MECH

VOL. 66, NO. 2

FOLLOW PROCEDURES

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U.S. Navy photo by Siobhana R. McEwen

COMMANDER`S LETTER

REAR ADMIRAL F.R. "LUCKY" LUCHTMAN

As we continue through the second half of 2021, I wanted to stop and take a moment to say thank you. Thank you for your hard work, your dedication and your determination to keep on accomplishing the mission – regardless of the challenges you face.

For nearly two years, our Sailors, Marines and civilians encountered unique and challenging situations that required the ability to continuously adapt to changing environments – both on and off duty.

You confronted these challenges head on and thanks to your perseverance, safety mindset and mission focus, the aviation maintenance community adapted, learned from these experiences and continued to make our Navy and Marine Corps stronger than before. And we are not done yet.

We continue to meet these challenges head on as COVID-19 and its variants trend upward in many areas of the world. Now is not the time to relax our vigilance and lose focus on our mission. We must stand ready to adjust routines and procedures safely. As we continue our service to this great nation, we must also continue to preserve our combat readiness for the fight; we cannot afford to let complacency slip into a single routine or procedure.

A culture of excellence requires the continued vigilance of every Sailor and Marine, and the Naval Safety Center is here to help preserve readiness and protect our most valuable resource – you. We are your safety advocates and we are standing by to assist.

I have no doubt we will continue to face obstacles in our path. I am confident in your abilities to meet and exceed the unknown challenges ahead as you continue to play a critical role in the success of naval aviation and the defense of our country.

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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 this 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. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Navy endorsement.

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U.S. Navy photo by K.R. Jackson-Smith

AVIATION MAINTENANCE MISHAPS

DECADE IN REVIEW

By CWO5 Brian Baker

As we closed out another decade at the end of 2020, we thought it was probably a good time to provide the fleet with a snapshot of what happened in our Naval Aviation maintenance community during the decade, provide some visual trends and statistics and offer sage advice for the way ahead.

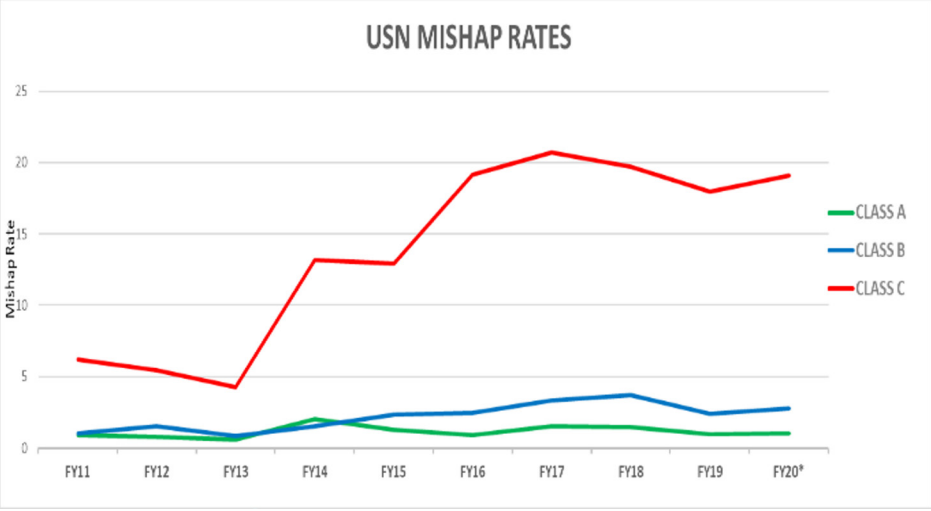


Figure 1

Throughout the last fifty years of Naval aviation as a whole, incremental improvements have been made and the overall number of aviation mishaps have gone down.

This past decade (2010 – 2020) however, we have seen a concerning trend with Aviation Ground Mishaps (AGMs) and more specifically aviation maintenance and ground operations mishap trends rising.

Figure 1 shows the Navy and Marine Corps aviation mishap rates over the last decade.

The majority of Class C mishap rates on both charts were derived from maintenance servicing and ground movement operations.

We should ALWAYS ensure clear communication and CLEAR UNDERSTANDING of each team member's roles and responsibilities on every task.

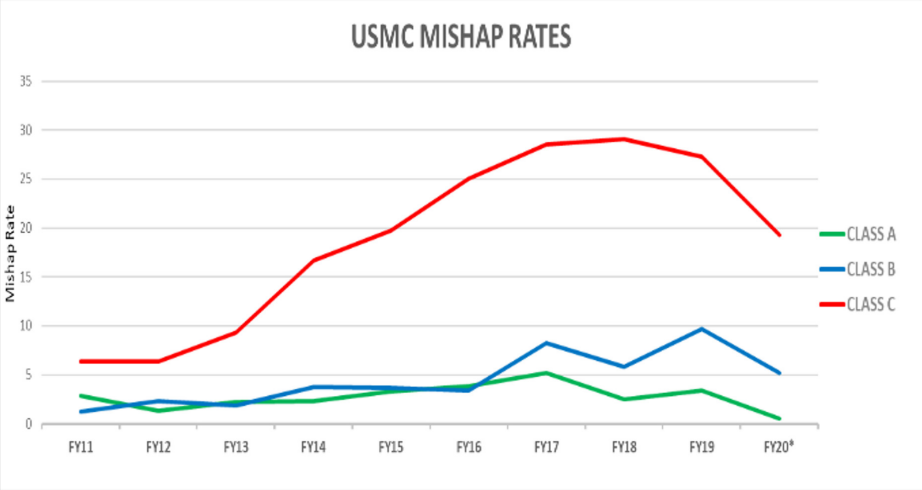


Figure 2

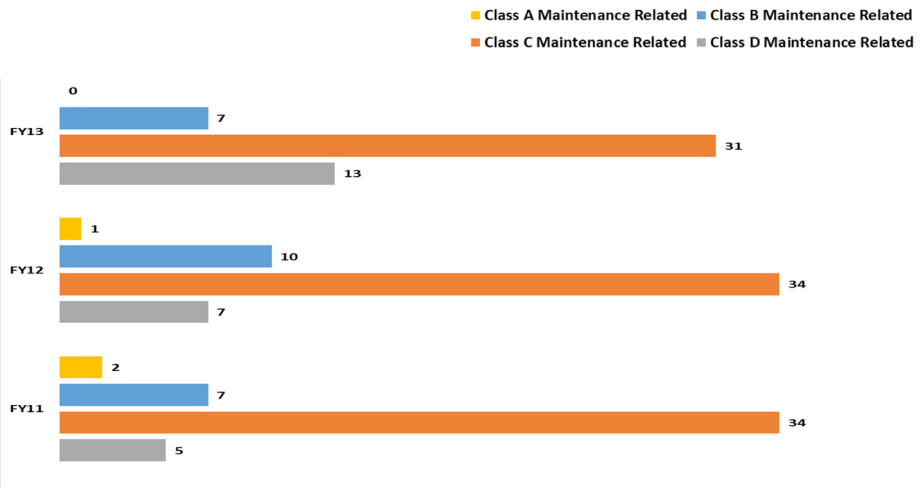


Figure 3

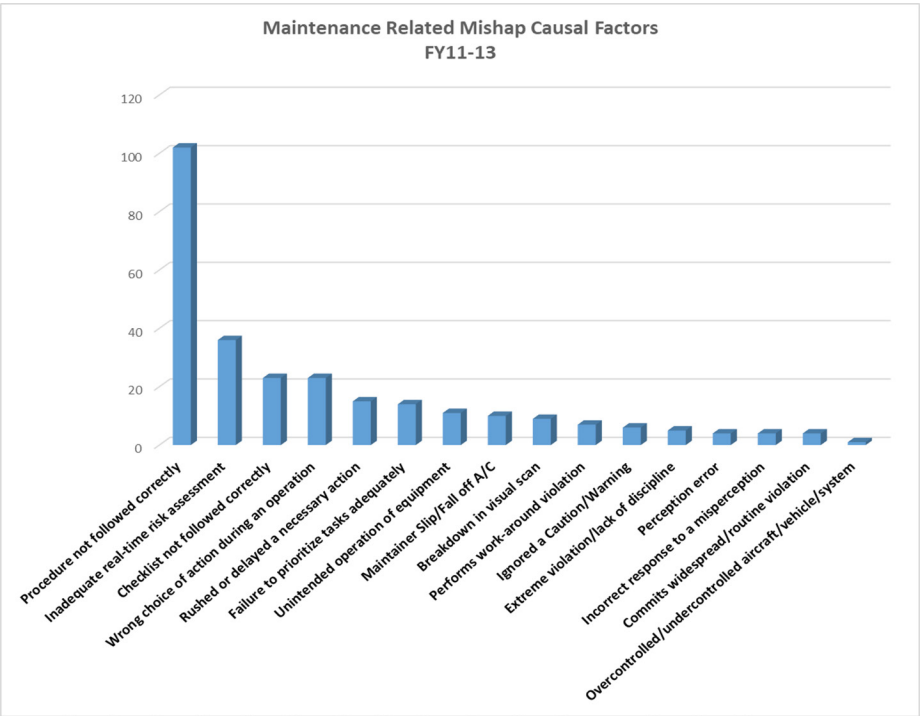


Figure 4

As you can see on both charts, before 2013, both services were averaging much lower Class C aviation ground mishaps per 100,000 flight hours and as the decade progressed, the rate has more than tripled.

Even flying less flight hours in FY-20, the rate has remained high. So we thought we would take a little bit of a deeper dive and looked at maintenance mishap trends 2011 through 2013 and then looked at 2017 through 2020 to see what, if any, primary causal factors have changed. We also watched changes within our services that may have driven change in maintenance and ground operations mishap rates. The mishap trends for 2011 through 2013 are depicted in **Figure 3** and the primary causal factors leading to those mishaps are displayed in **Figure 4**. **Figure 5** provides a visualization of the most common human factor pre-conditions that contributed to the mishaps.

As you can see from the figures, we were averaging 50 maintenance related mishaps per year and we were flying more during those years. Reviewing the maintenance mishap causal factors, one can see failure to follow procedures correctly far outweighs all of the other factors. Inadequate risk assessment and management, checklist not followed correctly, and wrong choice of action were all significant contributors as well, depicted in **Figure 3**.

If one were to take a closer look at those, some of them are closely related and they are really a failure of one of the most basic principles in aviation maintenance, always follow the maintenance procedure, checklist, maintenance requirement card, inspection card…as a base-line for all that we do.

Though these usually do not account for all of the environmental conditions that affect maintenance, they do provide a certain level of basic risk management for the task.

Reviewing the human factor pre-conditions to those mishaps in **Figure 5** reveals some other common themes that we can control and again should be core best practices within aviation. We should always ensure clear communication and clear understanding of each team member's roles and responsibilities on every task. There is NEVER any place for complacency in aviation, but especially Naval aviation maintenance.

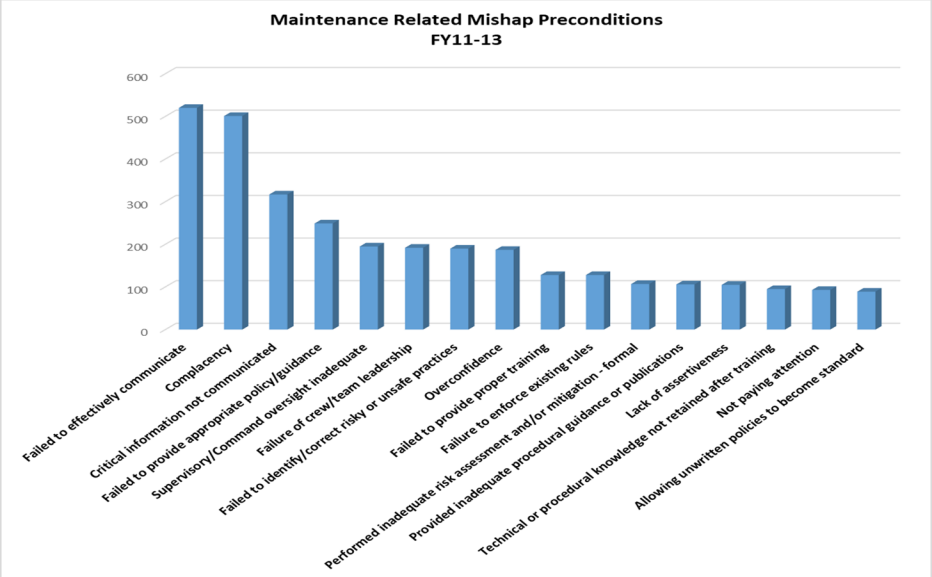


Figure 5

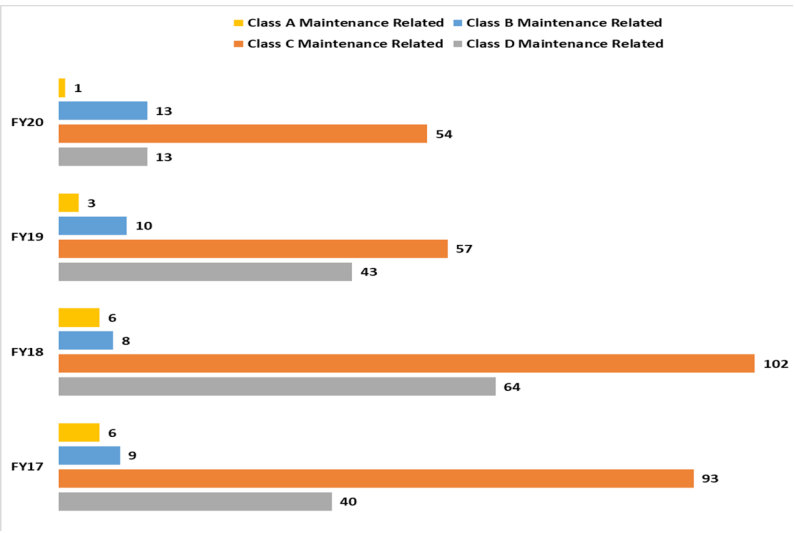


Figure 6

The lives of the people who fly those aircraft are on the line every time the aircraft starts up and takes off. Many maintenance evolutions even put the technician's life on the line, whether it be dealing with high-voltage wires, props, rotors, or fan blades that could sever body parts, or dealing with heavy components that can easily crush an individual or body part.

Additionally, not to even mention all of the hazards associated with turning up an aircraft and launching and recovering one on the flight deck or flight line. My 31 years of aviation maintenance experience tells me that failure to provide proper guidance, oversight, supervision, and leadership ALWAYS leads to the next pre-condition, failure to identify and correct risky or unsafe practices. If those of us that know what "right" looks like and have many years of experience conducting safe maintenance on those aircraft, aren't out providing that proper oversight, training, coaching and constant maintenance process review, then we should expect these results. If we provide less and less oversight and quality training, the results we will see in the next decade will be even worse.

Interesting contrast for all of you aviation maintenance technicians (AMTs) out there, the average age of a aircraft maintenance team lead in commercial aircraft maintenance is mid-forties with 20 years' experience maintaining aircraft, and the average age of an inspector, the equivalent to our QARs, is 52 years old. In our military aviation units, we push these responsibilities down to aviation maintenance technicians that have as little as four to five years' experience to be a maintenance team lead and as little as six to eight years to be a QAR. We have young, bright, and very capable technicians doing and leading things, they just do not have the required experience and insight to be leading. So, what has changed in the latter half of the decade compared to the first half of the decade? Theoretically, we are supposed to learn from our mistakes, our mishaps should be fewer, and our top causal factors in first half of the decade should not be the same top causal factors in the latter half, if we have an effective safety management system (SMS) and perform risk management well. **Figure 6** represents the number of maintainer related mishaps year by year for fiscal year 2017 through end of fiscal year 2020. **Figure 7** represents the top causal factors discovered when conducting the investigations of the mishaps represented in **Figure 6**. **Figure 8** once again depicts the most common pre-conditions to the recorded aviation maintenance mishaps depicted in **Figure 6**.

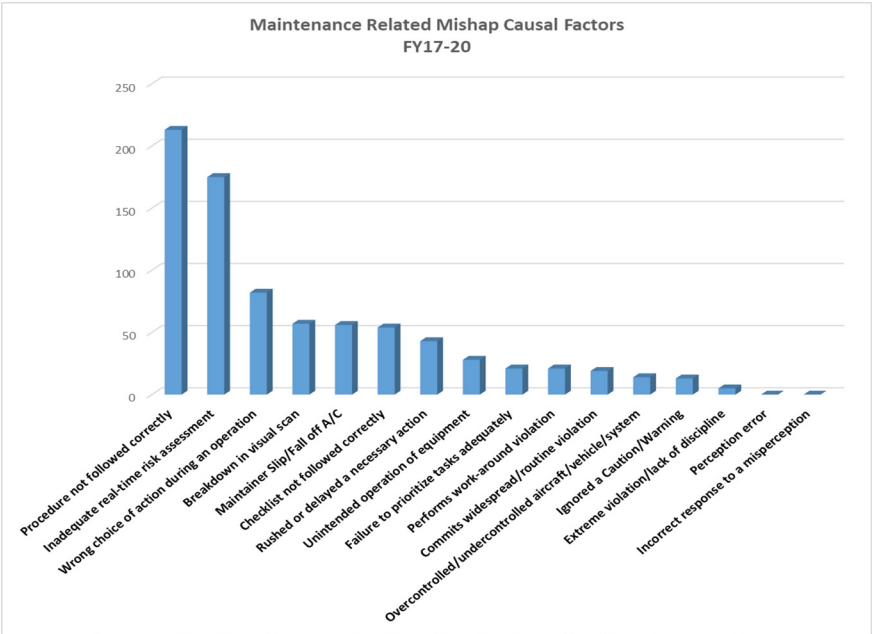


Figure 7

U.S. Navy photo by Zach Dalton

Bottom line, there is just absolutely no room for complacency, over confidence, lack of attention to detail, or lack of focus when we are conducting aircraft maintenance and aircraft flight operations support.

The top primary causal factors are still the top primary causal factors in the latter half of the decade.

As a senior aviation maintenance professional, it really bothers me to see that failure to follow procedure is still the number one aviation maintenance mishap causal factor, followed closely by wrong choice of action during an operation. Our procedures are written to give us clear guidance as a busy maintainer. Yes, sometimes the procedures are flawed, but that is why we have systems in place to correct them in a timely manner. This is why we are supposed to debrief so we ensure that things are captured and socialized.That is also, why we have safety reporting systems to get the word out to your TMS community to highlight problems with the procedures. It is important to get the word out through as many avenues as possible so that other like squadrons or technical work centers can put controls in place to mitigate the issues until the procedures are formally corrected.

The second leading pre-condition, inadequate real-time risk assessment, is often eliminated by actually practicing the plan, brief, execute, debrief (PBED) process. The PBED process can be accomplished quickly utilizing the quick questionnaires that are already in place via FAA's maintenance hangar webpage, or the pre-brief and post-maintenance evolution brief posters posted on the Naval Safety Center's public webpage, or checklist referenced in our Maintenance Risk Management (MRM) brief templates on our Naval Safety Center CAC enabled aviation maintenance web page.

PBED should be practiced by every maintainer in their head utilizing these quick questionnaires before and after every work related task. If the tasks are more complicated and have higher levels of risk, the questions should be formally discussed in a team setting with senior, highly experienced technicians, who have experience in the task to ensure all "differences" for the current evolution are discussed and all risks are discussed and mitigated. The post-brief needs to be conducted so that issues and anything that was missed or not discussed in pre-brief are captured. It is also conducted to ensure best practices or lessons learned are captured and shared, not only with all shifts within the squadron, but with other squadrons as well.

The maintenance ASAP system and Risk Management Information (RMI) system are perfect mass communication avenues to share this type of information. I will admit, there are problems around the fleet with information from these systems getting out to the people who need to know. The need to get the information out to the fleet is why maintenance technicians, especially quality assurance technicians and aircraft maintenance leaders, should be familiar with ASAP and RMI.

We constantly stress being brilliant on the aviation maintenance basics when delivering our maintenance risk and resource management (MRM) briefs around the fleet! Every aviation maintenance technician, no matter rank or experience level, should know and practice the basic principles and practices outlined in our general NAVAIR publications, Naval Aviation Maintenance Program (NAMP), Wing and CAG standard operating procedures and local command procedures.

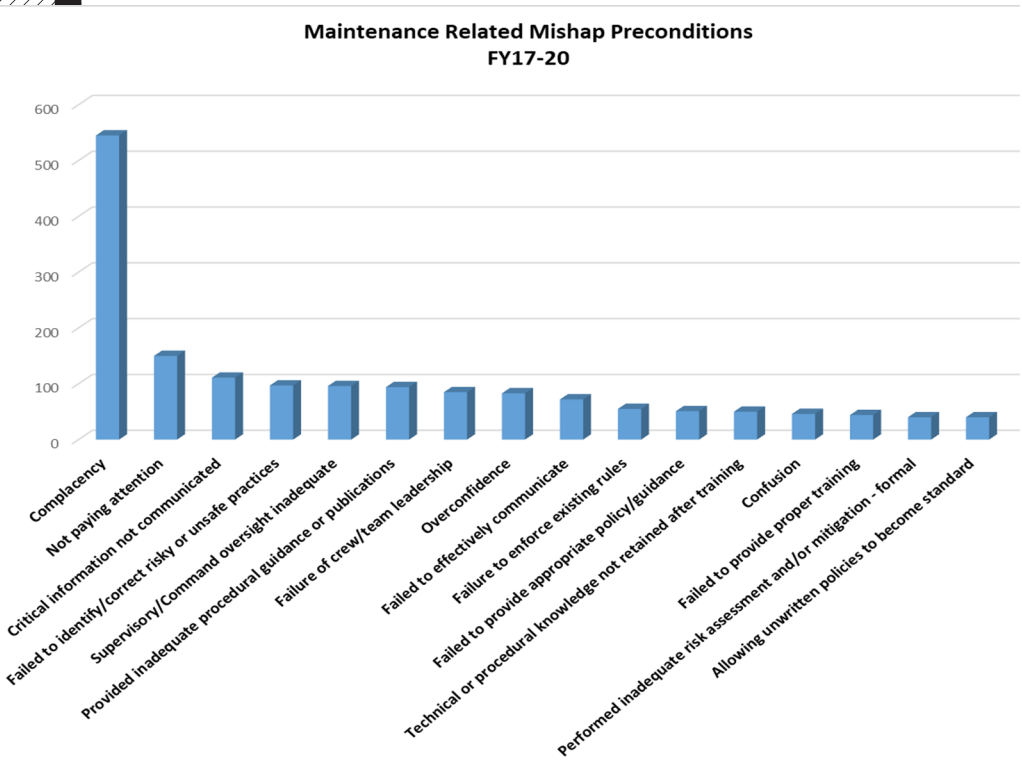


Figure 8

Every aviation maintenance technician should actively practice proper pre and post maintenance risk management activities provided by the FAA on their Maintenance "Personal Minimums" checklist or "Aviation Maintenance Never Events - Rising Tide" two minute pre-brief and post-brief checklist. This should all be accomplished via PBED process which is foundational to executing quality, error free, safe, and reliable aviation maintenance, and it is also foundational to sustaining resiliency and an effective safety management system (SMS).

Figure 8 also raises a very critical issue that also often concerns me, the human problem of complacency.

There is absolutely no room in aviation, especially Naval aviation, for complacency.

Many of our processes and procedures have been "written in blood", or rather derived from flight crews and maintenance personnel being severely injured, or killed, and aircraft severely damaged or destroyed. We are in what is referred to as a high reliability career field, in which even the smallest mistakes can lead to catastrophic damage. Therefore, everything we do to support the daily operations of the organization has to be precise and error free to ensure high reliability.

A distracted misstep can lead to a nasty fall off an aircraft. Working on an engine or replacing a flight control actuator while your mind is thinking about some life stressor, what you are doing when you get off work, the next maintenance task, or worrying about a maintenance leader yelling at you, can lead to catastrophic results for you or the people flying in your aircraft. Often, I read about instances of complacency where more senior maintenance technicians think to themselves. "I have done this task a thousand times, I don't need the maintenance procedure to walk me through it" and he or she misses an important caution or warning, a simple circuit breaker, or switch. That simple miss leads to a damaged aircraft, extra work for several more people, missed training for flight crews, degraded readiness, broken trust, and a damaged reputation.

Your pilots and flight crews' lives are on the line every time that aircraft starts up and heads out. Your reputation, credibility, possibly your life, and others' lives are on the line each time you conduct aircraft maintenance or support flight operations.

All of these poor habits put squadron maintenance departments, the maintainers, Naval Aviation Enterprise, and the Navy at large at higher risk. We should have had proper mitigations in place for many of the mishaps that happened over the decade, but rising aviation maintenance and ground operation mishap rates would suggest we did not put proper mitigations in place.

With that in mind, the experienced technicians within the squadron that have the most experience, to include the Chiefs and ground maintenance officers, need to be out ensuring that the most sound maintenance practices are being taught and that proper risk management is being practiced.

These are all very basic principles to safe and reliable aviation maintenance and ground operations and we must get back to actively practicing these basic practices around the fleet.

U.S. Navy photo by Zach Dalton

Some resources to assist in combating the top mishap causal factors:

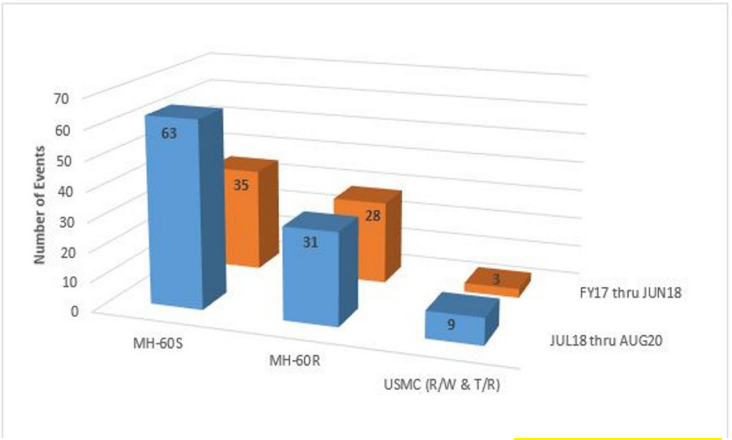
- Federal Aviation Administration's (FAA) *Maintenance "Personal Minimums" Checklist* available for download at: https://www.faasafety.gov/gslac/onlineresources.aspx
- "Maintenance Never Events-Rising Tide" "pre" and "post" maintenance evolution brief questions available for download at: https://navalsafetycenter.navy.mil/Resources/Poster-Downloads/Aviation-Posters.
- FAA resources available to download at: https://www.faasafety.gov/gslac/onlineresources.aspx.
- Aviation Maintenance Technicians Creed available for download at: https://www.faasafety.gov/files/gslac/library/documents/2013/Feb/74231/MechanicsCreed.pdf
- ALC Course Catalog available to download at: https://www.faasafety.gov/gslac/ALC/course_catalog.aspx?view=AMT

A note on the data, most of the charts start in FY-2011 because before the start of FY-2011 the Navy and Marine Corps as a whole did not capture pre-cursory conditions very well for Class C and D mishaps, which are our highest types of maintainer related mishaps.

MH-60 GUNEX-Related Things Falling Off Aircraft

By AWSCS (NAC/AW/SW) Wade Hove

Diagram 1. USN and USMC GUNEX-related TFOAs



During FY19, the MH-60 community reported an average of 32 things falling off aircraft (TFOA) every six months, spanning numerous mission areas. The recognized causal factors were divided into two categories: material factors and human factors. The material subcategories were the failure or malfunction of aircraft systems and aircrew or support equipment, while human factor subcategories involved failure to use proper risk management and crew resource management and aircrew and maintenance procedural noncompliance. The majority of TFOAs involved material failure or malfunction as causal.

As a community, we need to get a handle on the controllable aspects causing TFOAs. Doing so will effectively increase flight crew lethality and the Navy and Marine Corps' ability to effectively deploy assets worldwide. From July 2018 through August 2020, the Navy reported 94 gunnery exercise-related TFOAs; 63 from MH-60S and 31 from MH-60R. These mishaps and 91 hazard reports cost the Navy $119,484. Of note, 56 of them were attributed to material factors and 38 cited human factors as their primary cause. Defective equipment (material causal factors) listed for these TFOAs included night vision goggle retention lanyards, M-240D discriminators, ammo can bungie cords, IZLID 200P lens covers and mounts along with GAU-21 link chute adapters, feed tray cover latches and various retention screws. In contrast, the USMC only reported nine GUNEX-related TFOAs. Of these nine, six reported defective equipment and three identified human factors as the cause. Diagram 1 depicts GUNEX-related TFOA totals for Navy MH-60 series aircraft and USMC rotary and tilt-rotor aircraft from July 2018 to August 2020. It also shows TFOA data from FY 2017 to June 2018. Table 1 shows, with increased fidelity, GUNEX-related TFOAs from July 2018 through August 2020 for the same series aircraft.

Table 1. USN and USMC GUNEX-related TFOAs, July 2018 through Aug 2020

	MH-60S	MH-60R	USMC All T/M/S
Ammo (lost, discharge)	3	2	0
GAU-21	0	0	1
GAU-21 parts	8	8	2
M-240D parts	18	0	1
GAU-17	1	0	0
GAU-16 parts	0	0	1
IZLID 200P parts	2	11	1
NVD parts	9	2	0
Aircraft parts	2	0	3
Misc.	9	2	0
LEP	11	6	0
Total	63	31	9

What we can do to reduce the numbers

Since the majority of reported TFOAs are attributed to material factors such as defective equipment, reporting custodians should submit engineering investigation requests and Conventional Ordnance Deficiency Reports (CODR) to highlight these issues. Crew-served weapons (CSW) malfunctions, damage, training deficiencies and associated safety-related risks have been reported via CODRs, safety reports and community feedback. Some GAU-21 TFOA-related issues noted were weapons found out of configuration, causing weapon malfunctions, lack of weapon conformity with maintenance manuals, unfamiliarity with tools contained in armorer and operator kits, records not being updated by proper personnel and improper use of project codes used in requisitions.

An overall lack of efficiency regarding CSW operations, maintenance and documentation was noted as driving increased malfunctions and damage to equipment. As mentioned earlier, human factors were found in 38 reports. These incidents were attributed to improper use of weapons and checklists by aircrews and improper weapon maintenance or installation. Lack of aircrew situational awareness for night vision devices, weapon components and improper use of the ammo can retention bungee cord were also noted as contributing factors. Almost all of these human factors can further be broken down as being caused by CSW training and proficiency issues. Navy rotary wing squadron GUNEXs are scheduled to maintain aircrew currency at 90-day intervals. A unit's Non-Combat Expenditure Allocation (NCEA) for the aircrew to maintain currency is based on the number of aircrew members assigned. This allocation is also tied to the squadron or detachment's current deployment cycle.

> **CSW proficiency is gained through system usage and task repetition with hands-on real time use of the weapon and associated components.**

NCEA instructions for both helicopter maritime strike (HSM) and helicopter sea combat (HSC) communities were built to maintain currency vice proficiency. Allotting the minimum amount of NCEA and flight time for aircrew GUNEXs equates to reduced numbers of proficient gunners. This lack of proficiency not only influences MH-60 GUNEX human factor TFOAs, but also reduces our flight crews' lethality. The Navy HSM/HSC community's CSW training programs are adapting to better familiarize aircrew with CSW operations and employment earlier in Optimized Fleet Response Training Plan cycles. CSW proficiency is gained through system usage and task repetition with hands-on real time use of the weapon and associated components. Maximizing the number of times a gunner is able to "put hands" on a CSW system and leadership`s enforcement of procedural compliance will reduce the prospect of human factors influencing these TFOAs.

Reducing the human and material factors causing GUNEX-related TFOAs requires an "all of the above" approach. Such an approach will also grow our gunners' ability to effectively engage targets with CSW, thus, increasing the Navy's ability to effectively use HSM and HSC assets worldwide.

For more in-depth coverage of this topic, see the study titled: MH-60 GUNEX-Related Things Falling Off Aircraft, dated Sept. 25, 2020.

Photo by Apprentice Orion

PROPER TOOL FOR THE JOB

By ADCS (AW/SW) Andrew S. Van Norman

The pass down from the previous shift just finished; the next shift just started and so begins the countdown to the next pass down. The list of maintenance tasks from the prior shift seems never-ending. How many times have you been in the middle of a maintenance task and rather than stop everything and go back to the workcenter to get a hammer, you pick up a ratchet to knock that piece into place? Sure, the job was finished a few minutes faster this time, but have you ever considered the consequences of not using the proper tool for the job?

Whether you're working on your own car in the driveway or a multimillion-dollar aircraft on the flight line, using the proper tool is vital in preventing a wide array of mishaps. Is it easier to use a screwdriver as a pry bar? Is it faster to use a wrench as an extension bar? How about a pair of pliers as a wrench? Perhaps. But what happens when that ratchet you used as a hammer or the part you are hammering breaks? Now a broken tool is reported, a foreign object damage inspection is performed and it may even require additional time to replace another broken component. A short walk and an extra five minutes to check out the proper tool from the shop can help avoid a rather long walk to maintenance control and an uncomfortable chat with the Maintenance Chief explaining how your negligence is holding up the mission.

The majority of maintenance performed on an aircraft requires a particular tool, or set of tools, to get the job done. Maintenance publications serve as instructions to perform the job correctly and efficiently, outlining the tools and materials required. Along with the tools and publications, tool control programs are in place to ensure accountability for the tools used on an aircraft to avoid operational mishaps that can be detrimental during flight.

Photo by Petty Officer Third Class Alexander M. Corona

Photo by Alana Langdon

Just as surgeons count all their instruments before and after an operation to avoid complications, it is crucial tool control programs are well-maintained, up-to-date and followed at all times to prevent instruments from causing damage to the aircraft.

When you are up against a heavy workload and a clock that seems to move with lightning speed, it is easy to look for quick solutions to small problems that arise during the job. A piece lodged here, a stripped screw there and rather than take the time to get the right tools to handle the tangential problem, you're now grabbing your pocket knife or multitool to handle the job.

While this might be an option when you are at home working on your car, using the same shortcut when working on an aircraft could cost someone their life. Personal tools are not accounted for as a part of the tool control program; they are not etched, not checked out and not included on an inventory. If that tool was left on the aircraft, how would anyone know it was there?

While we have all been guilty of tool misuse to some degree, it is our job as supervisors, inspectors, maintainers and shipmates to ensure we all abide by the rules and procedures of the programs that keep us honest and keep us from causing a major incident. Not all programs are focused for strictly "on the job" or "aviation only."

The use of risk management and tool control is not a waste of time, it saves time and lives. We hear it all the time: Use proper personal protective equipment, the proper tools for the job and put safety first. These rules apply for our own safety, whether it is on or off duty. Do not be the one to ignore the warnings. Be the one to listen.

Safety Best Practices:
Small things paying large dividends

· By MGySgt Joshua Smith ·

Entranceway at VMAT-203

> "For the great doesn't happen through impulse alone and is a succession of little things that are brought together."
>
> – Vincent van Gogh

This is a quote of few words, but one that shares a strategy to the achievement of any measurable success. Giving it credence, I have observed this truism in the many small things that lead to a successful culture in all facets of the aviation world.

As part of the Naval Safety Center's assessment team responsible for comprehensive safety-centric looks of all Navy and Marine Corps aviation squadrons, I have observed many of the best practices to be small in nature and resources, but when effectively employed, pay large dividends. This is especially true when it comes to building a healthy safety culture within a unit. Of those best practices, below are a few of the most prominent.

One of the easiest and most effective, but often underused best practices is capitalizing on a unit's most frequented spaces, namely the geedunk and the heads. It is a reasonable expectation that everyone in the unit will frequent one of these spaces on any given day. As such, use this real estate to advance your unit's safety culture. These high-traffic places are perfect for posters and literature to address safety concerns. With knowledge and information being critical to a successful culture, the key is getting the word out and getting the unit in a safety-conscious mindset. Often, if a unit had a mishap and is effectively using their spaces, these locations are where we see the unit address topics such as motorcycle and recreational accidents, slips and falls, causal factors to aviation-related mishaps and preconditions within the squadron culture that allow such mishaps to occur. Additionally, we see safety-conscious units regularly post their recurring publications and promulgate safety through Stall Wall Safety Topics of the Month, MEF/Wing Monthly Safety Spotlights, the Naval Safety Center's MECH Magazine, Lessons Learned and Sanitized Safety Incident Reports.

Another effective best practice is to recognize people within the unit who are doing the right thing about safety. All too often, we beat the drum about things done wrong. Through our assessments, I have observed if you want to make safety an essential part of your unit's culture, your command needs to incorporate it into the mission statement and make it part of the command philosophy. Good examples of recognizing significant contributions to safety include programs such as Safety Professional of the Month, Sailor of the Week or something as simple as callouts in the Plan of the Week.

As American businessman Sam Walton said, "Appreciate everything your associates do for the business. Nothing else can quite substitute for a few well-chosen, well-timed, sincere words of praise. They're absolutely free and worth a fortune."

Sometimes the little things give you maximum return and get others gravitating toward the desired mindset. I encountered an excellent example of getting the message out during a recent assessment of a unit at Marine Corps Air Station Cherry Point, North Carolina. Upon entering the unit, I saw a full-length mirror on the wall with the words, "This is the person responsible for your safety." I remember being immediately impressed with the simplicity and power of the message. Remember – safety is, always has been and always will be an all-hands effort.

U.S. Navy photo by Mass Communication Specialist 3rd Class Zach Dalton

By Lt.j.g. Kevin Gable

Quite often, the word "routine" is used to describe activities done on a normal basis or in an everyday manner. These actions might be as simple as driving to work or answering the phone. In many occupations, the routine can seem mundane, completed at a subconscious level without the need for prior planning.

In aviation, however, there is never an instance in which "routine" describes any evolution. From the beginning of flight training, aviators are taught about the Swiss cheese model. This metaphor is used to describe a sequence of seemingly unrelated events, which if left uninterrupted, create an opportunity for a catastrophic occurrence. The following story, from a few days into a P-8A squadron deployment, highlights a series of events culminating in an incident that could have resulted in fatalities. At numerous points in this story, missteps could have been corrected if those involved had not treated this scenario as routine.

In December 2020, after a brief holiday reprieve, a maintenance team was busy wrapping up a scheduled inspection and implementation of a technical directive (TD) on a P-8A Poseidon, which required power to be applied on the aircraft. This maintenance action was a fairly simple task for a highly trained maintenance team with countless hours of experience removing and replacing parts. However, when an aviation electronics technician (AT) collateral duty inspector (CDI) became startled by the sparking of an intentionally loose wire on a 28 Vdc/100 amp circuit grounding on a nearby metal interior component, this scene strayed far from a simple maintenance action.

> The quality assurance investigation later revealed the aircraft maintainers who removed the equipment failed to secure power via the appropriate circuit breaker.

As with most maintenance evolutions, this effort required several representatives from various workcenters to complete the evolution. Two days before the arcing incident, Sailors from a different shift had removed the ordnance, intercom and circuit breaker panels on the aircraft and taped off and terminated all wires per published TD procedures. This part of the work order called for power leading to the panels to be secured by pulling the source 100 amp circuit breakers. The entire procedure was clearly specified per the governing maintenance publication. Here, the story takes a turn through a Swiss cheese hole because contrary to the published procedure, the 100 amp circuit breaker was not pulled.

The quality assurance investigation later revealed the aircraft maintainers who removed the equipment failed to secure power via the appropriate circuit breaker. Instead, they incorrectly attempted to secure power via electronic controls known as the solid state power controller based on an inaccurate interpretation of a wiring diagram and a lack of knowledge of the aircraft electrical system. Furthermore, a Portable Electronic Maintenance Aid (PEMA), which is a required item on all maintenance evolutions, was not checked out nor referenced while the ATs performed the procedures. Several CDIs from different workcenters were present on the aircraft or had been onboard throughout the entire operation. One of them went so far as to identify the potential hazard to the AT CDI who was performing the work for the TD.

The alternate workcenter CDI failed to assert himself and call for power to be removed the proper way. The following workday, a CDI from another shift performed work on the same circuit breaker panel, now with loose wires and aircraft power applied because other "routine" maintenance was still being conducted on the plane.

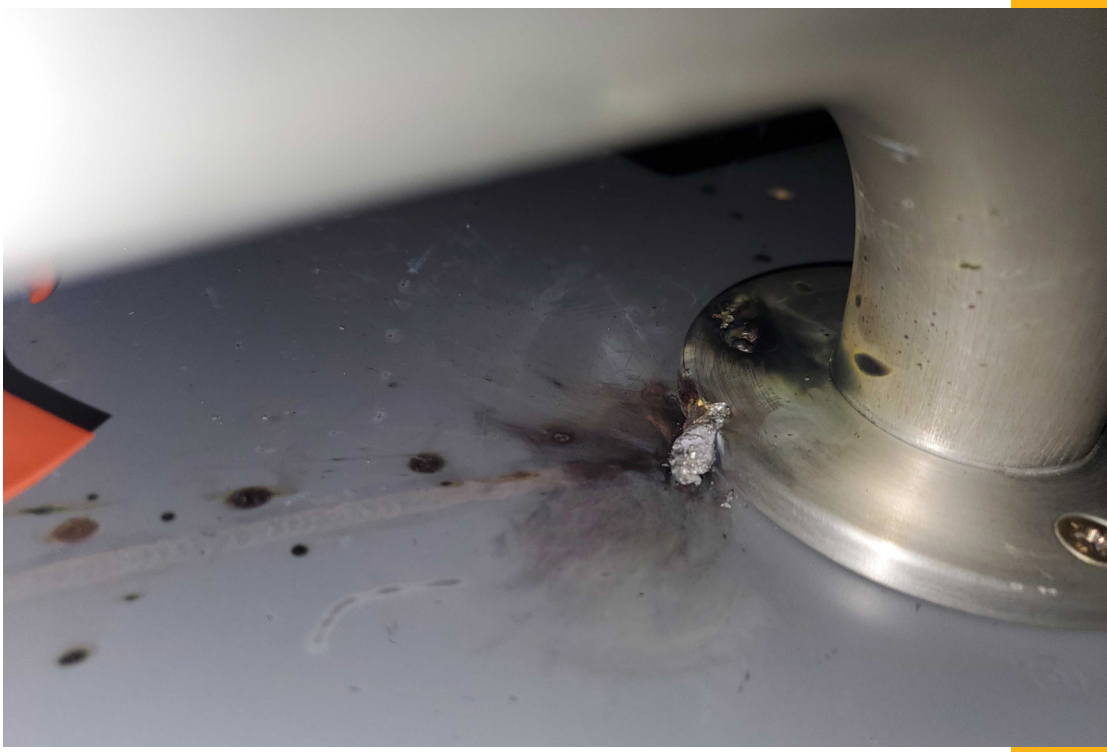
Reviewing the "In Processes" portion of the TD maintenance action form, which is effectively pass down notes from one shift to the next, the CDI assumed the proper procedures had been performed the previous day and the appropriate 100 amp circuit breaker had been pulled. Upon removing the wire tape, the AT momentarily let the wire go to move on to the next wire. However, upon touching bare metal, the untaped loose wire became a threat as fireworks ensued in the aircraft. Witnessing the event, an aviation electrician took action by swiftly securing power to the entire aircraft, thus preventing further damage and averting a potentially grave emergency. As with many procedures in aviation, one misstep can result in a catastrophic outcome. The chain of events that played out over these maintenance shifts contained several missteps, starting with the initial technician's failure to follow procedures and culminating in the emergent need to cut aircraft power. The obvious indication of several procedural mistakes was the live sparking of the lead wires.

But why didn't another CDI or shop supervisor notice a PEMA was not present? Why wasn't the technician who handled the loose wire while power was still applied to the aircraft sufficiently questioned? Wouldn't it have been easy to verify circuit breakers were properly pulled before resuming work or reapplying power? Any one of these actions could have easily disrupted alignment of the Swiss cheese holes and prevented this incident from occurring. Instead, a routine removal and reinstallation of electronic equipment became a near-fatal lesson for everyone. All too often, aviation lessons learned occur only after tragedy. The importance of using publications, checklists and proper personal protective equipment can be taken for granted, but these things are in place because of hard lessons learned by those who came before us.

Our story demonstrates if we become too familiar with a routine, we risk becoming complacent. In aviation, as in all things, complacency breeds lazy, undisciplined adherence to policy and procedures – especially if they are inconvenient. Without strict adherence to policy and procedures, we allow manageable and controllable risks to manifest into hazards with starkly negative consequences. As aviation professionals, we must always remain vigilant against complacency, use the appropriate equipment, read the publications and adhere to published procedures – no matter our level of experience or how simple the task.

These basic principles will maximize the readiness of our nation's maritime aircraft and protect naval aviation's most valuable asset: our Sailors.

As aviation professionals, we must always remain vigilant against complacency, use the appropriate equipment, read the publications and adhere to published procedures – no matter our level of experience or how simple the task.



Is Safety the No. 1 Priority?

By GySgt D.H. Green

Safety is the No. 1 priority … or is it? Safety is extremely important. Risk management (RM) should be implemented in the planning process for all tasks and risk mitigation should be applied in every dangerous job. We put control measures in place and monitor for needed changes. With all that said, is safety the No. 1 priority?

No. Mission accomplishment is the No. 1 priority. The task must be completed, whether that task is repairing an aircraft or conducting flight operations. However, it is completed through the lens of safety. Even though safety may not be the No. 1 priority, it is incredibly important and sits right next to the No. 1 priority, mission accomplishment. If we truly believed safety was the No. 1 priority, we would never fly or work on aircraft.

This occupation is inherently dangerous, but we must conduct daily operations as safely as possible by using RM. As we conduct our work, we should always be using the five-step RM process: 1) Identify hazards, 2) Assess the hazards, 3) Make risk decisions, 4) Implement controls and 5) Supervise and watch for change. This is all done in a manner to ensure safety is handled and approached as a priority in any given task. That does not mean accomplishing a task at any cost; instead, this is where making risk decisions comes into play. The right people, at the right levels, decide if the risk is acceptable after controls have been put in place to lower the risk. The overarching idea is to never accept unnecessary risk, with the emphasis on unnecessary. There are many needful risks, as pointed out by the inherent dangers of our occupation. However, we do not accept unnecessary risks. If we all look at mission accomplishment from this perspective, we can have more meaningful conversations about how to get the job done and get it done safely.

U.S. Navy photo by Jenna Dobson

U.S. Marine Corps photo by Zachary Bodner

U.S. Marine Corps photo by Jackson Ricker

U.S. Navy photo by Joseph M. Bulavac

Noncompliance in Support Equipment Planned Maintenance System

By ASCS Joseph Hippolyte

Photo by Kenneth Rodriguez

Using unsafe maintenance equipment is an unnecessary risk that should never be viewed as acceptable. Those who maintain and enforce the Support Equipment Planned Maintenance System (SEPMS) should understand the significance of abiding by the guidelines of the naval aviation maintenance program and local policies. Not abiding by set guidelines and policies could result in injury to personnel and damage to equipment or aircraft. This article will discuss assessment findings, factors contributing to procedural noncompliance and means of mitigating noncompliance.

Assessment findings

Findings from 20 command assessments reveal a worrying trend of commands sidestepping directions laid out by the naval aviation maintenance program. In many instances, maintenance records for equipment used to work on aircraft had no documentation of the completion of required baseline or subsequent technical directive screenings. Records for lift slings that recently received nondestructive inspections had no documentation to prove the slings passed inspection and were safe for use by maintainers. Servicing equipment overdue for technical directive compliance had no work order written against them and were still in use by maintainers. Maintenance equipment that was not in a preserved status did not have required preventive maintenance tasks activated. Equipment overdue for periodic maintenance was readily available for maintainer use. Supporting equipment that cannot be maintained regularly after the expiration date is considered to be shut down and must not be used. The use of down equipment can cause harm to personnel and aircraft.

Contributing factors

After studying the findings and accounts from numerous assessments, here are a few items found to be contributing factors to procedural noncompliance. 1) The maintenance department's lack of or inability to hold the upkeep of maintenance equipment and records to the same standards as they would for an aircraft. 2) The junior service member usually assigned to the program seemed to lack in-depth program knowledge. This issue is often due to poor training. 3) The assessments also noted those charged with program oversight are simply not doing their job. This is a culture problem and must be corrected. Next, I will share some process improvement measures that have been implemented at commands.

Process improvements

Some of the practices that seemed to mitigate program noncompliance are as follows: Having a command culture that emphasizes and lives by working within instruction guidelines to get the job done. Another effective process improvement is weekly hands-on training for the maintenance management team. This greatly increased the administrative team's knowledge base, allowing them to pick up where team members left off. I have also seen quality assurance perform weekly administrative spot checks, which helps identify and correct discrepancies. It is important that those who maintain and enforce the SEPMS understand the significance of abiding by program guidelines, because not abiding by set guidelines and instructions could result in injury to personnel and damage to equipment or aircraft. Keep in mind that the right decision will often be the hardest one to make.

> “I have also seen quality assurance perform weekly administrative spot checks, which helps identify and correct discrepancies.


U.S. Marine Corps photo by Jose Gonzalez


U.S. Navy Photo by Kenneth Rodriguez Santiago


U.S. Navy photo by Kelby Sanders

SMALL ARMS SAFETY

By GySgt Christopher Watson

The inadvertent or negligent discharge of firearms has been an ongoing issue for many years. Whether it's on or off duty, the results can be devastating. Many questions may run through a person's mind when the latest mishap report hits the streets.

When a mishap report involves a small arms weapons handling incident, questions often posed include:

- Did the person who caused the mishap have the proper training in weapons handling?
- Was anyone there to prevent this?
- How did the individual not know the weapon was loaded?

These are valid questions and the investigations following these incidents produce a variety of causal factors. Some of the more common factors are complacency, lack of supervision, failure to follow procedures, horseplay or the use of alcohol or other substances. When it comes down to it, the majority of required training is being completed, but the action taken during the mishap shows the training is either not sufficient, not conducted often enough or complacency has taken over.

In the past year, there has been an increase in small arms weapons mishaps, specifically involving machine guns during flight. Many of these incidents occurred because proper procedures were not followed to troubleshoot and clear the weapon, resulting in an inadvertent discharge. The service members conducting the evolution were qualified and completed the training, but in that moment when emergency procedures were required, they did not use the training or publications provided.

Taking a look at off-duty firearms mishaps over the past year reveals alcohol or other substances, complacency or overconfidence in the weapon's safety features are usually contributing factors. A majority of these incidents occurred due to complacency and not adhering to firearms safety rules while playing around with loaded weapons. Fortunately, the injuries caused by these incidents were not fatal, but they did take the service member away from work, burdening the command with workers lost due to negligence and unsafe practices. Any military person handling small arms weapons at home needs to have the same respect for the weapon as they would at work. They also must understand alcohol and other substances inhibits their ability to follow proper procedures and handle weapons safely.

There are four basic firearm safety rules to follow, which are listed in the NTRP 3-07.2.2, Weapons Handling, Standard Procedures and Guidelines:

1. Treat every weapon as if it was loaded. This rule prevents unintentional injury to personnel or property damage that could occur when handling or transferring possession of a weapon. Consider every firearm loaded until it has been examined and proven otherwise. Upon receiving the weapon, check the chamber to verify it is not loaded.

2. Never point a weapon at anything you do not intend to shoot. This rule enforces the importance of maintaining awareness of the muzzle's direction and reinforces positive identification of the target.

3. Keep finger straight and off the trigger until ready to fire. This rule minimizes the risk of firing the weapon negligently and reinforces positive identification of the target.

4. Keep the weapon on safe until ready to fire. This rule enforces the use of the weapon's safety features and reinforces positive identification of the target.

Although basic firearm safety rules may seem self-explanatory and easy to follow, thinking "this would never happen to me" is one factor that leads to injury and death to service members and others around them. Firearm safety is extremely important and the rules must be strictly adhered to, on and off duty, to prevent mishaps from happening. Proper weapons handling training should be conducted frequently to ensure personnel are aware of the hazards and emergency procedures associated with small arms weapons. Complacency will always be a hurdle for every command, but it can also be thwarted by actively training to prevent it.

UNDUE PRESSURE: A HOLE IN THE WING

U.S. Navy photo by Giovanni Squadrito

By AMCS T. Matthew Fain

It was the seventh month of cruise and we had been out to sea for almost two months straight. Everyone was beat down and at each other's throats at this point. There was no port in sight and the flight schedule wasn't letting up to let us catch our breath. We had an aircraft come down to the hangar bay because it had aileron binding. We had already changed the servo the night before and it didn't fix the issue. As airframers, we blamed the electricians for the issue. We were all a bunch of young guys in the workcenter, so we really had no experience in this situation.

Maintenance control was breathing down our necks to get this jet back in the fight. The electricians read out all the wires and said they were all good. The quality assurance airframes representative came downstairs to the bay and said it was the wing fold swivel, so we packed up our tools and headed out to change the swivel.

I assigned one of the junior petty officer second classes to change the swivel, since we had a full workload to take care of. It was really a one-man job to pull this small part. I went on top of the jet, showed him where the part was and how to pull it out. I said if all else fails, look in the publication and come get me if you are having problems. Like I said before, he was a junior second class petty officer who spent most of his time in the line division and corrosion workcenter, so he had no experience pulling this part.

The rest of the maintainers on the shift were spread out all over the ship, working on specials and another down jet on the roof.

I was on the roof working when I saw the petty officer second class come running to me, saying he screwed up. We went to take a look and when I got under the wing, I saw he had punched a hole through the bottom of the wing with a giant screwdriver. I asked him how it happened and he said he was using the screwdriver to pry up the swivel and get it out. So now not only did we not have the swivel out, which might have fixed the issue, but we also had a hole in the wing.

I went to maintenance control to tell them what had happened and the Maintenance Chief was not happy, to say the least. I was able to repair the hole in the wing with the help of some civilian contractors on the ship, but this added another shift before we got the aircraft to the flight deck and in the fight again.

There were several lessons learned that day and here are a few points to take away. First of all, don't throw a junior person onto a job they have never done before without providing direct supervision. Don't speed through a job or take shortcuts to get the job done quicker.

Although there may be pressure from maintenance control to complete the job as soon as possible, rushing or cutting corners can result in horrible things happening. It is their job to push maintenance, but you have to be able to call uncle if you can't make it happen.

Additionally, know your tools and their uses, which includes knowing what you are prying against when prying is needed. In this case, knowing the bottom of the wing is made of aluminum, which is easily punctured, would have helped determine the best way to approach the job.

These takeaways may not only have prevented damage to the aircraft wing, but more importantly, they may have helped get the jet back in the fight sooner.

It is their job to push maintenance, but you have to be able to call uncle if you can't make it happen.

Take Advantage of Training Resources

By PRCS (AW) Randi M. Zetterlund

In my most recent assignments, I've filled non-aviation billets or worked in commands with a high operational tempo, so it has been a few years since my last Naval Aircrew Systems PMA 202 FAILSAFE conference. Right before COVID-19 locked everyone down, I had the opportunity to attend the last conferences held at Naval Station Norfolk and Naval Air Station Oceana, Virginia, and the first thing that struck me was the low turnout – especially for aviators and E-6 and below. It was sad to see, especially considering the location; with all the squadrons local to the area, there should have been a much better turnout.

For those who are not familiar with FAILSAFE, they introduce new and newly modified aviation life support systems to the fleet, provide the primary points of contact between fleet aircrew and the PMA 202 team, provide feedback to PMA 202 on new and existing products introduced to the fleet, assist NAVAIR engineering teams with research, development, test and evaluation and conduct follow-up training as requested by various aviation activities.

The information and training distributed during these conferences – not only on operational equipment, but also on future plans – is significant. The networking available at these events alone is invaluable. So I reached out to PRC Carlos Hunter, who works FAILSAFE East and has worked these events for the last three years. He has spent a lot of time traveling to different squadrons, providing hands-on training. The following are his responses to questions I asked regarding the value of these training opportunities.

Why do you think these PMA 202 training sessions are important?
"The FAILSAFE Tiger Team has four people, two on the West Coast and two on the East Coast, so we are only able to reach a limited number of commands in a year to provide training. So yes, it's extremely important to make these training events."

What are some of the benefits outside of training?
"Networking – you get to meet a large spectrum of folks not only in your rate, but also folks who work at Naval Air Systems Command (NAVAIR)."

Do you think participation in these events would impact safety?
"Yes. As I travel around, there are a lot of junior folks running shops who don't understand the importance of the job they are doing."

While conducting safety assessments, I've noticed there seems to be a lack of effectively trained Sailors and Marines – for example, when it comes to operating Combat Survivor Evader Locator (CSEL) radios or maintaining log sets correctly. Are you seeing this as well?
"Absolutely. Some are afraid to ask because they don't want to look like they don't know what they are doing; others just don't know who or what to ask."

Has participation in the PMA 202 conference dwindled in recent years?
"Yes. It has a lot to do with funding. Previously, NAVAIR had a budget that could fund your travel and lodging, but now your command has to pay – or you pay for the travel and lodging and proceed on no-cost temporary additional duty orders. Another thing that may also be affecting this is the fact there are a lot of junior shops. We advertise these events on our website and through message traffic, but how many junior Sailors and Marines read mail traffic? If they have an out-of-rate division Chief, are they recognizing the importance of sending Sailors and Marines to these events?"

What do these events offer?
"An exposé of upcoming new gear as well as refresher training on gear that is not used often. For example, at our last conference, we provided training on chemical, biological, radiological (CBR) gear. A few weeks later, the fleet was using CBR gear as personal protective equipment for protection against COVID-19 as the backup in case we ran out of N95 masks."

Are these events only relevant to the aircrew survival equipmentman and flight equipment and aviation structural mechanic and seat shops?
"No, it is also relevant training for aviation medical safety officers, aviators, supply, aviation electronics technicians and electrician's mates (for CSEL training) and civilian maintainers.

What do you say to squadrons that don't want FAILSAFE training even though their junior Sailors and Marines have told them they need and want this training?
"I would say the squadron will be missing out on vital training for their junior Sailors and Marines. Our rating does not have Fleet Readiness Aviation Maintenance Personnel schools or technical representatives like most other naval aviation maintenance ratings. When opportunities come up for junior Sailors and Marines to get training from the subject matter experts, you must make that happen. That is leadership 101."

If we don't support programs at our disposal now, it will be extremely difficult to justify maintaining these events in the future, the way they are available to us now. There is no replacement for hands-on training. You may not be able to attend these training conferences and events as often as you would like due to funding or operational commitment, but you are always able to reach out and ask your FAILSAFE team questions or schedule them to come to your squadron and conduct training. They are an amazing resource worth using.

> *If we don't support programs at our disposal now, it will be extremely difficult to justify maintaining these events in the future, the way they are available to us now.* ***There is absolutely no replacement for hands-on training.***

Aileron 1 / Aileron 2 Pictures taken by: AMCS (AW/SW) Curtis Layne

INADVERTENT WING CRUNCHES

By AECS Russell Gross and GySgt Jeffrey Schmitt

The loss of an aircraft to mishaps puts a burden on already strained material readiness requirements and more importantly, our workforce.

You have heard the term before, "inadvertent," and even if you are new to the fleet, you know exactly what it means. Whether it is an aircraft being towed into a hangar, onto a maintenance stand or another aircraft, the damage reported varies from scuffs and scratches to major structural. The causation varies, but is usually limited to a few reasons because there are clear ways to prevent a specific type of damage: inadvertent wing crunches.

The term inadvertent covers a wide variety of situations and by definition means "not intended." Crunch simply indicates any striking, crashing, colliding, impacting or contacting aircraft, objects or structures that causes damage to equipment. Hence, the full definition of an inadvertent wing crunch is an unintentional contact of an aircraft wing into another aircraft, object or structure or an object contacting an aircraft wing during a maintenance evolution. The number of inadvertent wing crunches continues to be high and costs the Navy and Marine Corps millions of dollars each year.

One of the more common wing crunches happens when a squadron is out to sea. It's common knowledge that an aircraft carrier deck is a crowded place and leaves little room for error. Oftentimes, an aircraft returning from a mission will be placed into a "wingspread spot" so the aviation ordnanceman (AO) can download any unexpelled ordnance or change the load out of an aircraft. After removing or changing the ordnance, the AOs will manually crank the wings to the folded position, often neglecting to reposition the wing fold switch in the cockpit to match the position of the wings. When a maintainer or aircrew applies power to that aircraft, the wings will automatically move to the spread position, impacting one or sometimes two aircraft on either side of the first aircraft.

Other examples of wing fold operation mishaps include trailing edge flap and aileron damage due to incorrect positioning, incorrect installation of the wing fold switch and missing or skipping steps stated in the publication. Factors contributing to these types of incidents range from judgment and decision-making errors to not following checklists to failing to prioritize tasks adequately.

Additionally, personnel found at fault ranged from inexperienced maintainers to maintenance department leadership and pilots in command. All of these facts lead to the conclusion that every maintenance action should be carefully addressed and performed each and every time. With manpower already being pushed to the limits with extended deployments and short deployment turnaround times, performing maintenance by the book and following procedures every time cannot be overstated. The loss of an aircraft to mishaps puts burden on already strained material readiness requirements and more importantly, our workforce. It's very easy to get complacent when performing the same action day in and day out; however, the importance cannot be overstated to take the extra time and adhere to your aircraft maintenance instruction manuals.

U.S. Navy photo by Jess Lewis

By AZCM (AW/SW) Courtney Barber

Have you ever heard the phrase "blind loyalty"?

If not, let me introduce to you what everyone has, already built in, without even knowing it. Each of us is guilty of putting our trust in someone or something because we *know* they would never harm us, do us wrong or take our kindness for weakness. Think about all the leadership, adults and peers you have trusted because of their title, training or position. As an aviation maintenance administrationman (AZ), you too hold that same power. Your command, your leadership and your peers trust you automatically because of your title, your training and your position in the command. Whether they care to admit it or not, AZs cover everything from A to Z. If your maintenance action form is incorrect, you rely on AZs to correct it. If the printer is jammed, you rely on AZs to find and fix the jam. If Maintenance Master Chief's data board is not up to date, the AZ is responsible for the latest and greatest information. Oh yes, and sometimes, for whatever reason, AZs seem to convert into information system technicians if a computer malfunctions. It seems overwhelming, doesn't it? Last, but definitely not least, Navy pilots depend on AZs because they are the gatekeepers for the most current and up-to-date flight hours, component times and inspections on the aircraft. So how well are AZs ensuring the trust or loyalty is not lost because of a simple process?

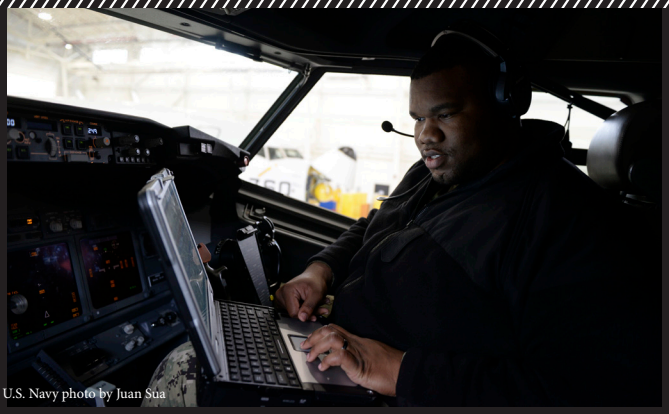
During recent assessments, analysts found many squadron AZs do not have a process for accepting or transferring aircraft. According to COMNAVAIRFORINST 4790.2D, there are required steps to complete when a reporting custodian accepts an Aircraft Transfer Order under Xray Action Code R (COMNAVAIRFORINST 4790.2D 5.1.1.6.). Those steps include, but are not limited to, the following:

1. Inventory of all equipment listed in the AIR.
2. Verification of cartridge-activated devices (CAD) and propellant-actuated devices (PAD).
3. Configuration verification.
4. Hydraulic fluid sampling.
5. Daily inspection.
6. Aircraft acceptance conditional inspection technical publication requirements, if applicable.
7. Complete the functional check flight.

If you want to ensure the aircraft that is being accepted is up-to-and-touching all corners, it is a good idea and practice to review more than what is listed on the left. Also, check and complete the administrative side as well:

1. Submission of XRAY and DECKPLATE ETRs.
2. Electronic receipt of aircraft and associated ALSS equipment in the virtual fleet support CADPAD, TRACE CADPAD and TRACE LIFE SUPPORT Modules, if applicable.
3. Verify the Monthly Flight Summary (OPNAV 4790/21A) (**Figure 5**-5) by calculating cumulative FLYING HOURS in PERIOD and SINCE NEW blocks/fields.
4. Verify the Equipment Operating Record (OPNAV 4790/31A) (**Figure 5**-6) by calculating cumulative OPERATING HRS ACCUM blocks/fields.
5. Submitting a WO for Aircraft Gain.
6. Entry in the aircraft and AESR logbooks on the inspection page titles "Conditional." Authority for the entry is this instruction.
7. Hydraulic fluid sampling results entry in the Miscellaneous/History (OPNAV 4790/25A) section of the logbook.

Now you can always add to the list, but never take away. Many AZs who have experience in accepting and transferring aircraft know it is a tedious task, especially when you lack experience or your command is accepting more than one aircraft at a time. Having a step-by-step process written in layman's terms so the most junior person in the work center can follow will do wonders for your stress level. Shooting from the hip or trying to remember what you think you read or heard is never the way to conduct business. Units rely heavily on AZs to ensure squadrons can meet or exceed mission expectations. That is why trust among AZs is important. I have been taught to never be the single point of failure or the reason why a command's aircraft has to be grounded and pilots miss out on their qualifications. If this happens, as an AZ, you failed to have a process in place or a step-by-step guide on how to properly ensure the safety and trust of those who depend on you with blind loyalty.



U.S. Navy photo by Juan Sua

U.S. Navy photo by Victoria Granado

Maintenance Complacency An Easy Trap To Fall Into

By AECS Russell Gross

Picture this: It's a Thursday night at the end of a 14-hour shift and you're trying to wrap up that last maintenance check that's keeping everyone at work. There is a flight schedule for day check on Friday and this aircraft turn is the last thing you need to do.

The plane captain gives the engine start signal and just as the engines turn up, you feel a shudder in the aircraft and see the emergency shutdown signal from the plane captain. That's right, someone left the 64 Doors open for this leak check and the Starboard Trailing Edge Flap raised and contacted the door. No matter the aircraft platform, everyone can relate to this situation and the feeling you get.

With the current accelerated and extended deployment schedules, it's not uncommon for complacency to set in during aircraft maintenance. From the smallest steps of checking out tools to properly maintaining our maintenance programs and extending to our day-to-day tasks such as foreign object debris walk-downs or moving support equipment on the flight line, it's more important than ever that we continue to follow the publications and use risk management in everything we do. It's more important than ever to lean on the firm steps that are taught the minute you walk through the doors of your first command. Always use your maintenance instruction manuals (MIMS) and the Naval Aviation Maintenance Program (NAMP) for all you do.

> "If You See Something, Say Something.

After being in the Navy for 24 years, I've seen my share of complacent behavior and have fallen into it myself, making the mistake of thinking I knew every step and knew exactly what needed to be done. I was stuck in the routine, and before I knew it, I completed the task on autopilot only to return to the workcenter and find I was missing a tool.

It's the simple steps we take that ensure our jobs are done correctly and safely. In maintenance, taking the proper steps goes a long way in keeping you safe. Not only do we have our MIMS, the NAMP and local regulations to keep us safe, but we also have our shipmates to help keep us in check. No matter what your rate or military occupational specialty, we all know the basics of safety. Remember the phrase, "If you see something, say something."

If you see someone on top of an aircraft without a strapped cranial, be the person who says something. If you see someone flying on or around a turning aircraft without hearing and head protection, step up and say something. Taking the time to correct a small discrepancy could be the crucial step that prevents something from getting damaged or someone from getting injured – or even killed. If you follow the steps in the Portable Electronic Maintenance Aid, along with the steps clearly outlined in the NAMP, maintenance will be conducted safely and correctly every time. Remain focused on the task at hand, take the extra time required to do the job correctly and watch out for your shipmates.

Don't get snared by the trap of complacency.

U.S. Navy photo by K.R. Jackson-Smith

A FUEL TRUCK HIT A PARKED AIRCRAFT IN BROAD DAYLIGHT

by AMCS (AW/SW) Anthony Abraham

U.S. Navy photo by Jim Kohler

> The Aviation Mishap Board (AMB) recommended briefing all aviation maintenance and support personnel on the importance of adhering to the basic procedures.

A fuel truck recently hit a parked aircraft in broad daylight.

Many may ask, "How does a preventable mishap like this happen?"

The Navy and Marine Corps have spent tremendous amounts of time and effort training military personnel to prevent mishaps, so how did this happen? Are personnel getting too comfortable with the job or is it a lack of training? Whatever the reason, it needs to stop because these mishaps are costing the Navy and Marine Corps millions of dollars, adding more maintenance man hours and greatly affecting overall readiness.

The mishap mentioned above involved a fuel truck and an F/A-18 Hornet parked on the flight line. Squadron maintenance control called for aircraft fuel for one of the many aircraft they have in custody. A few minutes later, the fuel truck arrived and approached the target aircraft. As the fuel truck began to turn left and set up for a right-hand U-turn, the truck driver misjudged the distance of the adjacent aircraft and hit the parked aircraft.

This maneuver damaged the aircraft radome and the fuel truck. Luckily, no personnel were injured during the incident.

The squadron immediately conducted an investigation, collected data and lines of evidence and also assigned an aviation mishap board (AMB). The AMB personnel immediately conducted an investigation to find the root cause of the mishap. The investigation revealed the incident was caused by human factors. The fuel truck driver was fully qualified with years of experience in the field; however, complacency set in. The driver did not comply with the proper procedures per NAVAIR 00-80T-109, which states "at no time shall a truck approach closer than 10 feet of an aircraft and normally no turns are made except at the end of the parking line."

Another factor was life stressors. During the investigation, the board also discovered the driver was experiencing significant stress involving the loss of several family members leading up to the mishap.

The last factor fell into the supervisory category. Squadron leadership did not conduct adequate risk assessments and did not apply risk management before allowing fuel truck drivers to operate machinery along the route, and as a result, cost the Navy and Marines $27,169; a Class D ground mishap.

How can we stop this type of mishap from happening again?

First, the AMB recommended briefing all aviation maintenance and support personnel on the importance of adhering to basic procedures. Next, members must implement risk management before every evolution or tasking occurs. Lastly, members need to open up to their immediate leader if they are facing stressors outside the workplace.

This mishap could have been prevented if the member had followed proper procedures and communicated any life stressors that could affect job performance. It is also important for khaki leaders and immediate supervisors to monitor the status of their personnel as another layer of mishap prevention. Lastly, we cannot become complacent in the job. Complacency can weaken the country's military preparedness and cause injuries or death.

U.S. Navy photo by Kristina Young

A Shocking Experience

By ATCS (AW/SW/IW) Cristie Link

When you are one of the chosen few and become an aviation electronics technician, you come to expect certain things on a daily basis during your career with the command. Whether you are intermediate level working at fleet readiness centers on shore duty or aircraft intermediate maintenance departments on sea duty or organizational level in the squadron, you will always have the inherent risk of electrical shock and possible electrocution. Although we are taught over and over in "A" school and again with training provided in the fleet, this is still something that occurs many, many times a year. What's most shocking is the majority of these incidents are entirely preventable.

Reading through the reports in the RMI, one can see the majority of incidents boil down to lack of attention to detail or complacency. In some cases, there are inexperienced personnel who just need additional on-the-job training to avoid the occasional zap while troubleshooting radar or forward-looking infrared subsystem replaceable assemblies, otherwise known as circuit cards.

It may sound fundamental, but simply remember when working with any equipment that may be energized, to use only one hand. If the technician has two hands on the equipment, the stray voltage or amperage will have a complete circuit to follow and will travel up the arm, through the chest and through the other hand.

Even in situations where the technician is following safety precautions and working with one hand, there is still a risk of getting shocked. If this happens, the technician must be seen by medical to determine whether further evaluation or treatment is required based on the severity of the incident. Intermediate level technicians work on many circuit cards with very small components that require adjustments when voltage is applied. These circumstances require the correct nonconductive tools are available – and always used. Additionally, when technicians perform testing, it requires their full attention and distractions should be kept to a minimum.

Following procedures as the Consolidated Automated Support System bench does is critical to keeping the technician safe. Depending on the asset, some items require an end-to-end run time of eight hours or more. Hot swapping, which happens when the technician pulls a circuit card out of an item with power applied to save time, is never a good idea. Not only can this injure the technician, but it can also cause severe damage to the asset. Perpetuating these habits within a workcenter can quickly cause injury to inexperienced technicians.

For those of us who work in these situations, following procedures becomes the norm and it's common sense. However, it is important to enforce the back-to-basics training for newer technicians in the workcenter. Read the posters, follow the procedures and remember as long as the emphasis on attention to detail is at the forefront of training, many of these incidents are preventable.

Additionally, should a technician in the fleet discover issues that are not documented in maintenance manuals, they should notify quality assurance immediately.

COMPLACENCY, A COMMON VICE

By GySgt Jeffrey Schmitt

U.S. Navy photo by Ryan Breeden

> Today at work, take your time, correct your peers and don't let complacency be a common vice!

U.S. Navy photo by Jacob Hilgendorf

U.S. Navy photo by Jacob Hilgendorf

Across the fleet, Marines and Sailors often work consecutive 12-16-hour shifts in forward-deployed, austere environments, living among their peers in cramped quarters, putting blood, sweat and tears into everything they do. These individuals have dedicated themselves to ensuring their assigned type, model and series of aircraft are in the best condition possible and ready to accomplish their missions. There is no doubt that a certain sense of pride exists for these aviation maintainers and the work they perform.

So the question needs to be asked: Why is it then, that complacency can be found in almost every unit assessed by the Naval Safety Center?

During the last year and a half, the Aviation Maintenance Assessment Team has conducted over 100 assessments of Navy and Marine Corps squadrons all over the world. The vast majority of units visited had complacency issues pertaining to all work centers, as identified by team members.

From incidents such as foreign object debris (FOD) found on the flight line during FOD walk-downs to standing directly under a crane while it is in use, the safety violations are many and the spectrum is broad. We are all in the business of mitigating risk and reducing safety violations with the goal of reducing mishaps. How often have you found yourself on your way to work in the morning feeling as if it's Groundhog Day? It has happened to me more times that I`d like to admit. This is a sure sign that complacency is creeping up on you. The best thing to do in this situation is to acknowledge it by making sure you take a little extra time on the job that day. Ensure you adhere to every step of the publication for each task you are involved in and all supplementary tasks are completed, such as accounting for all tools before, during and after the job. Always using personal protective equipment (PPE) and keeping your head on a swivel are other ways to mitigate the risk of complacency, which can cause safety violations.

Another thing to look out for is simple mistakes made by peers. A Marine or Sailor on top of an aircraft with an unstrapped cranial, for example, could be a red flag of complacency setting in. Walking out of the shop with a toolbox that hasn't been signed out, performing a pre-operational inspection on support equipment without signing out the pre-operational card or not using proper PPE while handling hazardous material could also be indicative of complacent maintainers.

However, all it takes is a supervisor, peer or even a junior Marine or Sailor to correct those mistakes on the spot. If the violator is not corrected, they will continue to make the same mistakes because they are not held accountable. The more they get away with it, the more likely they will continue it.

Complacency is a reoccurring common discrepancy identified by the assessment team and is definitely something we should all focus on. Whether you are getting ready for, already on or just coming back from a deployment, you must remain engaged at all times to ensure your unit will perform the required mission to the best of its ability.

Today at work, take your time, correct your peers and don't let complacency be a common vice.

Expired vs. Expiring

By AMC (AW/SW) Mark Pugh

Conducting HAZMAT inventories can seem like a monotonous task. A revolving door of the same inventory you did last week, last month – or maybe even last quarter. You already know it is going to take the better part of two days to a week, so you place it near the bottom of your priority list.

Why is it so important that we go through all these lockers and boxes and put hands on every item? Is the item expired, is it going to expire in the next month or is it going to expire at all? And if the item is nearing expiration, can we get an extension?

Prioritizing the items into three categories will help maintain a thorough process: Indefinite, code 0; Non-extendable, Type I or alpha codes and Extendable, Type II or numeric codes, per Department of Defense Manual 4140.27, Vol. 1, "Shelf Life Management Program: Program Administration." Shelf-life material will be extended per the DoD Quality Status Listing if an exact Type II National Stock Number (NSN), contract number and batch or lot are present. If the Type II NSN material with associated information is not on the HAZMAT, the shelf-life code listed in the DLA Logistics Information Service (LIS) database will be used for shelf-life extensions. The criteria for extending nonstandard Type II material is the original manufacturer's shelf-life period plus two additional manufacturer's shelf-life periods.

Normally, Type II material should not be extended or retained for more than three shelf-life periods – the original manufacturer's expiration date plus two extensions, based on the DLA LIS shelf-life code or manufacturer's shelf-life period if a nonstandard or open purchase. The HAZMAT regional director may consider scrapping or disposing of the two extended materials as appropriate.

If the material is expired and cannot be renewed for further use, what now?

When inventory material other than BP28 or shelf-life extendable must be surveyed and processed as hazardous waste due to shelf-life expiration, container failure, defective material summaries or some other problem rendering it unusable, the last customer to turn in the material is responsible for the hazardous waste disposal costs. The commands spend taxpayer dollars on HAZMAT needed to complete maintenance and preservation projects. It should not be a difficult task to ensure items are not expired so they can be used for their intended purpose. For example, due to an overlooked expiration date, a command is spending more funds to process as waste and dispose of last month`s product.

> "The commands spend taxpayer dollars on HAZMAT needed to complete maintenance and preservation projects."

U.S. Navy photo by Kambra Blackmon

SAILORS AND MARINES PREVENTING MISHAPS

BRAVO ZULU

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

AME1 Ruby Gill - Patrol Squadron 16

While conducting FOD walk down on the flight line, AME1 Ruby Gill recognized a potential risk involving an unchocked and unattended vehicle parked near the threshold of the hangar doors. Without being asked she took the immediate initiative to chock the vehicle and notify the Safety Department, preventing potential damage to both the vehicle and the hangar. Her steadfast awareness and overall vigilance broke a chain of events that may have led to a potential mishap and ensured continued safe squadron operations without injury or damage to the aircraft or support equipment.

LCpl Nicholas Lahay - HMLAT-303

During the night-crew maintenance shift at HMLAT-303, LCpl Nicholas Lahay was concluding a scheduled maintenance inspection on an AH-1Z turret system. Working in the dark and mostly by feel, as the area he was working on is difficult to see, he was attempting to safety wire the turret system bolts.

LCpl Lahay noticed the safety wire had an odd tactile feel and was difficult to thread through the turret fasteners. When the wire broke in his hand, he called “knock it off” and halted the maintenance action. LCpl Lahay crawled out from under the turret and inspected the safety wire in a well-lit area where he discovered that the wire he checked out from the tool room was in fact solder wire.

Upon further investigation, he discovered a mislabeled solder wire spool in the tool room central distribution area. Luckily, other maintainers had not used the spool yet.

LCpl Lahay’s situational awareness and attention to detail prevented a potential mishap and lost maintenance hours.

DID YOU KNOW?

The origins of "Bravo Zulu" are in the Allied Naval Signal Book, which for decades has been used by members of the North Atlantic Treaty Organization (NATO), established in 1949.

LCpl Karina Aguilargonzalez - HMLAT-303

During the day-crew maintenance shift at HMLAT-303, LCpl Aguilargonzalez was troubleshooting a generator system failure on an AH-1Z. She discovered a melted bus bar on the aft power distribution panel relay. Her meticulous attention to detail and technical expertise led her to investigate the issue further. LCpl Aguilargonzalez was able to diagnose the problem as a loose nut and lock washer that had rubbed together. This rubbing caused arcing eventually sparking a small fire.

LCpl Aguilargonzalez's technical acumen resulted in a product quality deficiency report submission to Bell Helicopter. This report prompted Bell to conduct a thorough inspection of the aft power distribution panel on the last lot of AH-1Z helicopters before delivery to the fleet. Her efforts prevented a potential catastrophic fire that could have resulted in the loss of the aircraft and aircrew.

Aircrewman 1st Class George Parsons III - HSC-9

HSC-9 Sailor Receives Navy and Marine Corps Medal for Heroic Actions

Naval Helicopter Aircrewman 1st Class George Parsons III, assigned to Helicopter Sea Combat Squadron (HSC) 9, was at his Elizabeth City home on Oct. 24, 2019 when a police officer came through his neighborhood chasing an assailant. When he saw that the assailant was trying to take the Officer`s weapon, Parsons sprung into action and helped detain the suspect.

Parsons has received other accolades for his bravery, such as recognition from the Elizabeth City Mayor, Bettie J. Parker who awarded him with a Mayoral Certificate of Appreciation last November thanking him for his assistance in aiding the Elizabeth City Police Department.

HSC-9 employs the MH-60S in a variety of missions to include Anti-Surface Warfare, Strike Coordination and Reconnaissance, Intelligence, Surveillance and Reconnaissance, Maritime Interdiction Operations, Helicopter Visit Board Search and Seizure, Anti-Terrorism Force Protection, Personnel Recovery, Combat Search and Rescue, Search and Rescue, Plane Guard, Special Operations, Medical Evacuation, Non-Combatant Evacuation, Vertical Replenishment, and Disaster Relief.

SUBMISSION GUIDELINES

Please use the following guidelines when submitting articles.

1. If you have already written your article and are familiar with our magazines, simply email it to one of the email addresses below:

SAFE-MECH@navy.mil

Length

BZ Article: 90-150 words
Short story: 450-500 words
Feature story: 1200-1600 words
News briefs: 500 words

Fact-checking

We ask that writers research reference materials (such as manuals and books) used in their articles. Please verify your sources before attributing quotes to them. If you need us to perform additional fact-checking, please make a note of it when submitting your article.

Photos

All photos must be high resolution (300 dpi) in JPEG or JPG format.

When you e-mail your article, use the author's name as the filename. **Example:** CatalinaMagee.doc.

We forward to receiving your great articles!