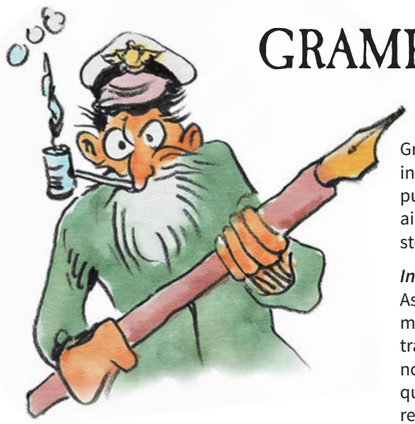
MECH

VOL. 69, NO. 1
Spring | Summer

Pre-Op Checks

LIFE-SAVING
MISSION-CRITICAL
NECESSARY

THE ART OF TROUBLESHOOTING



GRAMPAW PETTIBONE *Award*

Grampaw Pettibone is the famous curmudgeon 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 of 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 at Training Wing FIVE. He created presentations for the quarterly Safety Days and notably, designed a flyer outlining near midair collision 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 FY23, 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 FY23, 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 flew and fly in defense of our nation. The award is presented each year to the controlling custodian that contributed the most toward readiness and economy of operations through safety.

4th Marine Aircraft Wing
4th Marine Aircraft Wing 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.

The Admiral James S. Russell Naval Aviation Flight Safety Award stands on display. (U.S. Marine Corps photo by Casey Price)

ADMIRAL FLATLEY MEMORIAL AWARD

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

USS George 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 after 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 CVN-77 and 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 CVN-77 and CVW-7 personnel who exhibited exceptional technical skill and outstanding sea and airmanship.

(Continued on page 31)

From the Maintenance Officer

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 affecting 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 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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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.

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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)

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In This Issue

IS YOUR CELLPHONE DANGEROUS?

By Senior Chief Aviation Ordnanceman Niels Mygind

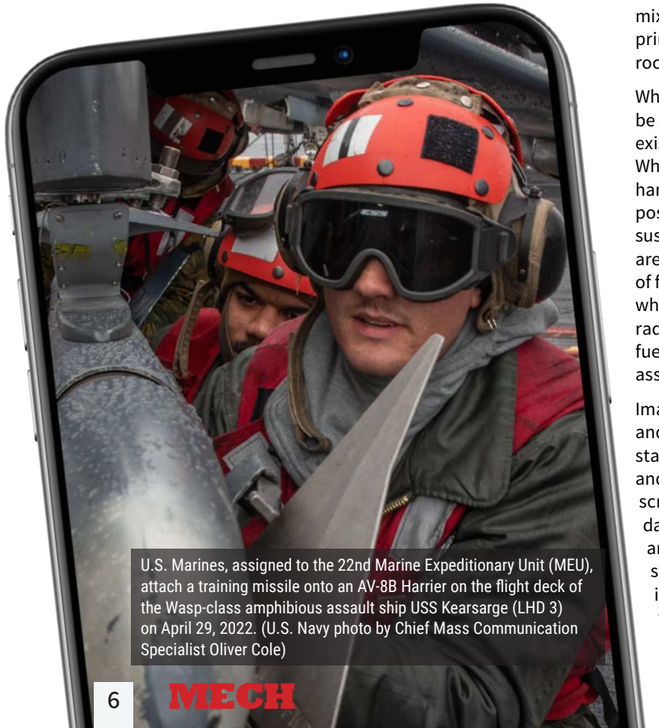
Cellphones are a vital part of our lives and have become our primary communication and information source. However, do cellphones present safety risks to people and equipment?

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, taking cellphones anywhere near the aircraft while conducting maintenance 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 produce static electricity and while they may not have caused an aircraft fire yet, that does not mean they can't or won't. Fuel vapors ignite easily, so aviation personnel should not use a cellphone while fueling or working around open fuel cells.
- ***Ordnance*** – Cellphones emit low levels of radio frequencies. Never transmit radio or cellphone signals near ordnance. Many types of ordnance contain electro-explosive devices (EED) (see Figure 1) and radio or cellphone signals can easily activate the EEDs.



U.S. Marines, assigned to the 22nd Marine Expeditionary Unit (MEU), attach a training missile onto an AV-8B Harrier on the flight deck of the Wasp-class amphibious assault ship USS Kearsarge (LHD 3) on April 29, 2022. (U.S. Navy photo by Chief Mass Communication Specialist Oliver Cole)

- ***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 and magazines. Phones are electronic devices and produce invisible pulses of electromagnetic energy, or radiation when electric current is present. Radiation may be present in different frequencies or wavelengths. Depending on the power or intensity of that radiation, it can interfere with or cause ammunition items or systems to function prematurely or operate erratically, resulting in a potential catastrophe.

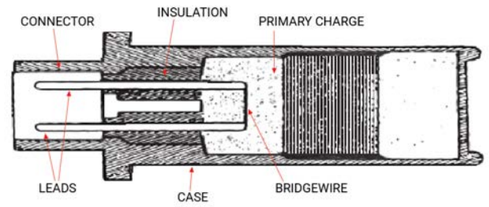


Figure 1. Parts of an electro-explosive devices.

For EEDs, voltage comes in one lead (see Figure 1), passes across the bridgewire and out the other lead. When this energy transfer occurs, the current causes the bridge wire to heat up inside a very sensitive explosive mixture – 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 gas, aviation gas and possibly JP-8 fuel. Marine diesel fuels and JP-5 have extremely low susceptibility to electromagnetic radiation since their vapor pressures are low enough that, under ordinary temperatures, there is no chance of fire from an arc induced by radio frequency (RF). The flash-point at which these volatile fuels are considered hazardous when exposed to RF radiation is 140 degrees Fahrenheit and below. If the flash-point of the fuel in use is unknown, personnel must err on the side of caution and assume the flash-point to be 140 degrees Fahrenheit or less.

Imagine all the obstacles and risks we dodge daily, both in the hangar and on the flight line – risks such as tie-down chains, radomes, horizontal stabilizers wings, flaps, pylons, support equipment trailers, power cables and countless other objects. Now, imagine doing this while texting, scrolling through social media or trying to play the latest game. From day one, aviation personnel are taught to keep their head on a swivel and pay attention to their surroundings. That is hard to do when swiping or texting on a cellphone. The flight line or flight deck is already a hazardous place to work; why make it more dangerous with the 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.

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 work center, personnel must wear 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 referenced in OPNAV Instruction 5100.19F, FOD is "any article or object which may be disturbed by the wind across the flight deck or rotor wash and may cause damage to personnel, aircraft or equipment."

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 off aircraft, bird strikes and weather disturbances. As with many other maintenances programs in the Navy, the reason we have programs like the FOD program, as required by CNAFINST 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 550 FOD-related incidents resulting in over $354 million in associated aircraft damages. The below table shows a breakdown of each hazard damage classification and total associated costs.

DAMAGE CLASSIFICATION	NUMBER OF EVENTS	COST
A	8	$307,136,524
B	18	$16,673,479
C	76	$16,322,845
D	34	$766,776
E	83	$322,973
HAZREP	328	$13,210,446

FOD is an all-hands issue that requiring 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 evolution 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 as safely 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 evolutions. 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 around 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 housekeeping should be treated like any other part of the maintenance evolution. Encourage technicians and aviation support personnel to clean as they work and ensure work areas are clean and neat throughout maintenance evolutions.

Training

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. That training continues 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 hundreds 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)

ESD PROTECTION

WEAPONS-REPLACEABLE ASSEMBLIES & SHOP-REPLACEABLE ASSEMBLIES

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 weapon replaceable assemblies (WRA) and support shop-replaceable assemblies (SRA) 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 discharge, 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 or latent failures, resulting in malfunctioning or completely non-functional equipment. Damage to ESD-sensitive components may occur at 10 volts or less. Given the Navys' 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. Aircraft are complex systems that house a multitude of electronic systems in confined spaces, creating a breeding ground for static buildup. 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 differences 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 Reediness Center Mid-Atlantic, installs electrostatic discharge tape on a weapons replaceable assembly, Sept. 22, 2023. (U.S. Marine Corps photo by Master Gunnery Sgt. Jerod Williams)

Humidity Control: Controlling humidity levels within equipment compartments is a strategy used to reduce the likelihood of ESD events. Higher humidity levels can help dissipate static charges and make it more challenging for static buildup to occur.

For example:

Event	*Work space w/ 10% to 20 % humidity produces*	*Work space w/ 65% to 90% humidity produces*
Walking across carpet	35,000 volts	1,500 volts
Picking up a common poly bag	20,000 volts	1,200 volts
Walking over across vinyl floor	12,000 volts	600 volts
Picking up a vinyl envelope	7,000 volts	450 volts
Sitting on a work bench	6,000 volts	100 volts

ESD Control Materials and Equipment: Using ESD control materials such as dissipative mats, wrist straps and antistatic bags is standard practice when handling WRAs and SRAs. These materials help route static charges away from sensitive components and personnel.

PROPER ESD GRID TAPE APPLICATION

During many Naval Safety Command assessments, ESD grid tape has been the most widely used method across the fleet for ESD protection. Unfortunately, there is no instruction or guidance on applying ESD grid tape. The only provision is the tape should fully protect the connector to which it is adhered. Many times, Sailors and Marines do not apply the ESD grid tape in a manner that sufficiently protects the component it is applied to. The Air System Electromagnetic Interference, Corrective Action Program (ASEMICAP) released the article "ESD Grid Tape", in the December 2016, Vol. 15, Issue 2 and covers the preferred way to apply ESD grid tape. The article and the latest news from ASEMICAP is available at https://asemicap.navair.navy.mil, which requires a common access card and account creation.

According to the December 2016 ASEMICAP Newsletter:

> "ESD grid tape has an adhesive on the back. If that adhesive gets on the surface of the pins or into the connector it can lead to "Micro FOD" or electrical shorting issues. So, if you are using ESD grid tape, we ask you to take extra precaution when removing the ESD grid tape to make sure the pins and internal area of the connector are clean and FOD free. If ESD grid tape is to be used, ASEMICAP highly recommends placing a single run of the ESD grid tape, if possible, flat over the face of the connector with the ends running down both sides of the connector then secure it there. Place another single run of the ESD grid tape wrapped around the circumference of the connector and then fold it in on itself, if required (see Figure 2).
>
> We have also noted some personnel have the ESD grid tape wrapped around the side of the connector and then adhered to itself or twisted together at the top forming a sort of cone over the connector. We have found that when using this method due to the ESD grid tape's propensity to slough off the adhesive when exposed to environment, the ESD grid tape will open up at the top and expose the connector to any undesirable static charges. This opening also leaves a greater possibility the remaining adhesive will be exposed to the environment and slough off onto the pins or connector itself. With those factors in mind, ASEMICAP does not recommend the method in Figure 1., the method shown in Figure 2 will allow the entire connector to remain covered and therefore provide less of a chance of adhesive sloughing or exposure to charges."

The Navy and Marine Corps face unique challenges in safeguarding WRAs and SRAs from the detrimental effects of ESD. Recognizing the potential risks posed by ESD events and their potential impact on operational readiness, the Navy and Marine Corps have adopted comprehensive strategies to mitigate ESD risks. Through a combination of design considerations, education, grounding techniques, humidity control, ESD control materials and rigorous testing, the Navy and Marine Corps are committed to maintaining the integrity of their electronic assets in the face of a dynamic and highly challenging environment. By ensuring ESD protection for WRAs and SRAs, military entities continue to enhance their operational capabilities and maintain their technological edge in today's complex maritime landscape.

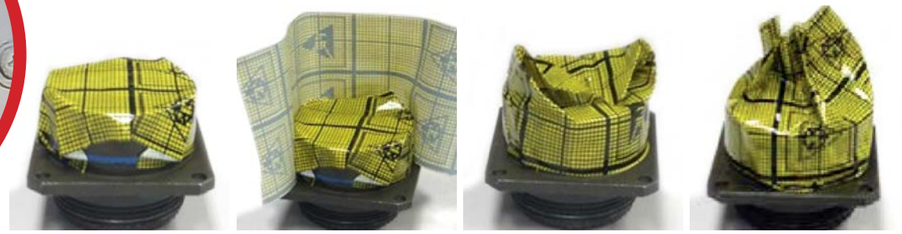


Figure 1. Incorrectly installed ESD tape. Figure 2. The four steps to correctly wrap ESD tape to keep the interior clean and FOD-free.
(Left: U.S. Marine Corps photo by Master Gunnery Sgt. Jerod Williams, Right: Four photos courtesy of ASEMICAP Newsletter)

Incident Impacts on Maintenance

CAUSES | CONSEQUENCES | SOURCES

By Master Chief Aviation Maintenance Administrationman 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 maintenance 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. Broadly categorized, 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 or maintenance procedures, leading to oversights, incorrect installations or inadequate repairs. Such errors may result in aviation incidents, as observed in various mishap and hazard reports.
- ***Inadequate Training*** - Maintenance technicians must receive thorough training and stay up to date with evolving aircraft technology. Insufficient training can lead to errors in diagnosing problems, selecting appropriate maintenance procedures and executing repairs, ultimately contributing to aviation incidents.
- ***Communication Breakdown*** - Miscommunication between maintenance personnel and other stakeholders, such as pilots, aircrew or maintenance control chiefs, can lead to misunderstandings or incomplete information regarding aircraft status. These communication breakdowns can have dire consequences.
- ***Regulatory Compliance*** - Failure to adhere to stringent aviation regulations and standards can result in aviation incidents. Maintenance organizations must follow established guidelines to ensure aircraft airworthiness.
- ***Tool and Equipment Malfunction*** - Defective or poorly maintained tools and equipment used during maintenance procedures can lead to errors and accidents. Routine tool inspection and maintenance are crucial to preventing incidents.

CONSEQUENCES OF AVIATION INCIDENTS DUE TO MAINTENANCE

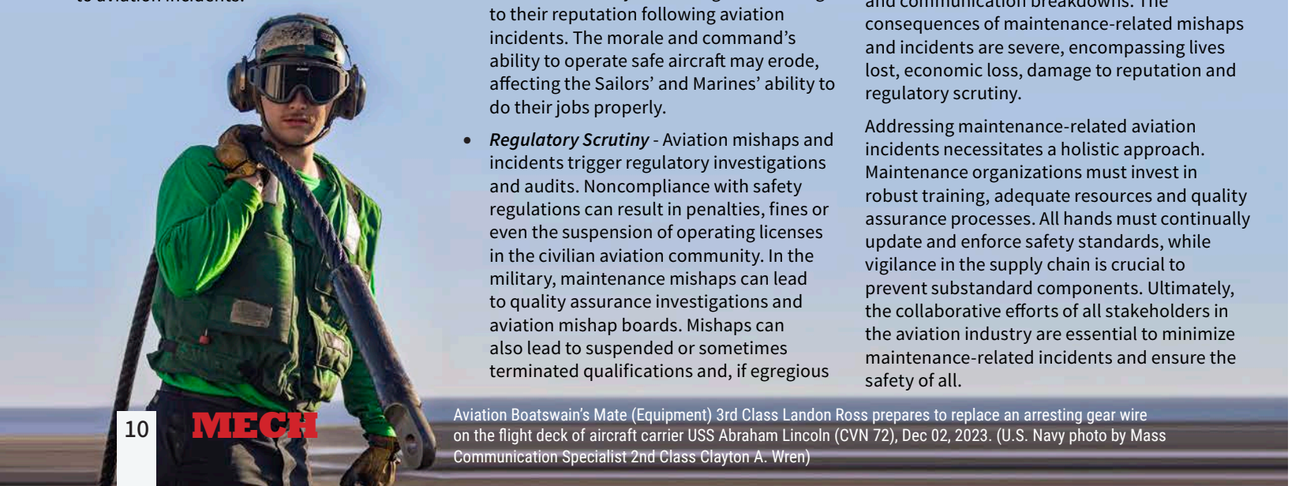
- ***Loss of Lives*** - Aviation mishaps stemming from maintenance issues can lead to loss of lives among crew members and even maintenance personnel involved in the process.
- ***Economic Impact*** - Aviation accidents result in substantial financial losses for the naval aviation enterprise as a whole. These incidents also take needed weapons systems and people out of the fight when there is great political unrest around the world. The majority of these incidents and mishaps also pull critical resources, i.e., depot repair artisans and parts, to effect priority repairs for a mishap that was preventable in most cases.
- ***Damage to Reputation*** - Maintenance communities may suffer long-term damage to their reputation following aviation incidents. The morale and command's ability to operate safe aircraft may erode, affecting the Sailors' and Marines' ability to do their jobs properly.
- ***Regulatory Scrutiny*** - Aviation mishaps and incidents trigger regulatory investigations and audits. Noncompliance with safety regulations can result in penalties, fines or even the suspension of operating licenses in the civilian aviation community. In the military, maintenance mishaps can lead to quality assurance investigations and aviation mishap boards. Mishaps can also lead to suspended or sometimes terminated qualifications and, if egregious enough, personnel involved in the mishap could be charged with offenses within the Uniform Code of Military Justice.

SOURCES OF MAINTENANCE-RELATED AVIATION INCIDENTS

- ***Inadequate Resources*** - Some maintenance organizations may cut corners to reduce costs, leading to inadequate staffing, subpar training or insufficient maintenance budgets. Such resource limitations can compromise safety.
- ***Time Pressure*** - The aviation industry is time-sensitive and aircraft turnaround times are crucial. Rushed maintenance tasks may increase the likelihood of errors. Perceived pressure to return aircraft to service quickly can contribute to maintenance-related incidents.
- ***Aging Aircraft*** - Older aircraft require more frequent and extensive maintenance due to wear and tear. Inadequate maintenance of aging aircraft can lead to incidents, as seen in cases of structural failures and systems malfunctions.
- ***Supply Chain Issues*** - Dependence on a global supply chain for aircraft components and parts means that delays or substandard replacements can affect maintenance quality. Counterfeit or substandard parts pose significant risks.
- ***Regulatory Challenges*** - Evolving regulations and standards can create challenges for maintenance organizations trying to remain compliant. Ensuring maintenance procedures align with changing regulations is crucial.

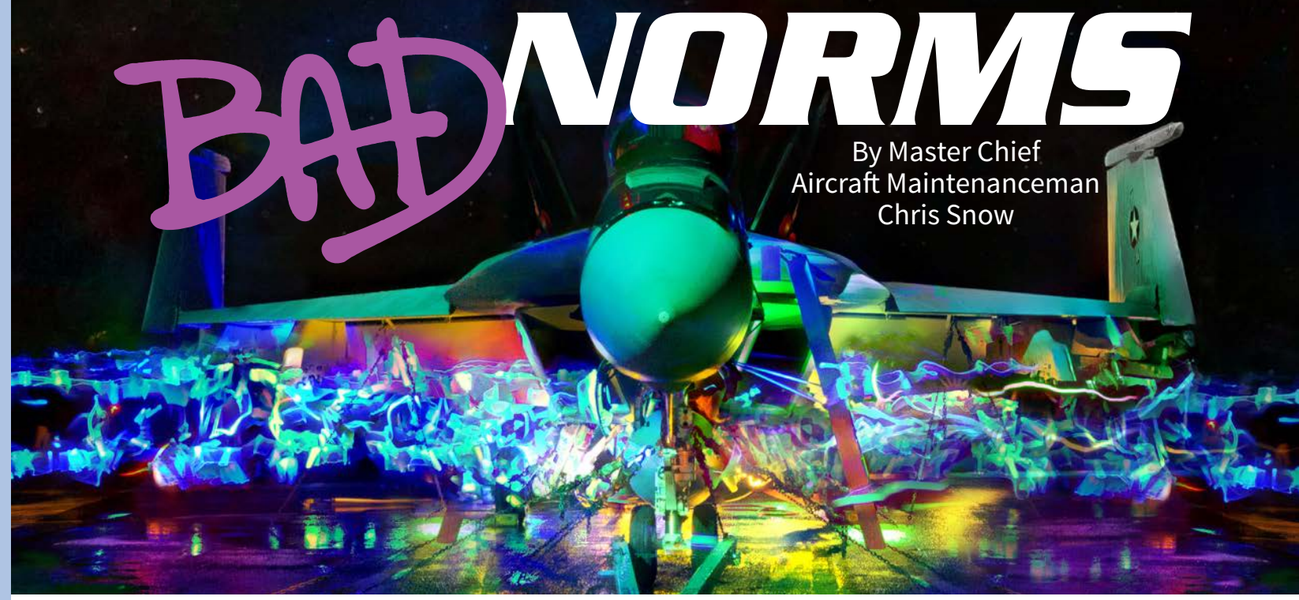
Maintenance is an indispensable aspect of aviation safety. Its impact on aviation incidents is profound, with causes ranging from human error to inadequate training and communication breakdowns. The consequences of maintenance-related mishaps and incidents are severe, encompassing lives lost, economic loss, damage to reputation and regulatory scrutiny.

Addressing maintenance-related aviation incidents necessitates a holistic approach. Maintenance organizations must invest in robust training, adequate resources and quality assurance processes. All hands must continually update and enforce safety standards, while vigilance in the supply chain is crucial to prevent substandard components. Ultimately, the collaborative efforts of all stakeholders in the aviation industry are essential to minimize maintenance-related incidents and ensure the safety of all.



Aviation Boatswain's Mate (Equipment) 3rd Class Landon Ross prepares to replace an arresting gear wire on the flight deck of aircraft carrier USS Abraham Lincoln (CVN 72), Dec 02, 2023. (U.S. Navy photo by Mass Communication Specialist 2nd Class Clayton A. Wren)

Sailors assigned to the "Blacklions" of Strike Fighter Squadron (VFA) 213 perform routine maintenance on an F/A-18F Super Hornet on the flight deck of aircraft carrier USS Gerald R. Ford (CVN 78), Oct. 16, 2023. The photo illustration includes 27 long-exposure images of Sailors conducting routine maintenance on an F/A-18F Super Hornet, stacked and rendered using photoshop techniques. The artificial sky was also created using photoshop techniques. (U.S. Navy photo illustration by Mass Communication Specialist 2nd Class Nolan Pennington)



BAD NORMS

By Master Chief Aircraft Maintenanceman Chris Snow

Aviation maintenance is a critical aspect of aviation safety. Safe operation of Navy aircraft depends heavily on maintenance practices and procedures carried out. However, there are certain "bad" norms in aviation maintenance that compromise the safety of the aircraft, pilots and aircrew.

BAD: SPEED OVER QUALITY

In the aviation industry, time is 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 miss 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.

BAD: COMPLACENCY

After performing the same tasks repeatedly, maintenance personnel can become complacent and overlook potential hazards. This complacency can result in critical maintenance tasks being skipped or not performed correctly, leading to potentially dangerous situations. Complacency can be a significant problem, particularly when maintenance personnel repeatedly work on the same aircraft. As a result, it's crucial to maintain a high level of awareness and ensure maintenance tasks are performed consistently and to the highest standard, regardless of how familiar maintenance personnel are with the aircraft.

BAD: INADEQUATE TRAINING

Navy and Marine Corps aviation is heavily regulated and maintenance personnel must receive adequate training to ensure they are competent to perform maintenance tasks. However, in some cases, maintenance personnel may not receive the appropriate training required to carry out certain tasks and can lead to performing tasks they are not qualified to complete, potentially resulting in safety hazards. Furthermore, inadequate training can lead to maintenance personnel being unaware of changes to maintenance publications or procedures, leading to noncompliance and potential safety hazards.

BAD: 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, safety concerns or potential hazards. Communication breakdowns can also create an environment where maintenance personnel are afraid to report issues, leading to potential safety hazards going unreported.

BAD: 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 prioritizing 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 emphasizes the importance of training and competency, ensuring maintenance personnel are adequately trained and qualified to perform maintenance tasks safely. In addition to ensuring personnel are 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.

New Cranials for Aviation Maintenance, Shipboard Deck Crew

By Gunnery Sgt. Alex Thomason

Navy and Marine Corps leadership says our greatest warfighting asset is our people - the Sailors, Marines and civilians. Yet, while we invest many millions of dollars on multiple modern aircraft, aircraft maintenance personnel working on those aircraft receive 1960s-era personal protective equipment (PPE). The risk of injury from falling off aircraft, tools or falling parts, impact bumps, abrasions, bruises, contusions, lacerations and other injuries incurred during aircraft maintenance are well-known, but unfortunately, less reported and documented. Modern and effective PPE is shelf-ready.

A CRANIAL IS NOT FALL PROTECTION. In the event of a fall, cranials do not prevent a person from contacting a lower level or object, which is the official purpose of fall protection. Although they do not prevent a person from falling, they do provide an additional layer to reduce serious injury to the head. Unfortunately, the inadequacies of the three-piece Head Gear Unit Number 24/25 (HGU24/25) cranial, which entered service in the 1960s, have gone unchanged for over 60 years. Throughout the years, upgrades have improved the cranial's effectiveness; however, the technology has reached its limit of hearing loss prevention from exposure to increased noise levels produced by modern aircraft and amphibious-capable platforms.

For head protection, the advanced cranial prototypes attenuate a significantly greater amount of impact energy comparable to that of a hardhat. The Head Gear Unit Number 98/Personal (HGU-98/P) and the Head Gear Unit Number 99/Personal (HGU-99/P) are the newest introduction to head and hearing protection helmets. The naval aircrew systems program office (PMA-202) has developed and fielded new headgear, known as the HGU-98/P, which improves 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 fleet 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 stiffer and more protective at high-impact speeds. The open-cell foam feature makes for a highly protective product that is also comfortable to wear even over 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, white, 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 Services Administration. Naval Supply Systems Command is working with the Defense Logistics Agency to get the helmet and its parts into the supply system for sustainment. The communication variant is currently being assessed and tested.

U.S. Marine Corps Cpl. Anthony Collier, a flight equipment technician with Marine Medium Tiltrotor Squadron (VMM) 161, Marine Aircraft Group 16, 3rd Marine Aircraft Wing (MAW), performs maintenance on an MV-22B Osprey on Naval Air Station Key West, Florida, Jan. 31, 2023. (U.S. Marine Corps photo by Lance Cpl. Daniel Childs)

Reference to commercial products does not imply Department of the Navy endorsement.

"The HGU-98/P provides improved impact protection and increased hearing protection, which are long overdue improvements that our maintainers deserve," said Capt. Carey Castelein, PMA-202 program manager.

The HGU-99/P is also known as the hearing protection helmet (HPH). Manufactured by Creare, it improves on the existing three-piece cranial by providing greatly increased hearing protection, ANSI Z89 hard hat protection and communication interfaces to a variety of radios, aircraft intercoms and other shipboard communication systems. Given the high level of sound attenuation provided by the helmet, the manufacturer is adding a face-to-face communication capability to its HPH helmet to enable deck crew members to communicate with each other without having to remove their hearing protection. By improving head protection, hearing protection and communications, this new helmet will contribute to improved user safety and health while helping the deck crew maintain their high effectiveness and operational tempo despite the extremely challenging environment. Avoiding hearing loss and tinnitus improves quality of life. PMA-202 testing is complete and a contract has been awarded. The HGU-99 is currently being fielded to CVN, LHS, F018 and F-35 units. PMA-202 and the team responsible for fielding the HGU-99/P requested to issue the original equipment manufacturer training materials via commercial off-the-shelf means through Naval Air Systems Command 13-1-6.7-6-1 to speed up delivery to the fleet. Those materials are now available on Naval Air Technical Data and Engineering Services Command for viewing.

Inspection, storage, care and maintenance of fall protection equipment and all PPE are crucial to their longevity and to properly protect users while on the job site. With new gear comes new maintenance procedures. Gear users must check each publication for guidance, checklists and specific requirements.

Squadrons that began receiving the HGU-98/P flight deck helmet system in October 2022 have given favorable feedback. Fielding to aviation units will continue until all units have received them. Afloat assessments are now underway and if all goes well, anticipate procurement in 2024.

New Head Gear Unit Number 99/Personal (HGU-99/P) on display for Marine Medium Tiltrotor Squadron 162 (VMM-162) in early 2024. (U.S. Marine Corps photo by Gunnery Sgt. Christopher Stamps)

AIRCRAFT CONFINED SPACE

By Senior Chief Aviation Machinist's Mate Anil Ramdeen

An aircraft confined space is described as a space large enough and configured such that an employee can "bodily enter" – from the top of the head to the bottom of the feet, but has limited or restricted means for entry or exit. Additionally, the space is not designed for continuous employee occupancy. Confined space examples include: tanks, vessel voids, silos, storage bins, hoppers, vaults and pits. There are risks to personnel safety and health, as well as risk of damage to aircraft and equipment, while performing maintenance within aircraft fuel cells and tanks, to include internal bladder fuel cells and external fuel tanks. In this article, we will explore the risks aircraft confined spaces pose and discuss strategies to mitigate these risks.

Within the vast and complex world of aviation, there are many aspects that demand our attention; one of which is confined space within aircraft. These compact areas present challenges and potential risks to both personnel and equipment. Understanding the hazards associated with these confined spaces is crucial for ensuring the safety of aviation professionals, the integrity of the aircraft, and in some cases, the safety of the aircraft maintenance hangar, i.e., fire or explosion prevention.

Limited Mobility and Ergonomic Challenges: Limited mobility is one of the primary risks in aircraft confined spaces. Maintenance technicians often find themselves working in tight areas, making it difficult to maneuver. This restricted movement can lead to ergonomic challenges like awkward body positions and excessive strain on muscles and joints. Prolonged exposure to such conditions may result in musculoskeletal disorders and long-term health issues.

Hazardous Substances: Another concern with confined spaces is the presence of hazardous substances. In certain aircraft compartments, maintenance personnel may be exposed to toxic chemicals, fuel vapors, hazardous fluids and other harmful substances. Poor ventilation exacerbates the risks associated with such exposures, potentially leading to respiratory ailments and other health complications.

To safeguard against these hazards, stringent safety protocols must be put in place and followed. Supervisors should ensure personnel have the appropriate personal protective equipment, including respirators, gloves and eye protection. Implementing effective ventilation systems and regularly monitoring air quality are essential steps to mitigate risks associated with confined spaces.

Electrical and Fire Hazards: Aircraft confined spaces often house critical electrical systems and wiring that may pose a significant risk to personnel and equipment. The potential for electrical shock and short circuits is heightened in these tight spaces, especially during maintenance or repair work. Additionally, the presence of flammable materials, combined with limited ventilation, increases the risk of explosion or fire incidents.

To minimize the dangers associated with electrical, explosion and fire hazards, strict adherence to safety protocols is paramount. Regular inspections, proper grounding procedures and effective fire suppression systems should be implemented. Adequate training and awareness programs should also be in place to ensure personnel have the knowledge and skills to handle electrical, explosion and fire risks within confined spaces.

Equipment Damage and Accessibility: The equipment and components within aircraft confined spaces are also susceptible to damage. The close proximity of equipment and limited workspaces increase the likelihood of accidental bumps, drops and collisions. Delicate instruments, control panels and wiring harnesses 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 monitoring workers in confined spaces. Developing and adhering to standardized operating procedures can minimize accidental damage. Implementing protective measures, such as padding or barriers around sensitive equipment, may further safeguard against potential harm.

Confined spaces within aircraft pose distinct hazards to both personnel and equipment. Through risk recognition and safety protocol application, aviation experts can effectively reduce the dangers associated with confined spaces. By making safety a top priority, the aviation community will prosper, ensure the welfare of its workforce and the dependability of its aircraft.

PRE-OP CHECKS

LIFE-SAVING | MISSION-CRITICAL | NECESSARY

By Senior Chief Aircrew Survival Equipmentman William Morgan

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 ripple 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 is 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 falters 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 retrain, 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.

Naval Air Crewman 2nd Class Jeremy Hunt performs preflight checks on the tail of an aircraft on the flight deck of the aircraft carrier USS Nimitz (CVN 68). (U.S. Navy photo by Mass Communication Specialist 2nd Class Samuel Osborn)

TROUBLE SHOOTING
A LOST ART

By Staff Sgt. Michael Kelly

As 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 trouble-shooting process?

This article aims to prompt unit maintenance leaders, quality assurance representatives (QARs), collateral duty QARs (CDQARs) and collateral duty inspectors (CDI) to contemplate why so many junior Marines and Sailors are losing their ability to troubleshoot aircraft. As an airframer, I often 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, CDQARs 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, CDQARs and CDIs to share what they learn with all relevant personnel within the squadron. Even when working on 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.

U.S. Marine Corps Sgt. Suraj Jadav, left, an aircraft electrical systems technician and Sgt. Dominic Bilotta, a fixed-wing airframe mechanic, both with Marine Fighter Attack Squadron (VMFA) 232, troubleshoot flight controls during the Nyutabaru Aviation Training Relocation (ATR) at Japan Air Self-Defense Force (JASDF) Nyutabaru Air Base, Japan, Dec. 18, 2023. (U.S. Marine Corps photo by Cpl. Raymond Tong)

Aviation Maintenance Administration

Ensuring Operational Readiness

By Staff 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. Naval Safety Command (NAVSAFECOM) subject matter experts (SME) have recorded instances when maintenance intervals haven't been set correctly, aircraft operated beyond their inspection tolerance allowance, schedules weren't set 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.
- ***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 can't be overstated. NAVSAFECOM assessors have noted numerous occasions when lack of attention to detail in record keeping has allowed critical safety of flight components to be overflown, or the incorrect record and tasks applied to the wrong aircraft, exceeding the technical directive compliance.
- ***Parts Inventory Management*** - Aviation maintenance relies on a vast inventory of spare parts and equipment. Maintaining an organized and efficient parts management system is essential to ensure the right parts are available when needed. This minimizes delays and maximizes aircraft availability.
- ***Personnel Training*** - Well-trained maintenance personnel are crucial to the success of any aviation maintenance program. 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 (SE) records are accurate. NAVSAFECOM assessors often 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.

Capt. Pete Riebe, left, commanding officer of the aircraft carrier USS Abraham Lincoln (CVN 72), recognizes Abraham Lincoln leadership award winner Chief Aviation Maintenance Administrationman Akesiu Tafuna, on Naval Air Station North Island, California, May 25, 2023. (U.S. Navy photo by Mass Communication Specialist Seaman Apprentice Christian Kibler)

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 maintenance activities. QA representatives and programs aim to identify and rectify potentially small issues before they become significant. QA is always working to ensure maintenance work meets established standards and is performed in the most efficient and safe manner. Ensuring quality maintenance is conducted and quality maintenance programs are supported can't be done solely from within the QA work center. NAVSAFECOM SMEs often observe understaffed QA work centers, quality assurance representatives (QARs) who aren't fully aware of their responsibilities and QA work centers not tracking negative trends, nor familiar with effective ways to conduct trend analysis. NAVSAFECOM SMEs also often find QARs congregate in the QA work center vice where the work is being conducted and often depending on production, collateral duty QARs (CDQAR) and collateral duty inspectors (CDIs) to fulfill the QA work center role in the hangar and on the flight line. There's a requirement for a QA work center with dedicated billets at each aviation unit for a reason; there must be highly experienced technicians with a non-production mindset, vice an "I have to get this discrepancy corrected yesterday" mindset, which typically leads to tunnel vision instead of an overall safety and quality view.

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, central 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 don't assess well during 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, all of which are crucial in identifying and addressing issues promptly. Inspection instructions, cards and publications exist for a reason and must be followed line-by-line to ensure critical steps are completed. NAVSAFECOM SMEs often 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 nearby as well.
- ***Regulatory Compliance*** - Aviation, whether military or civilian, is highly regulated and strict adherence to these regulations is essential. Maintenance administration must ensure all work complies with federal and military aviation regulations within their scope of responsibilities. Examples include maintenance data recording, technical directive compliance, correct inspection compliance, aircraft and engine component record maintenance.

Aviation Maintenance Administrationman 3rd Class Norvohnne Gray organizes supply paperwork on the aircraft carrier USS George H.W. Bush (CVN 77), March 26, 2023. (U.S. Navy photo by Mass Communication Specialist Seaman Sasha Ambrose)

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 aviation 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

Aviation Structural Mechanic Airman Alexzandra Thompson, conducts maintenance on an MH-60R Sea Hawk in aircraft carrier USS Gerald R. Ford's (CVN 78) hangar bay, May 5, 2023. (U.S. Navy photo by Mass Communication Specialist 2nd Class Nolan Pennington)

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. Personnel 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 levels to avoid putting the mission, our fellow Sailors and Marines, civilian counterparts and ourselves at risk.

The Navy Safety and Occupational Health (SOH) manual, OPNAV Manual (M)-5100.23, 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 those 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.) and their source descriptions
- Existing controls (safety controls, fall protection, personal protective equipment (PPE), etc.)

INITIAL IH SURVEYS, PERIODIC INDUSTRIAL HYGIENE SURVEYS AND COMMAND HAZARD CATEGORIES

Every unit receives an initial IH survey followed by PIHS. Based upon assessment and exposure criteria, commands may see shop-specific supplements to PIHS. Periodicity of surveys can change based on command hazard categories. Category I (CAT I) PIHS include Priority 1 shops which require annual evaluations. CAT II PIHS include Priority 2 shop evaluations every two years for shore commands and every three years for afloat commands. CAT III PIHS include all Priority 3 shop evaluations occurring every four years. The IH Field Operational Manual (IHFOM) defines command hazard categories and frequency of periodicity assessments in Appendix 2-C. For example, aviation squadrons are defined as CAT II (moderate hazard) and require two-year assessments command-wide with Priority 1 shops evaluated annually. However, if workplace conditions change, such as the squadron operates or maintains a new type-model-series aircraft, there is a process change, or change to the hazardous material used, then an update to the survey is required to monitor and reassess employee exposures.

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 hazardous exposures. Naval Safety Command (NAVSAFECOM) assessors validate the currency of a unit's PIHS report during local area assessments (LAA). On a LAA conducted overseas, NAVSAFECOM assessors identified local IH Surveys specific to the hangar or facility being utilized, were not posted in work center spaces. Why is this report important? One example is because the PIHS conducts Occupational Safety and Health Administration (OSHA) compliance exposure monitoring outlined in the PIHS exposure monitoring plan for specific stressors expected to exceed an action level or occupational exposure limit (OEL). The Navy primarily uses OSHA permissible exposure limits and Navy developed or adopted OELS. When both the Navy and OSHA have standards applicable to a given situation, the more stringent of the two will be used.

Unit commanding officers or designated personnel should perform frequent walk-throughs to ensure work center personnel are taking the necessary safety precautions (e.g., using the control strategies required in the PIHS, local exhaust ventilation, paint spray booths, PPE) to reduce exposure. Whether exposed during hot work, applying two-part primer or top coat, paint and corrosion removal particulates, aircraft noise, or respiratory sensitizers (e.g., chromium (VI), isocyanates), etc., we have a duty to each other to optimize safety and eliminate the risks. Personnel should report deficiencies in accomplishing a safe and hazardous-free workplace to the appropriate program managers and document in the Risk Management Information (RMI) reporting system.

HAZARDOUS WORKPLACE CONDITIONS BEYOND THE UNIT, WING OR TYCOM

On a recent LAA conducted overseas, NAVSAFECOM assessors visited aviation unit detachments and identified that local IH surveys specific to the hangar or facility being used were not performed nor posted in work center spaces. Per the IH filed operations manual, Chapter 2, Para 3(a)(8), "detachments will receive their IH support 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 IHPO 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 home guard IH surveys instead. Hazardous conditions not reported or assessed, combined with high rotation rates with no follow-up or accountability, results in unsafe and unhealthy work environments. As part of the command risk assessment process, the PIHS is a tool when developing written compliance and exposure control programs to prevent harmful employee exposures hazards. Examples of written program requirements are found in the OSHA specific substance standards. Table 8-1 of OPNAV M-5100.23 lists General Industry requirements. Commands must evaluate hazard controls and medical surveillance program requirements 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 them more vulnerable to injury. Hazardous communication training teaches employees how to identify hazardous materials and what can happen when safety precautions are not followed.

SELF-ASSESS AND TAKE AN IN-DEPTH LOOK

An important process in effective safety management is ongoing assessments of hazards following identification. The initial IH survey report and follow-on periodicity reports submitted to units can help identify unsafe and unhealthy hazard trends, areas of concern that haven't been remedied and a deep dive into survey recommendations that may or may not match up to our ever-changing acquisition of warfighting weapons systems. All units are encouraged to review their workspace IH surveys, local safety policies and instructions (such as respiratory protection and medical surveillance) and validate them. Anyone can provide change recommendations to the Enlisted Safety Committee meetings, to safety department representatives 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 RMI process.

Preparing for Explosive-Handling Evolutions

By Gunnery Sgt. Samuel Lee

Ordnance handling evolutions are inherently dangerous. Combined with the hazards we face on the flight line and flight deck, it is even more important to follow proper procedures during ordnance handling evolutions. From loading to downloading, arming to de-arming, buildup, breakdown and even movement, handling procedures exist to keep ourselves and everyone else in the area safe.

The NAVAIR 00-80T-103 is one of the references laying out particular safety instructions when it comes to handling ordnance. Ordnance crews must consider a few critical points when preparing to handle ordnance:

- ***Weather***: Adverse weather conditions of all types can affect safety during ordnance operations. In situations with sustained gale force high winds, lightning within 10 miles or severe storm systems, all ordnance handling evolutions should cease. Refer to NAVAIR 00-80T-103 for exceptions and procedures. Adverse weather does not only affect the physical ordnance evolution. Consideration for personnel well-being needs to be among the top priorities when preparing for an evolution. Adverse weather can have physical and mental effects on personnel. If someone on your team is feeling miserable or apprehensive due to the current conditions, i.e., seasickness, head cold, runny nose or anxiety triggered by adverse weather, then their mental state may not be capable of working through the challenges present while handling explosives. Ensure your team is dressed properly for conditions and have plenty of water regardless of outside temperature.
- ***Pre-evolution brief***: The assigned team leader should give a pre-evolution brief to the team, which should include types of munitions being handled, loaded, armed etc., times and aircraft. The team leader should also assign jobs commensurate to personnel qualifications to ensure everyone knows their roles and responsibilities during the evolutions. As always, safety and sound risk management must be briefed with an emphasis and assurance anyone can stop the evolution if they believe there is a safety concern. Any leader should want the evolution to be stopped – even if there is nothing wrong – rather than team members being afraid to speak up and if there is an actual issue, risking injury to personnel or damage to equipment. If a team member was mistaken, then that should be used as a teachable moment rather than chastise them for erring on the side of safety.
- ***Communication***: Once the weather is acceptable and the team has been formed and briefed, the team leader needs to communicate with maintenance and production control (MC/PC) with the team's intent. Whether loading aircraft, building up munitions and flare dispensers, performing a ready service locker inventory or just moving munitions, ordnance team leads must communicate with MC/PC. Informing MC/PC of the team's intent covers multiple risk and quality management aspects. Depending on the task, there may be restrictions on communication devices.

  Informing MC/PC allows them to know what the team will be doing, the proposed workflow and where ordnance team leads and teams will be in case the event MC/PC needs to contact someone from the team. In addition, communicating with MC/PC before starting a task will let the team lead know if 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 will ensure nothing changed with the aircraft. Anyone who has been in the ordnance community for a while knows that just because an aircraft was signed off and ready to be loaded does not mean it is still ready to be loaded; things can change. Maintenance and turn-around inspections happen between aircraft daily and things such as a missed step on an inspection, a misplaced tool or a tire losing pressure can affect aircraft readiness.

  The best thing ordnance teams can do is verify with MC before going out to the aircraft. This way, if the team is called on the radio to stop and download so munitions can be loaded on a different aircraft, the ordnance team leader did everything possible to prevent the extra work. Once the ordnance crew is prepared, briefed and has communicated with MC/PC, the crew can head out to perform the assigned evolution.

No ordnance evolution should ever be taken lightly. Ordnance teams should always be properly briefed and prepared, have the necessary publications and instructions and ensure everyone understands their role regardless of the evolution type, i.e., transport, buildup, breakdown, loading, etc. There is no room for carelessness or complacency, as lives are at stake during every evolution.

Cpl. Wayne Shrock, aviation ordnance technician with Marine Light Attack Helicopter Squadron (HMLA) 267, Marine Aircraft Group 39, 3rd Marine Aircraft Wing, poses for a photo during a Marine Air-Ground Task Force Warfighting Exercise as part of Service Level Training Exercise 2-24 at Camp Wilson at Marine Corps Air-Ground Combat Center, Twentynine Palms, California, Feb. 20, 2024. (U.S. Marine Corps photo by Lance Cpl. Richard PerezGarcia)

The Naval Support Activity (NSA) Souda Bay Morale, Welfare and Recreation Department hosted an Independence Day Celebration for NSA Souda Bay and its tenant commands, along with guests from local military and civil authorities, at the Agios Onoufrios Summer Officer's Club of the Hellenic Air Force 115th Combat Wing, July 7, 2023. (U.S. Navy photo by Nikolaos Fragos)

27 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
- Fireworks and firearms
- Sports and fitness
- Home projects and more

Whatever you do this summer, understand and avoid preventable risks.

101 CRITICAL DAYS OF SUMMER 2024

Your Safety is Critical

By Ani Pendergast

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 – Sport and fitness activity injuries
27 – Vehicle and motorcycle fatalities
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 beat and think it through this summer. The life you save may be your own.

A CH-53E Super Stallion helicopter, assigned to the "White Knights" of Marine Medium Tiltrotor Squadron (VMM) 165 (Reinforced) during flight quarters, Oct. 27, 2023. (U.S. Navy Photo by Mass Communication Specialist 2nd Class Evan Diaz)

Right: Super Hornet pilot on a flight line at Naval Air Station Oceana, Virginia, Aug. 30, 2023. (U.S. Navy photo by Mass Communication Specialist 1st Class Raymond Maddocks)

Apocalypse CAD

By Senior Chief Aviation Structural Mechanic Renzo Nuñez

Over the past 20 years, there have only been two notable fleetwide inspections, known as Aircrew Systems Bulletins (ACB), that grounded F-18s due to issues with egress and escape systems. The first inspection focused on the proper installation of Canopy Jettison Rocket Motors (DODIC: SS67) on two-seater F/A-18B/D/F and EA-18G aircraft. The goal was to ensure the rocket motors were installed correctly – with the thrust nozzles positioned downward to facilitate upward movement of the canopy during jettison actuation. Despite the difficulty of the task, there was a risk of incorrect installation, which would render the rocket motor ineffective. The solution involved removing and reinstalling the SS67 in the correct orientation.

The second inspection involved the SJU-17 Navy Aircrew Common Ejection Seat Parachute Deployment Rocket Motor (PDRM) (DODIC: MT29). The inspection aimed to identify any installed but expired aircraft assets that were exposed to excessive heat, such as those parked on exposed flight lines for extended periods. The presence of expired double base propellant materials in high-heat environments could lead to uncommanded activation of the PDRM. If the PDRM was installed, the solution required removing the MT29 and turning it in as ordnance.

While both fleetwide events had a minimal impact on aircraft readiness compared to the magnitude of the 2022 cartridge-actuated device (CAD) recall, they provided valuable insights.

The CAD recall puzzled many, including experienced technicians, as CADs deemed Ready-For-Issue (RFI) and installed were suddenly recalled due to suspected defects. The recall led to numerous ejection seat replacements to address the suspected defective CADs.

To understand the chain of events leading to the CAD recall, I collaborated with Jennifer Yoder-Stedman, a PMA-202 Aircrew Escape and Crashworthy Systems Fleet Support Team site representative at Naval Air Station Oceana, Virginia. She played a vital role in resolving the CAD recall and restoring affected aircraft to mission-capable status. As we began our conversation, she jokingly referred to the recall as the "CAD apocalypse."

Chain of significant events:

- April 6, 2022: At Hill Air Force Base, Utah, while performing maintenance on an F-35A, US16E Martin-Baker ejection seat, the left-hand seat initiator CAD (DODIC: JN72, PN: MBEU252671) came apart in the breech while it was being removed.
- April 7, 2022: Hill AFB notified Martin-Baker and Lockheed Martin of the discovered discrepancy. The notice prompted Martin-Baker to examine their stock of RFI CADs at their pyrotechnics manufacturing facility located at Chalgrove Airfield, Oxfordshire, United Kingdom. The preliminary investigation revealed two additional CADs with no SR371 igniter (P32059, magnesium powder) but cashew sealant was present.
- April 12, 2022: CAD and propellant-actuated devices (PAD) engineering inspection of the defective CAD at Hill AFB confirmed there was no SR371 igniter (P32059, magnesium powder) in the CAD and the cashew sealing (P33184) 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 557A 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: NAVSUP 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 not 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 requirements that impact naval aviation aircraft and equipment. Naval aviation ordnance deficiency reporting is governed by the OPNAVINST 5102.1 and OPNAV M-8000.16.

The benefit of these programs cannot be overstated. OPNAV M-8000.16 explains how these programs improve our readiness:

"Deficiency reports are required to provide improved quality of material and warfighter readiness. Deficiency reporting ensures substandard materials, workmanship and technical publications receive the visibility 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 refocus on 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?

Unlike other manufacturers, Martin-Baker does not rely on automated machinery for the production of CADs and PADs. Instead, they employ a manual assembly process for CADs and PADs. While a manual assembly approach allows for more control, it also introduces the possibility of human errors during production.

To identify the root cause of the issue, investigators examined the production volume at the facility. Martin-Baker has an expected production rate of 7.27 fully assembled CADs per hour. Using this benchmark, they analyzed the production records of the three units identified as nonconforming – one at Hill Air Force Base, Utah, and two found in stock. By comparing the documented man-hours of employees to the completed quantity recorded per shift, Martin-Baker was able to determine the number of partially assembled CADs stored overnight to be completed by a different crew the next day. Unfortunately, due to the lack of an established standard operating procedure for handling and storing unfinished units, some of these unfinished units were mistakenly identified as finished units during the next shift. Consequently, some units were completed without the SR371 igniter (P32059, magnesium powder).

This lesson learned is in egress system maintenance and validated by this manufacturing human error. Here is the validated quote from an ejection seat arming and de-arming checklist, which is quite familiar to egress technicians.

"Except in an emergency, the arming or de-arming procedures should not be interrupted. The procedures should not be stopped until the entire arming or de-arming process is complete from start to finish. The removal or installation procedure for any components, and/or cartridges, once started, shall not be interrupted."

Chain of significant events continued:

- July 24, 2022: Commander, Naval Air Forces Atlantic (CNAL) Force Supply Officer directed an MH-53 airlift 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 truck deliveries to NAS Oceana were made weekly on Saturdays directly to the commander of Strike Fighter Wing Atlantic, 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: Two Navy air logistics office 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, CVW-5, VMFA-232 and VMFA-533.

(Continued on next page)

- August 2, 2022: The CNO's Gulfstream aircraft is used to move CADs from Joint Base Andrews-Naval Air Facility Washington, Maryland to EUCOM.
- August 14, 2022: To date, NSWC Indian Head reported screening 2,639 CADs by X-ray, computerized tomography scanning or weight test. Additionally, although not directed, they also screened over 2,500 Parachute Deployment Rocket Motors (MT29) but did not find any defective CADs or MT29s.
- August 26, 2022: CNAL Maintenance Operations Center reports "Fleet complete."

Addressing a unique problem requires a unique solution. The entire naval aviation enterprise came together and used all available resources to resolve the issue in a safe and efficient manner, ensuring our assets returned to mission-capable status as quickly as possible. In fact, even the chief of naval operations' aircraft was used to transport CADs to EUCOM Aug. 2, 2022. The collaborative effort truly exemplifies the teamwork and dedication of everyone involved, from the highest-ranking officials to the newest egress technician. If this level of collaboration doesn't make you feel like a valued member of the Navy and Marine Corps team, I don't know what will.

Speaking of teams, the F-18 Hornet communities represented by Electronic Attack Wing Pacific (CVWP), Commander Strike Fighter Squadron Wing Pacific (CSFWP) and Commander Strike Fighter Wing Atlantic (CSFWL) took two different approaches to address the CAD issue. CVWP, CSFWP and CSFWL prioritized the distribution of CADs that were directly shipped to their respective wings based on the squadron's maintenance plan cycle. Each squadron was then responsible for conducting maintenance on the affected aircraft.

However, CSFWL took a different approach to leverage experience, ensure maintenance continuity and allow operational squadrons to focus on their mission. They created four egress maintenance teams by hand-selecting Sailors from various squadrons. Each team consisted of one Collateral Duty Quality Assurance Representative/Quality Assurance Safety Observer and three to four Aviation Structural Mechanic (Equipment) team members.

These teams worked in two shifts, day and night, seven days a week until the majority of the egress maintenance was 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.

CSFWL Egress Maintenance Team 1		
1st Class Garret M. Wilson	(CDQAR/QASO)	VFA-105
1st Class Louis J. Anderson	(CDQAR)	NAMCE
2nd Class William C. Williams	(CDI)	VFA-87
2nd Class Harvey O. Danere	(CDI)	VFA-32
3rd Class Daniel J. Guerra	(TM)	VFA-87
CSFWL Egress Maintenance Team 2		
1st Class Michel T. Wilson	(CDQAR/QASO)	VFA-83
1st Class Tony D. Powell	(CDI)	VFA-213
2nd Class Darwin D. David	(CDQAR)	VFA-31
2nd Class Gareth S. Gustafson	(CDI)	VFA-32
Airman Ocean R. Popa	(TM)	NAMCE
CSFWL Egress Maintenance Team 3		
1st Class Linna Zhang	(CDQAR/QASO)	VFA-32
2nd Class Zachary H. Nevard	(CDI)	VFA-143
2nd Class Breanna M. Pollock	(TM)	VFA-83
3rd Class Juan F. DoradoRojas	(TM)	VFA-31
CSFWL Egress Maintenance Team 4		
2nd Class Xavier Gonzalez	(CDQAR/QASO)	VFA-131
2nd Class Deterrion R. Callaway	(CDI)	VFA-37
2nd Class Jasper L. Perrigo	(TM)	VFA-131
Airman Chad W. Ferrell Jr	(TM)	VFA-106

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 if you come across any discrepancies, it is imperative not 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 trigger a safety hazard report due to the potential danger it poses to aircrew emergency egress, in accordance with OPNAV 3750.6S.

It is the responsibility of maintenance personnel to report hazards like these through the Aviation Safety Action Program and notify the unit's safety department about the discovery of such hazards. We all have a critical role to play in ensuring fellow technicians across the fleet, wing subject matter experts, NAVAIR program offices, engineers and other relevant stakeholders are made aware of hazardous conditions, as well as the chain of events, root causes of mishaps and effective preventive measures that impact our aircraft community readiness.

The Arleigh Burke-class guided-missile destroyer USS Daniel Inouye (DDG 118) sails behind the aircraft carrier USS Theodore Roosevelt (CVN 71), Jan. 25, 2024. (U.S. Navy photo by Mass Communication Specialist 1st Class Chris Williamson)

EWIS Incidents Importance

By Gunnery Sgt. Louis Tiberio

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

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's 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. EWIS ensures the aircraft systems remain resilient and reliable in such harsh operational environments.
- ***Vertical Lift and Short Take-Off and Vertical Landing (STOVL) Aircraft*** - The Marine Corps' aviation assets, like the MV-22 Osprey (tiltrotor) and F-35B Lightning II (STOVL variant), have unique operational requirements. EWIS ensures the advanced avionics in these aircraft operate reliably, from hover mode to high-speed flight.
- ***Advanced Weapon Systems*** - Modern naval aircraft come equipped with sophisticated weapons that rely on complex electronic guidance and targeting systems. EWIS 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.

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 fleets, maintenance becomes crucial. EWIS 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 often undergo upgrades. EWIS ensures these new systems seamlessly integrate without compromising safety or aircraft performance.
- ***Training and Standardization*** - EWIS 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.

U.S. Navy Aviation Electronics Technician 3rd Class Jacob Hall replaces parts on an F/A-18E Super Hornet fighter jet, attached to the "Wildcats" of Strike Fighter Squadron (VFA) 131, aboard the aircraft carrier USS Dwight D. Eisenhower (CVN 69), Oct. 27, 2023. (U.S. Navy photo by Mass Communication Specialist 3rd Class Janae Chambers)

While the might of Navy and Marine Corps aviation assets is often 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 EWIS 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/jswag.

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 often unnoticed. These errors occur when a maintenance technician inadvertently skips a crucial task or inspection. Picture this:

- A missed scheduled inspection.
- A critical 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 effect 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 many platforms are already deficit on, and maintenance man-hours are wasted 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 or an incorrectly rigged control surface could lead to catastrophic equipment failure 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, often 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.

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 witness required or chief/safe for flight individual required to oversee aircraft moves, aircraft jacking/lowering, etc.)

Aircraft carrier USS Carl Vinson (CVN 70) transits the Philippine Sea, Feb. 2, 2024. (U.S. Navy photo by Mass Communication Specialist 3rd Class John A. Miller)

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-18F Super Hornet from the "Fighting Redcocks" of Strike Fighter Squadron (VFA) 22 aboard the aircraft carrier USS Nimitz (CVN 68), Aug. 25, 2023. (U.S. Navy photo by Mass Communication Specialist Seaman Peter McHaddad)

EXTRANEOUS ERRORS: RIDING THE WAVES OF DISTRACTIONS

Extraneous errors threaten to destabilize the steady course of naval aviation maintenance. These errors, often 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. ***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 avoidable. 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 off the aircraft and either injuring the maintenance person 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 efforts, 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 hangar/flight line chiefs, QA personnel and ground safety personnel play a critical role in helping people stay focused on tasking.

CONCLUSION: ANCHORING RELIABILITY IN A SEA OF CHALLENGES

In naval aviation, there are other unrecognized heroes often 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.

Safety in Your Pocket

By Leslie Tomaino

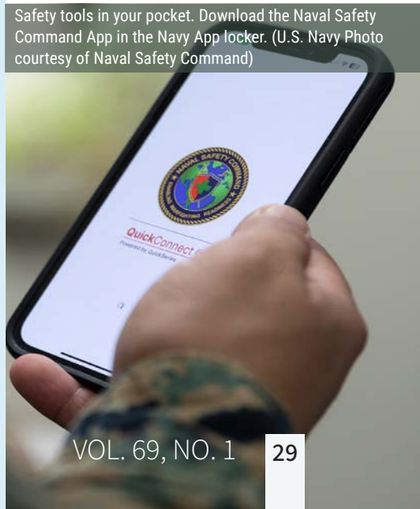
Naval Safety Command (NAVSAFECOM) app is a mobile-friendly way to keep up to date on all things Navy and Marine Corps safety and risk management. The app allows Sailors and Marines on-the-go access to safety-focused learning and improved communication.

The mobile app is a robust toolkit containing NAVSAFECOM 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 universally useful throughout the naval enterprise, from safety representatives to service members daily.

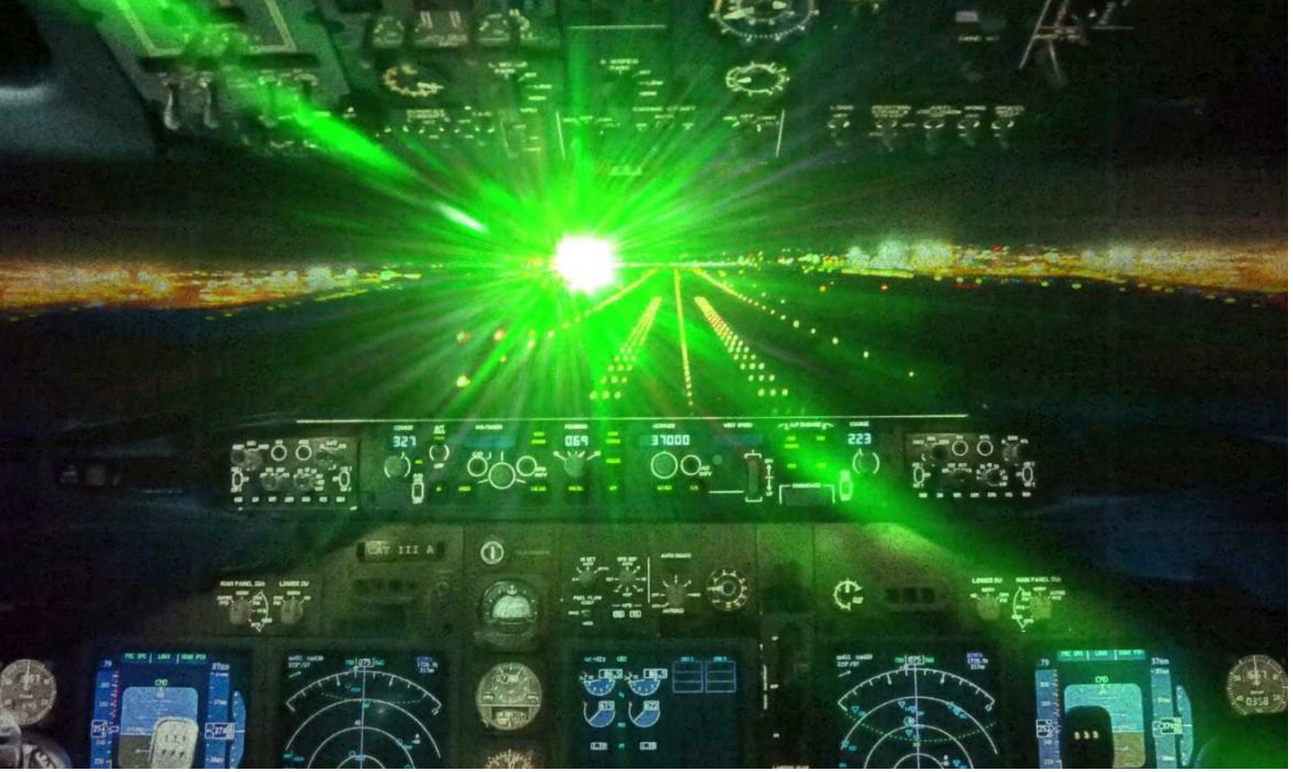
"This mobile application allows our Sailors and Marines to access and download information in advance for use remotely," said CMDCM(AW/SW) Dean Sonnenberg, NAVSAFECOM command master chief. "This app is an additional tool for the warfighter and safety professional to help advance our mishap-focused, reference 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 "Naval Safety Command" or "NAVSAFECOM" in the app stores or your web browser. Sailors and Marines can also find this app and many others in the Navy App Locker: https://www.applocker.navy.mil



Safety tools in your pocket. Download the Naval Safety Command App in the Navy App locker. (U.S. Navy Photo courtesy of Naval Safety Command)



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

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 military to commercial to residential. Along with multiple benefits, lasers have created an ongoing problem for military and civilian aircraft, such that the federal government established laws to protect pilots, aircrew and passengers – military and civilian alike.

Aircraft lasing, or directing a laser at the cockpit of an aircraft, creates a significant safety problem for pilots and passengers. When a laser strikes the flight deck of an aircraft, depending on where or whom it hits, it can cause visual effects to the pilots, which can lead to a hazardous situation for all personnel onboard. These effects include glare and disruption, temporary flash blindness, and can distract or startle pilots. In some cases, pilots reported eye injuries requiring medical treatment. All these effects could lead to total loss of control of the aircraft.

This hazard to aircraft and crews led to the implementation of Federal Aviation Administration (FAA) Modernization and Reform Act of 2012, wherein making it a federal crime to aim a laser pointer at an aircraft.

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 lasing reports and saw a sharp rise from January 2016 to September 2023 to 59,432 reported incidents, with the Navy and Marine Corps reporting 698 incidents. The FAA works closely with local law enforcement to apprehend suspects of lasing aircraft.

On Feb. 8, 2013, the FAA issued Advisory Circular (AC) 70-2A, superseded by AC 70-2B dated April 3, 2020, which requested all aircrew report unauthorized laser illumination by radio to the appropriate air traffic controlling 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/report/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 5100.27B/MCO 5104.1C. This report must list personnel involved, estimated laser exposure received, the medical officer'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 5100.1D/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 lasing of 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. Civilians 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.

(Continued from page 2)

AVIATION SAFETY AWARD

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 151
ELECTRONIC ATTACK SQUADRON 139 (CVW)
AIRBORNE COMMAND AND CONTROL SQUADRON 125
HELICOPTER SEA COMBAT SQUADRON 4 (CVW)
HELICOPTER SEA COMBAT SQUADRON 25 (EXPEDITIONARY)
HELICOPTER MARITIME STRIKE SQUADRON 75 (CVW)
HELICOPTER MARITIME STRIKE SQUADRON 37 (EXPEDITIONARY)
HELICOPTER SEA COMBAT SQUADRON 3
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 34

Commander, Marine Forces Command (COMMARFORCOM)
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 369
MARINE LIGHT ATTACK 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 (COMNAVAIRRESFOR)
PATROL SQUADRON 62
FLEET LOGISTICS SUPPORT SQUADRON 54
FLEET LOGISTICS SUPPORT SQUADRON 56
FIGHTER SQUADRON COMPOSITE 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 (CNATRA)
TRAINING SQUADRON 2
TRAINING SQUADRON 9
TRAINING SQUADRON 28
TRAINING SQUADRON 35
TRAINING SQUADRON 22
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 INSTALLATIONS WEST
HEADQUARTERS AND HEADQUARTERS SQUADRON MCAS YUMA

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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, as well as unit or organization

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 submissions must be sent as separate files 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 photographer's full name, rank, unit and full description of the image and date taken.

Send to: navsafecom_mech@us.navy.mil

We look forward to including your submissions!

Stay Connected

Front Cover: Aviation Structural Safety Mechanic 2nd Class Carter Burlison, with Patrol Squadron FORTY (VP-40) conducts a maintenance check on the wheel well fire detection system of a P-8A Poseidon aircraft, August 29, 2023. (U.S. Navy photo by Lt. Steven Wilkerson)

MECH cover features a hidden wrench. Can you find it?


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