separate hazardous waste from regular waste and categorize it according to type (e.g., flammable, corrosive, toxic) to facilitate proper disposal.
- Certified Disposal Services: Use certified hazardous waste disposal services to handle, transport and dispose of hazardous materials safely and in compliance with regulations.

PERSONAL PROTECTIVE EQUIPMENT

Using PPE when handling HAZMAT is crucial to protect personnel from unintentional exposure. The required PPE varies depending on the type of HAZMAT and the level of risk involved. These requirements are outlined in each HAZMAT Safety Data Sheet. Aviation units must provide adequate PPE and ensure personnel are trained in its correct usage and disposal.

U.S. Marine Corps Lance Cpl. Carlos A. Sierrasans, fixed/rotary wing aircraft mechanic in the hazardous material storage area of Headquarters and Headquarters Squadron (H&HS) on Marine Corps Air Station (MCAS) New River in Jacksonville, North Carolina, Jan. 26, 2023. (U.S. Marine Corps photo by Lance Cpl. Zachary Zephir)

PPE BEST PRACTICES

- Hazard Assessments: Conduct regular hazard assessments to determine the appropriate PPE for different tasks and materials.
- PPE Provisioning: Ensure all personnel have access to the necessary PPE, including gloves, goggles, face shields and respirators, as appropriate.
- Training and Drills: Regularly train personnel on the proper use, maintenance and disposal of PPE. Conduct drills to simulate HAZMAT emergencies and test personnel response.

COMPATIBILITY

HAZMAT items can react dangerously with incompatible substances. Aviation units must understand HAZMAT compatibility and take precautions to prevent accidental mixing. Proper labeling, storage and segregation of incompatible materials are crucial to avoid hazardous reactions. For example, during NAVSAFECOM LAAs, corrosive materials were discovered being stored with incompatible substances without proper segregation, posing a risk of chemical reactions, including fires, explosions or the release of hazardous gases.

INVENTORY

It's essential to maintain an inventory of HAZMAT stored in lockers to prevent mishandling and potential accidents, injuries or exposures to harmful substances.

Inventory Best Practices

- Centralized Database: Maintain a centralized digital database for tracking HAZMAT inventory, including quantities, locations and expiration dates.
- Regular Updates: Maintain an up-to-date HAZMAT inventory to reflect new materials received and those used or disposed of.
- Access Control: Restrict access to HAZMAT inventory to authorized personnel only to prevent unauthorized use or mishandling.

RESPONSIBILITIES

Aviation units share a collective responsibility for the safe management of HAZMAT. This includes providing training to personnel, implementing and enforcing protocols and overseeing all aspects of HAZMAT management. Designated personnel should oversee HAZMAT storage, handling and disposal to ensure compliance with regulations and minimize risks.

HAZMAT management is critical for aviation unit operations. By understanding and implementing best practices for HAZMAT shelf life, storage, inspection, handling, disposal, PPE, compatibility and responsibilities, aviation units can enhance safety, protect the environment and ensure mission success. Effective HAZMAT management not only safeguards personnel and equipment but also demonstrates a commitment to regulatory compliance and environmental stewardship. By prioritizing HAZMAT safety and adhering to established guidelines, aviation units can maintain operational efficiency while minimizing risks associated with hazardous materials.

Want to be featured in MECH Magazine?

SUBMISSION GUIDELINES

When submitting articles and photos, please include:

TITLE: Proposed headline, though it is subject to change

AUTHOR INFO: Rank, first and last name, unit or organization and location

ARTICLE: Authors should fact check and ensure statements are backed by references or sourced data. Spell out acronyms on first reference. Spell out all organizations and units, as well as city, state or country. Authors need to ask a team member and/or subject matter expert to review article before submitting. NAVSAFECOM and/or CMC SD may make additional changes for clarity and style during the review process.

Article length should be 450-1600 words. Bravo Zulu inputs should be 90-150 words and include a photo.

PHOTOS: All photos must be sent as separate files (not included in a word doc) and approved for public release. Images should adhere to established safety and security policies. Images should be the original with minimum 1 MB file size. Include the description, photographer's rank and full name, unit or organization, location and date taken.

Send to: navsafecom_mech@us.navy.mil

We look forward to including your submissions!

Stay Connected

Front Cover: Aviation Boatswain's Mate (Aircraft Handling) 1st Class Kristopher Barnhart, tows a dummy aircraft on the flight deck of Nimitz-class aircraft carrier USS George Washington (CVN 73) during a crash and salvage drill while underway in the Pacific Ocean, Aug. 25, 2024. (U.S. Navy photo by Mass Communication Specialist 3rd Class August Clawson)

Back Cover: Sailors participate in a crash and salvage drill on the flight deck aboard Nimitz-class aircraft carrier USS Carl Vinson (CVN 70) in San Diego, California, May 2, 2024. (U.S. Navy photo by Mass Communication Specialist Seaman Kenneth Ostas)

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. government, 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.

Postmaster: Send address changes to MECH, Code 04, Naval Safety Command, 375 A Street, Norfolk, VA 23511-4399. Send article submissions, distribution requests, comments or questions to the address above or email: navsafecom_mech@us.navy.mil.

SHARE THE MAGAZINE

MECH