The Navy & Marine Corps Aviation Maintenance Safety Magazine

Mech

Summer 2013
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Crunch Time

Guns n' Rotors

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The Navy & Marine Corps
Aviation Maintenance Safety Magazine
Summer 2013, Volume 51 No. 3

Mishaps cost time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This magazine's goal is to help make sure that personnel can devote their time and energy to the mission. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous; the time to learn to do a job right is before combat starts.

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Front Cover: AD2 Mandime Seitz (hardhat), and AD2 Lucas both assigned to HSC-9, use one of the hangars overhead crains, to lift and move one of four main rotor spindle-heads up to maintainers working topside on a MH-60S. Photo by John Williams.

Departments

Note from Our Aviation Maintenance Safety Team

By AMC(AW) Richard Kersenbrock

We here on the maintenance safety team have noticed a problem from the fleet when it comes to Mech article submissions. We are not sure if that it is just a misconception that the magazine is viewed as NAVY only, or if there is a disconnect for article submissions. The good news for my fellow Marine maintainers; this is a magazine for the maintainer, by the maintainer, both Navy and Marine. Another myth that we hear while on survey is that it takes too long to get an article through the chain of command chop process. Well guess what? You do not need to be an English major to submit an article to the Naval Safety Center, we have a very skilled and experienced editorial staff that will make it look good, we just require the information so we can get it out to the fleet. Whether it's good, bad or indifferent information, if it's hurting your head, chances are that somewhere else in the fleet there is another unit having the same issues, and our magazine is a great way to get that information to the fleet.

AMC(AW) Richard Kersenbrock, is an Airframes/Corrosion/HAZMAT Maintenance Safety Analyst at the Naval Safety Center.

Photo this page: LCdr. Douglas Kay signals an EA-18G Growler from VAQ-129 to launch during night flight operations aboard USS *Carl Vinson* (CVN 70). Photo by MC2 Timothy Hazel.

The New Safety MO

Greetings to the Fleet. My name is LCdr. Richard Thousand, and I have just recently relieved Cdr. Vernon Hunter as the Maintenance and Material Division Head at the Naval Safety Center.

First, I'd like to congratulate Cdr. Hunter on his recent retirement. We wish him well as he heads off to start the next chapter in his life. He left some big shoes to fill. But, he left me with a solid team of technical experts and safety professionals.

I recently completed my tour onboard USS *Wasp* (LHD 1), where I served as the AIMD Officer. It was a very fulfilling tour and a great opportunity to work with today's technicians and stars of tomorrow. My prior assignments include USS *Abraham Lincoln* (CVN 72), CNAP, and various squadrons.

As the newest member of the team, I'm excited to get to work. Our team of safety professionals is here to help. The aviation safety survey process continues to evolve, so that we can bring you the best product available. By simply using Operational Risk Management and Time Critical Risk Management in our daily routine, we can greatly improve our safety culture.

I look forward to working for you. Remember, safety is a by-product of doing it right the first time, every time. Stay safe.

Very Respectfully,
LCdr. Richard Thousand

MAINTENANCE TRENDS
from the FIRST SIX MONTHS OF FY13 CLASS A, B, & C MISHAPS

So far, there have been 30 Class A/B/C Mishaps where maintenance was identified as an accepted causal factor.

- 28% of the mishaps reported in the six-month period involved maintenance.
- Three personnel injured (2 from falls).
- Over $42.2M in damage to aircraft.
- At the time of this writing, there were still 16 mishaps with the causal factors pending.

While many of the events were the result of multiple factors, some of the most-often repeated are shown below. Here are a few of the What's, Where's, and Why's:

WHAT

- Aircraft impacting other aircraft, GSE, or structures (9).
- Parts damaged due to incorrect installation (6).
- FOD (5).
- Engine fires (3).

WHEN

- During aircraft operations (12).
- During ground handling (9).
- Ground turns / checks (4).

WHY

- Among the causal factors, Failure to Follow Established Procedures was (once again) the most common, cited in 20 of the 30. This includes not utilizing the published MIMs / IETMS, or disregarding locally established procedures.
- Failure to Properly Supervise was the second most common (11). Maintenance control personnel, flight deck coordinators, or CDI's all had the opportunity to stop the event before it occurred.
- Poor Communications was the third most common (6). During ground operations on the flight line / flight deck or during complex maintenance evolutions, a clear flow of communications with an established leadership is critical in the smooth execution of the tasks at hand. ■

How Did We Get Here?

By AD3 Derek Espino, VFA-37

During a standard engine turn, I was serving as the plane captain (PC). Even though I was junior, I observed the right trailing edge flap (TEF) extend to full while giving the signal for half flaps and I noticed that door 64R was open. I then saw the TEF drive into the door 64R causing the metal to crunch and bend in three different directions, causing a Class C mishap. I then asked myself, "How did we get here?"

It was a typical evening in the squadron and I was the PC chosen for the turn. Our goal for the night was to conduct a low power turn (LPT). This particular aircraft had recently gone through extensive maintenance and would require a full systems turn to assess systems performance. Upon reporting to the flight line, the LPT operator (LPTO) asked me to verify the circuit breakers were pushed in and to secure the aircraft. Once secure the LPTO asked me to help push the starboard TEF up so that she could verify doors 64R and 68R connections. After verifying all connections and fittings, the LPTO continued a walk-around before proceeding to the cockpit for the turn.

As the PC, I took my position near the front of the aircraft and awaited the startup signal from the LPTO. Upon receiving the go ahead from the operator, I gave the "clearout" signal and then began to signal for the auxiliary power unit (APU) startup. A mechanic from the engine shop held door 68R away from the APU blast. The operator "wind milled" the engine for three minutes and then we secured the engine for servicing. Following servicing, we closed door 64R but left door 68R hanging. Once personnel were clear we began the start sequence; however, the engine would not start. After some quick troubleshooting the maintainer discovered that the fuel control breaker was not pushed in. He reset the breaker and gave the signal to try starting the engine again. The LPTO then began to start the aircraft and the engine started up.

Once the right engine came up on power, one of the troubleshooters involved in the turn gave the signal to open door 64R. I then gave the LPTO the "hands off" signal and the door was opened. It was then that things went horribly wrong. The starboard TEF traveled to the "full" or down position. The movement caused severe damage to the TEF and the AIM-7 illumination antenna. I then gave the signal to shut down the engine and we began to survey the damage and count our blessings that nobody was injured.

Upon completion of the mishap investigation it was determined that the major fault of the incident was lack of communication and the fact that we did not conduct a thorough preturn safety brief. Had we completed the brief, all of us would have had a clear understanding of responsibilities, and what was going to be checked. We would have also been aware that the flaps would extend to their commanded position upon startup. Also, as a junior PC, I should have had a clearer understanding of my duties and responsibilities during the turn. We can't always guarantee a mishap-free environment, but we can significantly reduce the possibility of a mishap with proper planning, deliberate, and Time Critical Operational Risk Management. ■

By the Book

By AD2 Andrew Koch, VP-1

Our tale begins as a typical Friday night on Whidbey Island: cold, windy, dark and dreary. Patrol Squadron One maintenance was swamped as usual, and our discrepancy board was riddled with Zulu EOCs and red ink. The bulk of this ruin was entrusted into the hands of 110. To the uninitiated, 110 is the home of bloody knuckles and greasy palms.

Let me introduce the players: an overworked, rough-and-ready AD and an audacious AE. The latter found propeller contact rings not giving the proper resistance to ensure safe operation of the No. 1 de-ice system in flight. Power Plants was directed to remove the propeller. On deck, it was determined the malfunction originated in a bad front spinner, so the propeller needed to be reinstalled. As the installation of the No. 1 propeller was nearing its end, the AEs asked the ADs for assistance in removing the No. 3 spinner to further troubleshoot the No. 1 propeller de-ice problem. Happy to oblige, the ADs assisted in the removal of the No. 3 front spinner and the AEs placed the No. 1 front spinner on in its stead, thereby confirming the de-ice discrepancy was caused by the No. 1 spinner.

The AE's findings led to the No. 1 spinner being replaced. Once again those beautiful, negatively-charged electrons were able to leave their host atom for the next, and migrate from the contact ring to the front spinner and back ensuring the de-ice system was functional. As an AD, I call this magic; AEs call it a bad front. (All of this was done without an assist work order and was the first of many missed opportunities that would later lead to No. 3's front spinner departing the aircraft.) Both propellers were presumably reassembled properly with their appropriate parts and aircraft 761 was declared ready for turns.

Enter the protagonist. I present to you myself, AD2, CDI, night shift supervisor. My shift assumed our duties at 1430, while day shift stayed late to finish the propeller installation. We did the usual regimen of checking tools, maintenance meeting and reacquainting with NALCOMIS. Maintenance tasked us with two things: We shall have aircraft 761 in an up-status and we shall proudly serve our country's Navy combat team.

The day crew went home and my shift suited up for high-power engine turns. We had a quality brief by an AWF2 and Quality Assurance representative, and departed for the plane. The plane handler, taxi pilot and AWF2 performed a diligent screening of the ADB and walk-around of the aircraft. However, all three were oblivious to the troubleshooting that was preformed earlier because no work order was initiated for the removal and reinstallation of the No. 3 spinner.

As turns started, I listened to the AWF2 go through the usual start routine: air is good, button in, rotation indicated, fuel flow, light off, pressure rising in both

sections, air is good, pumps in parallel, EDC light out, button out, light out, TIT 783 — a normal start. At this point, all conditions were very normal. The plane handler guided us through a right turn and we rolled out to the high-power spot. The valve-housing beta cam on No. 1 was not aligned properly, so we shut down to make beta-scheduling adjustments. At that moment our Bluejacket of the Year, an AD3, made a startling discovery that caused all the aforementioned work to become questionable. The No. 3 front spinner was sitting on the deck. As rotation stopped, we ran to investigate.

The good news is that the propeller and aircraft were untouched. It seemed the spinner fell forward, perhaps as the engine shut down. The bad news is that the spinner was placed on, but not properly secured; the bolt on the retaining ring was not set to the proper torque and therefore not engaged.

The front spinner was ruined, turns were cancelled, Saturday's duty section had to work overtime to rectify the damage, and night check was awarded hours of overtime writing statements. The ugly news is that the plane could have been sent flying with a half-installed spinner, and the plane handler could have been on the receiving end of a Class A or B mishap as we made our turn to head out to the high power spot. There were no MAFs documenting the swapping of spinners, and the plane handler, turn operator, or taxi pilot did not detect the improperly installed spinner.

The damages were only monetary. The primary take away is the importance of documenting your maintenance, no matter what the perceived pressure to get the job done is. Operational tempo, manning, or personal pride are not excuses to neglect safety. Conduct maintenance in a "by the book" manner. ■

Maintenance tasked us with two things: We shall have aircraft 761 in an up-status and we shall proudly serve our country's Navy combat team.

Crunch Time

By AE2 Jason Bashor, VFA-137

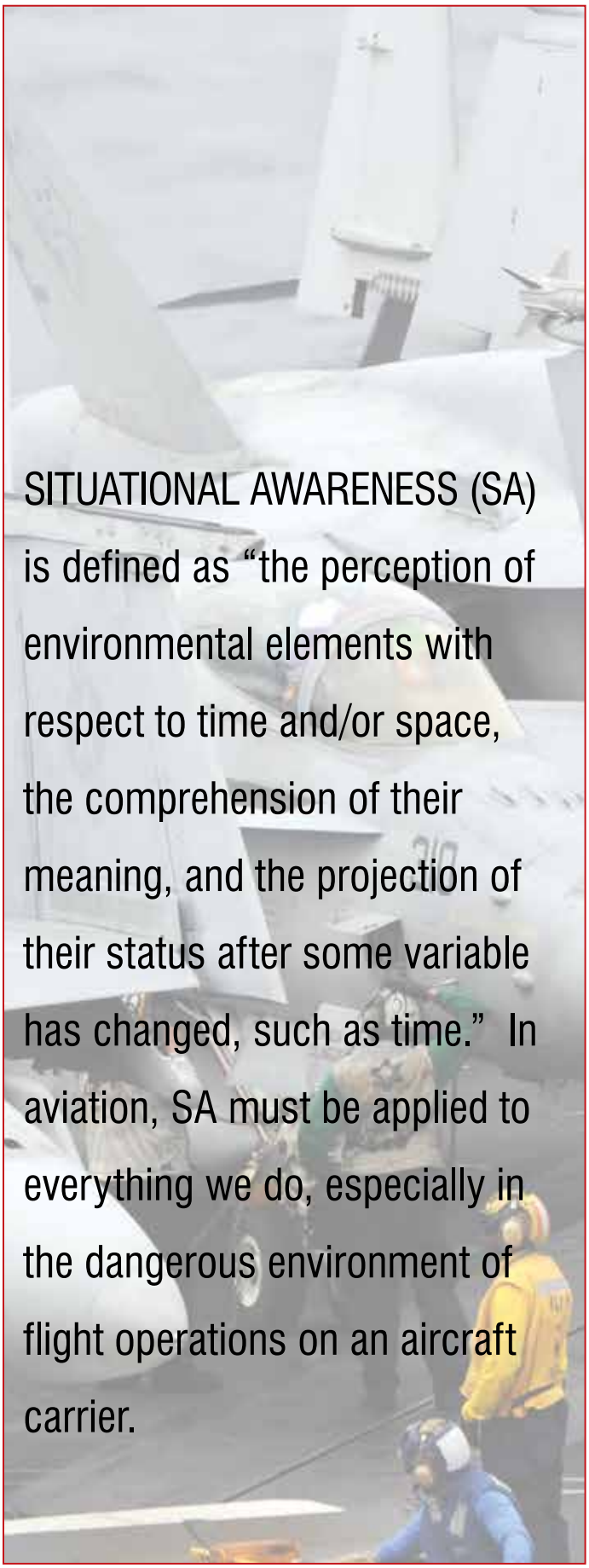
Recently, during a low power turn aboard the USS *Abraham Lincoln* (CVN 72), it was realized just how important SA can be. A fully qualified, low-power-turn operator was proficient and had executed multiple turns in the previous days leading up to this mishap. He performed his pre-turn walk-around as he always had, and although everything appeared normal, there was a breakdown in SA.

What our capable Sailor missed was the proximity of his aircraft to others on the flight deck. The stabilator of the mishap aircraft and another squadron's wing were too close to each other.

The startup was conducted in accordance with NATOPS and was uneventful. A flight control system (FCS) initiated built-in-test (IBIT) was performed to troubleshoot the FCS system, and as the IBIT was initiated, the starboard stabilator moved up and struck the folded wing of the aircraft next to it. As the crunch was observed, the mishap aircraft was immediately shut down. Upon further investigation it was discovered that the crunch had led to a broken stabilator boot.

In hindsight, the lesson learned here isn't just a lack of SA by the low-power-turn operator, but the flight deck chief, plane captain and flight deck coordinator to name a few. The point is everyone missed the close proximity of the jets to each other.

At a cost of $19,371, this was an expensive mistake, and we were fortunate that it wasn't much worse. Lack of SA on the flight deck can have dire consequences, and it's imperative that everyone always keep their head on a swivel and watch out for other shipmates at all times. ■



SITUATIONAL AWARENESS (SA) is defined as "the perception of environmental elements with respect to time and/or space, the comprehension of their meaning, and the projection of their status after some variable has changed, such as time." In aviation, SA must be applied to everything we do, especially in the dangerous environment of flight operations on an aircraft carrier.

An Extra Moment

By AOAN Randall Gray, VFA 11

We routinely use the terms "staying alert" and "situational awareness (SA)" in training as we near the end of my first combat deployment. I had spent most of cruise temporarily assigned (TAD) to the forward galley onboard USS *Enterprise* (CVN 65). I eventually checked into my squadron's Line Division and was excited to work toward my plane captain qualification.

Upon our return from deployment, our squadron went through the holiday slow-down, utilizing single-shift maintenance until the New Year to afford Sailors in the command some well-deserved time off. Soon, we were back to operating a two-shift maintenance schedule. On this particular Wednesday, following a command safety stand-down, my daily tasks included two aircraft moves and two 14-day inspections. I was assigned as the starboard wing-walker for aircraft 105, an FA-18F Super Hornet, from our flight line to the wash rack. Onboard NAS Oceana, we use the wash rack behind the line shack located between our hangar and the AIMD power plant facility. This is a tight squeeze, but a routine process that we safely complete on a daily basis.

The move director gathered all involved to conduct his aircraft move brief and ensured we each had signed out the proper gear prior to walking out on the flight line. We had two extra personnel assigned to the task that were under instruction (U/I) during the move, one as a tractor driver and one as a move director. Whistles were handed out to all required positions of the move team; however, the additional two members did not receive whistles. The move director gave his whistle to the move director U/I and addressed the group. His brief was quick and to the point.

With a full day's worth of work scheduled, we needed to move aircraft 105 as soon as possible. The move team maneuvered the aircraft from the taxiway around the far corner of the building. As the starboard wing approached the edge of the building, the move director U/I blew his whistle and stopped the move evolution to ensure the jet was lined up and tracking straight forward. The starboard wing appeared to be

clear of the building, so I gave the move director U/I a signal that my area was "all clear." This is where a loss of SA resulted in a critical error. As the move evolution began again, I moved from behind the wing to forward of the outboard edge of the folded wing. This drastically limited my field of view, and I was now forward of the aileron that was faired outboard.

The move director U/I gave the signal to start moving. I continued to look forward to ensure clearance but failed to look up. Moments later, I heard the loud "crunch" of the starboard wing aileron trailing edge flap boot ripping into the building gutter which was hanging off the corner of the line shack. I initially hesitated and failed to blow my whistle to warn the move director. Thankfully, the experienced move director informed the move director U/I to blow his whistle and called for stop when he saw the aircraft's wing impact the building. I knew instantly that this was a negative situation and immediately contacted Maintenance Control and Quality Assurance to survey the damage. No one was hurt. Even though the damage was minimal, I caused more unscheduled maintenance and directly affected several work centers. I also affected the next day's flight schedule because that aircraft was scheduled to fly.

I learned several hard lessons during this aircraft move evolution:

- All personnel involved with the aircraft move are considered safety observers, including the instructor and the U/I, so everyone should have been equipped with whistles to prevent a delay in stopping the move.
- I need to stay alert no matter what job I have been assigned, regardless of the routine nature or the perceived urgency of the task.
- I must be assertive enough to stop an evolution if there is a safety concern.
- And, most importantly, it is imperative I maintain SA and ensure I am aware of my entire surroundings, not just what is straight ahead.

If I had taken an extra moment to survey my surroundings and build my SA, it could have been the difference between explaining how a mishap was prevented versus how a mishap occurred. ■

Guns n' Rotors

Part of our risk management was ensuring that procedures were completed correctly with an emphasis on attention to detail and safety.

By Lt. Marco Acosta, HSL-42

HSL-42 Detachment Nine had its share of maintenance challenges while deployed to the Fourth Fleet area of responsibility onboard USS *Nicholas* (FFG 47), none more difficult than completing a Phase "D" maintenance inspection while underway. With multiple deployments onboard aircraft carriers, I thought I had seen it all, but I was definitely wrong. In the dynamic environment of carrier operations and its related maintenance, things happen fast and you learn to expect the unexpected. On a carrier, each night you can walk down the hangar bay and see every embarked squadron's maintenance personnel busy turning wrenches to provide mission capable aircraft for the following day's flight schedule. Some are working on removing ejection seats, others doing an engine change, while right next to them an aircraft could be on jacks ready for a drop check. Each community has its own challenges, regardless if it is a jet, E-2C, or helicopter. Small deck maintainers are no different; the Naval Aviation Main-

tenance Program (NAMP) applies to all Naval Aviation communities including independent deployers.

The Phase "D" inspection is a challenge because it entails removing all main rotor blades and spindles for subsequent rebuild and replacement. This task is difficult ashore and even more challenging while underway. Imagine doing this in a hangar bay the size of an oversized garage, add violent motion caused by pitch and roll found only on a small deck ship, and you have yourself an Operational Risk Management (ORM) conundrum. To make matters worse, you have to complete all this while traversing the aircraft in and out of the hangar to rotate the blades and utilize the overhead pulley system to remove these blades. But just like any big deck maintainer, a task this big gets conquered by sweat and elbow grease. You tell a good maintainer how difficult a task will be and he will inform you how big a hammer he is going to use. Our Navy is blessed with many hard charging maintainers who go to great lengths to complete the mission and provide combat ready aircraft. Detachment NINE's maintenance team was no different.

We were able to overcome this ORM puzzle by employing sound maintenance practices and using effective risk management throughout the evolution. First, we briefed every phase of the evolution, ensuring we identified the risks involved and how we would mitigate them. Then we ensured safety supervisors were in place to safeguard the established safety procedures. In every maintenance evolution there are risks and associated safety controls. More often than not, these controls become second nature and happen intuitively. The safeguards include using proper personal equipment, tool control, and established maintenance procedures. They all contribute to the success of the maintenance process. In our case we had previously removed a blade early in the deployment and learned from this valuable experience. We learned that the helicopter position in relation to the overhead hoist is critical. Also, it is important to keep in mind that certain parts come at a premium with no embarked intermediate maintenance department or aviation supply division. Procedures need to be done right the first time, every time. Part of our risk management was ensuring that procedures were completed correctly with an emphasis on attention to detail and safety.

In the end we completed the phase inspection ahead of schedule. Our first Functional Check Flight (FCF) ground turn following the inspection resulted in main rotor head vibrations reading of 0.13 inches per second on the Automatic Track And Balance Set (ATABS), a value well within the established parameters. Success like that does not happen by accident; you do not achieve that by luck. Those low vibration levels are a result of good maintainers who do excellent work, pay attention to detail, and take pride in their job. Detachment Nine *Guns n' Rotors* had a successful deployment Combating Trans-National Organized Crime (CTOC), all on the shoulders of an outstanding group of maintainers who consistently did what every maintainer loves, turning wrenches to put aircraft in the sky. ■

Load Testing a Ladder

By AM2 (AW) Justin Quam, VAW-120

Two days after returning to Naval Station Norfolk from a week long Carrier Qualification (CQ) detachment, I found myself serving as the Airframes Branch shift supervisor, and the only Airframes Collateral Duty Inspector (CDI) on yet another busy midnight shift with the Greyhawks of VAW-120, the Navy's sole E-2/C-2 Fleet Replacement Squadron (FRS). My job is to assist in providing full mission capable aircraft in support of the training of naval aviators, naval flight officers and naval aircrewmen; preparing them to join the fleet as E-2 and C-2 operators.

This particular evening, while managing several other smaller jobs, I joined a couple of my most qualified and experienced workers for what would seemingly be a routine mainmount tire change on aircraft 644, which was parked at the end of our ramp on a dark Norfolk night. After ensuring that brakes were set and all other safety checks were complete, we informed a shipmate from the Power Plants work center, who was on a ladder just forward of the starboard intake preparing to seal a propeller drain panel, that we would be jacking the starboard main landing gear and that we could not have anyone working on that side of the aircraft. The shipmate moved away from the starboard engine, and we proceeded to jack the starboard wheel clear of the deck and began the tire change. The ladder was left in front of the starboard nacelle while we jacked the aircraft. I did not realize that jacking the

As the aircraft began to descend, I noticed it shudder slightly.

aircraft only a few inches would be enough of a concern to have to move the ladder well clear of the aircraft.

After visually verifying serial numbers on the wheel assemblies, I quickly went back to the work-center to fill out required paperwork and also to check on the progress of other jobs. I wanted to ensure my coworkers didn't have any questions for me. I returned to the tire change evolution 15 minutes later and supervised final installation and servicing of the tire. Before servicing the tire, we informed the technician from power plants that they needed to stay well clear of the starboard tire while we were servicing, causing them to move to the port side of the aircraft. During servicing I pointed out to others the location of an uninstalled rivet and loose screw; we could take care of these before returning inside.

Following servicing of the tire, we checked around the aircraft and performed all pre-lowering safety checks and ensured that no personnel were near the starboard side. Once complete with our safety checks, we called out to all hands that we would be lowering the aircraft. Even though I noticed the ladder still standing in front of the starboard engine nacelle, I didn't give it much thought since it was obviously clear enough of the aircraft before we jacked it. I had not noticed anyone near it during the time I had been present for the job.

As the aircraft began to descend, I noticed it shudder slightly. Everything appeared fine otherwise, and we removed the jack and began to wrap up our tools. Since the missing screw discrepancy that I had pointed out earlier required a ladder to reach it, one of my workers asked permission from the power plants crewmember who was still removing tape from the port side of the aircraft if we could borrow it. The work center was willing to help us out, but to our surprise, when we went to move the ladder it did not budge. We grabbed a flashlight to look at the ladder and we noticed that it was now stuck into the leading edge of the starboard engine intake by about two or three inches. We immediately rejacked the aircraft, removed the ladder and informed maintenance control. It was obvious that the ladder was not clear of the nacelle when we began lowering the starboard main landing gear. That's why you're reading about this "simple" routine job.

During the investigation it was determined that power plants had taken the ladder to the port side of the aircraft to seal another panel, and then returned it to the starboard side to finish the sealing the first panel. Concentrated on my own tasks and hindered by the darkness of night outside, neither I nor any of my workers noticed that the ladder had ever been moved. In addition, it was determined that power plants did not hear us call out that we were lowering the aircraft.

Ultimately the responsibility falls on me to ensure that proper and complete procedures are followed prior to any raising or lowering of an aircraft's landing gear. In this case, the ladder was placed tightly against the starboard intake leading edge so those "few inches" it took to lower the wheel to the deck put a dent a "few inches" deep into the intake. Greyhawk 644 was supposed to be on our flight schedule the next morning, but the damage was severe enough to down the aircraft, which caused the squadron to be minus an otherwise mission-capable aircraft. This crunch could have been considerably worse, and no one was injured. It took less than a day to make 644 mission-capable again.

In hindsight, there are several things that I could have done to avoid this chain of events. First, our squadron maintains custody of several light carts that should have been utilized, making it much easier to see our work space, the surrounding area and anything that may be taking place there. Also, when we informed personnel that we were jacking the aircraft, we should have taken the extra time to thoroughly explain that all personnel and support equipment need to remain well clear of the aircraft until the job was complete. Just as important, as the CDI, I should have stayed with the job from start to finish so that I was aware of everything that was going on. I should have slowed down and double checked the area before lowering the aircraft. My biggest mistake was being comfortable in believing that nothing had changed while we were busy doing our job, just because I hadn't seen it change, knowing fully that in a busy squadron people and things are always moving and changing.

I've learned that even the simplest and most routine tasks can be full of unforeseen dangers. Always stay aware of your surroundings and don't rush. Even with a heavy workload, there is always time to be safe! ■

Damaged Beyond Repair

It was day one of our deployment aboard USS *Nimitz* (CVN 68), and we were transiting out of the San Diego area. During a walk-around inspection of our E2-C Hawkeye in the hangar bay, AD3(AW) Brian Shuckerow discovered a crunched blade (No. 8) at the 7 o'clock position of the starboard T56-A-427 turboprop engine. The propeller blade was damaged beyond capable repair and was replaced, followed by a propeller balance and high-power turn.

Hangar bays on an aircraft carrier are always full of moving aircraft, support equipment and supplies. When aircraft are parked for a prolonged period of time they run a chance of getting damaged, as in this case. Day and night activities in the hangar bays involve countless movements of aircraft and gear. Even with strict procedures in place mishaps still occur.

An investigation of the mishap concluded that a piece of support equipment accidently struck the blade and caused the damage. After the replacement of the blade VAW-117 now places a safety chain around the propeller area to prevent further accidents and unnecessary maintenance. ■

The VFA-41 Black Ace Safety Pro: A New Spin on a Proud Naval Tradition

Naval aviation

is inherently dangerous and exceptionally unforgiving. As a squadron, our ability to take the fight to the enemy requires that we have all of our Sailors, aircrew, and aircraft healthy and functioning at their maximum capacity. If we as naval aviation professionals incorrectly assume the cost of doing business is the inevitable injury of personnel and damage to aircraft, then we will fail at our mission. Failure has never been an option in this community, and in an era of shrinking budgets and reduced manning, we must make it our goal to proactively protect our people and our aircraft.

By LCdr. Jeremy Shamblee, VFA-41

The squadron safety department is responsible for and ultimately focused on one thing: mission accomplishment. The truth of the matter is that mishaps, for the most part, are preventable. So in this inherently dangerous and unforgiving business, we must keep our aircraft and people fully mission capable. We do this by taking a proactive approach to safety. As safety professionals, we cannot sit by and idly watch and wait as the next mishap occurs. We must train our Sailors to recognize and identify what situations, circumstances, and human factors typically transpire before a mishap. No squadron is immune from a mishap, but at the same time, mishap-free squadrons are not safe by accident. Sailors must be vigilant and always on the lookout for danger. What is different about today? What is going to change today that will align the holes in the

Swiss cheese and cause a mishap? Having created a culture of awareness, we must reward those Sailors who act to prevent mishaps. In the fast-paced environment and high operational tempo which all squadrons now face, the execution of the flight schedule can bias even the safest squadron's decision making. Because this pressure is very real, stopping an evolution, or voicing a contradictory opinion can often be unpopular. The unfortunate and completely preventable results of this are the risk factors which elevate a squadron's potential for a mishap. However, we must foster a culture which allows for and rewards people who have the courage to stop unsafe evolutions or practices in order to protect our Sailors and aircraft.

Enter VPA-41's Safety Professional Award or Safety Pro for short. The idea came about by taking a new twist on a time-honored tradition. During WWII, aviators would paint aircraft silhouettes on the fuselage of their aircraft to symbolize aerial victories. Inspired by this tradition, college football teams adopted the practice of placing team stickers on the helmets of players who had made significant accomplishments for their team. Amassing stickers for exceptional plays and team victories has become a source of pride for these athletes. And so the tradition has come full circle and returned to naval aviation. VFA-41 Sailors are recognized with a "Spade" sticker for any act that prevents a mishap, injury, or hazard to any of our aircraft or personnel. The one-inch diameter sticker is made of reflective cranial tape. It bears the VFA-41 logo and can be affixed to a Sailor's cranial to recognize them for their commitment to safety. Chiefs and above can recognize a Sailor on the spot for a safety act which they witnessed. Spades can also be awarded via a brief write-up with the safety pro nomination form. Recipients receive squadron-wide recognition as well as a reward that is presented at the discretion of the executive or commanding officer.

One exceptional Sailor recognized as a VFA-41's Safety Pro was PRAN Walter Moskal. PRAN Moskal was conducting a routine flight gear inspection and noticed a broken quick-disconnect buckle missing from a joint helmet. He called the desk chief in maintenance control and alerted him to the potential FOD hazard. The flight schedule was immediately suspended and a thorough search of the aircraft was performed. The missing piece was quickly found and the flight schedule resumed. Because of his diligence, attention to detail, and by the book maintenance, PRAN Moskal prevented potential damage to the aircraft and harm to the aircrew.

In the world of high-tempo operations, undermanned and overworked maintenance departments, and the unforgiving nature of naval aviation, we must reward excellence in safety.

Another Sailor recognized for their effort was ATAN Logan Ferkol. He was working in the fuel skids during a hot refueling evolution. Another member of the fueling team dropped their watch in front of an aircraft intake. ATAN Ferkol expeditiously grabbed the watch before it could be ingested by the aircraft. His quick and decisive action prevented a costly mishap.

Airman Carlos Aguilar was recognized as a VFA-41 Safety Pro for his outstanding attention to detail. AN Aguilar was executing an aircraft daily inspection and found a bolt in an engine access panel which was later determined to come from the high-pressure compressor. Airman Aguilar notified his supervisors immediately. The discovery of the bolt led to a maintenance crew finding three more loose bolts in the engine bay. Airman Aguilar's diligence and attention to detail during a routine inspection likely prevented an aircraft mishap.

In the world of high-tempo operations, undermanned and overworked maintenance departments, and the unforgiving nature of naval aviation, we must reward excellence in safety. Our Sailors' attention to detail, quick thinking and commitment to excellence are the only means by which we keep our people and our aircraft safe and mission ready. As part of the Black Ace team, we and all squadrons must cultivate a culture that puts mission first and safety always. ■

Tear this poster out and post it in your shop as a reference

Lithium battery waste storage bin, clearly labelled

Lead acid and nickel-cadmium battery storage units

PRQ-7 radio

Assorted Lit

Batteries:

Do You Know Proper Care, Storage

Battery safety spill kit

Opened battery safety spill kit, showing contents

battery

hium batteries

Storage units for lithium batteries. Used lithium batteries should always be stored separately from new lithium batteries.

Lithium battery storage units opened, with close-up of contents. Notice contacts of batteries are covered (bottom right).

and Disposal?

Aircraft battery

Poster idea AMEC(AW) Samuel Dixon
01-02-05-11-001 Aug 2013 JW

SMOKE *and* SPARKS

By PR2 Shane Flaherty, VFA-122

The day started with command PT, followed by the maintenance meeting and then off to work. The routine had us starting with tool accountability and inspection, followed by the day's workload. The first item on the list was an inspection of flight gear, including the CMU-36/P survival vest and its associated gear.

Working with a junior Airman, I was excited for the opportunity to do some mentoring. After ensuring we had all the required instructions available, I began the inspection with the piece of survival gear that would be the culprit in this explosive tale, the PRC-149 survival radio and its lithium batteries. I worked with my fellow Aircrew Survival Equipmentman (PR) through the inspection and in accordance with the S9310-AQ-SAF-010 (AN/PRC-149 survival radio technical manual). We started with a visual inspection for any signs of damage or undue wear. With all the external components in good working order, we moved to the next step of inspecting the lithium batteries. We didn't see any signs of leaks, venting or damage. I removed the batteries from their holder and that's when the job changed from a routine flight gear inspection to a Class D firefighting and first-aid response.

Lithium battery used in the PRC-149 Survival Radio

Almost immediately after removal, the batteries in my right hand exploded into a plume of toxic white smoke and sparks that filled the shop. My first reaction was to drop what was in my hand, not realizing that one battery had already shot out of my hand and the other was just ash. The explosion had two main characteristics associated with it: toxic white smoke and hot sparks similar to a large firecracker. I received first- and second-degree burns to my face and hands. After the initial shock of the explosion, the shop sprang into action and immediately cleared the room of personnel while notifying maintenance control of the ongoing threat. The call was made to the base fire department as our maintenance team tried to get a handle on the situation. We had two injured personnel and a small fire still burning within a work center which housed flammable material.

With the fire department alerted and en route, our shop personnel began to do what they could to treat the burns and toxic smoke inhalation, while additional squadron maintainers entered the PR shop to help extinguish the small fire. I was taken to the emergency room where I was treated for first-degree burns on my face, second-degree burns on my hands and put on 100 percent oxygen for toxic smoke inhalation. An additional ambulance transported my coworker to the ER where she also was treated for toxic smoke inhalation. The

Lithium battery after exploding.

shop suffered only minor cosmetic damage, some charring on the ground and work table, and was cleared of the hazardous material. My co-worker and I were both released later that evening and back on the job the next day, eager to debrief the event and provide some valuable lessons learned.

I want to pass along lessons learned for what we did well and some items we could have improved on. First, per the NAVAIR16-30PRC149-1 instruction, personal protective equipment (PPE) was not required for this inspection unless signs of battery damage were visible, which in our case there were none. If there had been signs of damage or corrosion we would have adhered to instructions and worn the proper PPE: goggles, rubber apron, and a face shield. While a lithium battery explosion is very rare, we should never become complacent when dealing with potentially volatile material. This means using ORM in choosing a safe place in the shop to do this inspection so that we can limit the exposure of the hazards should the unexpected occur. Second, this event resulted in a small fire which was easily contained by smothering the flames. However, had the fire been larger, a Class D fire extinguisher would have been needed to extinguish the flames. This class of extinguisher is not required in the PR shop, but after this recent event our command installed these critical fire extinguishers in the Paraloft and Aviation Electrician's Mate (AE) shops. Third, having little to no notice prior to these batteries exploding, we were extremely fortunate that the shop doors were open, quickly dissipating the toxic smoke and that the batteries did not ignite something else in the shop creating a much larger fire. This particular type of lithium battery has had a history of being volatile and has since been replaced with a much more dependable type of lithium battery on most aircrew gear, which hopefully will prevent this event from occurring in the future.

Lastly, the first aid training that maintainers receive is an effective baseline should we find ourselves responding to an emergency. However, first response training is a perishable skill and must be reinforced through routine refresher training. Only then will we ensure the best chance for success during these emergency situations.

This event is yet another reminder to diligently practice ORM during every maintenance evolution, no matter how benign or routine the task may appear to be. You may never know when the unexpected will happen, but when it does, you can fall back on your training like we did and prevent any serious damage or injury. ■

BRAVO Zulu

Sailors and Marines Preventing Mishaps

AM3 Brandon A. Schuh

HSL-49

While deployed with Detachment Two onboard USS *Thach* (FFG 43). During a scheduled phase maintenance inspection, Petty Officer Schuh found a serious and potentially catastrophic material condition discrepancy on a critical flight component while inspecting an SH-60B tail rotor servo coupling assembly. His keen attention to detail and "by the book" maintenance led to the discovery of a deformed pitch beam shaft bolt with excessive movement that had created a large gouge on the tail rotor servo. He quickly notified his supervisor and devised a plan to correct the discrepancy and return the aircraft to a safe and flight-worthy status. His initiative and dedication to safety identified a major hazard and averted a potential loss of aircraft and crew.

AD2 (AW) Mariano Frias

VAQ-4

After completing engine turns for a 55-hour inspection on an E-6B aircraft, AD2 Mariano Frias began assisting others in closing engine cowlings and other post maintenance duties. He noticed a lineman pulling away a 300-pound engine turn screen that was clearly going to collide with the airstairs at the forward crew entry door. He quickly got the attention of the driver and others in the vicinity by yelling and whistling, stopping the tractor just short of the collision. His diligence and attention to safety prevented a costly collision that would have resulted in damage to the support equipment and the aircraft door.

AT3 Jacob Merriman

VAW-124

AT3 Jacob Merriman performed an acceptance inspection on an FC-770 filling unit that had recently been returned from the FRC. While inspecting the filling unit, he noticed that it contained the wrong liquid. Upon further inspection, it was found to be filled with oil instead of the required FC-770. The filling unit was then returned to be cleaned and flushed in order to be serviceable. Petty Officer Merriman's proactive attitude and keen attention to detail prevented the contamination of the cooling system to four E-2C Hawkeye radar systems that potentially could have cost more than $16 million to replace.

ADAN Grace M. Duford

VAW-125

While performing a preflight inspection on Tigertail 600, Airman Duford noticed a hole in the port outboard flap. She quickly alerted Maintenance Control and initiated a Maintenance Action Form. Her keen eyesight and to attention detail prevented the aircraft from flying in an unsafe condition and allowed for the squadron to conduct a detailed inspection of the flap's structural integrity.

Airborne Screwdriver

By AME1(AW/PJ) Brian Schrier, VFA-37.

It was a typical day in the fast-paced environment of an FA-18 maintenance department operating under a condensed work-up cycle. The Aviation Structural Mechanic Egress (AME) work center was heavily tasked and working extremely hard to get the squadron's aircraft ready for our scheduled TSTA detachment. I arrived on a brisk September morning and my day shift supervisor had already prepared the work center for the maintenance efforts of the day. The shift supervisor had generated the workload report, a personnel muster report was prepared, and an all tools accounted for (ATAF) was completed and logged in the work center's tool inventory log. I signed the tool log indicating that each tool box was properly inventoried with no evidence of worn, broken or missing tools.

What I did not know at the time was that I had just contributed to a chain of events that could have resulted in the loss of an aircraft or even worse, the loss of a squadron pilot. The first error in this chain was set in motion the night before when my work center was tasked with the removal and replacement of a secondary bleed air valve located in the right engine bay. After an uneventful low power turn to check for leaks and the proper operation of the valve, two of my hard charging technicians proceeded to complete the assignment by installing the protective thermal installation boot and the panel housing the secondary bleed air valve. In the process of installing the protective boot, the technician used a flat tip 1/4" x 4" screwdriver to secure the required clamps around the protective boot. Displaying poor tool control practice, the technicians placed the screwdriver on the ledge of the engine bay door instead of back into the tool during their checks for proper security of the protective boot and clamps.

Once the task was complete, the shift supervisor, who was also the collateral duty inspector (CDI) on the assigned job, ensured the correct installation of the valve, protective boot and clamps. He continued down the path of maintenance malpractice by failing to perform a proper sight inventory of the toolbox while at the aircraft. The flat tip ¼" x 4" screwdriver used to secure the thermal installation boot around the secondary bleed air valve

was not visually inventoried. Both the power plants work center collateral duty inspector (CDI) and a quality assurance representative (QAR) performed their visual inspection of the engine bay doors and did not notice the screwdriver lodged in the outboard ledge of the forward engine bay door. After returning from the flight line, the technicians returned the toolbox to the work center without it being inventoried by the shift supervisor. Closing out the night shift maintenance effort, the shift supervisor again overlooked it and did not inventory the toolbox prior to securing for the evening.

I became a part of this regrettable event the following morning when I delegated my responsibility for performing the "beginning of shift ATAF" to my day shift maintenance supervisor. As per the Naval Aviation Maintenance Program (NAMP) instruction, the "beginning" and "end of shift" ATAF shall be performed by the work center supervisor. As a result of failing to perform my duty properly, the missing screwdriver went unnoticed once more and the aircraft was placed on the flight schedule. It flew three missions without incident.

The toolbox was not utilized during the day shift maintenance efforts. At shift change I provided a verbal passdown to my night shift supervisor while watching over his shoulders as he performed his beginning of shift ATAF. To this point, five ATAF inspections encompassing two shifts were signed for on the toolbox without detecting the missing screwdriver. After receiving their assigned priorities from maintenance control and passing those onto the work center's technicians, the night shift supervisor began to inventory the toolbox selected for the first assignment. It was during this inventory of the toolbox that the flat tip screwdriver was discovered missing. Maintenance Control was immediately notified and with the assistance of two QARs, a thorough search was conducted within the work center and the hangar bay spaces.

Using the tool checkout log to determine the last time the toolbox was utilized, maintenance department leadership decided to open the right side engine bay doors on the aircraft where we had replaced the secondary bleed air valve the previous evening. The aircraft in question had flown three uneventful flights since replacing the secondary bleed air valve. Immediately after opening the engine bay doors, the flat tip screwdriver was discovered lying on the outboard ledge of the engine bay door.

The command's quality assurance division immediately held an all-hands training on proper tool-control procedures and reinforced the NAMP instruction 4790.2B, paragraph 10.12.3.11(f), which states that the work center supervisor shall inventory all tool containers, special tools, and PPE (personal protective equipment) at the beginning and end of each shift and document change of shift inventories using a logbook or locally generated tool control log.

I'm thankful that this horrible experience did not end with the loss of a squadron asset or worse, the loss of a Naval Aviator. ■

A Blast of Caution

Hydraulic brake quick-disconnect fitting is shown above, in between the gear strut and the wheel. Brake fluid at high pressure is sitting behind this fitting, pressurizing the brake pad. Photo by Lt. Roderick Smith.

By AM3 Joseph Ferrara, VP-16

Maintainers from the War Eagles of VP-16 were two months through the transition-training syllabus for the P-8A Poseidon. My squadron had just returned from six months at Kadena Air Base in Japan, where we had wrapped up our last deployment with the P-3C Orion. While the Orion was a workhorse, aging airframes meant there was always a system to troubleshoot or a gripe to work on. Keeping the birds mission ready was a challenging and demanding job.

Learning the ropes of the Poseidon had been no less of a challenge. The jet was impressive, new, and very different from the aging turboprop aircraft it was replacing. The chance to get our hands on a new platform was exciting and motivating, but we had a new set of hurdles to clear. Our maintainers were hungry to learn, and the instructors from the Fleet Replacement Squadron (FRS) were excited to train us. However, the simple fact was that there was not the level of experience and deep knowledge that comes from working on an airframe for decades, like we had with the P-3. To help out, we were assisted by civilian technical representatives. The tech reps would use their knowledge from working on similar aircraft in the civilian world to guide us along during our training.

During passdown, we were told that our shop would have our first chance to perform a tire change on one

This photo highlights the main landing gear strut of the P-8A Poseidon. The hydraulic brake disconnect fittings are the grey knurled knobs with blue lines connected, outboard of the main gear assembly. Photo by Lt. Roderick Smith.

of the jets. As we were removing the tire, the brake retaining ring came off the brake assembly. The tech reps began to troubleshoot the issue while I stepped back and started talking about the removal procedure with a shipmate. However, communication broke down, and in our haste to change the tire, the pressure in the hydraulic lines wasn't bled down. One of my shipmates saw me standing near the brake fitting and asked me to disconnect the line. I reached up, grabbed the fitting, and pulled.

The hydraulic lines were pressurized to over 3,000 psi. The second the fitting was removed, fluid spewed out at high pressure. If this seems bad, then wait, because the problem gets worse from here. The P-8A is derived from the Boeing 737 airliner. To save money, airlines don't use filtered hydraulic fluid and ground servicing-equipment. Instead, they use a highly corrosive fluid known as Skydrol, which breaks down impurities in the system without needing a filter. Skydrol is an organic solvent, meaning that if left on your body it will literally begin to break down your skin.

When I reached up and disconnected the brake line, this highly corrosive fluid blew out at high pressure and covered my face and eyes. My shipmates grabbed me, rushed me into the hangar, grabbed the material safety data sheets (MSDS) and parked me in front of the eye-rinse station. As I was having my eyes rinsed, another maintainer brought castor oil to the scene to help relieve the pain until they could take me to the emergency room. I felt like I had been pepper-sprayed. Every few minutes, the pain would subside, but would come back again just as badly as before. The waves of pain kept coming as my shipmates drove me to the hospital.

When I arrived at the emergency room, the doctors were at a bit of a loss of how to treat me. They had never heard of Skydrol. Fortunately, a fellow maintainer brought a copy of the MSDS with us, and when the doctors figured out that Skydrol was an organic solvent, they knew what to do. The doctors ordered an irrigation treatment for me, which consisted of placing contact lenses over my eyes. The contacts were hooked up to an intravenous (IV) drip line, which pumped water over my eyes to flush the solvent off. This irrigation feels like having your eyes poked with a dozen needles. The contacts had to stay on my eyes for more than two hours.

The irrigation prevented any permanent damage to my eyes and I was discharged from the hospital later that night. After a day off, I was back in the shop a little more cautious and wise.

Communication broke down that day and the procedures that keep us safe failed. We also did not have enough respect for the hazardous fluid we were working with. Skydrol is dangerous, and our unfamiliarity with the danger led me to do maintenance action without the required personal protective equipment (PPE). Know your hazmat, use your PPE, and keep in mind that what we do on the flight-line has risks. Respect those risks, protect yourself, and stay aware during a job. ■

The hydraulic system B pressure gauge is shown below. The gauge is located in the main landing gear wheel well of the P-8A Poseidon. The gauge should read zero during brake assembly removal. Photo by Lt. Roderick Smith.

Close up of hydraulic brake quick disconnect fitting is shown below, in between the gear strut and the wheel. Brake fluid at high pressure is sitting behind this fitting, pressurizing the brake pad. Photo by Lt. Roderick Smith.

Maintainers in

AS2 Vanessa Lindsay-Kerr starts the engine of an aviation tow cart aboard the aircraft carrier USS *John C. Stennis* (CVN 74). Photo by MCSN Marco Villasana.

AM3 Nicholas Beach performs maintenance on an FA-18F of VFA-41 aboard the aircraft carrier USS *John C. Stennis* (CVN 74). Photo by MC3 Chelsy Alamina.

AM3 Tajanise Coats cleans the Turkey Feathers of an FA-18C assigned to VFA-37 aboard the aircraft carrier USS *Harry S. Truman* (CVN 75). Photo by MC3 Lorenzo Burleson.

AM3 Sandra Ortiz-Melo stencils an FA-18C assigned to VFA-83 in the hangar bay aboard the aircraft carrier USS *Dwight D. Eisenhower* (CVN 69). Photo by MCSN Andrew Schneider.

the Trenches

AT2 Laticia Watson checks the operating and navigation systems inside the cockpit of an HH-60H helicopter in the hangar for HS-14. Photo by MC3 Kegan Kay.

AM3 Steve Gandre, right, and AM Casey Klotz, load a main-mount aircraft tire onto mounting equipment in the tire shop of the aircraft carrier USS *John C. Stennis* (CVN 74). Photo by MC2 Lex Wenberg.

ADAN Trathen McClauslan assigned to HSL-49 performs maintenance on the engine of an SH-60B helicopter aboard the guided-missile frigate USS *Gary* (FFG 51). Photo by MC1 Ian Anderson.

Cpl. Jorge Nieves and LCpl. Haldis Tucker work on the tail position light on an F/A-18C assigned to VMFA-323 aboard the aircraft carrier USS *Nimitz* (CVN 68). Photo by MC3 Chris Bartlett.

Caught Barehanded

By AM3 Lee Venable, VFA-192

This is the story of how complacency turned an average day of flight operations into something potentially catastrophic. The daily operation of a squadron can become all too familiar as a troubleshooter, and on that day a sense of routine allowed complacency to rear its ugly head and catch me "barehanded."

It was a morning like any other on the NAS Lemoore flight line and I was working the event three launch. Dragon 407, piloted by our maintenance officer (MO), was scheduled for a close air support (CAS) training mission. I checked out my tools and the PPE required for the event and headed out to the flight line where the plane captain was preparing the aircraft for flight. I began my usual pre-flight walk of the aircraft, checking for discrepancies, as the MO approached. He completed his pre-flight and climbed in the cockpit. As the auxiliary power unit (APU) came to life, I told myself it was game time, confident that this jet had no issues and would be an easy launch.

After both engines were online, I began my final checks. I started on the starboard side of the radome, worked aft to the variable exhaust nozzles (VENs), and then on to the port side. With the final checks almost complete, I entered the nose wheelwell to record the codes from the digital display indicator. This is where I made my mistake. In order to get a better grip on my pen, I removed my right glove and placed it in the frame of the nose wheelwell. After verifying there were no codes that would down the aircraft, I exited the wheelwell and verified all tools accounted for (ATAF). The pilot indicated he was ready, the chocks were pulled, and the aircraft began its taxi.

As Dragon 407 departed the line, I opened my tool pouch to put my right glove back on and noticed that it was missing. I immediately informed the flight deck chief (FDC) to stop the aircraft. The FDC called in the missing glove to maintenance control, who notified the squadron duty officer (SDO). The SDO immediately made the call to the tower and canceled 407's takeoff clearance. The aircraft was already positioned on the runway ready for takeoff! The pilot contacted the SDO and taxied back toward the line. I grabbed a tractor driver and we met 407 halfway back to the apron. I signaled to the pilot to hold the brakes and I retrieved my glove from inside the nose wheelwell.

Rather than serving as a troubleshooter to identify and correct potential problems, I caused a potentially serious threat by leaving a piece of my PPE in the aircraft. On that event I failed to ATAF all of my tools, including the PPE I brought to the flight line. While this was my normal habit pattern during every launch, it should not have been. That day I learned that leaving any tool or PPE on or in an aircraft is a huge mistake and could have resulted in any number of dangerous situations. My glove could have become lodged in the nose landing gear during retraction or could have come loose and been ingested in one of the engines. All of these situations could have put the pilot's life, or the aircraft, in danger. I allowed complacency and bad habit patterns to get in the way of doing my job effectively. Fortunately, I made a good decision and informed my chain of command in a timely fashion averting a potential mishap. I learned several valuable lessons that day: establish sound habit patterns early on and always ATAF everything, even your PPE. ■

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ALSS Program

Aviation Life Support Systems (ALSS) in the Spotlight

By PRCS(AW/SW) James Adams

The last few months of performing aviation safety site surveys have been an eye-opening experience for me. I have seen everything from RFI flight gear being piled on the deck for storage, unauthorized ordnance storage, undocumented modifications, and 125 lithium batteries being stored on top of the clothes dryer in a work center, just to name a few. These types of discrepancies fall in line with the top few overall maintenance-induced causal factors in all Class A, B and C mishaps in the Navy and Marine Corps; the top two factors being a lack of supervision and not using or following publications and checklists.

Once I start peeling back the onion skin on these issues many of the cited reasons for lapses in procedural compliance included a lack of personnel, operational tempo, maintenance control pushing the work center to get the job done, or a lack of experience in leadership within the work center. Usually there is a combination of these factors at play. All of these situations are realities in today's Navy; however, none of these are acceptable reasons for allowing complacency to creep in and allow the exception to become the norm. Being brilliant on the basics within the work center cannot be overvalued. Applying ORM at the appropriate level and supervising evolutions and personnel will eliminate many mishaps.

Leading Petty Officers and shop Chiefs need to take a hard look at how business is being conducted in their area of responsibility and understand that manning is a constant battle across the Fleet. When a shortfall is detrimental to your work center bring the issue up the chain of command, and bring along solutions. Consider proposing a memorandum of understanding with other local units to share CDI/CDQAR/QAR and QA/SO coverage as well as shared workers, offer modified work schedules for CDI/CDQAR/QAR personnel and workers to meet the flight schedule and maintenance requirements.

Operational tempo can be planned for to meet mission requirements. The level of communication between the operations department, maintenance department and the work center is critical in planning a successful short-duration detachment or a full-on deployment. Ensuring that all the gear requiring shore-based Intermediate Maintenance Activity (IMA) support is taken care of prior to departure is critical, for example, FA-18 Super Hornet parachute assemblies cannot be repacked at sea so ensure that your high-time removals are managed prior to deploying. Making sure that all of the aircraft and man-mounted survival equipment is RFI/RFU and will not drop dead upon arriving on site may take some extra leg work with the local supporting Fleet Readiness Center (FRC). But it is worth the effort in saved man-hours and lengthy explanations as to why aircraft and aircrew are down to your MMCPO, Maintenance Officer and CO. LPOs and shop Chiefs have a vested interest in verifying that maintenance control has a full understanding of what is going on with the ALSS gear and what the short and long term effects are if items are not occasionally rebased to meet operational commitments.

I will leave you with this little nugget: You are not alone in the PR and AME Shops. What I mean is that you have numerous resources available to help you solve any issue that you experience: Contact your cognizant Type Wing, Wing AMSO, FAILSAFE Tiger Teams, PMA-202, CNAF AMI Teams, and Naval Safety Center. Never be afraid to ask for the help you need.

PRCS(AW/SW) Adams is an Aviation Life Support Systems/Aviators Breathing Oxygen/Egress and Explosives Safety Analyst at the Naval Safety Center.

Aircraft Confined Space Program

Aircraft Confined Space Program Why Do We Need ORM?

By ADCS(AW/SW) Timothy Figallo

Performing safety surveys on approximately 300 squadrons worldwide, spanning all TMSs in the Navy and Marine Corps inventory, you could say we see it all. We like to say "We see the good, the bad, and the ugly." While some squadrons do things very well, others do things not so well.

Upon arriving at a squadron, I usually walk through the spaces to familiarize myself with the layout of the hangar and where the various shops are. While surveying a particular H-53 squadron, I noticed an aircraft in the hangar with an open fuel cell. I could tell right away that something wasn't right. The air exhaust unit was hooked up and was purging the open fuel cell to the atmosphere. Upon closer inspection, I noticed that the external power cord was hooked up and energized with maintenance personnel working in the cabin. The aircraft was not roped off and Maintenance Control was not aware of the open fuel cell.

Did the Aircraft Confined Space program manager and Fuel Cell Entry supervisor perform their assigned responsibilities directed by the NA-01-1A-35? If he had, they would've completed a Fuel Cell Maintenance Checklist. The checklist would've ensured that the aircraft was roped off, the aircraft external-power receptacles and fuel-control panels were tagged, and that personnel were briefed. Was there any Quality Assurance oversight during this hazardous evolution? Warnings in the NA 01-1A-35 strictly prohibit performing any other maintenance on aircraft during depuddling, purging, or inerting operations. Was Maintenance Control in control of maintenance being performed on this particular aircraft? If they were, they would have flagged the maintenance status board and notified all work centers that no other maintenance was allowed on the aircraft. What prevented the maintainers working in the cabin from manipulating the fuel management panel or energizing any number of circuits in the aircraft? The answers to these questions should be clear, yet we continue to see similar situations across the fleet. We often talk about the Swiss cheese model and the importance of doing everything we can to prevent the holes from lining up. On this day, almost all the holes lined up and could have had catastrophic consequences.

Were any of the basic principles of Operational Risk Management — identify, assess, make risk decisions, implement controls and supervise — exercised on this day? We all have it memorized and can recite it on command, but how well do we put it into practice? A little bit of Deliberate ORM would have gone a long way in preventing this situation. Unfortunately, this type of scenario is far too common. A simple five-minute safety brief to ensure all safety precautions were complied with and to notify all work centers of the open fuel cell would have easily averted a potential major mishap.

ADCS(AW/SW) Figallo is a Powerplants/Quality Assurance Maintenance Safety Analyst at the Naval Safety Center.

ORM

ORM – What's in It For Me?

By Denis Komornik

As I visit commands around the fleet discussing ORM with junior and senior personnel, one question always seems to come up: "Man, this ORM thing seems like an additional burden, so what's in it for me?"

How do you answer that?

Let's relate operational risk management to sports.

We enjoy watching our favorite teams, especially when they're winning. What makes a winning team successful? They develop plays (deliberate ORM) during preseason. They study them over and over while integrating them into practice. This effort goes on hourly, daily, and weekly until they have it down pat. The athletes then take their skills to the game and execute (time critical risk management) what they've practiced.

Each player has to Assess the situation and adapt to the changes, Balance their resources (changing the play or players), Communicate to each other and Do the play. When they execute to the standards they trained to then success is measured by winning games. They then Debrief and review the game. Winning earns accolades from sportswriters, fans and even the opposing team. Key players also may get recognized through awards and money.

How does ORM relate to the junior Sailor in the fleet? I suggest that when you walk around your command (a.k.a., leadership by walking around or LBWA) ask your junior Sailors if they use ORM/TCRM, and what benefits they see from using this tool. If you get a deer-in-the-headlights response, relate ORM to a familiar subject, such as sports, as we did above.

Our Navy has a mission to accomplish, no matter if it's training or at the tip of the spear. We need to integrate risk management processes to effectively meet mission requirements.

Mr. Komornik is an ORM education and training specialist with the Naval Safety Center.

Logs/Records

It's *All* in the Details

By AZC(AW) Marcus Fuller

A recurring trend I have observed during recent safety surveys is an ambiguity regarding the tracking of auxiliary power unit (APU) meter times and starts. Aviation Maintenance Advisory (AMA) 2012-11 states, "Time since new (TSN) for equipment tracked by meter time (for example, APU) is updated by generating a work order (WO) to verify meter time and manually updating the equipment time since new in OOMA

Configuration Management (OOMA CM)." The guidance stated in AMA 2012-11 can also be applied to tracking the current number of APU starts. Generating a WO provides a historical record of usage data and reduces the possibility of missing an inspection or retirement interval on your equipment.

Another issue that has been present in multiple commands involves cartridge and propellant actuated device (CAD/PAD) and OOMA installed explosive reports that do not match. One method of preventing discrepancies is to print a CAD/PAD report. Verify this report against your OOMA installed explosives device report. Pay careful attention to the expiration dates that are loaded in your system. Also, make sure the two reports match exactly, for example, part numbers/lot numbers/shelf life/installed dates. Be vigilant in ensuring each time a CAD change occurs, your database and CAD/PAD match the inventory in your aircraft. A CAD/PAD report is printed out whenever you change a CAD and placed in your Aircraft logbook/Seat Aeronautical Equipment Service Record (AESR).

An issue that has been plaguing various squadrons has been component/equipment OOMA auto log set missing tasks or tasks not activated in the equipment auto log set. The best practice I have observed regarding the validation of OOMA log sets utilizes the Component Removal Due report and your applicable Periodic Maintenance Information Cards (PMIC). The first step in validating your logs sets is to first run a Component Removal Due report. Ensure your report is unfiltered so every task set against your log sets will be listed. Then, use the export function to export your report to Microsoft Excel. Next, verify each component in OOMA matches the requirements listed in your Periodic Maintenance Information Cards. After that, Organizational level activities should be sure to verify the Intermediate and Depot level maintenance inspection tasks are active. Activating these tasks ensures aircraft/support equipment inspections and retirement intervals are not over looked.

Note, in accordance with the NA 00-25-300 "Reporting custodians, in whose custody the equipment is assigned, shall: 4.3.2.1 Quarterly, upon receipt (download) of new LISTS 02's and 04's, verify the accuracy of the new lists before inserting them into the Technical Directive Requirements Section of the aircraft/equipment logbook. (Replaced LISTS 02 and 04 should be destroyed.) Report any errors or omissions from the new lists to appropriate AIR-6.8.5.2 TDSA manager. Reports of errors or omissions are made by annotating LIST 02 with the following codes":

C- Completed
P- Previously Complied
D- Does not apply

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Logs/Records

Incomplete Auto Logsets

By GySgt. Dhanmattie Singh, USMC

A common trend in the Navy and Marine Corps is incomplete auto log sets (ALS). The perception surrounding ALS is that only items that are being maintained in the paper logbook must be built up in OOMA. However, all ALS that has usage (for example, flight hours, cycles, starts, meters) must be built-up on the Inventory Explorer Configuration Management (CM) "tree" before a flight or before any usage is applied via a flight document or other processes. When an ALS is not completely built on the CM tree a command runs the risk of overflying that item or missing the compliance time/date/event for a technical directive (TD). Once the ALS is correctly built on the CM tree all applicable tasks will automatically be available for the appropriate action to be taken.

"Logbooks and records are an integral part of aviation maintenance. They are the administrative means of providing managers with aircraft/equipment age, status, modification, configuration, and historical data to plan, maintain, and operate aircraft and equipment. Properly

maintained logbook/records are critical to aviation maintenance and safety." (COMNAVAIRFORINST 4790.2B, chapter 5, par 5.2.1.12.)

One example that I witnessed on a survey was when an electronic subcomponent existed on the assembly catalog under the work unit code (WUC) for a Scheduled Removal Card (SRC). Paper SRCs do not carry subcomponents on them. So with the mentality of only building ALS to match what's in the paper logbook and not verifying the inventory explorer CM with the assembly catalog, it's possible to miss the electronic subcomponent. I would like to say that this example had a happy ending, but this particular component had an electronic subcomponent with a structural life limit and its removal time that was sooner than the SRC removal interval. The subcomponent had to be removed at 1,800 flight hours, had already acquired 1,600 flight hours, and was applicable to all of the aircraft within that command.

The above example is one of many situations that can occur when an ALS is not correctly built into OOMA. The worst situation that I've encountered so far was an aircraft on the flight schedule for that day. I opened the inventory explorer and navigated my way down to the engines. Clicking on one of the engine systems, I was stunned to see that there were five "stop signs" (indicating an incomplete or inaccurate record) for five systems installed on that engine.

As I drilled down each of those systems it was apparent that these five systems were only shells and were not built into OOMA. The work center supervisor was under the impression that the only "required" ALS that had to be built into OOMA were the ones carded in the engine log book.

Incomplete auto log sets (ALS) can be very detrimental to a command. The Logs and Record/Maintenance Administration section of all aviation outfits is the lifeline of the command. Properly maintained logbook/records are critical to aviation maintenance and safety.

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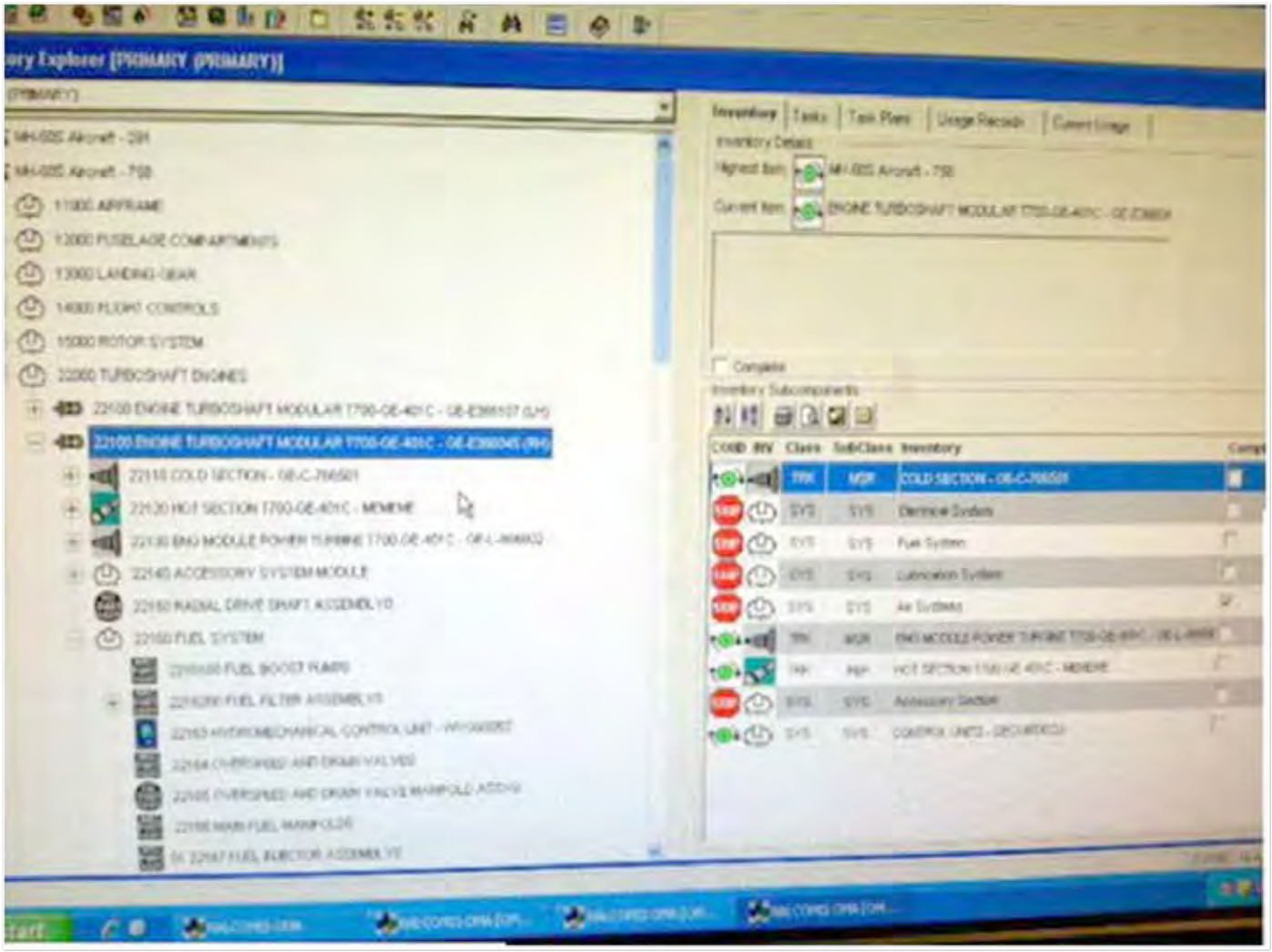

Time-Critical Risk Management

Because conditions can change with little or no warning, being ready and alert can minimize risks.

- Assess the situation and potential for threats.
- Balance resources to prevent error.
- Communicate risks and intentions.
- *Do and Debrief to improve future performance.*

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