Pre-Op Checks
LIFE-SAVING
MISSION-CRITICAL
NECESSARY

THE ART OF TROUBLESHOOTING
Grampaw Pettibone is the famous cumudrung of Naval Aviation News. Organizations and individual winners of this award contribute the most toward aviation safety awareness through publications and media resources. Sharing stories of miscues, mishaps, goofs, flubs and other airborne misadventures has long been a hallmark of professional aviators. Publishing these stories and the lessons learned keeps countless aviators from learning the hard way.

Individual Award: Lt. Tyler Heinemeyer

As the aviation safety officer for Helicopter Training Squadron EIGHT (HT-8), Heinemeyer created multiple safety awareness products in fiscal year 2023 (FY23), raising awareness of hazardous traffic conflicts in the local area, unmanned aircraft systems regulations and TH-73 limitations noted during the aircraft’s transition to Training Wing FIVE. He created presentations for the squadron’s Safety Days and notably, designed a flyer outlining near-miss and conflict reporting requirements. Heinemeyer included a QR code in the flyer linked to the ASAP site to encourage reporting. The flyer was ultimately distributed to all Naval Air Station Whiting Field squadrons.

Organization Award (Written): Fleet Air Reconnaissance Squadron ONE (VQ-1)

During FY22, VQ-1 submitted four articles to Approach Magazine and three Bravo Zulu submissions to MECH Magazine. The articles raised awareness unique situations that occurred during training and mission flights worldwide, highlighting crew resource management and risk management principles. The squadron’s articles raised the aviation community’s awareness of the lessons learned from these incidents. The information sharing evident among the various crews and squadrons proved to be of paramount importance. Deliberations pertaining to safety continued to serve to mitigate inherent risks accompanying flight line operations. VQ-1 not only exceeded expectations by issuing 13 hazard reports over FY22, but took the initiative to contribute articles to widely disseminated publications.

Organization Award (Electronic Media): Helicopter Training Squadron EIGHT (HT-8)

As the squadron transitioned to the TH-73, the platform brought unknown hazards to Chief of Naval Air Training during the first year of service. The HT-8 safety department took the lead to raise awareness of the potential new hazards of the TH-73, writing articles and curating images. HT-8’s reporting was conveyed in imagery rather than words alone. The HT-8 safety department excelled in visually communicating safety and keeping safety awareness informative; articles covered naval aviation history and other analogous Federal Aviation Administration mishaps.

NAVAL AVIATION READINESS THROUGH SAFETY AWARD

The Naval Aviation Readiness Through Safety Award is awarded along with the Admiral James S. Russell Aviation Flight Safety Award given by the Order of Daedalians, a fraternal organization of military aviators promoting air and space power and honor those who fly and fly in defense of our nation. The award is presented each year to the team that contributed the most toward readiness and economy of operations through safety. VQ-1 is recognized for their outstanding safety record, an aggressive safety program and an improving safety trend. The command flew just over 18,000 hours with no Class A or B flight, flight-related or aviation ground operations mishaps.

ADMIRAL FLATLEY MEMORIAL AWARD

The Admiral Flatley Memorial Award is presented to a nuclear powered aircraft carrier (CVN) and their associated air wing.

US Navy H.W. Bush (CVN-77) and Carrier Air Wing SEVEN (CVW-7)

The USS George H.W. Bush (CVN-77) and Carrier Air Wing Seven (CVW-7) team received this award for outstanding achievement in mishap prevention during carrier operations. The team was recommended by Commander, Naval Air Forces afloat being endorsed by Commander, Naval Air Force, U.S. Atlantic Fleet and Commander, Naval Air Force U.S. Pacific Fleet. The ship and CVW maintained an exceptional safety record in support of FIFTH and SIXTH fleet operations. The CVW-7 team was deployed for 203 days, flew just over 19,500 flight hours and conducted nearly 8,350 landings with no Class A aviation or afloat mishaps. This award is a testament to the exemplary efforts of all CVW-7 aviation personnel who exhibited exceptional technical skill and outstanding sea and airmanship.

From the Maintenance Of icer

Greetings from the Naval Safety Command. I hope this letter finds you all in good health and high spirits as we continue to operate in the new year. This will be my first of many MECH introductions, as I have taken the reins as Aircraft Maintenance and Material Division Head. I wanted to take a moment to introduce myself and address the crucial matter of safety both at sea and ashore.

First, allow me to express my gratitude for the incredible work each and every one of you does to ensure the safe operation of our naval aviation systems. Your dedication and commitment to excellence are commendable and I’m truly honored to join this remarkable team. Safety is paramount in our line of work and it’s not a matter to be taken lightly.

The nature of naval aviation maintenance presents unique challenges, particularly when operating in dynamic environments at sea and ashore. Therefore, it’s imperative we maintain a steadfast focus on risk management and reduction to protect our personnel, assets and mission success. To achieve this, I’d like to emphasize the importance of proactive safety measures. We must remain vigilant in identifying potential hazards, assessing risks and implementing effective controls. We must integrate safety into every aspect of our daily operations, from routine maintenance procedures to emergency response protocols.

I encourage everyone to actively participate in your command’s safety programs and initiatives and gain a better understanding of the safety management system. Your input and feedback are invaluable in identifying areas for improvement and developing best practices. Safety is a collective responsibility and I have full confidence in our ability to foster a culture of safety where everyone’s voice is heard and concerns are addressed. Additionally, open and transparent communication will be a cornerstone of our safety efforts. Please don’t hesitate to promptly report any safety concerns, hazards, near misses, incidents or nagging risks that are of acting daily operations through the appropriate channels. By doing so, we can ensure lessons are learned, corrective actions are taken and the necessary changes are implemented to prevent future occurrences.

As we move forward, I’ll be working closely with each of you and leadership to reinforce safety protocols, provide training opportunities and foster a culture of continuous improvement. Together, we’ll strive for maintenance and safety excellence while ensuring our naval aviation maintenance operations remain among the best in the world.

I am excited to embark on this journey with all of you and our collective commitment to safety will not only protect our personnel and assets, but also enhance our overall operational readiness and mission of effectiveness. Your expertise and dedication are pivotal in maintaining the highest standards of safety and I’m confident that together, we’ll achieve remarkable things. Take care and I look forward to seeing you all around the fleet!
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AWARDS
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An aviation structural mechanic conducts maintenance on a F/A-18E Super Hornet, attached to Strike Fighter Squadron (VFA) 83, aboard aircraft carrier USS Dwight D. Eisenhower (CVN 69), Jan. 27, 2024. (U.S. Navy photo by Petty Officer 3rd Class Lauren Duval)
IS YOUR CELLPHONE DANGEROUS?
By Senior Chief Aviation Ordnanceman Niels Mygind

Cellphones are a vital part of our lives and have become our primary communication and information source. However, do cellphones present safety risks to people and equipment? Yes, they most certainly do.

We deal with so many actual and potential hazards while operating in a hangar and on the flight line - why introduce more risk? We should remove all unnecessary objects from our pockets that could lead to foreign object debris (FOD) and distraction before leaving our work centers to perform aircraft maintenance. Unfortunately, Sailors and Marines carry a cellphone in their hand or pockets while conducting maintenance on and around aircraft. Although seemingly innocent, cellphones are a vital part of our lives and have become our primary communication and information source. However, do cellphones present safety risks to people and equipment? Yes, they most certainly do.

Distraction - Like texting and driving, cellphone use in the hangar or on the flight line can easily cause distraction leading to personnel missing critical maintenance steps, important hand signals or calls. Additionally, this inattention increases the likelihood of walking into an aircraft, dropping a tool or expensive aircraft part - or being hit by a turning jet's exhaust, all of which can cause significant injury to personnel or damage to aircraft or equipment. Over the years, maintenance leaders have emphasized maintainers should never have a cellphone while on the flight line, handling ordnance, or in the ready service locker. Phone use in aircraft maintenance areas can lead to a catastrophe!

Common ways your phone can be a hazard in the hangar or on the flight line:

- **FOD** - Cellphones can easily fall out of a pocket unnoticed or get left behind to fall into an ejection seat, flight controls or engine controls. Even with a known drop, the cellphone could fall at an inopportune time, causing distraction at a critical moment or add extra work hours trying to retrieve it from a precarious spot.

- **Fuel** - Cellphones emit low levels of radio frequencies. Never transmit radio or cellphone signals near ordnance. Many types of ordnance contain electro-explosive devices (EEDs) and radio or cellphone signals can easily activate the EEDs.

- **Ordnance** - Cellphones emit low levels of radio frequencies. Never transmit radio or cellphone signals near ordnance. Many types of ordnance contain electro-explosive devices (EEDs) and radio or cellphone signals can easily activate the EEDs.

- **DANGEROUS?** - Cellphones emit low levels of radio frequencies. Never transmit radio or cellphone signals near ordnance. Many types of ordnance contain electro-explosive devices (EEDs) and radio or cellphone signals can easily activate the EEDs.

- **IS YOUR CELLPHONE DANGEROUS?** - Cellphones emit low levels of radio frequencies. Never transmit radio or cellphone signals near ordnance. Many types of ordnance contain electro-explosive devices (EEDs) and radio or cellphone signals can easily activate the EEDs.

- **Figure 1. Parts of an electro-explosive device.**

For EEDs, voltage comes in one lead (see Figure 1), passes across the bridge wire to heat up inside a very sensitive explosive circuit - like the filament in a light bulb. The glowing wire ignites the primary charge and starts the explosive reaction to fire a round, ignite a rocket motor or launch an ejection seat. When it comes to cellphone use during fueling operations, whether it be for aircraft, vehicles, support equipment or a container, the potential exists for fuel vapors to be ignited by the cellphone radio frequencies. While the chances may be extremely low, the risk is still present when handling more volatile fuels, such as JP-4, motor gasoline, aviation gas and possibly JP-8 fuel. Marine diesel fuels and JP-5 have extremely low susceptibility to electromagnets. Now, imagine doing this while texting, scrolling through social media or trying to play the latest game. That is hard to do when walking or texting on a cellphone. The flight line or flight deck is already a hazardous place to work; why make it more dangerous with already present dangers and injuries that can happen?

Cellphones should stay in work centers, personal lockers or vehicles. Not having a cellphone on the flight line or in the hangar may prevent damage to an aircraft or even save a life.

**Figure 1. Parts of an electro-explosive device.**

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C 76 $16,673,479
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**What the FOD?!?**
By Senior Chief Aviation Electronics Technician Adam Terrell

In the world of naval aviation maintenance, there are many hazards not only to personnel but also to aircraft that we must navigate daily. Regardless of whether the maintainer is working on the flight deck or in the workshop, it is vital to have the proper personal protective equipment (PPE), i.e., cranial, float coat, safety boots, etc., but they must also have all the required tools and necessary equipment to complete their tasks. Unfortunately, the equipment introduces the potential for foreign object debris (FOD) to cause damage to aircraft, equipment and pose a risk to maintainers.

So what is FOD, what causes it, what are the effects of poor FOD prevention and what can maintainers do about it?

As observed in OPNAV Instruction 5100.19F, FOD is “any article or object which may be disturbed by or in the aircraft engine, propeller, or in the engine compartment.” FOD can come from many different sources. These include poor housekeeping, improper maintenance practices and carelessness. While we can only do so much on the ground, there are other situations that arise in flight - like things falling out of aircraft, bird strike and weather disturbances. As with many other maintenance programs in the Navy, the reason we have programs like the FOD program, as required by CNAPSTG 4790.2 Naval Aviation Maintenance Program (NAMP), is due to numerous examples of what can happen if maintainers don’t take FOD prevention seriously. A review of Risk Management Information from 2018 to 2022 found nearly 150 FOD-related incidents resulting in over $3.5 million in associated aircraft damage. The below table shows a breakdown of each damage classification and total associated costs.

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**FOD is an all-hands issue that requires everyone’s help to prevent damage. This is why there is a FOD walk-down on the flight deck or flight line before and after any major maintenance or flight operation. FOD walk-downs and maintenance inspectors following the “18-inch rule” help mitigate potential damage while maintaining the flight deck and aircraft safety as possible.**

**Tool and equipment accountability**
Personnel must ensure control of all tools and equipment that could cause adverse effects on personnel and aircraft. Maintainers must maintain strict accountability and supervision for tools and equipment used for maintenance evaluations. Tool accountability takes place through inspections and inventories before, during and after maintenance. The appropriate Naval Air Training and Operating Procedures Standardization manual provides a listing of approved flight deck uniforms and protective equipment. Personnel should not use unapproved items. Remove items like jewelry and watches when working on or about aircraft. Any discrepancies should be brought to a supervisor and corrected immediately.

**Good housekeeping**
Along with proper accountability, good housekeeping is an easy and effective way to control FOD. There is a place for everything and everything goes in its place. Granted, maintainers sometimes work in less-than-ideal conditions, but maintaining a clean workspace should be treated like any other part of the maintenance evolution. Encourage maintainers, support technicians and aviation support personnel to clean as they work and ensure work areas are clean and neat throughout maintenance evolutions.

**Tool accountability**
Fortunately, FOD is a mainstay program and maintainers routinely train on FOD prevention. It is one of the first things maintainers learn when they enter ‘A’ school as well as all the aviation maintenance ‘C’ schools. The savings continue when maintainers reach their first command and attend unit and maintenance department indoctrination.

While there are unforeseen circumstances to FOD mitigation, some simple and common sense practices applied daily help reduce the risk. Millions of dollars and thousands of man-hours are lost each year to FOD damage despite having proven mitigation strategies. From the airman working on aircraft to the maintenance chief behind the desk all the way up the chain of command, everyone has a vital role to play in the reduction of FOD on our flight decks and flight lines.

Sailors and Marines conduct a FOD walk down aboard amphibious assault ship USS Makin Island (LHD-8), Feb. 1, 2022. (U.S. Navy photo by Mass Communication Specialist 2nd Class Kendra Helmbrecht)

*Image 3*
By Master Gunnery Sgt. Jerod Williams

In the modern world of advanced electronics and sensitive equipment, electrostatic discharge (ESD) has emerged as a critical concern for the Navy and Marine Corps. With the proliferation of weapons-replaceable assemblies (WRAs) and support shop-replaceable assemblies (SRAs) that rely on intricate circuitry and delicate components, ensuring robust ESD protection measures is paramount to maintaining operational readiness and preventing costly equipment failures. This article delves into the significance of ESD protection for WRAs and SRAs within the Navy and Marine Corps, highlights the challenges posed by ESD and the strategies employed to mitigate its potential risks.

UNDERSTANDING ESD

Electrostatic discharges, often referred to as static electricity, is the sudden flow of electric current between two objects with differing electrical potentials. While it may seem harmless in everyday scenarios, the discharge of static electricity can be highly damaging to electronic devices. The sensitive microelectronics within WRAs and SRAs are particularly vulnerable to ESD events. The discharge can cause immediate and latent failures, resulting in malfunctioning or completely non-functional equipment. Damage to ESD-sensitive components may occur at 50 volts or less. Given the Navy’s and Marine Corps’ reliance on advanced technology for communication, navigation, weaponry and surveillance, the need to protect these assets from ESD-induced damage is undeniable.

ENVIRONMENTAL CHALLENGES

Naval and Marine environments pose unique challenges when it comes to ESD protection. The presence of saltwater, humidity and maritime operations itself in general can exacerbate the risks associated with ESD. Aircraf are complex systems that house a multitude of electronic systems in confined spaces, creating a breeding ground for static build up. Furthermore, the need for rapid deployment and unpredictable operating conditions can limit the ability to implement extensive ESD protection measures. Mitigating ESD Risks

To counter the ESD challenges in naval and marine environments, the Navy and Marine Corps employ a multifaceted approach to ESD protection:

Education and Training: Personnel who handle WRAs and SRAs receive training in ESD awareness and mitigation techniques. This education ensures that operators understand the risks associated with static discharge and adopt best practices for preventing ESD events during installation, maintenance and operation.

- Uninstalled WRAs and SRAs must have external cannon plugs and connector pins covered with the provided connector cap or an ESD cap. ESD caps provide the best level of protection and are by far the preferred method of protecting WRAs. If the authorized covers are not available, ESD finger cots or ESD grid tape is an authorized substitute. Additionally, WRAs, SRAs and discrete component protection may be achieved by using an inner layer of anti-static pink poly material and an outer layer of static shielding material, or a bag with both characteristics.

Grounding and Shielding: Effective grounding and shielding play a crucial role in minimizing the impact of ESD. Proper grounding helps dissipate static charges and prevent the buildup of potential difference that could trigger a discharge. Shielding sensitive components from external sources of static discharge further enhances protection.

Aviation Electronics Technician 2nd Class Katrina Hoffman, assigned to Fleet Readiness Center Mid-Atlantic, installs electrostatic discharge tape on a weapons replaceable assembly.

Access safety tools quick and easy for risk reduction and a safety first mindset.
**Incident Impacts on Maintenance**

**CAUSES | CONSEQUENCES | SOURCES**

By Master Chief Aviation Maintenance Administrator Arlene Williams

Aviation safety is paramount and it relies on a complex interplay of various factors, with maintenance being a critical component. The effectiveness and diligence of aircraft maintenance personnel directly influence aviation incidents, ranging from minor technical issues to catastrophic accidents. This article explores the multifaceted relationship between aviation practices and aviation incidents, shedding light on the causes, consequences and sources of these incidents.

**Aviation maintenance encompasses a wide range of activities that ensure aircraft safety and airworthiness.** Broader categorization, these activities comprise two main types: preventive maintenance and corrective maintenance. Preventive maintenance includes routine inspections, scheduled checks and component replacements to prevent potential issues. Corrective maintenance, on the other hand, addresses unscheduled repairs, often due to failures or discrepancies identified during routine checks.

**TOP CAUSES OF AVIATION INCIDENTS RELATED TO MAINTENANCE**

- **Human Error** - Maintenance personnel play a critical role in ensuring aircraft safety. Human error can occur during inspections, repairs, maintenance procedures, leading to oversight, incorrect installations or inadequate repairs. Such errors can contribute to aviation incidents, as observed in various mishap investigations.

- **Inadequate Training** - Maintenance technicians must receive appropriate training and stay up to date with evolving aircraft technology. Skilled maintenance personnel are afraid to report issues, leading to potential safety hazards going unreported.

- **Communication Breakdown** - Miscommunication between maintenance personnel and other stakeholders, such as pilots, aircrew and maintenance control centers, can lead to misunderstandings or incomplete information regarding aircraft status. These communication breakdowns can have dire consequences.

- **Regulatory Scrutiny** - Adherence to stringent aviation regulations and standards can create challenges for maintenance organizations trying to meet such requirements. However, frequent and extensive maintenance due to regulatory scrutiny can contribute to maintenance-related incidents.

- **Inadequate Resources** - Resource limitations can compromise safety. Perceived pressure to return aircraft to service quickly can contribute to maintenance-related incidents.

- **Effort Speed** - In the aviation industry, speed is time money and there is always pressure to keep aircraft flying. The pressure can lead maintenance personnel to cut corners or rush through tasks to meet tight schedules. Prioritizing speed over quality might mitigate some critical steps and maintenance tasks may not be performed correctly, leading to potential safety hazards. Emphasizing speed can also create a culture where maintenance personnel are discouraged from reporting issues or delays, as they fear repercussions for slowing down the operation.

**LACK OF COMMUNICATION**

In the aviation industry, communication is critical to performing maintenance tasks correctly and safely. However, communication breakdowns can occur between maintenance personnel and other departments, or between maintenance personnel and maintenance control. The miscommunication can lead to missing critical information, such as changes to procedures, supplies or potential hazards.

**CULTURE OF FEAR**

In some cases, maintenance personnel may fear reporting issues or raising concerns due to fear of retribution from maintenance leadership, which can also result in critical safety hazards going unreported, potentially leading to accidents. Furthermore, a culture of fear can create an environment where maintenance personnel are discouraged from speaking up or providing feedback, leading to a lack of communication and potential safety hazards.

To mitigate these “bad” norms, it’s crucial to establish a safety culture. A safety culture is a set of values, attitudes and behaviors promoting safety above all else and emphasizing the importance of communication, teamwork and continuous improvement. In a safety culture, maintenance personnel are encouraged to speak up, report issues and provide feedback without fear of retribution. A safety culture also values the importance of training and competency, ensuring personnel are adequately trained and qualified to perform maintenance tasks safely.

In addition to ensuring personnel are adequately trained, leaders must also establish clear procedures and guidelines for aviation maintenance tasks, ensuring regular reviews and updates to reflect changes in regulations or best practices.
Wing (MAW), performs maintenance on an MV-22B Osprey on Naval Air Station Key Medium Tiltrotor Squadron (VMM) 161, Marine Aircraft Group 16, 3rd Marine Aircraft U.S. Marine Corps Cpl. Anthony Collier, a flight equipment technician with Marine orders are placed through the Grainger 4PL contract with the General has been updated with the ordering information of the HGU-98/P . Currently, The new helmets, referred to bump caps in the commercial sector, come over long shifts. The foam is currently in use in the HGU-98/P and other tactical makes for a highly protective product that is also comfortable to wear even X4 or X5 earmuffs with foam earplugs. Team Wendy LTP bump and ballistic Manufactured by Team Wendy, the new helmet incorporates eye protection For head protection, the advanced cranial prototypes attenuate a significantly improved the cranial’s effectiveness; however, the technology has reached its new helmet will contribute to improved user safety and health while helping the The HGU-99/P is currently being fielded to CVN, LHS, F18 and F-35 units. PMA-202 and the team responsibilities for fielding the HGU-98/P requested to issue the original helmet incorporates ANSI Z89 hard hat protection and communication interfaces for view and maintenance personnel may be exposure to increased noise levels produced by modern aircraft and amphibus-capable platforms. For guidance, checklists and specific requirements. Squadrons that began receiving the HGU-98/P flight deck helmet for head protection and hearing protection. The naval avionics system program office (PMA-202) has developed and fielded new headgear, known as the HGU-98/P, which integrates both head and hearing protection for fleet Marine Corps aviation maintainers. The HGU-98/P is the result of the latest advancements and information gathered from market research, lab testing and field assessments. Manufactured by Team Wendy, the new helmet incorporates eye protection using ESS Low Profile Pivot Mount Goggles or standard ESS Goggles and 3M X4 or X5 earmuffs with foam earplugs. Team Wendy LTP bump and ballistic helmets use proprietary Zorbium foam. Zorbium is an open-cell foam that is rate sensitive, meaning it’s soft and pliable at low impact speeds, but becomes stiff or more protective at high-impact speeds. The open-cell foam feature makes for a highly protective product that is also comfortable to wear even long shifts. The foam is currently in use in the HGU-98/P and other tactical bump helmets used by various military entities, providing protection from head injuries and increased hearing protection while working on aircraft. The new helmets, referred to bump caps in the commercial sector, come in seven colors (red, brown, green, purple, yellow and blue). In early 2022, the helmet passed testing and was introduced to the Marine Corps aviation fleet in September that same year. Publication 13-1-6-7-6 WP 00 009 has been updated with the ordering information of the HGU-98/P. Currently, orders are placed through the Grainger 4PL contract with the General twelve products. The new helmets incorporate features such as padding or barriers around sensitive equipment, which can be easily compromised, leading to operational failures and potential safety hazards. To prevent equipment damage, it is crucial to properly train personnel on handling equipment and maneuvering in confined spaces. It is also crucial to provide effective training for safety personnel managing workers in confined spaces. Developing and adhering to standardized operating procedures can minimize accidental damage. Implementing protective measures, such as policing or barricading, may further safeguard against equipment damage in confined spaces. Confined spaces within aircraft pose distinct hazards to both personnel and equipment. Through risk assessment, the aviation community will prioritize the safety of its workforce and its mission, taking into account the vulnerabilities posed by confined spaces.
Naval aviation plays a pivotal role in the defense and strategic positioning of our nation’s maritime operations. Like any other precision-driven field, its success is deeply entrenched in the efficacy and reliability of its tools and machinery. This is where the importance of pre-operational equipment checks can’t be overstressed. Ensuring every aircraft and piece of equipment is in optimal working condition before operations begin isn’t only a best practice—it’s a life-saving, mission-critical necessity. The competency with which these checks are performed determines the safety of the crew, the success of the mission, and the continued prowess of the United States’ naval aviation arm.

CREW SAFETY

At the very heart of naval aviation are the men and women who put their lives on the line every time they ascend into the skies or embark on a mission. Their safety is paramount. While we can’t completely eradicate the inherent risks associated with flying and maritime operations, we can significantly reduce them. A primary avenue to achieve risk reduction is through meticulous pre-operational equipment checks. An unchecked malfunction or slight oversight can result in catastrophic consequences. Engine failures, navigational errors, or critical systems malfunctioning during operations could lead to dire situations. These checks don’t just ensure a switch works or a light comes on; they ensure every system functions optimally and every backup is in place. This rigor ensures the crew does not face avoidable risks.

MISSION SUCCESS

In the field of defense and military operations, success isn’t just desirable, it’s imperative. Every mission is a cog in the larger machinery of national security, diplomacy, and strategic positioning. The failure of a single operation due to equipment malfunction can have rippling effects on our nation’s strategic objectives. For naval aviation, the sea presents an added layer of complexity. The volatile maritime environment means our equipment and machinery are constantly exposed to corrosive elements. Saltwater, changing temperatures, and high humidity can all contribute to equipment degradation. Pre-operational checks help identify and rectify these issues before they compromise mission objectives. An aircraft that can’t communicate, a navigation system that fails, or a weapon system that malfunctions can spell the difference between mission success and failure.

MAINTAINING SUPERIORITY

Our navy’s reputation, both domestically and internationally, hinges on its prowess and reliability. When a naval aviation unit is known for its meticulousness and near-perfect operational record, it sends a message. The high precision and reliability of our operations tells our allies we are a dependable partner and warns potential adversaries of the force they are facing. Consistent equipment checks and their competent execution plays a key role in building this reputation and ensuring every sortie flown is backed by equipment that has been vetted and approved for operation. These checks not only minimize the chances of operational failures but also fortifies the image of a robust and formidable naval aviation force.

COMPETENCY

Having established the importance of pre-operational checks, the competency with which these checks are accomplished takes center stage. It’s not enough to merely conduct these checks; they need to be executed with precision, attention to detail, and a deep understanding of the equipment in question. Training becomes paramount here. Naval personnel must routinely train and retain, not just in the operation of their equipment but also in its intricacies, potential vulnerabilities, and to look out for signs of wear and tear. Regular drills, simulations, and evaluations ensure these checks are not just automatic but are, in fact, thorough examinations.

Naval aviation’s margin for error is exceptionally thin. The stakes are extremely high, with the safety of the crew, the success of crucial missions and the very reputation of the U.S. Navy on the line. Pre-operational equipment checks stand as the first line of defense against potential mishaps and the competency with which they are performed is nonnegotiable. Ensuring every aircraft and piece of equipment is in top-notch condition isn’t just a best practice; it’s an obligation to the brave men and women who serve and to the Navy and nation they represent.
A new aircraft models join the fleet, we witness a surge in technological advancements. These advancements aim to create an aircraft that’s more reliable and easier to troubleshoot. However, these advancements also result in a growing reliance on external entities to handle troubleshooting, which used to be the responsibility of mechanics like us. As aviation maintenance technicians, our role extends beyond simple component replacement and routine inspections. When troubleshooting becomes necessary, it should be our duty to possess a deep understanding of the aircraft and its associated systems, rather than relying on others to inform us. We should strive to learn every aspect of the aircraft we work on, including its weapons systems. At the very least, we should be familiar with the systems we are responsible for and how they integrate with other systems.

Unfortunately, over the past decade, there has been a decline in technician system knowledge and troubleshooting skills.

Why are we so quick to seek assistance from tech reps or civilian contractors? Why has studying maintenance publications during downtime become uncommon? The most important question is why do technicians believe their troubleshooting abilities are diminishing? What is the root cause of this decline?

Some reasons may include increased flight hours, which prevent junior Marines and Sailors from becoming proficient troubleshooters. It could also be due to impatient unit or maintenance leadership, who readily engage tech reps or contractors to resolve issues without allowing technicians time to research and find solutions. Perhaps junior technicians have not received proper troubleshooting training and guidance. Is there a perception junior technicians are not yet capable or responsible enough to take charge of the troubleshooting process?

This article aims to prompt unit maintenance leaders, quality assurance representatives (QARs), collateral duty QAIs (CDQAs), and collateral duty inspectors (CDI) to contemplate why so many junior Marines and Sailors are losing their ability to troubleshoot aircraft. As an airframe or engine flier, I’ve encountered situations where a plane captain would request a troubleshooter.

To be honest, it was an adrenaline rush because it was our responsibility as troubleshooters to communicate with the pilot and identify the issue the pilot was experiencing. It was exhilarating to apply our knowledge and put the unit’s trust in us to the test. It was satisfying to do everything possible to ensure a successful aircraft launch and then watch the aircraft soar into the air, especially when it was a combat-related mission and the lives of Marines, Soldiers, or Sailors were at stake. All the hours spent working through the night or staying late on day crew became worthwhile in those moments.

The times when our sergeants would press us to use our downtime for studying maintenance publications, understanding systems theory, reviewing aviation technical training material and learning about the checks pilots must perform on functional check flights and their significance were for our own benefit and the sustained success of our unit. Engaging in extra-curricular studying and drilling each other on systems enabled my fellow technicians and me to perform well under stress, make quick decisions, and be confident in our abilities because we intimately knew our aircraft and understood how its systems functioned in isolation and integration.

Recognizing the decline in the art of troubleshooting is one thing; however, as leaders, what are we doing to reverse this trend? Are we ensuring new technicians study relevant publications? Are we ensuring they participate in every job; regardless of its simplicity or difficulty? Are we consistently challenging technicians to gain a better understanding of the aircraft and systems they maintain? Are we encouraging them to visit other work centers to learn how all systems come together and rely on one another for safe aircraft operation?

For instance, when we received a hydraulic servo, it was the airframers, not avionics, who performed the wire checks to ensure their quality, as it provided us with a better understanding of how hydraulics and avionics collaborated within that component to achieve the servo’s desired function. The cross-training between military occupational specialties or rates not only benefited the avionics work center, but also reduced the time required to reinstall the component into the aircraft.

Technicians need to realize acquiring knowledge and proficiency in various aircraft systems not only expands their own expertise but also minimizes aircraft downtime and the need for troubleshooting. Encouraging collaboration among different work centers leads to a more effective and efficient maintenance department overall.

Troubleshooting should never be solely delegated to technical representatives or contractors. However, if it reaches a point where their involvement becomes necessary, QARs, CDQAs and CDIs should collaborate with and learn from these experts. By doing so, active-duty technicians will gain the knowledge and skills needed to handle similar situations in the future.

It is crucial for QARs, CDQAs and CDIs to share what they learn with all relevant personnel within the squadron. Even when working with a newer and more complex platform that everyone is still learning, technicians should strive to fully troubleshoot the aircraft. There may come a time when these external resources are not readily available, and technicians must rely on each other and available publications to ensure the aircraft meets mission requirements. When working with new aircraft, it is essential to take advantage of resources provided by outside entities that work alongside us daily and absorb as much knowledge as possible.

It is worth noting most of these technical representatives and contractors are not much different from us, as many of them were likely wearing the same uniform just a few months ago. As aviation maintenance technicians, we understand aircraft, regardless of age, are highly complex. They undergo continuous changes and improvements and it is our responsibility to continuously learn and adapt to better care for them.

One of the valuable lessons I learned as a junior Marine was knowledge is power. By understanding the aircraft and its systems, the aircraft will take care of us. It is essential to continuously challenge our junior Marines and Sailors to embrace the troubleshooting aspect of the job, rather than simply focusing on removing and replacing parts.
Aviation Maintenance Administration
Ensuring Operational Readiness

By Staf. Sgt. DeMario Hargrove

Maintenance administration in Navy and Marine Corps aviation is a critical component of ensuring aircraft operational readiness. The intricacies of managing a fleet of diverse aircraft, each with its own set of maintenance requirements, pose unique challenges. This article will discuss key aspects of maintenance administration in Navy and Marine Corps aviation, highlighting its significance, procedures, and the technologies that streamline the maintenance administration process.

MAINTENANCE ADMINISTRATION IMPORTANCE

The Navy and Marine Corps aviation fleets comprise a wide range of aircraft, from fighter jets to helicopters to transport planes. These aircraft play vital roles in national defense and ensuring they remain in peak operational condition is essential. Maintenance administration is the backbone of this process.

Maintenance administration encompasses several functions:

- **Maintenance Scheduling** - The heart of maintenance administration lies in scheduling. Every aircraft has predefined maintenance intervals, whether they are hourly, calendar-based or event-driven. Maintaining a complex schedule for multiple aircraft requires precision and coordination. Maintenance scheduling and setting tasks correctly in the maintenance database, such as Naval Aviation Logistics Command Management Information System Optimized Organizational Maintenance Activity, ensures maintenance task execution when needed, minimizing downtime and preventing potential safety issues.

- **Record Keeping** - Accurate record keeping is indispensable for tracking an aircraft’s maintenance history. Maintenance logs document each task performed, enabling technicians to fully understand an aircraft’s maintenance needs. This historical data is vital for regulatory compliance, as well as for troubleshooting issues and making informed decisions regarding an aircraft’s airworthiness. Attention to detail is extremely important in the record-keeping element of maintenance administration. Ensuring hour counts, penalty computations, logbook entries, life-limited component records entry...are all accomplished correctly for the component installed, etc. NAVSAFECOM SMEs have also witnessed poor scheduling equating to numerous aircraft being non-mission capable, simultaneously stretching a squadron’s maintenance department very thin and greatly increasing risks.

- **Parts Inventory Management** - Aviation maintenance relies on a vast inventory of spare parts and equipment. Maintaining an organized and efficient parts management system is crucial to ensure the right parts are available when needed. This minimizes delays and maximizes aircraft availability.

- **Personal Training** - Well-trained maintenance personnel are crucial to the success of any aviation mission. Ensuring maintenance technicians are knowledgeable, skilled and up-to-date on the latest aircraft technologies and procedures is an ongoing effort. Regarding aviation maintenance administration, proper documentation training is important to technicians to ensure data accuracy and accountability, and for aviation maintenance administrators, thorough, demonstrative training and routine spot checks of junior administrators are crucial to ensuring aircraft engine and aviation support equipment (E) records are accurate. NAVSAFECOM assessors of en find lapses in unit-level training and experienced oversight leads to more junior maintenance administrators making mistakes in critical record keeping due to being unclear on their assigned tasks.

PROCEDURES AND PROTOCOLS

Navy and Marine Corps aviation maintenance administration follows strict procedures and protocols to maintain the highest levels of safety and operational readiness. Here are some key elements:

- **Standard Operating Procedures (SOPs)** - Each aviation unit has a set of SOPs that dictate how maintenance procedures are carried out. These procedures cover everything from pre-flight inspections to major overhauls, ensuring consistency and safety. The key to successful SOPs is for all personnel to know and follow them. Once again, this is an area where NAVSAFECOM SMEs find junior personnel, and even senior personnel at times, unfamiliar with or not following established SOPs, whether they be squadron, wing, base, ship or carrier air group, has led to mishaps.

- **Quality Assurance** - Quality assurance (QA) work centers and representatives monitor and evaluate existing programs and systems for improvements. Quality assurance activities must be conducted consistently and accurately. NAVSAFECOM SMEs have also found instances of QA work centers being non-mission capable, with critical safety of flight components not being identified or addressed in time.

- **Regulatory Compliance** - Aviation, whether military or civilian, is required to follow federal, state and local regulations. Compliance with aviation safety standards is critical. NAVSAFECOM assessors have noted numerous instances where technical directive compliance, correct inspection compliance, and even senior personnel at times, unfamiliar with or not following established SOPs, whether they be squadron, wing, base, ship or carrier air group, has led to mishaps.

Unfortunately, we also see QARs ignoring people not following applicable maintenance instructions, not wearing proper personal protective equipment or not being attentive to the task. The QA work center is also the focal point of ensuring the latest up-to-date maintenance publications, instructions and SOPs are available and in use. However, certain technical publication librarians aren’t always familiar with or actively ensuring their unit’s technicians are using the most recent version of applicable publications. Additionally, the QA work center must maintain highly knowledgeable QARs who can properly monitor and audit essential programs, such as Technical Directive Program and Maintenance Control processes as a whole. Units where these poor practices are observed typically can’t assign QARs to all of the fleet. NAVSAFECOM local area assessments, and are noted in many mishap and hazard reports as well.

- **Inspections** - The condition of an aircraft is assessed through regular inspections that include daily, pre-flight, post-flight and phase inspections. Inspectors, whether technical or not, play a crucial role in identifying and addressing issues promptly. Inspection instructions, cards and publications exist for a reason, and must be followed by line personnel to ensure critical safety of flight components are identified properly. NAVSAFECOM SMEs find find plane captains performing daily and turn-around inspections without the applicable cards or deck and SE operators conducting SE pre-operational inspections without pre-op inspection cards. SMEs also find technicians performing scheduled inspections without cards and publications nearly as well.

CHALLENGES AND FUTURE TRENDS

While maintenance administration has come a long way, there are ongoing challenges and future trends to consider. One challenge is the need for continual training and adaptation as aircraft technology evolves. Additionally, the growing complexity of aircraft systems demand a high level of technical expertise.

Looking to the future, there’s a growing emphasis on data-driven decision-making. Analyzing maintenance data can help identify trends, predict maintenance needs and optimize maintenance schedules. As avionics technology continues to evolve, maintenance administration will play a crucial role in ensuring Navy and Marine Corps aviation remains a reliable and effective force.

Maintenance administration in Navy and Marine Corps aviation is a multifaceted and critical discipline. It ensures the operational readiness and safety of a diverse fleet of aircraft, following strict procedures and harnessing technology to streamline processes. The future of maintenance administration will undoubtedly involve further advancements in data analysis and predictive maintenance, making it an even more indispensable component of military aviation.
Exposure in the Workplace
Importance of Industrial Hygiene Surveys
By Senior Chief Naval Aircrewman Erica Gibson

Under federal law, everyone has the right to a safe and hazard-free work environment. Every day our Sailors, Marines and civilians are exposed to numerous toxic substances and harmful physical agents. Personal exposure can increase or decrease based upon operational requirements, the mission and adherence to required controls. Not knowing which hazards we are exposed to is an unacceptable risk that can lead to injuries or harmful and long-term negative health effects. We have a duty to each other to operate at the highest safety level to protect our mission, our fellow Sailors and Marines, civilian counterparts and ourselves at risk. The Naval Safety and Occupational Health (SOH) manual, OPNAV Manual (M)-1002.23, identifies one of the occupational health assessment requirements as an Industrial Hygiene (IH) survey performed by an IH program office (IHPO). The purpose of this survey is to ensure a safe and healthy work environment by identifying and assessing hazards to personnel in their workplace and to make recommendations that reduce, eliminate or control the risk to personnel. Specific areas assessed are:

- Equipment used in the workplace to perform a job or task
- How these jobs or tasks are performed (with frequency and duration annotated)
- Hazardous materials and descriptions of their use
- Physical hazards (ergonomics, noise, non-ionizing radiation, etc.)
- Their source descriptions
- Existing controls (e.g., protective clothing, fail protection, personal protective equipment (PPE), etc.)

INITIAL IN-SURVEYS, PERIODIC INDUSTRIAL HYGIENE SURVEYS AND COMMAND HAZARD CATEGORIES

Every unit receives an initial IH survey followed by IHPO. Based upon assessment and exposure criteria, categories may see specific supplement IPs. Periodicity of surveys can change based on command hazard categories. Category I IPs include Priority I, Level I and II which require annual evaluations. Category II IPs include Priority 2 shop evaluations every two years for shore commands and every three years for afloat commands. Category III IPs include Priority I shop evaluations occurring every four years. The IH Field Operational Manual (OHM) defines command hazard categories and frequency of periodicity requirements in Appendix C-D. C-F. For example, aviation squadrons as part of CAT II (moderate hazard) require two-year assessments command wide with Priority 1 shops evaluated annually. However, if workplace conditions change, such as the squadron organization or maintains a new model-series aircraft, there is a process change or change to the hazardous material used, then an updated survey to the survey is required to monitor and reassess employee exposure.

Once the IH exposure assessment is complete, the IHPO will generate a report to the command providing exposure assessment findings, medical surveillance exam requirements and health hazard control recommendations for the reduction of chemical and physical workplace hazards. Naval Safety Command (NAVSFECOM) assessors validate the currency of a unit’s PIHS report during local area assessments (LAAs). On a LAA conducted overseas, NAVSAFECOM assessors identified local IH surveys specific to the hangar or facility being used were not posted or performed in work center spaces. Per the IH Field operation manual, Chapter 2, Para 3(a)(b), “detachments will receive their IH survey directly from the nearest IHPO that is within the area of responsibility in which the detachment is located. This initial survey shall be considered the baseline for the detachment. A copy of the survey should be provided to the parent IPHS and added as an addendum to the parent command’s initial IH survey.”

This resulted in a lack of oversight by local IH support services; the deployed detachments were posting their unit guard house IH surveys instead. Hazardous conditions not reported or assessed, combined with high rotation rates with no follow up or posted in work centers and unhealthy work environments. As part of the command risk management process, the PIHS is a tool when developing written compliance and exposure control programs to identify employee exposures hazards. Examples of written program requirements are found in the OSHA specific substance standard tables. Table B-2 of OPNAV-M-1002.23 lists its General Industry requirements. Command must evaluate hazardous materials that have not been readily identified for potentially exposed employees identified in the PIHS. Many workers are unaware of the potential hazards that chemicals present in their work environment, which makes the injury and toxic communication training teaches employees how to identify hazards and materials which can happen when safety precautions are not followed.

SELF-ASSESSE AND TAKE AN IN-DEPTH LOOK

An important aspect of the inspection program is ongoing assessments of hazards following identification. The initial IH survey report and follow-on periodic reports submitted to units can help identify unsafe and unhealthy work environments. Operational changes, life cycle changes, personnel changes, or new equipment have not been remedied and a deep dive into survey recommendations that may or may not catch up with our ever-changing acquisition of warfare weapons systems. All units are encouraged to review their workplace spaces and policies and instructions (such as respiratory protection and medical surveillance) and validate them. You can provide change recommendations to the Ensaf Safety Committee meeting minutes or NAVSAFECOM. If it’s a hazard that needs immediate attention, submit hazards to the commander’s suggestion box, Anymouse box, Aviation Safety Awareness Program or through the RMP process.

Preparing for Explosive-Handling Evolutions
By Gunnery Sgt. Samuel Lee

The Navy conducts explosive sensitivity training for the reduction of chemical and physical workplace hazardous exposures. As part of the command risk assessment process, the PIHS is a tool when developing written compliance and exposure control programs to identify employee exposures hazards. Examples of written program requirements are found in the OSHA specific substance standard tables. Table B-2 of OPNAV-M-1002.23 lists its General Industry requirements. Command must evaluate hazardous materials that have not been readily identified for potentially exposed employees identified in the PIHS. Many workers are unaware of the potential hazards that chemicals present in their work environment, which makes the injury and toxic communication training teaches employees how to identify hazards and materials which can happen when safety precautions are not followed.

Pre-evolution brief:
The assigned team leader should give a pre-evolution brief to the team, which should include types of ordnance handling evolutions. The mission brief needs to include a development of a crew, a mission overview, and a role regardless of the evolution type, i.e., transport, support, movement, etc., and a probability risk and quality management aspects. Depending on the task, there may be restrictions on communications and weapons.

The Navy must communicate with MCPF and the Naval MCPF of the time to understand the mission’s risk and quality management aspects. Depending on the task, there may be restrictions on communications and weapons.

The Natural History Museum (NRM) conducted a study on the evolution to be stopped – even if there is something wrong – because the team needs to be among the top priorities when preparing for an evolution. Adverse weather may not be capable of working through the hazardous conditions, such as chemical and physical workplace hazardous exposures. Ensure your team is dressed properly for conditions and have plenty of work-related supplies and equipment.

While preparing for an evolution, the crew can head out to perform the mission, which should be stopped only if there is something wrong. The crew must communicate with MC/PC, the crew can head out to perform the mission.

The best thing ordnance teams can do is verify with MC before going out to the field to confirm their mission with MC/PC with the team’s workflow and where ordnance team leads, and teams will be in case the event MC/PC will not be available. Confirming with MC/PC will ensure nothing goes wrong and the team can perform their intended evolution. For example, if a team is preparing to load a screened aircraft that should be ready to receive ordnance, confirming with MC/PC will ensure nothing goes wrong.

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Adventure is anticipated this summer, but misadventure should be too. A memorable experience can be overshadowed by a trip to the hospital or worse. Understand the risks this summer to help you minimize the chance of a good time turning bad.

Memorial Day weekend through Labor Day weekend marks the 101 Critical Days of Summer. It’s the time that many off-duty accidents happen. Most people go outside, enjoy the weather with friends and family and participate in fun activities. To manage risk in any activity you should identify potential threats, find tactics to decrease harm and make informed choices.

Complacency is a common root cause in off-duty mishaps every summer. Have situational awareness with these safety strategies:

Self-assess and self-correct - Recreational mishaps are avoidable. You should frequently self-assess and self-correct how you spend your time while off duty this summer. Assess the risks, remember procedures, understand your limits and comply with all laws.

Teach others to help you remember - Get help in any activity by choosing an assistant skipper or find an inexperienced friend and show them the ropes. Ensure more than one person involved is familiar with the plan of the day, knows how to use the gear or equipment properly and understands the summer activity from soup to nuts. Training others on best practices can help you remember operations, plan a safety strategy to avoid harm and what actions to take in case of an emergency.

Maximize your needs - Keep hydrated and have plenty of water available. Fully charge your phone and bring an extra charger. Bring spare gear. Wear sunscreen and stay in the shade, if possible. Dress in bright colors for the day or reflective gear in the evening. Remember to stretch and warm up your body. Stay extra prepared anticipate possible problems.

Motorcycle safety is deadly serious - About 1 in 10 Sailors and Marines own a motorcycle. Motorcyclists suffer higher rates of serious injuries and fatalities than other drivers. Are you one of the estimated 52,000 motorcycle riders? You must take the recommended safety courses and have a Department of Transportation-approved helmet, long sleeves, long pants, full finger gloves and boots that cover the ankle while on a ride. Additional armor could be lifesaving.

Simply drive - Look both ways, twice. Check the blind spots, twice. Be vigilant and aware. Any distraction is not multitasking, it is distracted driving. Keep plenty of distance between you and the car or motorcycle in front of you. Remember to reduce speed, arriving alive is more important than arriving early. Follow the rules of the road, never drink and drive or drive while sleep-deprived.

Suspect and inspect - Spring cleaning should be a detailed inspection. As your summertime gear gets unpacked after the winter, inspect and clean before use. Your grill, dive gear, motorcycle, sports equipment and more could have been stored damaged. Check the fit of all shoes, clothes and wearable gear. Purchase new tools or gear if anything is unsatisfactory or damaged. A deep clean and double-check can safeguard against potential risks.

Renew your research - Has anything changed from last summer? New resources and trainings are always showing up online. New laws and standards might be enacted. Check your route to make sure nothing has changed either. Read the owner’s manual again or take a refresher course.

Injuries and fatalities - Reported injuries and fatalities during last year’s 101 Critical Days of Summer time period:

- 122 - Vehicle and motorcycle fatalities
- 27 - Vehicle and motorcycle injuries
- 7 - Water related activity injuries

The 101 Critical Days of Summer is not about force preservation. It’s the Navy’s reminder to you that staying safe reduces your stress, personal harm or worse for you and your family. Take a boat and think it through this summer. The life you save may be your own.

Sailor and Marine fatalities occurred last summer. Accidents and mishaps are preventable, provided we assess risks and comply with laws and best practices.

Freshen up on common summertime injuries due to:
- Motor vehicles and motorcycles
- Heat and other weather-related activities
- Alcohol and party-related activities
- Water-related activities
- Firearms and firearms
- Sports and fitness
- Home projects and more

Whatever you do this summer, understand and avoid preventable risks.
The inspection aimed to identify any installed but expired aircraft assets: Ejection Seat Parachute Deployment Rocket Motor (PDRM) (DODIC: MT29). The second inspection involved the SJU-17 Navy Aircrew Common Canopy jettison actuation. Despite the difficulty of the task, there was no SR371 igniter (P32059, magnesium powder) in the CAD and the cashew sealant (P32034) was not applied to the threads to join the two portions during the manufacturing process.

April 20, 2022: Martin-Baker issued a Technical Information Letter 551A to Lockheed Martin with recommendations to inspect CADs that were in service.

April 24, 2022: Martin-Baker verified 100% of their CADs in stock.

Additionally, they examined 601 work-in-progress items that had already passed Martin-Baker production inspection, which included X-ray. Only 599 conforming units were identified of 601, while a “rattle test” was able to identify two nonconforming units that were later confirmed by disassembly. X-ray was used to identify and confirm the two nonconforming units and validated through disassembly.

April 26, 2022: Martin-Baker implemented a one-piece flow manufacturing process during assembly, end-of-shift standard operating procedure for unfinished units, which included segregation and means to validate the presence of magnesium powder before applying cashew sealant and closing the CADs.

May 2, 2022: NASSUP contracts issued a letter to Martin-Baker directing further investigation to rule out the possibility of a quality defect in other CADs manufactured by Martin-Baker. In short, a discrepancy was discovered, reported, action initiated to identify the root cause and rectify the discrepancy. Had the discrepancy gone unreported, it would have undoubtedly resulted in at least two non-ready-for-issue CADs being placed into service and potentially increasing the loss of aircrew lives due to failed ejections.

Discrepancy reporting is crucial to maintaining aircraft systems that are reliable, repeatable and lethal in support of fleet readiness. The extra time spent on discrepancy reporting could prevent damage to or loss of aircraft, equipment or facilities, injury to personnel or even death.

The Naval Aviation Maintenance Discrepancy Reporting Program, governed by COMNAVAIRFORCES 4790.2 series, covers deficiency reporting for all types of equipment, and any deficiency and ends with final solutions, appropriate modifications necessary for them to be resolved. The process begins with the discovery of a deficiency and ends with final solutions, appropriate modifications or logistics actions implemented to address the issue.

Let’s refer to the chain of events and address the original question: How could CADs deemed ready for issue (RFI) and installed suddenly be recalled due to suspected defects?

Chain of significant events continued:

- May 24, 2022: Commander, Naval Air Forces Atlantic (CNAL) Force Supply Officer directed an MH-53 arf from Naval Surface Warfare Center (NSWC) Indian Head to Naval Air Station Oceana to transport a total of 172 CADs in support of Carrier Air Wing (CVW) 3, CVW-7, CVW-8, VFA-106, VFA-25, and VFA-154. Subsequent deliveries to NAS Oceana were made weekly on Saturdays directly to the commander of Strike Fighter Squadron VMFA-312, who determined distribution priority based on squadron maintenance plan cycle.

- July 25, 2022: Technical Directives ACB-1342 (F-5), ACB-1343 (F/A-18), and ACB-1344 (T-45) were issued and O-level corrective actions commenced.

- July 26, 2022: Navy air logistics of ice movements departed from NAS Patuxent River for European Command (EUCOM) and Pacific Command (PACOM) in support of CVW-1, embarked aboard USS Harry S. Truman (CVN-75), VAQ-134, VMFA-323, CVW-9, VFA-5, VFMA-232, and VMAF-333.
enhancing aircraft readiness across CSFWL. Please know that these Sailors made significant contributions to active-duty personnel and civilians who answered the call to restore Unfortunately, our Navy and Marine Corps team is comprised of numerous collaborative efforts and technical expertise, each team successfully These teams worked in two shifts, day and night, seven days a week until three to four Aviation Structural Mechanic (Equipment) team members. Sailors from various squadrons. Each team consisted of one Collateral Quality Assurance Representative/Quality Assurance Safety Observer and three to four Aviation Structural Mechanic (Equipment) team members. These teams worked in two shift s, day and night, seven days a week until their maintenance efforts were completed. Through their collaborative efforts and technical expertise, each team successfully restored the fighting capability of CSFWL by returning four to five aircraft to mission-capable status per shift. Unfortunately, our Navy and Marine Corps team is comprised of numerous active-duty personnel and civilians who answered the call to restore fighting capability, making it impractical to list all their names. However, please know that these Sailors made significant contributions to enhancing aircraft readiness across CSFWL.

Our existing maintenance programs are specifically designed to prioritize the personnel and equipment safety. When implemented as intended, these programs have proven to be highly effective in driving significant improvements. In certain cases, the Department of Defense branches and suppliers swiftly execute the necessary improvements to minimize any potential risks. The Naval Aviation Maintenance Discrepancy Reporting Program is a crucial component aimed at enhancing the quality of our products, thereby increasing the reliability and safety of our systems. It is important to note that these improvements are not just isolated to ignore them, but rather report them promptly. In a situation where a similar discrepancy occurs on a Navy or Marine Corps aircraft, it would also be a priority to report the hazard condition due to the potential danger it poses to the aircraft. The role of maintenance personnel is to report hazards like these through the Naval Aviation Safety Action Program and notify the unit’s safety department about the discovery of such hazards. We have a critical role to play in ensuring fellow technicians across the fleet, wing subject matter experts, NAVAR program of ice, engineers and other relevant stakeholders are made aware of hazardous conditions, as well as the chain of events, root causes of mishaps and eff active preventive measures that impact our aircraft community readiness.

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The broader implications

Safety and Maintenance - Aircraft are prone to wear and tear given their operating environments. With aging, landing and takeoff cycles and the corrosive environments of naval and marine aviation facilities, maintenance becomes crucial. EWS provides guidelines and best practices to help technicians identify, troubleshoot and fix potential issues before they become critical.

Upgrades and Retrofitting - As new technologies emerge, aircraft of the modern era are continually upgraded. EWS ensures these new systems seamlessly integrate without compromising safety or aircraft performance.

Training and Standardization - EWS emphasizes personnel training. Given the crucial nature of avionics and electrical systems in aircraft, it’s vital technicians are well-versed in the latest standards and practices. This ensures uniformity in maintenance and repairs across the fleet, regardless of location or aircraft type.

EWIS Incidents Importance

By Gunny Sgt. Louis Tiberio

In the fast-evolving world of naval aviation, cutting-edge technology and advanced electronic systems are the cornerstone of mission success. Electrical wiring interconnected systems (EWIS) plays a pivotal role in this realm, ensuring U.S. Navy and Marine Corps aircraft operate of safety and reliability.

Understanding the Role of EWIS in Aviation

Every modern aircraft is a marvel of electronic complexity. From advanced avionics, radar systems and communication tools to weapons systems and navigation aids, each component requires seamless integration through electrical interconnections. EWIS covers not just the wires but also connectors, terminations, protections and the entire network, which distributes electrical power and signals throughout the aircraft. The U.S. Navy aircraft fleet, from fighters like the F/A-18 Super Hornet to reconnaissance planes and patrol aircraft, depend heavily on electronic and avionics systems. The Marine Corps, with its expeditionary nature, operates a range of aircraft tailored to support ground troops, be it through close air support, transport or reconnaissance.

• Carrier-Based Operations - Aircraft operating from aircraft carriers face unique challenges, including corrosive sea air and the wear and tear of catapult launches and arrested landings. EWS ensures the aircraft systems are resilient and reliable in such harsh operational environments.

• Vertical Lift and Short Take-Off and Landing (STOVL) Aircraft - The Marine Corps’ aviation assets, like the MV-22 Osprey (turboshaft) and F-35 Lightning II (STOVL variant), have uniquely specified EWIS requirements. EWS ensures the advanced avionics in these aircraft operate reliably, from hover mode to high-speed flight.

• Advanced Weapon Systems - Modern naval aircraft are equipped with sophisticated weapons that rely on complex electronic guidance and targeting systems. EWS is essential to ensure weapons integrate flawlessly with the aircraft, allowing pilots to deliver them accurately to their targets.

• Combat and Tactical Helicopters - Helicopters like the AH-1Z Viper and UH-1Y Venom have complex rotor systems, weapons and sensors that require impeccable electrical interconnects. EWIS plays a vital role in ensuring flawless systems communication, enhancing the combat capability of the rotorcraft.

While the might of Navy and Marine Corps aviation assets is on visualized through roaring engines, advanced weaponry and precision flying, the silent web of electrical systems facilitated by EWIS is what truly drives these capabilities. As aviation technology continues to evolve, the role of EWS in ensuring the efficiency, safety and combat readiness of our aircraft will remain paramount.

For more information on EWIS and joint Services Wiring Action Group initiatives, visit https://www.navair.navy.mil/swag.
Navigating the Tide
Battling Human Errors on the Maintenance Deck

By Senior Chief Aviation Machinist’s Mate Harold Mack

In the vast and unforgiving world of naval aviation where aircraft take off and land on the decks of moving giants at sea, the reliability of every component, system and fastener is of utmost importance. Here, the unsung heroes of naval aviation, maintenance personnel, ensure these powerful birds remain airworthy and mission ready. Yet, in this demanding arena, human errors (such as omission, commission, or extraneous, etc.) can loom as formidable adversaries. In this article, we’ll delve into these adversaries, examine their impact on naval aviation maintenance and uncover strategies to battle them.

OMISSION ERRORS: THE MISSING LINKS

In naval aviation maintenance, omission errors are like the unseen tides beneath the surface—potentially treacherous and of enorm unstated. These errors occur when a maintenance technician inadvertently skips a crucial task or inspection. Picture this:

- A missed scheduled inspection.
- An Acrical fastener is not torqued to specifications.
- An overlooked essential maintenance step.

The consequences of omission errors can be catastrophic. Neglecting to replace a worn out component might lead to mid-air equipment failures, jeopardizing the lives of the crew and the integrity of the aircraft. These errors result in four main consequences:

1. **Safety Compromised**: Omission errors can directly endanger the safety of the aircraft, its crew, and, in some cases, the entire mission. Safety is paramount in naval aviation and any compromise in this regard is unacceptable.

2. **Operational Delays**: Omission errors can lead to unplanned maintenance, causing operational delays. The ripple of ec may disrupt mission schedules and incur significant financial costs.

3. **Resource Waste**: Failed inspections and equipment malfunctions due to omission errors result in wasted resources. Funds, critical parts and many platforms are already deficient on, and maintenance man-hours are apted on maintenance and repairs that could have been avoided.

4. **Damage to Reputation**: Naval aviation operations are often high profile and closely watched. Any error, especially those resulting from negligence, can damage the reputation of the military unit and the personnel involved.

To battle this foe, maintenance personnel are rigorously trained, equipped with comprehensive checklists and instilled with an unrelenting commitment to be attentive to detail.

**COMMISSION ERRORS: NAVIGATING THE MAZE OF PRECISION**

Commission errors in naval aviation maintenance are akin to taking a wrong turn in a complex labyrinth. These errors occur when a maintenance technician performs a task incorrectly or inappropriately. It’s like attempting to put together a puzzle with a few mismatched pieces. Examples include:

- Improperly installing critical aircraft components, incorrectly calibrating vital systems or incorrectly rigging aircraft control surfaces.

The risks associated with commission errors are stark. An incorrectly installed part can catastrophically fail, a wrongly adjusted control surface could lead to equipment damage during flight. Commission errors result in four primary consequences:

1. **Aircraft Damage**: Commission errors can damage the very equipment that was to be repaired or maintained, leading to extensive repairs and operational downtime.

2. **Financial, Manpower and Supply Burden**: Repairing damage caused by commission errors is costly. It requires high man-hours, assignment of depot level technicians away from their scheduled work and draws critical repair parts for scheduled removal from the supply system. The burden associated with these resources can be substantial, impacting maintenance budgets and schedules outside of the mishap unit.

3. **Operational Hiccups**: Equipment failures due to commission errors disrupt planned operations, leading to delays, reduced mission readiness and potential mission cancellations.

4. **Reputation at Stake**: The reputation of the maintenance personnel and the unit can suffer, especially if commission errors result in preventable accidents or mishaps.

These errors, often driven by distractions, multitasking or cognitive overload, reveal the importance of attention to tasking. Extraneous errors threaten to destabilize the steady course of naval aviation maintenance. These distractions can compromise the quality and safety of maintenance work, leading to missed steps, miscommunication or mistakes in maintenance procedures. Extraneous errors result in four principal consequences:

1. **Reduced Productivity**: Distractions hamper productivity, leading to longer maintenance times and potentially overworked personnel.

2. **Increased Risk**: Distractions can allow significant risks to creep in during maintenance that would otherwise be avoided. An example would be looking at something else while climbing down from an aircraft and not seeing where oil or hydraulic fluid had accumulated and slipping of the aircraft or either injuring the maintenance personnel or worse.

3. **Inefficiency**: Mistakes and rework due to distractions create inefficiencies in the maintenance process, wasting valuable time and resources.

4. **Damage Control**: In some cases, distractions can lead to needing extensive damage control of aircraft, especially if discovering errors occurs when the aircraft is in operation.

To navigate these wild waters, maintenance environments are crafted to minimize distractions and personnel are trained in the art of maintaining unwavering focus on their tasks. It’s about ensuring every moment on the maintenance deck is a moment dedicated to the aircraft’s safety and reliability. The hanger’s flight line chiefs, QA personnel and ground safety personnel play a critical role in helping people stay focused on task.

**EXTRANEOUS ERRORS: RIDING THE WAVES OF DISTRACTIONS**

Extraneous errors threaten to destabilize the steady course of naval aviation maintenance. These errors, of en driven by distractions, multitasking or cognitive overload, manifest when technicians become trapped by unrelated conversations or activities while working on critical aircraft systems.

These distractions can compromise the quality and safety of maintenance work, leading to missed steps, miscommunication or mistakes in maintenance procedures. Extraneous errors result in four principal consequences:

1. **Operational Delays**: Omission errors can lead to unplanned maintenance, causing operational delays. The ripple of ec may disrupt mission schedules and incur significant financial costs.

2. **Resource Waste**: Failed inspections and equipment malfunctions due to omission errors result in wasted resources. Funds, critical parts and many platforms are already deficient on, and maintenance man-hours are apted on maintenance and repairs that could have been avoided.

3. **Damage to Reputation**: Naval aviation operations are often high profile and closely watched. Any error, especially those resulting from negligence, can damage the reputation of the military unit and the personnel involved.

To combat this foe, maintenance personnel undergo specialized training and certifications, with each step of the maintenance process documented and meticulously followed; ensuring precision is the guiding star. These types of mistakes are also combated through different levels of oversight required for different criticalities of steps (such as: quality assurance (QA) or collateral duty inspector required or chief/safety officer for flight individual required to oversee aircraft moves, aircraft jacking/lowering, etc.).

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CONCLUSION: ANCHORING RELIABILITY IN A SEA OF CHALLENGES

In naval aviation, there are other unrecognized heroes of en found below decks, in the hangars and on the maintenance platforms. They are the guardians of aviation reliability and safety ensuring aircraft roar into the skies with unwavering confidence.

To protect naval aircraft and personnel, maintenance crews aren’t just highly trained; they are part of a tradition that honors precision, attention to detail and unwavering dedication to the mission. The battle against omission, commission and extraneous errors is relentless, but it’s a battle aircraft maintenance technicians and plane captains are poised to win every day, bolstering the backbone of naval aviation and anchoring reliability in a sea of challenges. It’s a story of human perseverance and dedication, where every turn of the wrench, every inspection and every repair is a step closer to safer skies and a more secure nation. Human errors are formidable foes, but with vigilance, precision and dedication, they can be overcome, ensuring naval aviation maintenance remains a force to be reckoned with.

Aviation Machinist’s Mate 2nd Class LaShana Roanhorse, left, and Aviation Machinist’s Mate 3rd Class Patrick Jones, perform maintenance on an engine of an F/A-18B Super Hornet from the Fighting Roddocks of Strike Fighter Squadron (VF-23) aboard the aircraft carrier USS Nimitz (CVN 68), Aug. 25, 2023. (U.S. Navy photo by Mass Communication Specialist Seaman Peter McHaddad)

By Leslie Tomaino

### Safety in Your Pocket

**Naval Safety Command (NASCARECOM)** app is a mobile-friendly way to keep up to date on all things Navy and Marine Corps safety and risk management. The app allows Sailors and Marines on-the-go access to safety-focused learning and improved communication.

The mobile app is a robust toolkit containing NASCARECOM products, such as checklists, forms, news, videos, instructions and directives, as well as warfare community-specific products and information. It reinforces important safety and risk management information that can be used universally throughout the naval enterprise, from safety representatives to service members daily.

“This mobile application allows our Sailors and Marines to access and download information in advance for use remotely,” said CMDR GANAWISH Dena Sonnenberg, NASCARECOM command master chief. “This app is an additional tool for the warfighter and safety professional to help advance our mishap-focused, reference and standards-driven lens.”

Users have the option to personalize their preferences and select content specifically relevant to warfighting communities and categories. These communities include aviation, shore, afloat and expeditionary.

Users can download the free app from the App Store (Apple) or Google Play by searching “Navy Safety Command” or “NASCARECOM”. You can also find the app on the app stores on your web browser. Sailors and Marines can also find this app and many others in the Navy App Locker: [https://www.applocker.navy.mil](https://www.applocker.navy.mil)

**Safety tools in your pocket.** Download and use the Naval Safety Command App in the Navy App locker. (U.S. Navy photo courtesy of Naval Safety Command)
S
ince its first use in 1960, laser usage has grown since to various adaptable uses, from medical treatments to entertainment to military applications. Lasers have created a plethora of benefits, but they also carry inherent risks and dangers.

Dangers of Lasers to Aircraft
By Senior Chief Aviation Electronics Mate William Davis

Since its first use in 1960, laser usage has grown since to various adaptable uses, from medical treatments to entertainment to military applications. Lasers have created a plethora of benefits, but they also carry inherent risks and dangers.

Lasers are used in various applications, including medical treatments, entertainment, and military applications. However, the use of lasers can also pose risks to aircraft and pilots.

Laser pointers aimed at aircraft -- military, commercial or general aviation -- can be a major safety hazard. (Photo courtesy of Federal Aviation Administration)

The penalty, if caught, can range from a FAA fine of as much as $11,000 per violation, imprisonment for not more than five years or both. From 2012 to 2015, the FAA reported 18,682 laser reporting and saw a sharp rise from January 1 to September 30 of 59,432 reported incidents, with the Navy and Marine Corps reporting 688 incidents. The FAA works closely with local law enforcement to apprehend suspects of laser striking an aircraft.

On Feb. 8, 2013, the FAA issued Advisory Circular (AC) 70-24a, superseded by AC 70-28d dated April 3, 2020, which requested all aircraft reporting unauthorized laser illumination by radio to the appropriate air traffic controller facility as soon as possible. Additionally, once the aircraft arrives at its destination, affected pilots and crewmembers are encouraged to report the event via the FAA Laser Beam Exposure Questionnaire on the FAA website at https://www.faa.gov/aircraft/safety/reports/laserinfo/. Sailors and Marines must report all cases of personnel inadvertently exposed to laser energy to the Navy Bureau of Medicine and Surgery as per OPNAV Instruction 5100.27C/MCO 5104.1C. This report must list personnel involved, estimated laser exposure received, the medical of laser’s immediate and subsequent medical findings, a detailed account of the incident and lessons learned. Additional reports submitted when required are a safety investigation report and a hazard report. Sailors and Marines can find the requirements to submit these reports in OPNAVINST 5100.10D/MCO P5102.1B.

Lasers have many valuable applications in both the military and civilian world: measuring distances, targeting, threat detection, leveling and material etching to name a few. However, the use and availability of lasers has opened the door to a very hazardous environment for the aviation industry. The laser of striking an aircraft creates a dangerous environment for pilots, crewmembers and any passengers aboard the aircraft, which could lead to damaged aircraft or, worse, the loss of life. Sailors and service members must educate themselves on the potential dangers of aiming lasers at people or objects as well as the laws and penalties associated with laser safety.

Each year, safety awards are given to recognize operational excellence, exemplary safety contributions and to further the Naval Aviation Safety Program.

Commander, Naval Air Force Pacific (CNAP)
STRIKE FIGHTER SQUADRON 97
STRIKE FIGHTER SQUADRON 117
ELECTRONIC ATTACK SQUADRON 139 (CVW)
AIRBORNE COMMAND AND CONTROL SQUADRON 125
HELICOPTER SEA COMBAT SQUADRON 4 (CVW)
HELICOPTER SEA COMBAT SQUADRON 25 (EXPEDITIONARY)
HELICOPTER SEA COMBAT SQUADRON 75 (CVW)
HELICOPTER MARITIME STRIKE SQUADRON 37 (EXPEDITIONARY)
HELICOPTER SEA COMBAT SQUADRON 5
ELECTRONIC ATTACK SQUADRON 132
FLEET LOGISTICS MULTI MISSION SQUADRON 30

Commander, Naval Air Force Atlantic (CNAP)
PATROL SQUADRON 5
PATROL SQUADRON 30
AIRBORNE COMMAND AND CONTROL SQUADRON 120
HELICOPTER SEA COMBAT SQUADRON 28
HELICOPTER MARITIME STRIKE SQUADRON 46 (CVW)
HELICOPTER MARITIME STRIKE SQUADRON 48 (EXPEDITIONARY)
ELECTRONIC ATTACK SQUADRON 142
HELICOPTER SEA COMBAT SQUADRON 11
STRIKE FIGHTER SQUADRON 24

Commander, Marine Forces Command (COMMMARFORCOM)
MARINE HEAVY HELICOPTER TRAINING SQUADRON 302
MARINE ATTACK SQUADRON 223
MARINE ATTACK SQUADRON 231
MARINE AERIAL REFUELER TRANSPORT SQUADRON 252
MARINE MEDIUM TILTROTOR SQUADRON 162
MARINE MEDIUM TILTROTOR SQUADRON 261
MARINE MEDIUM TILTROTOR SQUADRON 365

Commander, Marine Forces Pacific
MARINE HEAVY HELICOPTER SQUADRON 465
MARINE LIGHT ATTACK HELICOPTER SQUADRON 267
MARINE LIGHT ATTACK HELICOPTER SQUADRON 367
MARINE LIGHT ATTACK HELICOPTER SQUADRON 389
MARINE HELICOPTER TRAINING SQUADRON 303
MARINE FIGHTER ATTACK SQUADRON 232
MARINE AERIAL REFUELER TRANSPORT SQUADRON 352
MARINE MEDIUM TILTROTOR SQUADRON 262

Commander, Naval Air Reserve Forces (COMNAVARRFOR)
PATROL SQUADRON 62
FLEET LOGISTICS SUPPORT SQUADRON 54
FLEET LOGISTICS SUPPORT SQUADRON 56
FIGHTER SQUADRON COMPOSITES 204

Commanding General, 4th Marine Aircraft Wing (CG Fourth MAW)
MARINE LIGHT ATTACK HELICOPTER SQUADRON 775
MARINE AERIAL REFUELER TRANSPORT SQUADRON 234
MARINE MEDIUM TILTROTOR SQUADRON 774
Chief of Naval Air Training (CNAVTRA)
TRAINING SQUADRON 2
TRAINING SQUADRON 12
TRAINING SQUADRON 28
TRAINING SQUADRON 35
HELICOPTER TRAINING SQUADRON 8

Commander, Naval Air Systems Command (COMNAVAIRSYSCOM)
FLEET READINESS CENTER EAST
AIR TEST AND EVALUATION SQUADRON 31
MARINE CORPS INSTALLATIONS EAST
HEADQUARTERS AND HEADQUARTERS SQUADRON MCAS CHERRY POINT
MARINE CORPS INSTILLATIONS WEST
HEADQUARTERS AND HEADQUARTERS SQUADRON MCAS YUMA

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