The Navy & Marine Corps Aviation Maintenance Safety Magazine

Mech

Spring 2012
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Maintainer's Situational Awareness= Saved Lives

The Navy & Marine Corps
Aviation Maintenance Safety Magazine
Spring 2012, Volume 51 No. 1

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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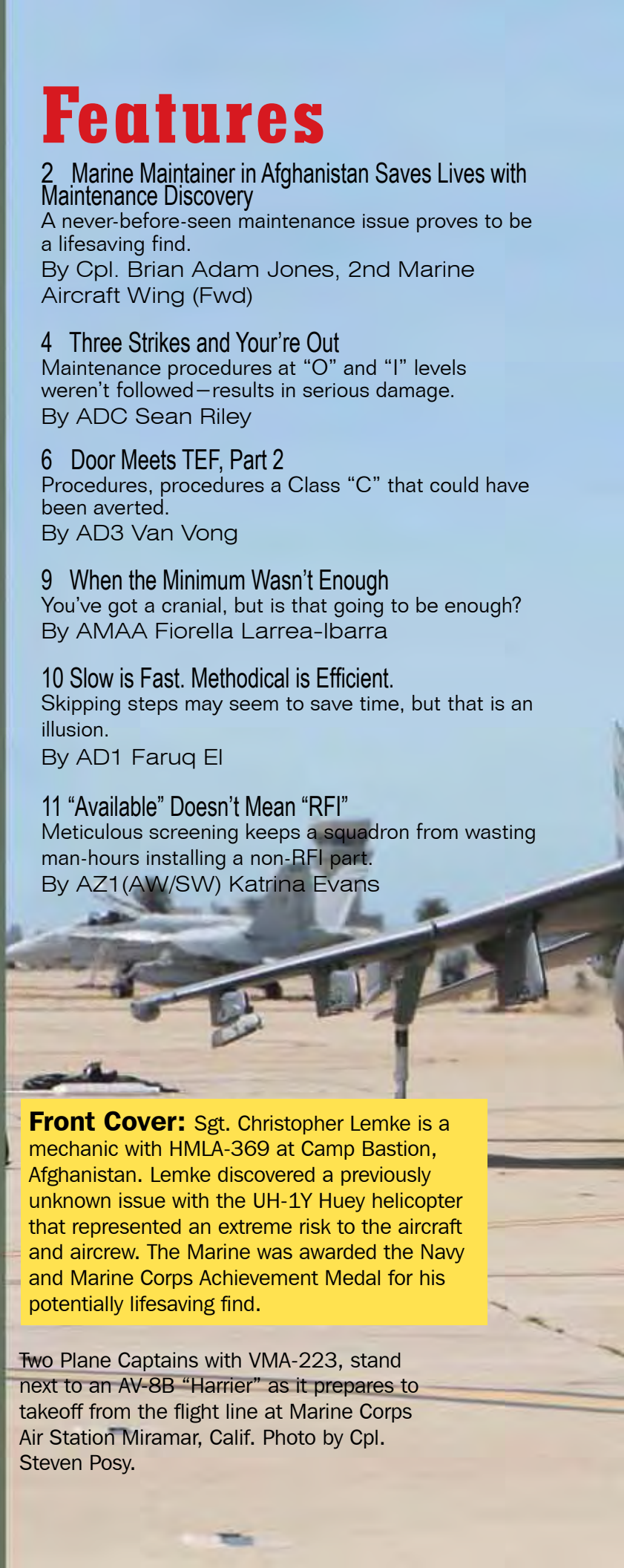
Features



Front Cover: Sgt. Christopher Lemke is a mechanic with HMLA-369 at Camp Bastion, Afghanistan. Lemke discovered a previously unknown issue with the UH-1Y Huey helicopter that represented an extreme risk to the aircraft and aircrew. The Marine was awarded the Navy and Marine Corps Achievement Medal for his potentially lifesaving find.

Two Plane Captains with VMA-223, stand next to an AV-8B "Harrier" as it prepares to takeoff from the flight line at Marine Corps Air Station Miramar, Calif. Photo by Cpl. Steven Posy.

Departments

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Get Famous!

And what better way than appearing on the cover of Mech? As we did in the current issue, we'd like to recognize individual maintainers whose hard work and dedication produced extraordinary results. This is more than the usual Bravo Zulus. We'll need a full story, including details and descriptions, as well as a high-quality image of the mech at work (this will require a trained photographer, not just a snapshot).

We think this is a great opportunity. If you agree, let us know. Send your comments or suggestions to …

John Mahoney, Head, Communications and Marketing: john.mahoney@navy.mil

Cover Story

Marine Mech in Afghanistan Saves Lives with Maintenance Discovery

Photo by Cpl Brian Jones

Sgt. Christopher Lemke, a mechanic with Marine Light Attack Helicopter Squadron 369, looks into the hell hole underneath a UH-1Y Huey helicopter at Camp Bastion, Afghanistan. Lemke discovered a previously unknown issue inside the tight space that represented an extreme risk to the aircraft and aircrew.

A Marine Corps sergeant in Afghanistan who unearthed a never-before-seen maintenance issue in a UH-1Y Huey—a potentially lifesaving find.

By Cpl. Brian Adam Jones, 2nd Marine Aircraft Wing (Fwd)

Sgt. Christopher Lemke, a mechanic with Marine Light Attack Helicopter Squadron 369, nicknamed the "Gunfighters," regularly conducts inspections on the squadron's UH-1Y Hueys and AH-1W Super Cobra attack helicopters. But during a routine phase inspection of a Huey in late December, Lemke uncovered something that could save countless lives.

Phase inspections are regular checks on an aircraft's various components to ensure they are safe. Underneath the UH-1Y Huey, in the aircraft's transmission compartment (an area so difficult to reach that maintainers call it the "hell hole"), Lemke found something wrong.

"When two metals rub together, it creates this black liquid, and that's what I found," Lemke said. The transmission pylon beam and the main beam joint, which secure the aircraft's transmission to the airframe, were disintegrating—an extreme risk to the aircraft and aircrew.

Lemke's finding led to a Corps-wide inspection, resulting in an engineering advisory report addressing a manufacturing defect found on multiple UH-1Y aircraft.

"No one else had ever found such an issue, but when we looked at another aircraft we had in phase, it had the same problem. There was a fault in the design of the aircraft," Lemke said.

Lemke hadn't been scheduled to inspect that part of the helicopter as there had never been an issue in the history of the aircraft, but he explained that Marine Corps aircraft maintenance demands more than completing the minimum requirements.

"That's how I was trained—it's the Gunfighter way," Lemke said of his squadron. "Our job isn't just replacing things. If we don't do it right, that's someone's life."

THREE STRIKES AND YOU'RE OUT

By ADC Sean Riley

The day started like any other: FOD walk down, maintenance meeting, cup of coffee. However, when all was said and done, more than $500K in damage had been done, an engine had been FODed, and a pilot had to declare an emergency and make a three-engine landing.

Here's how it happened.

Fleet Readiness Center Southeast (FRCSE) mechs do what is called an over-the-wing (OTW) gearbox change, which involves removing and replacing the reduction gearbox assembly (RGB). This common task is done at the "I " level and is used by the "O" level in place of an engine change.

On June 27, 2011, FRCSE I-Level personnel got a work request for an OTW for VP-5 because of an RGB failure. A CDI and two workers were sent to remove the old RGB and install a new one. But before they could start work, the squadron had to prepare the aircraft for "I" level maintenance.

Here's where things started to go wrong. The mechs didn't bag and tag all of the hardware they removed, so it wasn't all accounted for. A bolt that would later FOD the engine was misplaced and was later found deep inside the compressor section.

In other words, when FRCSE personnel started work, each part that was removed by the squadron hadn't been accounted for by both parties involved in the maintenance. That was strike one. As maintenance progressed during the reinstallation of the RGB, a mech noticed that an air-inlet housing bolt (which secures

A job that had been designed to keep an engine on the wing (as well as save time, money and man-hours) ended up producing a huge amount of work, risk and damage.

the clamp) was missing. FRCSE personnel told the work center about the missing bolt.

However, they didn't stop maintenance and inform both the squadron Maintenance Control and the I-level Production Control. Instead, work continued and a replacement part was obtained from a pre-expended bin. To the technicians' credit, a primary search was conducted. To their discredit, no FOD MAF was ever cut and the Maintenance/Production control chains of command were not informed. That was strike two.

FRCSE personnel finished the maintenance, the work request was signed off, and squadron personnel proceeded to get the aircraft ready for maintenance turns and an eventual FCF. Six hours of maintenance turns were done, including RGB break-in and propeller dynamic balancing. The P-3 took off for its FCF. During the flight, the flight engineer recorded that TIT uncontrollably increased, causing the aircraft to shudder and expel numerous fireballs from the tail pipe. The No. 3 engine was secured by e-handle, and the pilot declared an emergency to the NAS JAX tower. The three-engine landing went IAW NATOPS. The aircraft returned to the squadron ramp with no injuries or external aircraft damage. This was strike three. The squadron was now "out" an engine and an aircraft, and "in" for many more completely preventable maintenance man-hours.

A job that had been designed to keep an engine on the wing (as well as save time, money and man-hours) ended up producing a huge amount of work, risk and damage. Maintenance procedures for both "O" and "I" level weren't followed to the letter. Because of a "that's how we always do things" mentality, serious damage occurred.

At the end of the day, the mantra should be "Slow is fast." If you take your time and do the right thing, you'll hit a home run every time.

ADC Sean Riley' is the 400 Production Chief at Fleet Readiness Center Southeast.

By AD3 Van Vong

DOOR MEETS

The day started off better than the previous few aboard USS *Carl Vinson* (CVN-70). The sun was shining and the torrent of rain and the pitching of the deck finally had ceased. The morning was running smoothly and everyone was glad to be conducting operations in good weather. With the lack of flight ops, everyone was catching up on as much maintenance as possible. The only upcoming event at the time was the next FOD walkdown.

Around 1600, our LPO received a call that Maintenance Control needed a PC for a turn on aircraft 204. Power plants had just finished fixing a leak on the port-engine fan-variable-geometry (FVG) sensor. The LPO instructed me to take a trainee up to 204 and show him how maintenance turns were done. Being an astute PC, I arrived early to ensure that the aircraft was ready to go at the beginning the job. Five minutes after the trainee and I finished the turn around inspection, the mechs and turn operators arrived.

The mechs and turn operators went straight to work. However, no one coordinated any of this with me and my trainee. Normally a brief is conducted with the senior CDI present prior to the start of the turn. We, however, bypassed the brief in order to complete the turn prior to the aforementioned FOD walkdown. As a mech, I've always been taught there are times to move quickly and times to be slow and be deliberate—this time it seemed that we were jumping into this evolution too hastily. I guess after a month and a half of doing turns and other routine maintenance, I let my guard down and assumed everyone was on the same page.

Immediately after doing their checks, the turn operator and his instructor went to the cockpit to get set up. The remaining mechs went to the port side of the aircraft to prep for leak checks on the FVG sensor. Flight-deck control gave us clearance to start the aircraft, and the APU was brought online. The remaining startup went as expected.

As soon as the second engine was online, the line LPO approached the aircraft, went directly to the mechs, and began giving them further instructions. Because of the engine noise, I couldn't hear what information the LPO was passing on. I should have stopped the turn and gotten myself up to speed; instead I assumed that I already knew what he was saying. This mistake would later prove to be disastrous—the LPO was telling the mechs to drop the port-engine bay-door (64L) as soon as possible.

Those familiar with the FA-18E know that when the 64L is down, it swings into the path of the trailing edge flap (TEF). Apparently, flight-deck control had called and they wanted the turn completed before the quickly-approaching FOD walkdown. Passing instructions from the LPO, I tried to signal the turn operators that we needed to start expediting the evolution. I still wasn't completely clear about what exactly the mechs were doing with the port engine; this is something that normally would be covered during the brief.

The mech CDI told me he was ready for "hands off" in order to begin work under the aircraft. I then relayed the message via a signal to the turn operator and his instructor in the cockpit. They acknowledged the signal, but their hands remained inside the cockpit. Apparently, they were unaware we were now rushing the evolution and were busy in the cockpit bringing systems online. Meanwhile, I had lost my SA as to what the mechs were doing. It would have been a perfect time to stop the evolution citing safety concerns.

The turn operator was now not following the standard hands-off procedure to prevent inadvertent actuation of the flight controls. Looking toward the port engine, I noticed that the mechs had begun to open door 64L. Shifting my attention back to the cockpit, the turn Operator and the instructor signaled they wanted to close the flaps, a standard part of a *normal* aircraft startup. I realized things were beginning to spiral out of control, but with an LPO, CDI, and turn instructor present, I trusted they all knew what they were doing.

TEF, PART 2

The turn operator was now not following the standard hands-off procedure to prevent inadvertent actuation of the flight controls.

I did my standard clearing of the flaps and noticed that the port engine-bay door was still closed. I failed to pass the appropriate signal to the mechs, a major safety violation. When I signaled the turn operator, nothing happened. He was once again focused on the cockpit displays and did not see I had acknowledged his close-flaps signal.

After some delay, I finally got the turn operator's attention and gave him the "close flaps" signal. My final mistake: I hadn't re-verified the flaps were clear. During the delay in communications, the mechs had unbolted 64L; it was now open and directly in the path of the port TEF. As soon as I noticed this, I tried to signal the turn operator to stop the flap operation. I was too late. The TEF slammed into the forward portion of door 64L, which tore a hole in the TEF. We had just turned a routine maintenance evolution into a Class C mishap.

Petty Officer Vong works in the line division at VFA-81.

The New Safety MO

My name is Cdr. Vernon Hunter, and I am the new Maintenance and Material Division Head at the Naval Safety Center.

I recently served as the Commanding Officer of the U.S. Navy Ceremonial Guard in Washington DC. It was a great honor and privilege to lead the Guard during presentation of military honors to our fallen men and women, and conduct ceremonial arrivals of dignitaries from around the world.

Throughout my career I have had the opportunity to work with many outstanding leaders and maintenance technicians. My aviation experience includes MMCO, NAVAIR, AIMD MO, Air Wing MO and CMO XO.

It is great to be onboard working with the group of senior aviation professionals at the Center supporting your efforts in managing risk for safe operational readiness. Our mission is to assist you in maintaining aircraft readiness, identify hazards, and protect personnel and equipment. We are also continuously monitoring MISHAP trends in the fleet. The aviation safety survey team is hard at work refining how we conduct aviation surveys with the fleet. The team at the Center is solid and ready to support you.

I look forward to working with all of you in the near future. Continue your efforts to effectively apply Operational Risk Management to Naval Aviation maintenance, to include Time-Critical Risk Management in your daily routine. Keep it all safe!

All the best,

Cdr. Vernon Hunter

Top 10 Discrepancies During Last Quarter's Aviation Maintenance Surveys

1. Hazmat not uniquely identified for reference, retrieval and cross-reference between the label, MSDS, AUL and inventory. For example, using a local numbering system different from the MSDS number.

2. Program Monitor not maintaining trend analysis records for each assigned aircraft and piece of SE requiring hydraulic samples.

3. Fuel-cell maintenance areas not approved by the maintenance officer, fire marshal and safety officer.

4. Work center supervisor or CDI not ensuring that personnel account for each tool, item of SE, and consumables (such as safety wire and acid brushes) used in repair of aviation equipment before that equipment is installed, operated or activated.

5. Missing machine guards, which should be in place to protect the operator and other personnel in the machine area.

6. Shop machinery not securely mounted.

7. Personnel who are assigned duties involving opening, mixing, or applying coating materials haven't received pre-placement training, periodic medical surveillance evaluations, and respirator fit testing/use as recommended by the industrial hygienist.

8. Tool sets and multiple piece tools are not identified on the inventory lists.

9. During aircraft moves, director doesn't maintain control of the move at all times.

10. Mechs not using the correct PPE (gloves or eye protection) during aircraft washes.

When the Minimum Wasn't Enough

By AMAA Fiorella Larrea-Ibarra

While working on Airframes midcheck, a fellow airman and I were tasked with removing two hightime dampers from a HH-60H aircraft. We checked out our tools and cranials and went to work. This was not our first time doing this task, so I was confident we would complete it without any problems.

As we began work, we had a hard time removing the bolts that hold the dampers to the aircraft. Frustrated, I went to explain the situation to my supervisor while the other airman watched over the tools. My supervisor concluded that there was residual pressure on the hydraulic lines, which was seizing the damper bolts.

This is where I should have thought about applying some risk management to the task. In addition to the minimum required personal protective equipment (PPE), I should have checked out cranial goggles. As my supervisor loosened the line, a spray of hydraulic fluid shot from the disconnects and hit me in the eyes. Both my supervisor and fellow airman instantly stopped their work to figure out what had happened.

The burning pain in my eyes made me instantly climb down off the aircraft. My supervisor turned the job over to the other airman while he took me to the eyewash station. After the wash, my eyes were still bloodshot red. He notified our Maintenance Control about the incident and our chief escorted me to medical. Because this happened in the very early morning, we had to wait for an extended period of time at the emergency room before I could be treated. I then spent half of the next day at medical, receiving eye drops to soothe the pain and reduce the redness in my eyes.

After the ordeal, I realized that I had not taken the time to assess what was the proper, and not simply the minimum required, PPE. If I had worn my goggles down, I could have avoided the spray of hydraulic fluid, a personal injury, and the lost productivity for the workcenter. I was thankful that my eyesight was not damaged. I had lost one day of work, but learned an important lesson.

Airman Larrera-Ibarra works in the airframes shop at HS-14.

Slow is Fast. Methodical is Efficient.

Navy photo by MC1 Jose Lopez

By AD1 Faruq El

Following the tragic March 2011 earthquake, tsunami, and nuclear disasters in northern Japan, HS-14 was called upon to help in relief efforts. With less than 24 hours notice, the entire squadron was moved from Naval Air Field Atsugi to Misawa Air Base. Upon arrival the squadron was tasked with short notice Humanitarian Assistance and Disaster Relief (HADR) missions. In addition to supporting high tempo ops, aircraft still had to be inducted for phase inspections. With operations ongoing and phases coming up on deadlines with parts awaiting shipment, work had to be done as efficiently as possible.

Aircraft 613 was due for a Phase D. Most of the work was accomplished without incident and the phase team was awaiting the arrival of a new spindle. To keep things moving, the team decided to build the fold hinge assembly without the spindle. Normally, you'd wait for the spindle in order to orient the parts. We soon learned why—the parts can be installed backward, resulting in an upside down blade fold bolt.

As soon as the spindle arrived, the team quickly installed the assembly on the aircraft and mounted the blade. Immediately after the assembly was put together and fully installed on the aircraft, a mech noticed that the blade fold bolt was upside down. The night prior to a scheduled Functional Check Flight (FCF), the blade had to be removed and the spindle assembly taken apart and rebuilt. In the process of trying to be efficient, the team cost themselves a day's labor and set the FCF back a day.

Sometimes efficiency is not attained by speedy action but by following procedures, whether it's waiting for a part to ensure a job is done right or verifying the correct logging of tools. Despite the extra time it takes, these processes and procedures keep us all safe.

Petty Officer El is the Powerplants LPO at HS-14.

Photo by MCAN Shannon Renfroe

'Available' Doesn't Mean 'RFI'

By AZ1(AW/SW) Katrina Evans

Documentation is a key aspect of all maintenance. Incorporating and tracking technical directives (TDs) is an integral part of the process. Here's a perfect example.

We were deployed aboard USS *Abraham Lincoln* (CVN-72) in support of Operations Enduring Freedom and New Dawn. A hydraulic-drive-unit (HDU) on one of our squadron Hornets failed, pre-launch. Our maintainers quickly removed the defective HDU and ordered a new one. The work center then received a call that a replacement component was available, and a CDI went to supply to inspect and sign for the new HDU. Everyday stuff, right?

As the logs and records representative, I retrieved the equipment history record (EHR) card from AIMD and immediately saw that the TD paperwork was incomplete. I told Maintenance Control and the work center supervisor. They suspended the installation to allow for further investigation.

I found that two other TDs—relating to the inspection of the HDU gear shafts—hadn't been documented on the EHR card. The required stamp wasn't there, either. All this missing paperwork led us to conclude the TDs had never been incorporated.

A debate ensued over the 50-hour, O-level compliance timeline. At first glance, it appeared the HDU could be installed, provided it was removed 50 hours later. A closer read of the regulations revealed that the HDUs in the supply system should be TD-compliant prior to issue. My recommendation to Maintenance Control: Stock-check the supply system for other available assets onboard. Our search located one other available HDU on the ship.

I accompanied the MMCO to AIMD to return the part and tell them about the TD discrepancy. During our discussion with AIMD, we discovered that the other available HDU onboard did not have the TDs incorporated either. Our only course of action was to reject both components and wait until AIMD could incorporate the TDs and re-issue a correctly documented ready-for-issue (RFI) component.

In this case, meticulous screening prevented the squadron from wasting valuable man-hours installing a non-RFI part. More importantly, we eliminated the risk of installing an asset that was non-RFI, which ultimately could have led to a mishap. Also, we identified a deficiency in how the supply department receives and processes parts. This discovery led to a change in their screening requirements, which in turn increased maintenance efficiency and added another layer of protection against "bad" parts making their way onto aircraft.

Petty Officer Evans works in maintenance admin at VFA-151.

Solving a $3 Million Mystery

By Ltjg. Kristoffer Drew

When a FOD event occurs, the first question that comes to mind is "What procedure wasn't followed?" I asked that question following a mysterious FOD incident on aircraft 412. What I learned from this event expanded my understanding of how and why FOD happens.

From November to December 2010, VFA-87 was detached to NAS Fallon, Nevada for training. The temperatures were considerably colder than on previous trips to Fallon.

When aircraft 412 returned from an evening mission, the aircraft was chocked and shut down. The pilot climbed down the ladder. He debriefed the PC and troubleshooters with two thumbs up, stating that the jet was "good to go." The young PC anticipated a quick turnaround and a possible early secure for night. However, as she entered the port intake to do the post-flight intake and fan inspection, she found significant damage to six blades on the first stage of the engine. A borescope inspection showed no damage to any of the internal fan stages.

An extremely thorough inspection and troubleshooting process ensued to address how the damage occurred. When the blades are curved forward toward the front of the aircraft, the damage either is typically caused by a "pop" stall or ingested ice. Our initial thought was the former, which is a reverse pressure differential that allows air to come back out the front of the intake. This kind of stall usually accompanies a loud bang, hence the name.

We discussed the ice theory with the pilot and studied the weather conditions for that evening. It seemed unlikely that ice could have formed. Standard icing conditions require the presence of clouds or rain. As the aircraft flies through the visible moisture, and if the temperature conditions are close to freezing, moisture can freeze on the skin of the airplane. However, that night there was no visible moisture within a couple hundred miles.

To rule out as many variables as possible, we cannibalized a good engine from another aircraft. Maintainers installed the engine and did a low-power turn. Once completing all possible checks during the low power turn, we subjected the engine to an even more rigorous high-power turn. After more than 48 hours of extensive troubleshooting with no noted discrepancies, we returned 412 to FMC status.

On a clear and sunny morning, we prepped 412 for its first flight after the FOD incident. Following a trouble-free launch, the entire maintenance control team listened anxiously to the radio calls awaiting the status of the aircraft. Finally, the radio call came in: "412, five minutes out, alpha." All of us in Maintenance Control let out a collective sigh of relief, content that the FOD episode was an anomaly. We planned to turn

in the engine for an EI and let the engineers figure out why it had failed.

As the aircraft returned to the line, the PC checked the port engine as soon as it was safe to enter the intake. When he emerged, he said that the engine had significant damage to nearly the entire first stage—a blade was missing. At this point, we now had the attention of every tech rep in the area. We decided to again go through every troubleshooting step in the book. With the assistance of several outside experts, we also hoped to come up with some out-of-the-box troubleshooting ideas.

Since the weather conditions on both flights ruled out icing as the cause, the troubleshooting again focused on the "pop" stall. Maintainers removed the ECS ducting, which houses the primary bleed-air regulator, and checked it for failure. A borescope inspection revealed zero defects and again we were left without any definitive answers. With by-the-book troubleshooting complete, the technical reps recommended installing another new engine.

During our brainstorming, we also decided to consult the NATOPS, a manual typically written from

an aviator's point of view with minimal maintenance troubleshooting information. The aircrew-oriented NATOPS, though, contains good information to augment maintenance manuals. A warning jumped off the page at me. It addresses the potential for ice-based FOD in the engine caused by water leaking near the intake and freezing in flight. After reading this warning, we decided to turn the engine and monitor it for excessive leakage.

Maintainers did one more turn and, sure enough, after only a few minutes, the turn crew witnessed a significant amount of water draining from the port side of the aircraft and flowing over the bottom lip of the port intake.

After shutting down the engine, the AMEs pulled panels and found a broken line. That line routes water from the water extractor to the heat exchanger. They also discovered the housing connecting the nozzle to the heat exchanger had torn away from the structure, causing excessive movement of the line, which in turn had chafed it to the point of failure.

The failure of the line caused water to leak from a panel and run over the bottom of the port intake. During engine operation, water flowed into the intake, froze at high altitude, and eventually broke apart and was ingested into the engine. Maintainers hadn't paid too much attention to the water leak because some leakage is considered normal.

The aircraft also had no ECS degrades or any other indications of a broken line. Basically, the ECS worked as advertised, and we had no documented engine or environmental system issues that would have led us to troubleshoot the water-extracting system.

In hindsight, we had ruled out icing as the source of the problem until we reviewed every available maintenance resource. More than 100 man-hours and over $3 million in parts were consumed troubleshooting this mysterious gripe. In the end, the "War Party" maintenance department gained valuable knowledge about a unique discrepancy on a component that failed after 7,600 flight hours.

Lieutenant (j.g.) Drew is the Maintenance Material Control Officer at VFA-87.

What Lies Beneath

By AD3 Rebecca Romo

For the mechs of VAW-123, the day started out like any other. We were between work-up detachments for our January combat deployment, so the maintenance department was taking advantage of the lull in flight operations and focused on the 400/800 hour inspections that had come due for aircraft 602. When the division LPO returned from the morning maintenance meeting, he told us that incorporating a technical directive (TD) was our No. 1 priority. We had to do the one that applied to the 602's propeller pump housing.

We gathered all of our tools and publications for the day, conducted a QA brief to make sure that everyone was on the same page, and headed out to the hangar to start the job on aircraft 602. The TD required us to remove the entire propeller assembly from the port side of the aircraft. Although this was no small job, removing the propeller assembly was something that the power plant work center had done quite often.

The initial removal of the prop assembly went smoothly, and it was soon laid out on the deck. As I removed the rear cover of the pump housing to replace a seal, I saw a unique piece of FOD: a razor blade sitting at the bottom of the housing. Our mechs hadn't opened this housing before.

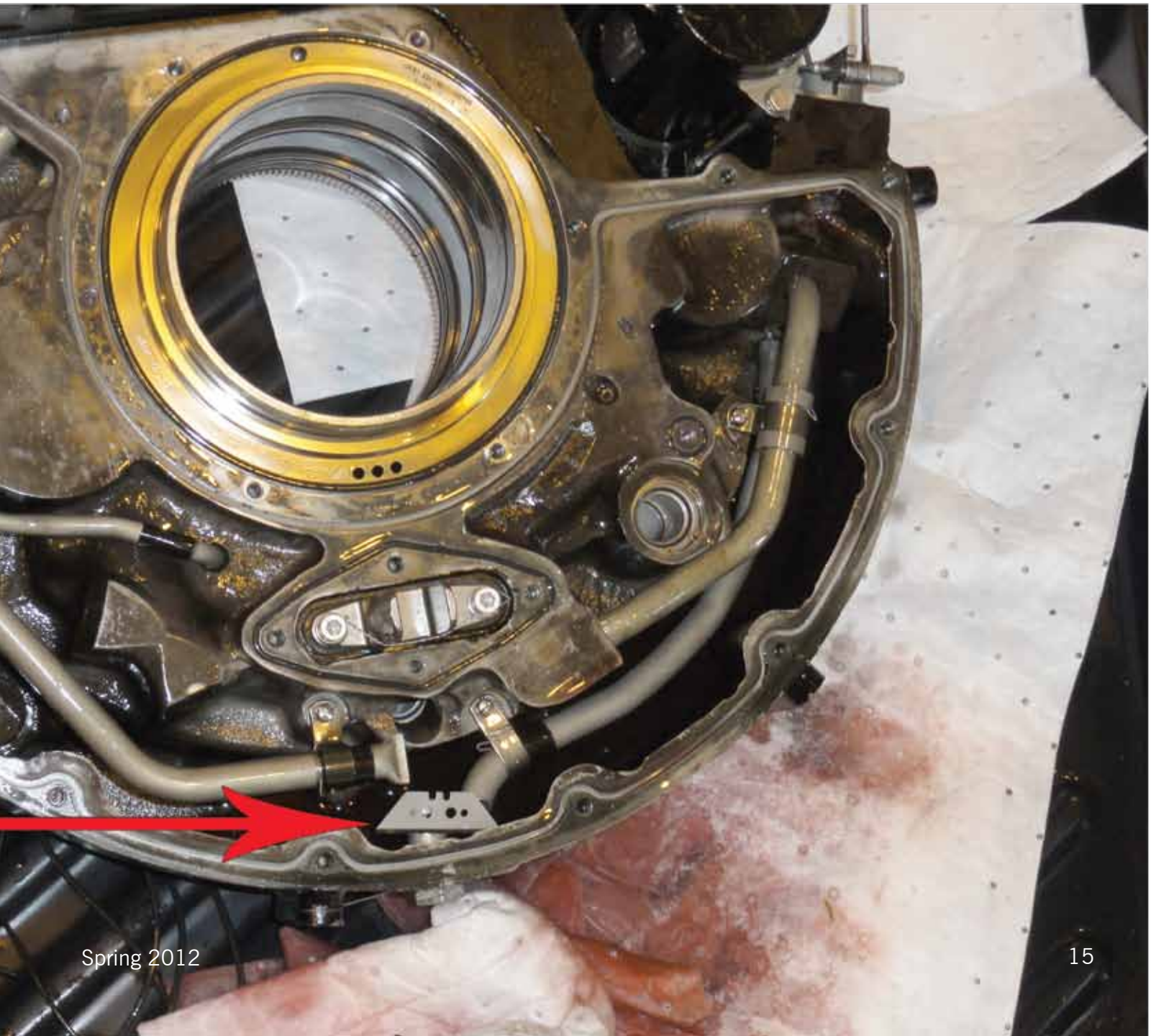
I halted the work on 602 and grabbed my supervisor. He then went to Maintenance Control and QA division to tell them about the find. Within a matter of minutes, a crowd—including the CO—had gathered around the hangar bay staring at the FOD.

The prop system in the Hawkeye community leaves little room for error. If contaminated or leaking, a failed pump housing system can prevent the prop from feathering, which may in turn prevent the plane from landing safely. Since the introduction of the new, eight-bladed prop system in 2004, unfeathered propellers have been involved in two major mishaps and have been the subject of several community hazreps.

Since the introduction of the new, eight-bladed prop system in 2004, unfeathered propellers have been involved in two major mishaps and have been the subject of several community hazreps.

We sent the pump housing back to the depot. The hazardous material report (HMR) that followed laid the blame on depot-level maintenance. Regardless of blame, this incident was a big reminder to me to always keep my eyes wide open for things that may be awry with squadron aircraft. Mistakes, even those with razor-thin margins, can fall through the cracks.

Petty Officer Romo works in the power plants shop at VAW-123.



CHECK

F

OD causes possible aircraft engine failure, jammed flight controls, and injury/death to flight crew. Take FOD seriously at all times.

A

TTITUDE Your attitude has a direct reflection on the quality of work you produce. Do each job with a positive attitude and with high standards in mind.

C

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Poster idea
AD1 Carlos Carbajal, VAQ-129

K THE

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T OOLS

Poor tool control can cost excessive man hours, damage to equipment, and possible loss of life. Account for tools prior to, during and after each job to ensure 100% accountability.

S AFETY

Is an all hands responsibility. Mishap prevention should be the goal of every Sailor and Marine. Mishap prevention starts with "Common Sense" and consideration of the risk before the activity.

Photo by MC3 Kenneth Abbate

Having a Screw Loose

Photo by MC3 Nichelle Noelle Whitfield.

By AM3(AW) Camron Michael Pecoraro

When I got to work that day, I had no idea that my squadron would discover a discrepancy for which there were no checklists, Interactive Electronic Technical Manuals (IETMS) specifications, or inspection criteria. I thought it would be just like any other day, as an Airframes Collateral Duty Inspector (CDI). Usually, I am called on to do everything from phase maintenance, to assisting with the troubleshooting of pilot discrepancies on Functional Check Flights (FCF). On this day I was working as a troubleshooter on a post phase aircraft, helping out where I could and trying to finish signoffs as efficiently as possible so that we could get this aircraft flying again.

So far the aircraft's progress was slow but steady. There were a few discrepancies that were being corrected by other shops but the ground turns were

progressing rapidly. After the last set of ground turns, the pilots had a discrepancy of feedback chatter in the flight controls. Normally the cause of such a discrepancy is basic and relatively easy to troubleshoot. But just to make sure I didn't miss anything, I headed out to the aircraft and opened the hydraulics bay to see if anything unusual jumped out at me.

As hydraulic power was applied I watched the flight controls move through their entire range of motion. Initially I'd thought that a faulty pump may have been the culprit when, out of the corner of my eye, I saw a movement that didn't make sense. Upon closer inspection, I noticed the entire pilot assist servo base plate shifting back and forth as the flight controls moved. There are eight bolts that should have held the base plate tightly against the skin of the aircraft. Instead, the bolts were loose and the plate was rubbing back and forth on the airframe, easily visible to the eye. Needless to say this was NOT supposed to happen.

Realizing that although this was not the cause of the original flight control discrepancy, it was a serious problem that needed immediate attention. When I tried to look up inspection criteria and torque specifications for the attachment bolts, I came up short. I couldn't find any amplifying information anywhere in IETMS or any other inspection cards. After additional research, the inspection of the base plate is not called for in any inspection cycle, either at the squadron or depot level. The only time the bolts are ever inspected is during initial production at the plant. This aircraft had flown over 3,200 hours and there was a distinct possibility that the base plate had never been reinspected.

1) Specific publication within the IETM: A1-H60RA-450-300 WP 013 00.

2) Table of Content path within the IETM: MH-60R\Hydraulic Power Systems\Hydraulic Power System\ Pilot-Assist Module Manifold and Base Plate\Procedure.

As hydraulic power was applied I watched the flight controls move through their entire range of motion.

Luckily, the damage to the aircraft was slight because the discrepancy was discovered early. Had it continued, abrasions to the airframe would have continued and likely caused a separation or catastrophic failure of the flight controls. Fortunately, insufficient time had passed and only minor abrasion and surface corrosion had occurred where the plate was slipping.

The original flight control feedback gripe was later corrected, even though it was unrelated to the shifting base plate. The aircraft was once again up and flying and my fellow maintainers and I were all the wiser in discovering a gap in the time tested maintenance inspection cycle. The experience emphasized the importance of the maintenance troubleshooter. For every discrepancy, even the seemingly insignificant ones, avoid jumping to conclusions and take a deep breath before you turn a wrench or replace a component. Focusing my attention on the surrounding area and looking for "anything out of the ordinary" allowed me to identify a potentially hazardous situation. Following the incident, my new mantra is, "If you expect the unexpected, you will never be surprised".

AM3(AW) Pecoraro is a CDI at HSC-85 on NAS North Island

My Short Stint as a Comedian

I fantasized about teleporting myself from NAS Fallon to MCAS Miramar.

Cpl. Hong V. Nguyen

Monday's show time was 0730. Flights started at 1000, with the temperature in NAS Fallon a breezy ten degrees Fahrenheit. Having the "Marine 15 Minutes Prior" mentality, I walked into the shop at approximately 0705 with a severe case of Monday-itis. A fellow Marine had called over the weekend to talk about my time here in Fallon. He laughed and teased me about the fact that I was freezing while he and the rest of the Marines had been at Pacific Beach playing volleyball with some of the Southern California locals in the radiant 75 degrees typical of the area. I fantasized about teleporting myself from NAS Fallon to MCAS Miramar.

"All available hands get out to aircraft 09 for hazmat cleanup!" I took a second to let the radio call soak in. "Awesome", I exclaimed. I couldn't think of a better way to start out my Monday morning. We suited up and hurried to contain the spill. I ran out, shivering and trying not to slip on the ice skating rink that we had for a flight line. Twenty pounds of kitty litter surrounded the jet, absorbing the spilled liquid, while the Crash, Fire & Rescue crew sat in their heated trucks.

Trying to sweep up every pebble of kitty litter, I noticed the jet still covered in frost. I recalled the conversation I'd had with my fellow Marine and thought that I should send him a picture of this winter wonderland.

I pinpointed the part of the jet that was most covered: the canopy. Summoning my artistic workmanship, I proceeded to write something similar to the "wash me" that you see on dirty cars. After that, the flight schedule and normal maintenance carried on throughout the day.

The next morning I walked into the shop thinking that today was going to be a good day. Someone said, "Hey, go check out what happened to aircraft 09." Nothing registered as I walked out to the hangar bay.

"What's going on here?" I wondered. Four khakis, a couple of petty officers, some Quality Assurance reps, and the Assistant Maintenance Officer crowded the aircraft. The words "*How is San Diego?*" were clearly inscribed on the port side of the canopy.

Uh oh.

I ran back inside the shop and told my supervisor that I was the culprit. "Who should I talk too? Who should I see?" He escorted me to the Senior Chief and I told my story. "I did it, Senior, it was me. After the spill yesterday morning I thought it would be funny to send my Marines in the rear a photo of the frost-covered jet—something they have never seen before. I didn't know my finger would cause such damage on the canopy."

"Stand by," the Senior Chief calmly replied.

Pacing around my shop and feeling guilty, I thought to myself, "Lance corporal second time, here I come." I walked out to take another look at my work, but there were some Aviation Structural Mechanic, Equipmentmen (AMEs) on top of the jet checking out the damage. "It's not deep at all," one said. "I can't even feel it."

"Can you remove it with some canopy polish?"

"Yeah, go get some for me."

I stood patiently with my fingers crossed. First wipe: "*How is San Di…*". Second wipe: "*How i…*". Third and last wipe: "……" gone.

Deep down inside, I was relieved, but I knew that I would still "get the hand" for the wasted man-hours and the investigation that Quality Assurance had launched the night prior when they discovered the damage.

My advice to anybody out there feeling clever and creative: Keep it off the aircraft. My innocent humor nearly cost $800,000 (and I think that's for a used canopy). The fear of losing rank, losing money, and being awarded restriction was not worth the two-second laugh that I got when I had written my rhetorical question on that aircraft.

I owe the seat mechs big time!

Cpl. Nguyen is assigned to Marine Fighter Attack Squadron 314, Strike Fighter Wing Detachment, Augment.

NAVAIR Makes Wire Splicing Cool

By Jim Jenkins

The NAVAIR Wiring Systems Team is bringing Navy and Marine Corps maintenance professionals an innovative way to seal electrical splices using a "cold" splice technique. How will cold splicing help maintainers? According to the Wiring Systems Team's findings, cold splicing requires fewer tools than conventional splicing and has several engineered design advantages, making the task of splicing easier and safer.

Conventional splicing techniques require the use of controlled, high-temperature air in order to heat-shrink the sleeve, sealing the splice from the surrounding elements. Both types of conventional "heat guns" approved for use on fueled aircraft require the use of a nitrogen cart or an air compressor, which are large and cumbersome pieces of equipment. According to Brian Vetter, a wiring systems branch electrical engineer, this added gear means that conventional systems are "…rather inconvenient pieces of gear to use for a simple splice."

Conventional heat guns also require a 110 volt AC power source, which can be a challenge on the flight deck or flight line. The ability to complete a splice repair on the flight deck or flight line without the additional logistical footprint and authorization required for heat-applied splices will be a benefit to workplace safety.

Cold splicing is a safer procedure in certain environments, such as in and around fueled aircraft, because of the absence of heat. The cold splice crimp barrel design is similar to that of the conventional style. But it has, integrated into the jacket, a gel material that creates an environmental seal once the conductors are pushed in. "No activation is needed, and there is no hardening of the gel," Vetter said, "The material simply wraps around the inserted wire, and it self-seals. It's like sticking your finger into Jell-O."

The sealing gel is not epoxy or silicone-based, so its consistency won't change over time. It has held up during extreme-heat, saltwater-immersion, altitude, hot-and-cold cycling, and fluid-resistant tests. The test team also did an operational evaluation where they applied three cold splices to a United States Coast Guard H-60 in an area where the splices were exposed repeatedly to altitudes, winds, and even salt water. The test team evaluated the splices periodically for a year and found no splice failures.

The new crimping tool used is also an improvement over conventional ones. The crimp barrels have a small inspection window which affords a view of the actual wire crimping, so you can see that it's being done correctly. In addition, the crimp tool specifically designed for the cold-splice crimp barrels will not release until the proper crimp is applied.

According to Vetter, "Rough estimates point to approximately $30 million in labor savings alone by simply moving from the current splicing techniques to the new cold-splice devices." But have no fear, conventional splicing isn't going away anytime soon. Cold splicing is simply a safer alternative to what's currently available. For more information on cold splicing, please visit www.navair.navy.mil/jswag or email jswag@navy.mil.

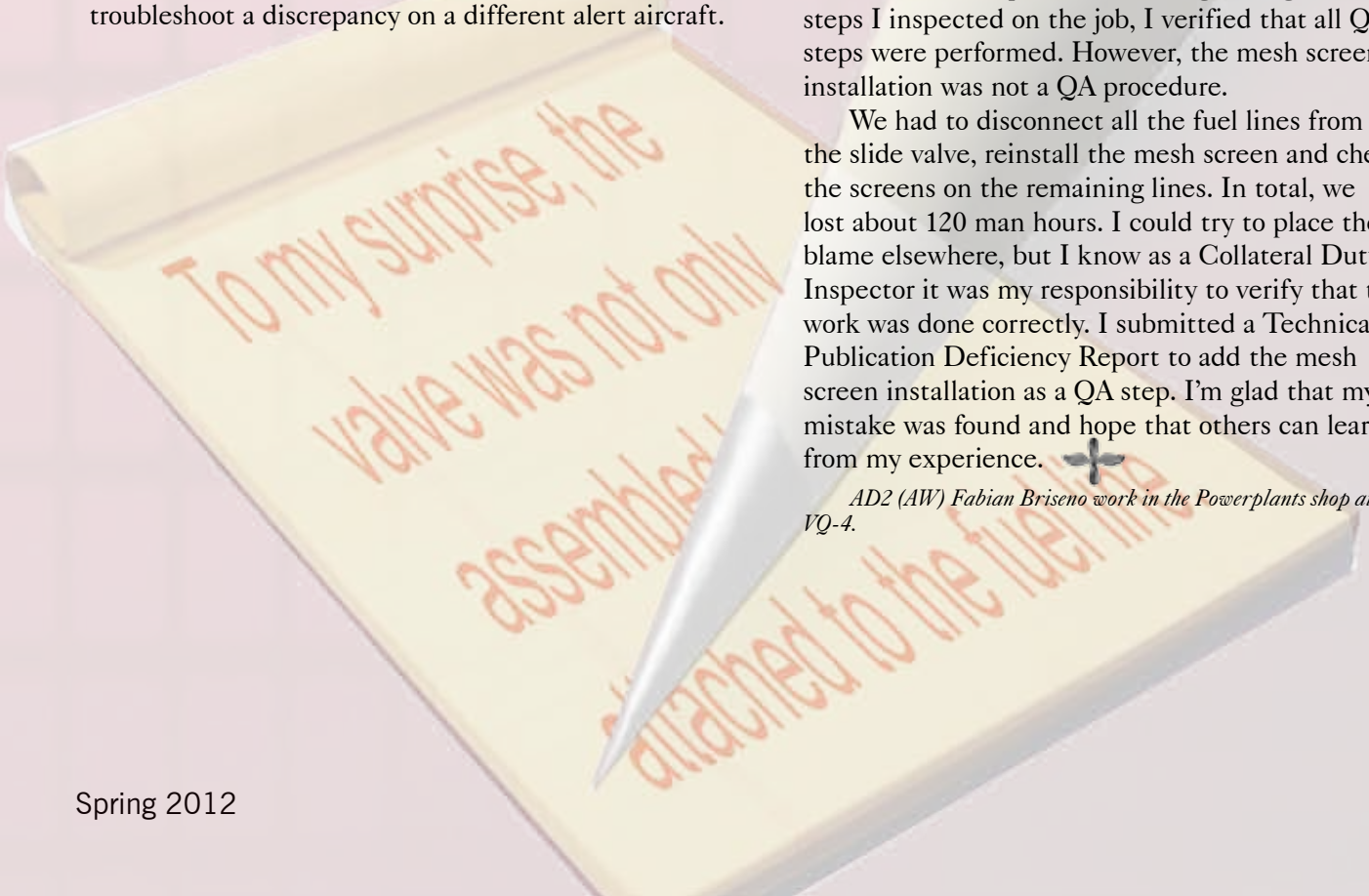
Jim Jenkins worked for NAVAIR and was a Joint Services Wiring Action Group (JSWAG) member at the time of this writing.

Signing Off a Mistake

By AD2 (AW) Fabian Briseno

Working as an E-6B CDI always comes with high op tempo. Reduced manning levels during the Christmas leave period and an unusually high-phase maintenance workload had me working overtime. Running two shifts instead of the normal three had me on night shift working until all downing discrepancies were corrected, easily extending my shift an additional two or three hours per night. This pace had been in effect for over a week. Looking back, I realize that fatigue had already set in.

I had begun installing a slide valve for the aerial refueling system with a junior third class who was new to the shop and eager to learn. I was soon interrupted, however, when I was called to the flight line to troubleshoot a discrepancy on a different alert aircraft.



The acronym describing our platform is TACAMO: Take Charge and Move Out. That means our alert aircraft are ready to go, around the clock, every day of the year.

I hurried to the flight line after leaving instructions to the junior mech on how to continue with the next few steps on the slide valve. An hour later, I finished the troubleshooting and returned to follow up on the slide valve assembly. To my surprise, the valve was not only assembled but attached to the fuel line. After referencing the pubs for Quality Assurance (QA) requirements, I went about the work of inspecting the completed job and congratulated the young mech on his efforts. With no further fanfare, a leak check was performed, the work order was signed off and the holidays enjoyed.

A couple of months into the new year, during a routine preflight inspection, an aircrewman found what looked like a mesh screen near the flight engineer's station on the flight deck. I was soon shocked to find out that the mesh screen was supposed to be inside the fuel line that attaches to the slide valve, to prevent debris from contaminating the fuel system during in flight refueling. And I had signed it off!

QA was immediately notified and I was called in to relay what happened. Thinking back over the craziness of that Christmas maintenance period, I couldn't say for sure if that screen was installed or not, and it appeared it was not. Looking back over the maintenance pub and thinking through the steps I inspected on the job, I verified that all QA steps were performed. However, the mesh screen installation was not a QA procedure.

We had to disconnect all the fuel lines from the slide valve, reinstall the mesh screen and check the screens on the remaining lines. In total, we lost about 120 man hours. I could try to place the blame elsewhere, but I know as a Collateral Duty Inspector it was my responsibility to verify that the work was done correctly. I submitted a Technical Publication Deficiency Report to add the mesh screen installation as a QA step. I'm glad that my mistake was found and hope that others can learn from my experience.

AD2 (AW) Fabian Briseno work in the Powerplants shop at VQ-4.

Maintainers in

Sgt. Veronica Ortega, an aviation ordnance technician for HMLA-169 loads an AGM-114 onto AH-1W Cobra at a forward arming refueling point in Afghanistan's Helmand province. We were reloading an aircraft that was going back out into the fight, said Ortega. The forward arming refueling point was constructed to enable 2nd Marine Aircraft Wing (Fwd) to better support Marines and other coalition troops. Photo by Cpl. Samantha Arrington 2nd MAW (Fwd).

Sgt. Orlando Ortiz, and LCpl Michael Scott, both assigned to the VMFA-323, replace a wing fold proxy switch on an F/A-18 aboard the USS *Ronald Reagan* (CVN 76). Photo by MC3 Shawn Stewart.

the Trenches

LCpl Randal Gibson, assigned to VMFA-323, performs a full toolbox inspection in the hangar bay of the USS *Ronald Reagan* (CVN 76). Tools should be inspected before you take on a job, checked while you are on the job and inspected after the job is done. Photo by MC3 Shawn Stewart.

AOAN Laticia Workman performs an inspection on an M61A-2 Vulcan 20 mm Gatling gun aboard USS *George H.W. Bush* (CVN 77). Photo by MC3 Billy Ho.

Flight, Flight-Related, and Ground Class A and B Mishaps

Class A Mishaps

Date	Type Aircraft	Description
2011-10-01	MH-60R	Aircraft crashed on takeoff.
2011-10-29	V-8B	Postflight inspections on multiple aircraft revealed impact damage to compressor blades.
2011-12-21	MH-60S	Experienced mishap while conducting mountain flying.
2012-01-19	CH-53D	Crashed while conducting night operations in support of OEF.
2011-10-03	KC-130J	Maintainer suffered amputation of 4th and 5th distal phalanges on right hand.

Class B Mishaps

Date	Type Aircraft	Description
2011-10-06	FA-18F	Birdstrike in landing pattern.
2011-10-10	FA-18E	Port engine FOD after takeoff.
2011-10-14	FA-18C	Engine FOD damage during CV recovery.
2011-10-21	MH-60S	Navy SEAL fell from aircraft while conducting helicopter rope suspension training.
2011-11-18	FA-18F	Turn crew lowered flaps causing port trailing edge flap to impact open door 64L.
2011-11-21	FA-18F	Engine screen quick release pin ingested down port intake during ground turn.
2011-12-02	MH-53E	Aircrewman took shrapnel to left eye while clearing jammed round of XM-218.

Date	Type Aircraft
2011-12-06	MH-60S

Aircraft struck by tractor trailer while under tow.

Date	Type Aircraft
2011-12-07	EA-18G

IFR probe separated in-flight while conducting night refueling.

Flight, Flight-Related, and Ground Class C Mishaps

Date	Type Aircraft
2011-10-01	FA-18C

Starboard aileron impacted starboard trailing edge flap during start up.

Date	Type Aircraft
2011-10-04	T-45C

Engine damaged during maintenance high power turn.

Date	Type Aircraft
2011-10-08	C-2A

Flaps damaged on wing spread.

Date	Type Aircraft
2011-10-09	RQ-7B

Engine failed during reconnaissance mission.

Date	Type Aircraft
2011-10-12	T-45C

Bird penetrated forward canopy during section approach.

Date	Type Aircraft
2011-10-13	EA-18G

Engine FOD from rotor blade baton discovered post flight.

Date	Type Aircraft
2011-10-17	C-26

Bird ingested by right motor on VFR final approach.

Date	Type Aircraft
2011-10-20	FA-18C

Bird strike damage in engine during air show practice.

Date	Type Aircraft
2011-10-22	FA-18C

Aileron damaged while manually cranking wing up in high wind conditions.

Date	Type Aircraft
2011-10-24	UH-1Y

Landing to unimproved surface resulted in damage to skid toe and FLIR unit.

Date	Type Aircraft
2011-10-25	FA-18D

Uncommanded jettison of CVER and attached 2 X mk-83 HE bombs.

Date	Type Aircraft
2011-10-25	EA-18G

Starboard engine fire in flight.

Date	Type Aircraft
2011-10-26	FA-18F/FA-18E

Aircraft was taxied into parked aircraft on flight deck resulting in aileron damage.

Date	Type Aircraft
2011-10-30	FA-18C

Sustained internal heat damage from APU during unscheduled maintenance turn.

Date	Type Aircraft
2011-11-01	MH-60S

Tail strut collapsed on landing.

Date	Type Aircraft
2011-11-01	FA-18/KC-10

Aircraft sustained refueling probe and canopy damage during air refueling operation.

Date	Type Aircraft
2011-11-02	E-2C+

In flight damage to both engines due to external FOD.

Date	Type Aircraft
2011-11-02	UH-60L

Damage to stabilator during landing zone operations.

Date	Type Aircraft
2011-11-09	FA-18C

Panel 49 damaged during low power turn from bleed air leak.

Date	Type Aircraft
2011-11-17	FA-18F

Taxied into chocked and chained FA-18F on starboard foul line forward of island.

Date	Type Aircraft
2011-11-20	AH-1W

In flight fire on short final.

Date	Type Aircraft
2011-11-29	FA-18D

Right main landing gear collapsed during arrested landing.

Date	Type Aircraft
2011-11-29	T-45C

Bird strike caused significant canopy damage in flight.

Date	Type Aircraft
2011-12-01	EA-6B

ALQ-99 pod unintentionally jettisoned during routine stray voltage checks.

Date	Type Aircraft
2011-12-05	TH-57C

Engine catastrophically failed prior to takeoff.

Date	Type Aircraft
2011-12-06	FA-18F

Aircraft NWS system damaged during shipboard taxi and tow.

Date	Type Aircraft
2012-01-05	EA-6B

Engine FOD damage.

Date	Type Aircraft
2012-01-24	RQ-7B

Engine failure after departure from LZ White Rhino.

Sailors and Marines Preventing Mishaps

BRAVO Zulu

Send BZs to: SAFE-Mech@navy.mil

PRAN KYLE COE and ATAN JOHN BERGER
VQ-4

Assisting in a low-power engine turn on an E-6B, PRAN Coe noticed sparks coming from the #4 engine cowling. He quickly alerted the plane captain, ATAN John Berger, who then signaled the turn operator to immediately shut down the engine. Upon inspection by the AEs, it was determined that two of four screws on the generator terminal block were not installed properly, causing the terminal board to come in contact with its outer guard.

AT2 (AW) MATTHEW A. VETTER
VAQ-141

During a turn-around inspection of OUTLAW 501, Petty Officer Vetter discovered a half-inch crack in the nosewheel steering swivel. He immediately informed his supervisor and Maintenance Control, asking to have the airframes workcenter confirm that the crack was out of limits. AT2 Vetter then wrote the Maintenance Action Form, resulting in the aircraft being quickly brought back into service after the swivel was removed and replaced.

Airman Seth A. Taylor
AT3 Kevin M. McGinn
ATAN Jason C. Hitchcock
HS-6

While preparing to paint tie-down chains one warm afternoon, Petty Officer McGinn, Airman Hitchcock and Airman Taylor noticed that a fellow working party member was holding his chest and having trouble breathing. They persuaded their shipmate to return indoors and seek medical attention. Their quick action helped him get rapid medical treatment, preventing what could have become a serious heat injury.

AD2 Thomas Moranz
HSL-42 Det

While deployed on board USS *Doyle* (FFG-39), Petty Officer Moranz was working on an engine change following an engine over-temperature condition. He noticed small cracks on the deswirl duct vanes, a result of them having been exposed to too much heat. His attention to detail prevented the installation of a bad duct.

ADAN CHRISTOPHER CAREY
VR-56

During a preflight inspection on a C-9, Airman Carey discovered a loose connection linkage on a movable flap vane. He immediately contacted Maintenance Control and the Airframes workcenter to suspend the functional checkflight until the discrepancy could be corrected. Upon further investigation, the linkage was found to be out of torque specifications.

BZ AE2 Michael Boothe and AE3 Michael Landers
HSL-48 Detachment Six

Over the course of three days, AE2 Michael Boothe and AE3 Michael Landers chased an erroneous engine indication malfunction on a SH-60B. Spending more than 54 man-hours troubleshooting this elusive discrepancy, they ultimately discovered a recessed pin on a cannon plug between the Pilot Display Unit (PDU) and Central Display Unit (CDU).

CROSSFEED

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Airframes

What Unique Identifier?

By AMCS(AW/SW) C. A. Walter, Code 12 Airframes Analyst

Problem: Is your hazardous material uniquely identified for reference and retrieval? My travels with the Naval Safety Center survey team has shown that 90 percent of the commands we look at are not using the Unique Identifier System as required. Most commands have the MSDS numbered in order that the AUL lists them, and located in a binder; however they are not putting the unique identifier on the individual HAZMAT containers.

Solutions:

OPNAVINST 5100.23G, chapter 7, paragraph 0702 (g) (5),states that your command is responsible for having a quick reference for retrieval, and it needs to be correlated between the AUL, MSDS, and individual HAZMAT.

The hazardous material must have the same numbering system as the MSDS and binder. For example, if your MSDS for MIL-PRF-83282 is the first MSDS in binder #1, then your unique identifier for MIL-PRF-83282 could be #1, or something similar. This number must be on the AUL, the MSDS, and on all containers of MIL-PRF-83282. The key is to keep it simple so that anyone can understand the system and rapidly find an MSDS for a particular piece of HAZMAT.

Ask a shipmate if he or she can retrieve an MSDS for hazmat you currently have checked out and see how long it takes him or her to find it , if at all. Next, incorporate your unique identifier, repeat the process, and see if they can locate the correct MSDS faster. Remember though, the unique identifier is no good to anyone unless you train everyone on how to use it.

Senior Chief Walter is a maintenance analyst at the Naval Safety Center.

ALSS Program

Correction to Summer 2011 article titled "CAUTION"! DO NOT IGNORE A "CAUTION" IN THE PUB!

By PRCS Young Code 12 ALSS Analyst

In the Summer 2011 Mech Magazine, we discussed HERO (Hazards of Electromagnetic Radiation to Ordanance) testing failures of CONAX Battery Voltage Testers and a CAUTION in NAVAIR 13-1-6.2 which states that only FLUCK 77 series multi-meters are authorized for use when performing battery voltage checks on Parachute Harness Sensing Release Units (PHSRU).

It has since been brought to our attention that an exception to this rule is authorized in NAVAIR 01-85ADC-6-3 (15 November 2007) for shore based EA-6B maintainers performing 218 Day Special Inspections. The CONAX Battery Voltage Tester authorized in this MRC is P/N 1842-106-01.

Special thanks to PR2(AW) Michael B. Ware of the FRCSE for making us aware of this and to Mr. Howie Tomlinson (NAWC Parachute Restraint Specialist/ Engineering Technician) for researching and confirming this correction.

General

Let's Hear from the Corps!

By GySgt Royce Downing

Being "the new aviation guy" in the Naval Safety Center came with a lot of questions. Several were standard. "What was your last command?" "Are you married?" "Do you have children?"

I was asked my views on the Safety Center from a Fleet perspective. I'm guessing I gave the standard answer: "I think it's important for the Safety Center to conduct surveys." But that was only part of the answer that they were looking for.

Photo by LCpl Ryan Joyner

One of the many products and services produced by the Naval Safety Center is the collection of safety-related magazines: *Mech*, *Approach*, *Sea Compass*, *Decisions*, and *Safe Ride*. The command wanted to know if the Marines in the fleet actually read them, and how often. Well, most of the guys know that you can always find the latest copy of *Mech* or *Approach* in a head stall. And that's what I told them. While this isn't a bad answer because at least they're being read, it became clearer that what everyone wanted to know was: If Marines know about the magazines, why don't they submit stories?

I started to think about this, and flipping through four past issues of *Mech* I found only one article sent in by a Major. At this point, what I couldn't figure out was out of all the stories we hear and tell each other, why have none of them ever been put on paper?

So what I ask of you in the Fleet is to submit your stories. We all have a story to share about something a "friend" has done that was not necessarily the most intelligent course of action. The point of these is to give the next generation a building block for smarter decisions. We don't necessarily care if you change the names to protect the dumb. We just want to share what's going on in the fleet to help the next person. So send them in.

Analyst's Note: Aviation maintenance – related topics would be considered for Mech *magazine. Off-duty and recreational stories appear in* Decisions. *And flight-related tales are submitted for* Approach.

Commander, Naval Safety Center would like to recognize the following aviation commands for their recent participation in safety surveys, culture workshops, and maintenance-malpractice resource-management (MRM) presentations for the months of June-September.

Safety Surveys

FRC Mid-Atlantic (Norfolk) USS Enterprise (AIMD) HMX-1 (Green and White) FRC Washington
FRC South-East (JAX) FRC South-East (Mayport) HM-15 VR-53 VR-1 HSC-7
VAW-121 VAW-123 VP-30 VP-62 VP-5 HS-11 HSL-46 HSL-42
VFA-83

Culture Workshops

Marine Forces Command

HMLA-167 HMLA-467 VMFAT-501

Marine Forces Pacific

HMH-466 HMLA-367 HMLA-369 HMLAT-303 HMM-262 HMMT-164 VMFA(AW)-121
VMFA(AW)-242 VMFA-232

CNAL

HS-11 HSC WEPS SCHOOL NAS KEY WEST SAR VFA-105 VFA-11 VFA-34
VFA-81 VP-16 VP-26 VP-30 VPU-1

CNAP

HS-14 HSC-23 HSM-75 VAQ-142 VAW-116 VFA-102 VFA-195 VFA-2 VFA-27
VP-46 VQ-1 VQ-2

CNARF

VR-56 VR-64

MRM

VFA-204 CNATT AMO HM-15 VR-53 ASO VFA-103

Photo by MC2 Alan Gragg.

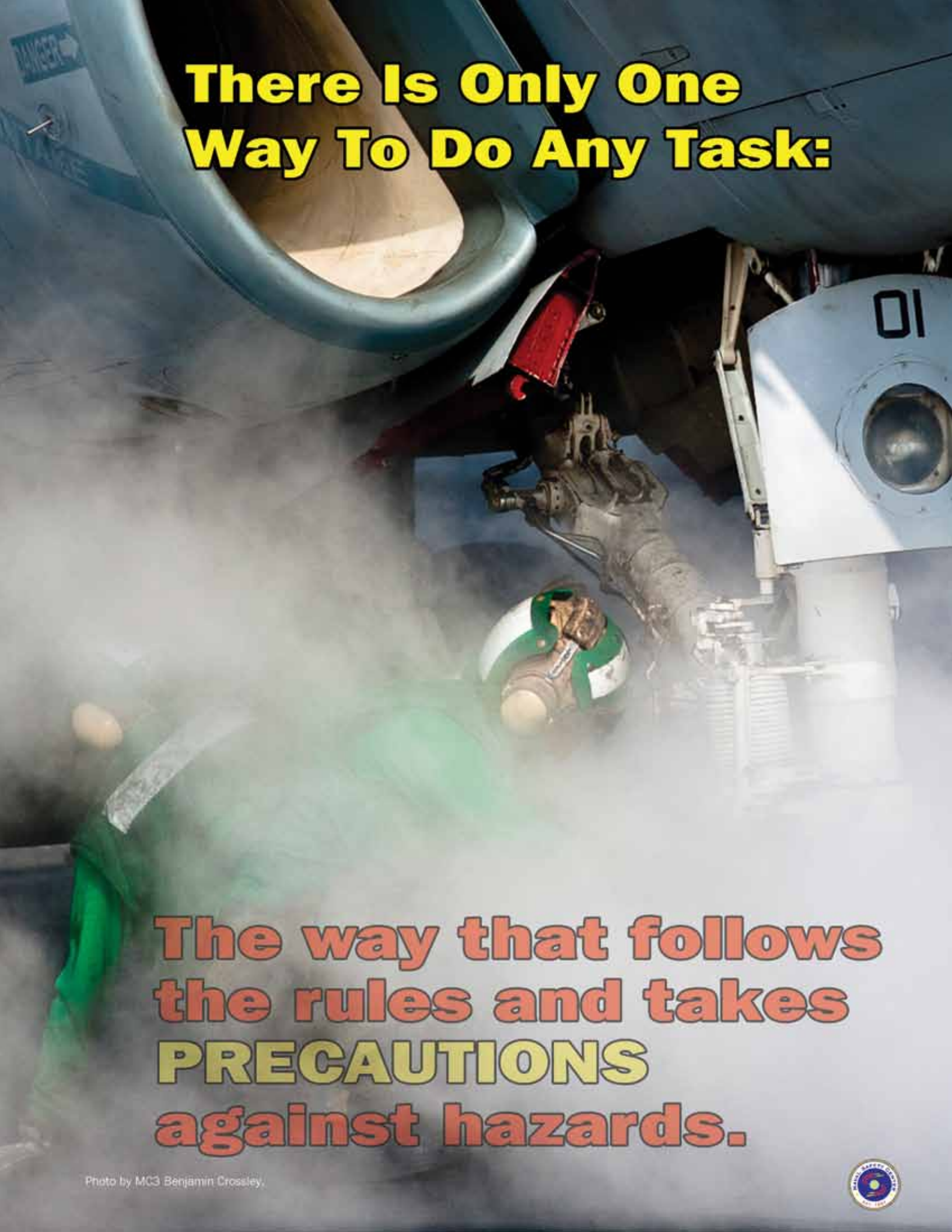

Photo by MC3 Benjamin Crossley.