The Navy & Marine Corps Aviation Maintenance Safety Magazine

Mech

Winter 2005-06

Warning: Explosive LCFUs

Don't Let This Happen to You

(See page 6)

THE NAVY & MARINE CORPS AVIATION MAINTENANCE SAFETY MAGAZINE

Mech

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Mishaps waste our 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 command's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is dangerous and demanding enough. The time to learn to do a job right is before combat starts.

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On the Cover:

Warning: Explosive LCFUs

Personnel have suffered similar injuries at three separate commands when a metal lid became a projectile while being removed under pressure.

A special thanks to VFA-86 for their photo.

Features


Page 10


Page 2


Page 18

Departments

Best Practic

Six Minutes for Safety:

By ATC(AW/SW) Douglas Robertson, VFA-14

We have a lot of "tools" to remind us how to be safe. We have annual safety reviews, quarterly safety stand-downs, monthly safety magazines, enlisted safety-council meetings, bi-weekly newsletters, weekly editions of *Safetyline*, and the timeless Friday Funnies. What more could we possibly need? The answer may lie in one simple fact: Sometimes, we have to keep the message timely and relevant, minute-by-minute.

While deployed to the Arabian Gulf in support of Operation Iraqi Freedom, it became painfully evident that personnel were falling into a deep rut. Flying nearly identical flight schedules daily and going for extended periods between port visits; we started to experience the same thing Bill Murray did in the movie "Groundhog Day." Each day seemed to be a carbon copy of the previous one, and there was no end in sight. Talk about an environment ripe for complacency!

On deployment, we received our safety publications, and we had access to Friday Funnies and *Safetyline.* So, why weren't the messages getting through? Lack of relevancy and timeliness may be the answer. Everything printed in the safety publications is relevant information; however, it did not apply to our current situation. We needed a new tool. *Six Minutes for Safety* was born.

Keeping It Relevant

Something New

The brainchild of a former squadron safety petty officer AO1(AW) Jeff Campbell and implemented by ATC(AW/SW) Douglas Robertson, *Six Minutes for Safety* is an innovative tool that allows constant focus on workplace safety issues.

Tied into the three-times-weekly CAG FOD/safety meetings, *Six Minutes for Safety* provides exactly what the name implies: a dedicated block of time for each shop to focus all attention on safety and safety-related issues. The tool is implemented at shift change, three times a week. Information from the CAG meetings may be reemphasized, or additional pertinent information can be added. The work-center LPO disseminates the information to their personnel, and it is presented in a manner to encourage discussion and feedback.

It's the feedback that really makes the difference with this program. Previously, many personnel, especially very junior Sailors, felt they had no voice when it came to issues of safety. This program encourages all hands to voice their concerns to their LPOs or directly to the squadron-safety representative.

What's Included

Examples of items that frequently find their way into *Six Minutes for Safety* installments include: proper use and inspections of personal protective equipment (PPE), FOD walkdowns and the impact of FOD in the aviation environment, situational awareness around operating aircraft and equipment, and, last, the biggest single issue during our time in the Arabian Gulf, heat-related injuries and the importance of staying hydrated.

Many of these issues find their way into multiple installments of *Six Minutes for Safety*, sometimes consecutively. To prevent personnel from getting bored or ignoring repeat topics, we present the issue a different way each time, emphasizing the hazard or mindset that needs to be addressed. The idea is not to make personnel weary of any issue. While discussing any of these or myriad other issues, all hands are encouraged to offer feedback or suggestions on how to reduce or eliminate these hazards. These discussions often lead to fresh new approaches to age-old problems that we face in naval aviation.

The Benefit

The program also leads to education. Instead of a single squadron-safety representative, we have a squadron full of them. People keep their heads on a swivel and constantly are looking out for themselves, as well as their shipmates. Perhaps the greatest benefit of a program like this isn't having a dedicated time to talk openly about safety-related issues or bragging that our squadron created a fantastic new program. Rather, the greatest benefit is that we are training up a squadron full of personnel who are confident safety observers and who are not afraid to point out an unsafe procedure or environment.

Six minutes, three times a week…a very reasonable cost for a highly effective safety program.

Critical Eye Award

Dear Editor,

I received my courtesy copy of the fall 2005 *Mech* magazine for my contribution (Critical Eye Award, pg. 8), and I thank you. I proudly showed it to my office mates as soon as I received it. They asked me where the picture was that had a bad example of fall protection. I replied, "Right here on the back cover." That was when I noticed that the picture on this issue's rear cover also shows an unsafe practice. The picture shows a Navy doctor suturing a toe. If you look closely, though, you will notice the Sailor assisting on the left is not wearing gloves, though he is close to the wound. Also, no one is wearing a face shield; both are needed to prevent bloodborne pathogen (BBP) exposure. Unfortunately, BBPs exist in the Navy (HIV, hepatitis) and need to be protected against. Please inform your readers that this photo is another example of how not to be safe. It will be the little things like this (details) that will help us achieve our 75-percent mishap-reduction goal by the end of FY08. Again, thank you.

Brion K. Hall
NAVOSH Specialist, CPSI
Naval Air Station Brunswick

Thanks again for your input. Closer inspection of the photo shows two of three personnel involved wearing gloves, which should raise the red flag in any work center when someone is not properly outfitted for their assigned task—i.e. whistle not in crew's mouth during an aircraft move, cranial not on crew's head while working around suspended loads or up on an aircraft, or any other safety regulations not being followed by personnel in your command.

The federal standard for working with bloodborne pathogens is 29 CFR 1910.1030. It is up to the individual unit to establish its BBP policy and determine what it considers "reasonably anticipated," but why would anyone want to take the risk of exposing themselves to a potentially deadly BBP unnecessarily? Gloves and eye protection are a very small price to pay for protecting yourself from harm. —Ed.

29 CFR 1910.1030(a)

Scope and Application. *This section applies to all occupational exposure to blood or other potentially infectious materials…*

1910.1030(b)

Definitions. *For purposes of this section, the following shall apply:*

Blood *means human blood, human-blood components, and products made from human blood.*

Bloodborne Pathogens means *pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).*

1910.1030(d)(3)(ix)

Gloves. *Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; when performing vascular access procedures except as specified in paragraph (d)(3)(ix)(D); and when handling or touching contaminated items or surfaces.*

1910.1030(d)(3)(x)

Masks, Eye Protection, and Face Shields. *Masks in combination with eye-protection devices, such as goggles or glasses with solid side shields, or chin-length face shields, shall be worn whenever splashes, spray, spatter, or droplets of blood or other potentially infectious materials may be generated and eye, nose, or mouth contamination can be reasonably anticipated.*

BEWARE OF THE OTHER DRIVER!

By AE3(AW/SW) Daniel Konieczny, VFA-146

My squadron held all-hands quarters, discussing ORM and the process of making the correct choices. I dismissed the command's warning, thinking I never would be in any of the positions they were discussing. What a mistake!

After a long day of work, I made another mistake by driving three hours to visit my girlfriend in Los Angeles, knowing I had to return for work the following day.

I ignored the ORM training I had received on numerous occasions. After my evening in LA came to an end, I started driving back around midnight. Everything was going smoothly; I was awake and did not feel tired. About 50 miles from base, though, another individual veered into my lane, almost hitting my car.

I hit my brakes and swerved to avoid a collision and then swerved back onto the highway. When I tried to correct my first swerve, I went into a series of 360-degree turns down the highway. My car eventually left the road, with the tires catching in the dirt and my car flipping side-over-side. After several flips, I came to a stop. I could see that the car's roof was caved in, every window was broken, and the car was totaled.

Did I mention that I had purchased my 2005 Nissan Altima three weeks before and just had sent the first payment? The car that came into my lane continued down the highway without the driver ever looking back, as far as I know. As I regained my composure, I climbed into the back seat where I kicked open a door to escape. I noticed I was the only person there—no one had stopped to help me or to see what had happened. After a short search for my cell phone, I found it and dialed 911. My vehicle was towed, and I was left without a ride. My decision to drive to LA on a workday resulted in the total loss of my brand new car and about seven days of limited duty.

The lesson that can be learned from my actions is to think before you act. Consider all aspects of your actions. I could have ended my life or someone else's. Even if I had not been in an accident, I could have put my fellow maintainers and pilots at risk because I did not get enough sleep.

Don't make my mistake. I am lucky to be alive, and I will not be making an after work drive to LA again. I'll wait for a weekend and spend quality time, instead of being rushed. It is not worth the risk!

WARNING: EXPLOSIVE LCFUs

Goes the Unit

By AM1(AW) Eldred Leavitt, VFA-115

It was a normal day at NAS Lemoore, and the squadron was preparing for an upcoming detachment to NAS Fallon. The flight schedule was going smoothly, so my fellow AMEs and I began work on an 84-day inspection. The shop was filled with qualified people, and we all set off to get the inspection done quickly.

I started by checking on one of the items we would need to complete the job: a liquid-coolant-filtration unit (LCFU). As it turned out, the unit's fluid level was low and needed to be serviced. I had done this task a million times before, so I opened the bleeder petcock on the fluid reservoir to let out the pressure. Knowing it would be a while before the unit fully depressurized, I went back to the shop to complete some other tasks. About 15 minutes later, I returned to the unit and loosened the clamp on the reservoir lid to remove it. The clamp seemed to be stuck on the lid, so I tapped it with my ratchet to loosen it. Tap… tap… boom!

The lid now was off… and lying about 20 feet away. As for me, I was in severe pain from the direct blow I had received from the lid as it tried to reach low Earth orbit. With people rushing to my aid, I became aware I was bleeding from the mouth. A quick body check revealed that my bridgework and a few other teeth were missing; I also had a big cut on my right cheek. The folks in maintenance rushed me to the emergency room, where I underwent surgery to graft bone to my now cracked jaw and to sew up all the cuts. Four hours and 20 stitches later, the reality of what had happened set in.

No one really is sure what happened. Safety and QA surmised that the valve for the nitrogen bottle on the unit must not have been closed completely, and the unit partly pressurized in the time it took for me to go to the work center and come back. I think familiarity got the best of me. My comfort with the unit probably caused me to miss a very critical step. I say "probably" because the safety investigation into this incident revealed a number of peculiarities about the LCFU.

First, this incident was not a one-time event. Similar occurrences had taken place within the community before, but they hadn't been reported due to lack of injuries. Second, an LCFU had slowly pressurized itself, even with the nitrogen turned off! Other factors worth mentioning include the lack of a formal training or licensing program for the LCFU and the omission of a warning/caution in the AG-521AC-S74-100 about the possibility of an explosive departure. Consider these points the next time you operate this piece of machinery.

I was lucky to walk away from this incident. The outcome could have been much worse. This painful lesson has given me a new respect for a piece of gear that I have used for years. I hope most of the AMEs out there already have heard about this incident through my squadron's hazrep. If not, you know now. It is unfortunate that prior incidents were not reported. Had they been documented, it may have prevented this incident. It's often said, "Our maintenance manuals are written in blood," and this incident proves it.

The next time you see a hazard or have an idea for making a job safer, think of the Sailor whose blood inked this story and act before someone else gets hurt.

HAZREP AWARENESS— P 071719Z APR 05

SUBJ/AVIATION GENUSE HAZREP VFA 115 02-05
REF/A/DOC/OPNAVINST 3750.6R
REF/B/DOC/AG-521AC-S74-100
NARR/REF A IS THE NAVAL AVIATION SAFETY PROGRAM. REF B IS THE OPERATIONAL AND MAINTENANCE INSTRUCTIONS WITH MAJOR PARTS LIST FOR THE LIQUID COOLANT FILTRATION UNIT PART NUMBER LCFU-2AC-302-8.

ANALYSIS: INVESTIGATION INTO THIS INCIDENT REVEALED THAT IT WAS NOT A ONE-TIME EVENT. TWO SIMILAR INCIDENTS HAVE TAKEN PLACE WITHIN THE COMMUNITY DURING THE LAST YEAR. FORTUNATELY, THESE PRIOR EPISODES DID NOT RESULT IN ANY INJURIES. IT IS PROBABLE THAT MANY COMPARABLE NEAR MISSES HAVE OCCURRED IN THE PAST, BUT WERE NOT DOCUMENTED DUE TO A LACK OF INJURIES.

THE AME INVOLVED IN THIS EVENT WAS HIGHLY EXPERIENCED AND WAS SERVICING THE CART AS HE HAD ALWAYS DONE IN THE PAST. QUALITY ASSURANCE (QA) EXAMINATION SHOWED THAT HE WAS CONDUCTING THE SERVICING FROM MEMORY. INVESTIGATORS IN THE PRIOR CASES CONCLUDED THAT OPERATOR ERROR WAS CAUSAL TO BOTH INCIDENTS. IN THOSE CASES, THE INDIVIDUAL SERVICING THE LIQUID COOLANT FILTRATION UNIT (LCFU) DID NOT COMPLETELY BLEED OFF THE RESERVOIR PRESSURE PRIOR TO REMOVING THE LID ASSEMBLY. AN EXACT DETERMINATION AS TO THE CAUSE OF THIS INCIDENT WAS NOT MADE. IT IS PROBABLE THAT THE AME INVOLVED DID NOT COMPLETELY SECURE THE VALVE ON THE NITROGEN PRESSURE BOTTLE AT THE BEGINNING OF SERVICING. THIS ALLOWED THE RESERVOIR TO PARTIALLY PRESSURIZE AND RESULTED IN THE EXPLOSIVE DEPARTURE OF THE LID AT REMOVAL.

WHILE OPERATOR ERROR WAS A CONTRIBUTOR TO THE PRIOR INCIDENTS, AND A PROBABLE CONTRIBUTOR TO THIS INCIDENT, IT BECAME APPARENT THROUGH INVESTIGATION THAT THERE ARE A NUMBER OF INADEQUATE MANAGEMENT AND MAINTAINER CONDITIONS THAT ARE COMMON TO EACH. PRESENTLY, THERE IS NO FORMAL TRAINING ESTABLISHED FOR THE LCFU. SQUADRON AME'S RECEIVE TRAINING INTER-SQUADRON AND ARE NOT REQUIRED TO HOLD A GROUND SUPPORT EQUIPMENT LICENSE (GSE) TO SERVICE THE LCFU. REF B IS THE ONLY PUBLICATION THAT CONTAINS SERVICING INSTRUCTIONS FOR RE-FILLING THE LCFU'S MAKE-UP RESERVOIR AND IS USED IN ALL THREE LEVELS OF AIRCRAFT MAINTENANCE. REF B DOES NOT DELINEATE THE QUALIFICATIONS REQUIRED TO PERFORM MAINTENANCE OR SERVICING ON THE LCFU. ADDITIONALLY, REF B LACKS A WARNING/CAUTION ABOUT THE POSSIBLE IMPLICATIONS OF A RESERVOIR THAT HAS NOT BEEN FULLY PURGED.

THE DESIGN OF THE LCFU DOES NOT AID IN THE SAFE SERVICING OF THE RESERVOIR. THERE ARE NO CROSSCHECK PROCEDURES OR VISUAL MEANS THAT CAN BE USED TO CONFIRM A LACK OF PRESSURE IN THE RESERVOIR. A PRESSURE SIGHT GAUGE LOCATED ON TOP OF THE RESERVOIR WOULD GREATLY AID IN THIS DETERMINATION AND WOULD HAVE PROBABLY PREVENTED THIS INCIDENT. THE METHOD OF ATTACHMENT OF THE RESERVOIR LID IS ALSO A SAFETY HAZARD. CURRENTLY A CLAMP RING IS USED TO SECURE THE LID TO THE RESERVOIR. ONCE THAT RING IS LOOSENED, THE LID IS FREED FROM THE UNIT. A NEW DESIGN IS NEEDED. ATTACHING THE LID TO THE UNIT WITH A HINGE OR SAFETY STRAP CAPABLE OF RETAINING AN EXPLOSIVELY OPENING LID WOULD HAVE PREVENTED THIS AND ALL PRIOR INCIDENTS.

CONCLUSIONS: ALTHOUGH THE EXACT CAUSE OF THIS INCIDENT IS UNDETERMINED, IT IS EVIDENT THAT THERE ARE SEVERAL SAFETY CONCERNS ASSOCIATED WITH SERVICING THE LCFU. FROM THIS INCIDENT IT IS APPARENT THAT REFINED PROCEDURES, FORMALIZED TRAINING/QUALIFICATION, AND INCLUSION OF A PRESSURE GAUGE ON THE LCFU WOULD SIGNIFICANTLY REDUCE RISK WHEN OUR SAILORS OPERATE OR SERVICE THIS EQUIPMENT.

CO'S ENDORSEMENT: IT WAS DISTURBING TO LEARN THAT THIS SAME EVENT HAD TAKEN PLACE SEVERAL TIMES IN THE PAST AND WAS NOT FORMALLY DOCUMENTED. PRIOR IDENTIFICATION OF THIS HAZARD MAY HAVE PREVENTED THIS OCCURRENCE AND KEPT AN AME FROM GETTING HURT. WE MUST CONTINUALLY BE PROACTIVE IN OUR IDENTIFICATION, COMMUNICATION, AND MITIGATION OF HAZARDS REGARDLESS OF THE SEVERITY OF THE INCIDENT.

HAZREP reporting is the primary method of identifying hazardous trends that exist throughtout the Navy. Don't rely on another squadron's HAZREP to bring attention to a problem in your command.—Ed.

Unknown Danger

By Lt. Gary Horsey, USS Theodore Roosevelt *(CVN-71)*

"We just had a wonderful port visit in Fort Lauderdale, Florida," said the ship's CO over the 1MC. "Keep your head on a swivel."

Part two of COMPTUEX was beginning, and we were ready to "git-'er-done." An AS2 supervisor with 10 years of superb Navy service was leading his Sailors in the daily production efforts in AIMD's IM-4 support-equipment division. As supervisor, he assigned an AS3 to work on a recently inducted liquid-coolant-filtration unit (LCFU). One of the squadrons had turned in the unit when it stopped working, with this note attached: "The red light comes on and won't go out, and the unit doesn't work now." The AS2 assigned an AS3 to the task—a shipmate who just had returned from several months TAD as a master-at-arms. The AS2 assisted him, along with one other AS3.

They gathered all the required pubs and tools and even signed in to work on the computer. After a good visual check of the LCFU, they fired up the unit, and the fault indicator (red light) immediately illuminated, just like the gripe said. As required by the maintenance pub (NAVAIR AG-521AC-574-100, Section 4, page 11), the filters had to be changed and any lost coolant had to be replenished. The two filters were replaced with no problem. One AS3 then went to the hazmat locker to get some coolant to refill the unit.

Meanwhile, the AS2, with the other AS3 watching, continued with the final maintenance procedures. He prepared to remove the LCFU make-up reservoir lid to facilitate adding the coolant. First, he loosened the bleed valve, which is part of the lid, to bleed off the pressure in the LCFU. With the other AS3 watching, the AS2 again carefully looked over the LCFU before getting any tools to remove the lid. Satisfied, he grabbed the right tools and started loosening the two bolts on the ring clamp that hold the lid in place.

Before the AS2 had completed the last few turns to remove one bolt, the lid exploded off the LCFU with a loud pop. The lid hit the AS2 in the face. He immediately grabbed his mouth and doubled over. That was the last position I recalled seeing him in before he was rushed to medical. He received more than 40 stitches (covering 6 inches of his face), had three hours of microsurgery, and then was put on a COD flight off the ship for further surgery to repair a fractured skull.

Investigators found none of the regular ingredients for mishaps; the AS2 had received adequate training, and pre-operational checks of equipment had been done. Complacency, lack of communication, and the day-to-day operational environment did not lead to this disaster. The investigation team did find an obstructed bleed valve that prevented the complete release of pressure.

Maintenance Operational Risk Management Note:

The AS2's overall situational awareness was lower than it should have been. Without considering the possibility that there could be more than the normal 9 to 12 psi in the cylinder, he loosened the retaining ring clamp, while leaning directly over the LCFU, which placed his face over the lid. The resulting situation could have been fatal.

Several lessons were re-learned that day:

- Wear PPE whenever working with any pressurized equipment, regardless of the unit's psi rating.
- Always stand to the side of a pressurized opening when performing maintenance on any pressurized equipment.

Proper use of ORM can help identify these hazards before they become a mishap, but we must consider the risks and controls before we perform any maintenance action.

Lt. Horsey is the IM-4 Division Officer.

Under Pressure

By AME3 Daniel Kennedy, VFA-86

I had been on leave for seven days, and despite a restless night of sleep, everything seemed to be running smoothly when I got to work. It was a beautiful day, and we had only a few small tasks to complete before FOD walkdown. Little did I know it was to become a day I soon would not forget.

During pass down, AME3 Tillman and I were told to refill the radar liquid-cooling filtration unit (LCFU) to prepare an FA-18C radar for decontamination. Our LPO reminded us to depressurize the LCFU before filling it. AME3 Tillman and I checked out the pre-op card and the required toolbox.

Lid with stenciling added by VFA-86 to warn personnel before servicing is performed.

As we headed out to the hangar, we made our first mistake. We left the correct technical manual sitting on the desk. The LCFU is known to be a hazardous unit that requires strict adherence to the publication because nitrogen is used to pressurize the unit. This topic has been covered in at least two hazreps, the latest from VFA-83. It also has been the subject of recent squadron safety training. Without the technical manual, we had no reference to verify we were doing the job safely.

Upon arriving at the LCFU, AME3 Tillman started loosening the front bolt from the band clamp on the refilling reservoir. Once it was loose enough to spin by hand, he handed the wrench to me. As I began to undo the back bolt, everything went wrong. We had missed one of the first steps in the technical manual that says, "Open LCFU make-up reservoir bleed valve to release any built up pressure."

A thunderous boom resounded in the hangar bay as the lid flew off and hit AME3 Tillman in the face. I immediately turned to assess the situation and saw AME3 Tillman cupping his face in his hands, with torrents of bright-red blood gushing from behind his hands. The blood was collecting at his feet. I immediately ran to the shop for clean, lint-free rags to stop the bleeding. While in the shop, I informed the LPO and day-check supervisor that AME3 Tillman was hurt and needed medical attention.

We applied direct pressure to stop the bleeding, and I drove AME3 Tillman to the emergency room. After several internal and 12 external stitches, X-rays, and a CT scan, AME3 Tillman was released from the hospital. To this day, he remembers little of the incident, but he remembers the effects every time he looks in a mirror. He was lucky that day; a half-inch left or right and he could have lost his sight.

In the future, I will heed the hazards presented during pass downs, safety training, and within hazreps. They are published so personnel can apply the ORM process. We missed a step because controls were implemented in the form of checklists, and we failed to follow them. It does no good to have a publication if it isn't the correct one for the job, if steps are skipped, or if the manual is in a work center while you perform maintenance tasks. We also have a recommendation for the fleet: Stencil the lid of the LCFU with a red-letter warning to release the pressure before loosening the lid. We believe some external marking or warning might help prevent future incidents with the LCFU.

Neither AME3 Tillman nor I will forget this mishap. You must follow checklists and pay attention to hazreps. Don't have a repeat incident at your command.

AME3 Kennedy is a collateral-duty inspector in the seat shop at VFA-86.

I Walked Off the End of Into the Sea!

By PR3(AW) Shane Enlow, VFA-27

After serving on three different aircraft carriers and working the night shift for the majority of my four-and-a-half years in the Navy, I was no stranger to operating around the flight deck at night. While on deployment near the Great Barrier Reef of Australia, I had no real concern about volunteering to participate in a night flight-deck scrub-down (SCRUBEX).

I grabbed my float coat and cranial and headed to the island for muster with the FOD team. However, before going to the flight deck, my supervisor stopped me and made sure I did a full inspection of both my float coat and my cranial. I then put on my personal protective equipment (PPE) and went to the SCRUBEX.

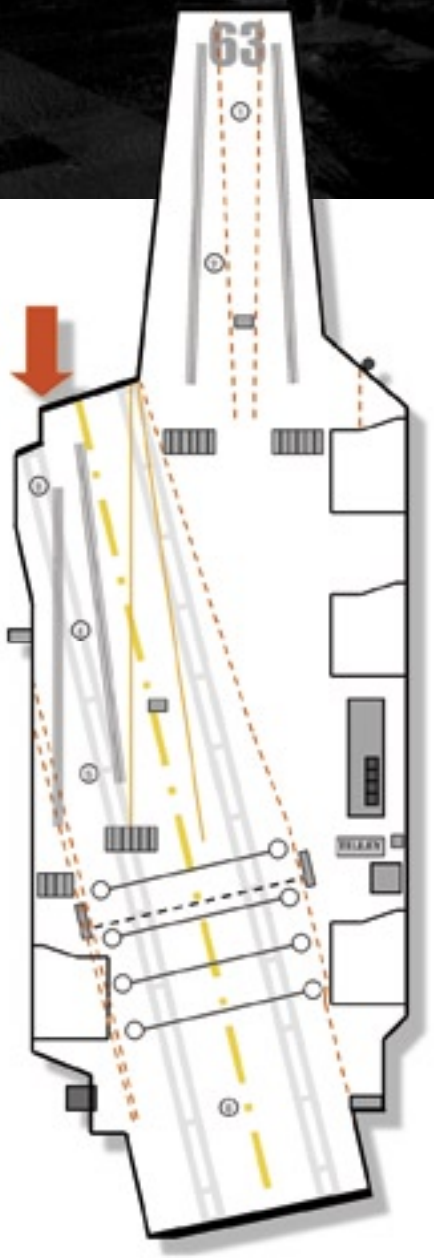
Once on the flight deck, I noticed it was an especially dark night. A thick layer of clouds obscured the moon and stars. After muster, everyone lined up along the forward edge of the landing area on the port side of the ship. As I moved along the line of people to take my position on the far port side, I was looking toward the stern, not really paying attention to where I was going. I reached the end of the line and took an extra step toward what I thought was a few more feet of flight deck. However, I suddenly realized nothing was beneath my feet but night air. Confusion gave way to concern as I tumbled through the air. I just had stepped off the edge of the ship and was falling into the sea.

I yelled all the way down and kept yelling as I smacked the water on my left side. I instantly was submerged, but, just as quickly, I was forced back above water when my float coat inflated automatically. With my head above water, I was able to spit out some of the saltwater in my mouth and took a deep breath. I needed the air to continue yelling and waving my arms at a group of Sailors on the smoking sponson.

Unfortunately, no one heard me over the sounds of the ship, and I only could watch as the carrier passed by. I then located my strobe light, took it out, and activated it.

the Flight Deck...

Photo by PHAN Ryan O'Connor



I was thankful it worked, but I wasn't sure how effective it would be because I'd already lost sight of the ship due to the rough seas that night.

Being alone in the dark and floating on rough seas is a scary and lonely experience. The only light I could see anywhere was the flashing of my own emergency strobe. I hoped that someone would spot me and that I would be rescued quickly. It seemed like an eternity had passed before I noticed the lights of a rigid hull inflatable boat (RHIB) sent to rescue me. As soon as I saw the lights and recognized the boat, I yelled and waved my arms. Once the RHIB was close to me, a rescue swimmer jumped into the water, and, before I knew it, I was aboard the RHIB and headed back to the ship.

Once aboard, I was taken to medical, where my CO and the rest of my chain of command were waiting to make sure I was OK. A full medical exam and several sets of X-rays showed no serious injuries. I was lucky to walk away with only some pain in my left leg and hip and a bruised ego. I felt like an idiot for having done something as careless and stupid as walking off the edge of the ship.

Looking back on the incident, I am very grateful my supervisor made me thoroughly inspect my PPE before heading to the flight deck. I am also happy I'd been trained to react to the situation by activating my strobe light. Later that night, I learned an airman from my squadron on the SCRUBEX detail was the only person who saw me fall overboard. He immediately went to flight-deck control and reported a man overboard. The only thing that gave away my position in the pitch-black night was my strobe light. I'm sure glad it worked.

Complacency creates a dangerous environment. All of the safety procedures—gear inspections, supervisory oversight, PPE training, and flight-deck situational awareness—are not things that should be taken lightly. My rescue at sea is proof of their importance.

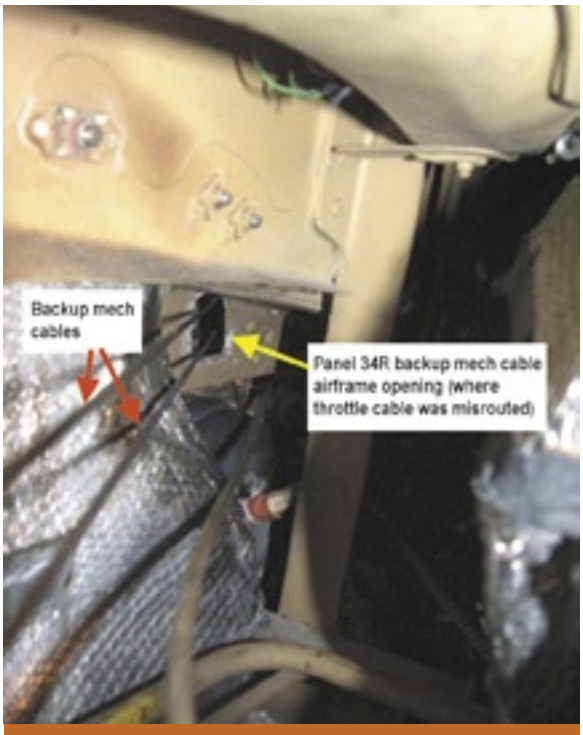
The 18-Inch Rule

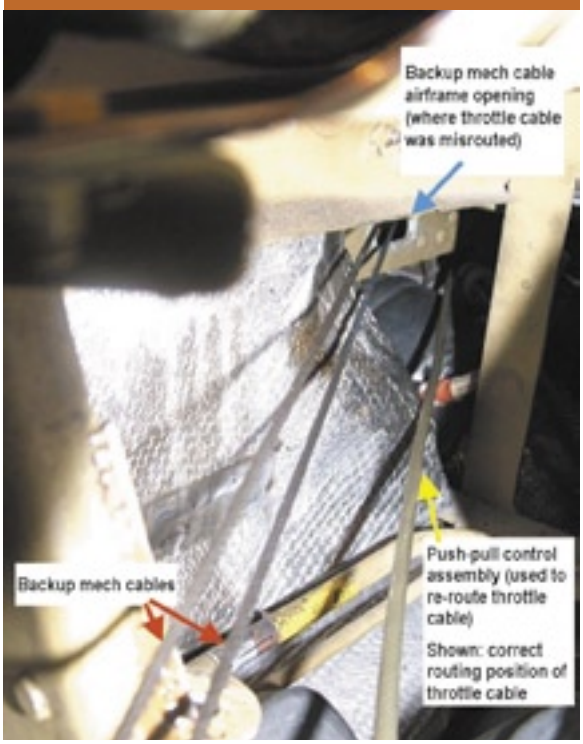
By AT1(AW) Cora Purcell, VFA-81

Most maintenance personnel have heard of the 18-inch rule and know what it means. For those who don't, the 18-inch rule means that whenever you do maintenance or inspect an aircraft, you should not focus on just that task or specific area alone. Instead, you should expand your view and look at the general area within 18 inches of the specific task. This practice is drummed into maintenance personnel from day one.

Look around the immediate area where you are working, with an eye on finding discrepancies. Many minor problems can be found and corrected before they become major ones. The following example demonstrates how one maintainer's version of the 18-inch rule prevented a major problem.

Aircraft 112, a recently accepted transfer aircraft, was in "specials" for a routine 84-day inspection. AD1 Lindsay, acting as a quality assurance representative (QAR), also was inspecting the back-up mechanical flight-control cables (as recommended in CSFWL Maintenance Gram 04-05). The maintenance gram said to look at the cables and all associated components in panels 41 left and right. Because many of the aircraft's access panels were open for the 84-day inspection, AD1 Lindsay decided to inspect all portions of the back-up mech cables that were visible in any of these open panels (hence the 18-inch rule). While inspecting the cables in panel 34 right, he noticed that the middle throttle cable for the right engine showed signs of rubbing and chafing. Further inspection revealed a groove worn into the shielding around the throttle cable. In one place, the shielding was worn through, and the throttle cable itself was damaged. AD1 Lindsay thought, "This is not good!"





The middle throttle cable was routed through the horizontal-stabilizer, flight-control-cable cutout, along with the back-up mech cables. Petty Officer Lindsay believed the throttle cable was misrouted and this misrouting had caused the damage to the throttle cable. He checked the aircraft publications to verify his suspicions. The pubs did not discuss or show the specific routing for the middle throttle cable in panel 34 right. He conferred with his fellow ADs, and they agreed the cable was not routed properly. However, none of them could prove it with the current aircraft publications.

AD1 Morris, the powerplants work-center LPO, suggested they contact the local Boeing representative to see if he could provide any guidance.

Fortunately, the Boeing representative was able to provide the technical drawings that proved the cable was routed incorrectly. The cable was repaired and rerouted correctly—underneath the horizontal stab cutout, vice through it.

Our quality-assurance division completed a naval aviation maintenance discrepancy report (NAMDRP) on this discovery. As a result, efforts are underway to revise the F18C-D Power Plant and Related Systems Maintenance Publication (A1-F18AC-270-310) to add an illustration showing the correct routing of the middle throttle-cable assembly in panel 34 right.

As part of the original maintenance gram, all AD1 Lindsay had to do was inspect the back-up mechanical flight-control cables in panels 41 R/L. He expanded that inspection into all the other open panels and associated cables, identifying a potentially fatal discrepancy. It was reported via the NAMDRP, thereby notifying other squadrons of this potential hazard. Also, a publication is being revised to decrease the likelihood of this discrepancy ever occurring again.

Next time you go out to change a tire, do a daily, or CDI the installation of a WRA, don't forget the 18-inch rule because you never know what you might find.

Never Thought I'd Need a Cranial To Push a Broom

By AOAN David Maryatt, VFA-136

It was the middle of a busy workweek at the NAS Oceana paint hangar. Our plan was to stay through the night to finish a paint job on aircraft 303 before day shift came in at 0630. Due to unforeseen circumstances, we didn't get a chance to do so. Allow me to introduce myself—I'm Mr. Unforeseen Circumstance.

Our night-check supervisor, who was the only qualified painter and CDI, was a little under the weather and had to leave. Without a supervisor, we could not start the actual painting, so we decided to at least get the prep work done.

Our assistant supervisor told us to finish cleaning and taping off the aircraft before returning to the shop. After we had completed that job, the assistant supervisor showed up with the duty truck to take us back. I noticed the deck still needed to be swept before we could leave, so I found a broom resting against the wall and commenced to sweep the immediate area around the jet. Working my way from the nose of the aircraft to the tail, I pushed off with my left leg extended in front of me and fell. Because it's a paint hangar, the floor was very slick from overspray.

I hit my head on the corner of the nose-landing-gear door and began to bleed profusely. Unaware of my injury or bleeding, I got up, shook my head, and started walking toward the hangar door, en route to the truck. A shipmate stopped me and helped with my injury and bleeding. I ended up going to a clinic, where I had to endure having six staples put in my head—not fun!

As I look back on that day, I realize I could have done a few things to prevent this mishap. For starters, if I simply had been wearing a cranial, my injury would have been far less severe. We religiously wear cranials when we climb up and down ladders or when we get on top of an aircraft, but few people consider the low-lying hazards, like weapons pylons, pitot probes, and landing-gear doors when walking around aircraft. Also, if I had taken the time to pay attention to what I was doing, I would have recognized the slick floor and not rushed the job. Next time, I won't assume that a task as simple as sweeping a floor is free from risk.

An Encounter With Afghan Concrete

By AE2(AW) Evan Hodges, VAQ-134

As with most stories in *Mech*, the day started off just like any other, but it didn't end that way.

First, I'd like to talk about the things that I do remember. I recall being at work early in the day and performing standard maintenance on one of our Navy EA-6B Prowlers at Bagram Air Base, Afghanistan. Even though we are forward deployed, our maintenance practices are exactly the same as back home.* First and foremost, we always wear our personal protective gear (PPE)—and doing so on this day may have saved my life.

We have to get the rest of my story from my shipmates, who later told me and our flight surgeon what had happened.

According to one of our line division personnel, I was troubleshooting an electrical discrepancy while sitting in the pilot's seat of Garuda 542. When I stepped out of the cockpit, I placed one foot on the external boarding platform, and then the other. Apparently I felt confident enough in my footing that I released my grip on the aircraft canopy—definitely a mistake.

Even though we don't see much rain or freezing temperatures in Afghanistan, there was enough moisture on the boarding platform for it to be slick.

As I let go of the aircraft, both of my feet slipped out from under me, and I literally was launched into the air horizontally. I fell eight feet, measured from the top of the platform to the concrete below.

You've heard it in *Mech* before, but it's worth repeating: Wearing a cranial probably saved my life. My head and back hit the ground, bounced up and hit again. I reportedly was unconscious for around 30 seconds. The first person to reach me said I was twitching and unresponsive. I was able to talk when I finally came to, but I couldn't move and had no feeling in my limbs.

One of the aircrew who was getting ready to fly ran up and asked me my name and if I knew where I was. I guess I had the presence of mind by this point to tell him, "I'm in Bagram; I fell on my butt, and I want to get up!"

The emergency crew arrived in less than three minutes, and I was transported to the base hospital for X-rays and a CAT scan. After several hours of observation, I was released and diagnosed with only a mild concussion.

This is where my part of the story can resume because the missing seven hours ended with standing in front of my B-hut, wondering how I'd gotten there. I'm told that after a head injury like mine, a person often will experience short-term memory loss for several hours. That's exactly what happened to me. I wish I could go into detail about the fall, but I honestly have no recollection of it.

Fortunately, I recovered quickly. Always be aware of your surroundings. I'll always make sure I have four body points of contact before letting go. As for my PPE, it goes without saying that I'll always wear it.

**All deployed squadrons should operate in this manner. —Ed.*

Found on Deck

By AS2 Thomas Bach, USS Kearsarge *(LHD-3)*

It was a beautiful morning off the coast of North Carolina as word was passed from the 1MC, "All hands are cordially invited to the flight deck for a FOD walkdown." Personnel were coming from all directions.

We all lined up and commenced the FOD walkdown. As the group approached the aft end of the island structure, ball bearings were found between the island and the A/S32A-36A amphibious assault crash crane, "Tilley." Post-walkdown analysis of the FOD recovered led to immediate tasking to identify the source of the ball bearings.

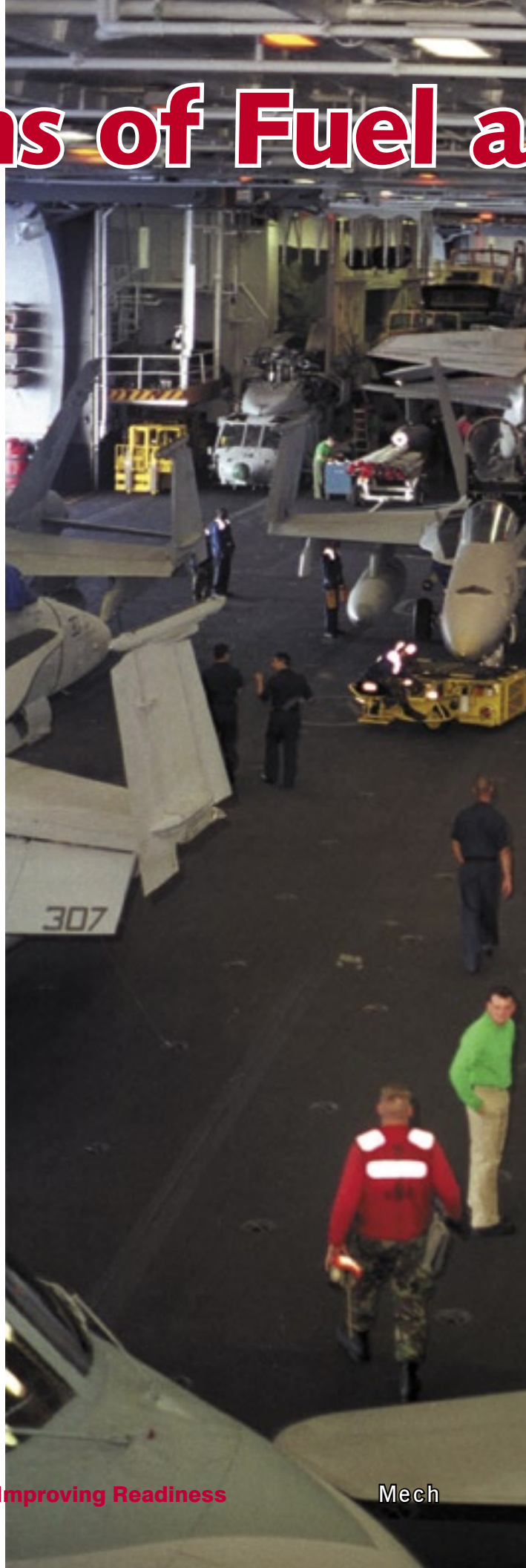
A close inspection of the crash crane by numerous support-equipment technicians revealed the source of the FOD. The doors on the engine-hood assembly of the crash crane use ball bearings to assist in opening and closing. The doors had been removed, and eight ball bearings were missing.

Further investigation produced an additional five bearings that were out of the track, as well. The door-slide track was damaged and would not hold the bearings in place. Review of current Periodic Maintenance Instructions did not reveal any requirement to open, close, lubricate or inspect the chassis doors. A recommendation was submitted to the CFA to add an MRC to include these steps at a specified interval.

This incident paints a clear picture of how important the PMS program is and how it relates to the FOD program. Foreign object debris can come from many places, including our support equipment.

AS2 Bach works in AIMD.

50 Gallons of Fuel a



By AM2 Timothy Swanson, VFA-147

The day started slowly—the only workload consisted of changing a couple of latches and swapping a flap from one jet to another. It made for a quick and easy day at sea for any Hornet airframer. I sent half of my guys to fix the latches, and I took the other half with me to swap out the flaps in the hangar.

Once at the jet, we noticed the flap needing removal had been pushed up too far. My first thought was to get at the bolts from the top of the wing; however, the aircraft had been painted the previous night, and we were instructed not to work on top while the paint was drying. I decided I would have to use hydraulic power to extend the flaps in order to remove the attachment bolts. I walked up to maintenance control to let the maintenance chief know what was going on and what we planned to do. We were ready to get this seemingly simple task done.

I walked around the jet to make sure none of the movable surfaces would hit anything that might be in the way. The area looked clear; all the doors were up out of the way. We then connected the external electrical and hydraulic power, and I asked someone to jump into the cockpit and turn on power. I immediately was called over to the cockpit, expecting to hear the power wouldn't hold for some reason. I climbed up to the cockpit and learned that one of the engine fire-warning lights was depressed, and the ready-discharge light was on. If the discharge light were to be pushed, it would cause the fire bottle to discharge—not a good thing. We secured power, and here is where the fun began.

To avoid accidental fire-bottle discharge, I reset the fire-warning light, which made the ready-discharge light go out. We finally were ready. I walked over to the wall power outlet, held the close-circuit button, and called to turn on the power. I walked back over to the aircraft and was instructing the "Jenny" operator when I noticed a massive column of fuel beginning to dump out the forward, port, engine-bay door. Keeping a calm head, I ordered the guy in the cockpit to secure power and to get someone from powerplants. I ran to place drip pans under the downpour of fuel. I then entered the port MLG wheel well, where there is a fuel-shutoff valve that might stop the waterfall of fuel that was beginning to draw some attention. The valve had the cannon plug disconnected, but it was too dark for me to see what position the manual lever was in. I began to panic.

Photo by PHAN David Laviolette

nd a Messy Cleanup

You know what they say: The only stupid question is the one you don't ask!

Whipping around, I demanded a flashlight, and the powerplant mechanic instructed me to reconnect the cannon plug. At the same time, in the cockpit, another powerplant mechanic turned on battery power and pushed the same fire-warning light I previously had reset. I heard a buzz and watched the shutoff switch move to the off position. I then disconnected the cannon plug, and the waterfall slowly began to decrease to a small trickle. Then came the clean up. Thanks to some fast reactions and some good luck no one was injured, and no equipment was lost as a result of this incident. There was, of course, the little matter of "fuel spill" being announced over the 1MC and the "Flying Squad" being called away.

What went wrong? There was a failure to follow established procedure when a fire-warning light was pressed and a failure to communicate. A warning sign wasn't posted on the aircraft, and maintenance control didn't mention any maintenance issues requiring special attention. The shop's pass-down also didn't reflect any issues with the aircraft. According to 4790, each squadron will establish briefing procedures for seat checkouts. Part of our squadron's seat-checkout training is "if you see a firelight pushed in, you are to notify maintenance immediately." The seat-checkout program was put in place for my safety and the safety of my shipmates.

To correct the problem, our squadron held additional training on what to do when a fire-warning light is depressed. The training stressed how important it is to communicate with other work centers and maintenance control before applying power to any aircraft being worked on. When embarked, effective communication is more challenging because the squadron's shops are spread out all over the ship.

Had I made it my business to be informed on the status of the jet and had I followed established procedures, this incident never would have occurred. You know what they say: The only stupid question is the one you don't ask!

Prop Arc Safety

By AMC(AW/SW) Curtis Marcantel, VAW-121

Four years of sea duty, two combat cruises, multiple detachments, and no Class A mishaps—in the air or on the deck. ORM works, plain and simple.

What are the marks of a successful tour of duty? Some might say promotions, awards, warfare designations, or maintaining a vigilant safety circle around prop arcs. To me, the real answer is no loss of life.

Workups in Fallon, Orange Air in Puerto Rico, numerous at-sea periods, Operation Enduring Freedom, Operation Iraqi Freedom, one crane-off of Bluetail 600, and we still had all those that we started out with. Not that the potential for disaster wasn't always present… it was. But, a "safety first" attitude, maintaining the prop "safety chain," and a thorough briefing before each evolution have proven to be real keys to success.

I feel it really started with my first LPO chewing me out for using a chair as a ladder while working on a plane in the hangar. "If you live long enough to make third class, what kind of example are you going to set?" he asked. Now that I have used those same words on others, I reflect back on the impact they really had on me and how much sense they made. Safety, regardless of where you are or who you are, always should be the foremost consideration.

Working in and E-2 command, we catch the usual jokes from others: "If it has wipers, it must be a target," "Too slow and too low to be a real plane" are just a couple. But let CAG see a Hummer start up without a safety chain and all the jokes are gone, and someone has to answer to the Handler. That's been my job for the last four years, and, thankfully, we, the "Bluetails," have maintained the chain in all types of weather,

night and day, and all types of flight OPS. We never have heard the call of "man down" on the flight deck because of a propeller mishap.

Not everyone is as vigilant about prop arcs as a Hummer squadron. Too many times, we have had to grab wayward red shirts on their way to the "farm," or grapes trying to get to the next bird needing fuel, but vigilance has paid off. Not everyone has been fortunate enough to see a video of what a prop can do to another aircraft or to the human body, so that is where the prop-safety chain comes in. The safety chain is there to protect the aircraft and you. We work with the props every day; we know their dangers, their abilities, and have strived to teach them to others. This protects the new check-ins at our command and others, too.

Our airmen have grabbed, tackled and stopped all sorts of people from crossing the "line of death," and we still ask ourselves, "Doesn't anyone know why we are here?" Ask the weight-board operators on board USS *George Washington* if they know why we are here. During a night launch for Operation Iraqi Freedom AMC(AW/SW) McCammon and AM1(AW) Bunton pulled two of them from certain death.

The examples are too numerous to count: a brown shirt rushing to chain his aircraft, a final checker racing to the cat to give the thumbs up to the shooter, even myself, too engrossed in the problems which arise during launch. We all have seen those hands waving in the air, the wands constantly moving at night. And we all know why they are there. Sometimes we just forget and try to meet the clock for the next recovery or launch. So remember, the chain is there for your safety. Don't break it because you are in a hurry; it is not worth the 20 seconds you will save by cutting through the prop-safety chain.

We have established numerous guidelines to follow when working around both static and spinning props; they exist for the safety of everyone on board. On the flight deck or on the beach, a spinning prop will kill. Respect the safety chain; don't even walk through a static prop! Should our airmen tackle you, they will just have saved your life.

Quick Decisions,

By AM2(AW) James Domholdt, VFA-83

Quick decisions are part of life on the flight deck of an aircraft carrier, but they can cause loss of equipment, aircraft, or even lives. As aircraft maintainers, we need to fully comprehend what is at stake when we make split-second decisions. We are trained, specific policies and procedures are put in place, and maintenance instruction manuals (MIMs) were written. Yet, human error remains the greatest cause of mishaps within the fleet.

After working on high-performance aircraft like the FA-18C Hornet, I know the key to success is communication. Maintenance control is the heart and soul of naval aviation, and accurate communication is a must; whether you're talking about something as simple as a loose fastener, or as major as a missing cotter pin on a flight-control surface.

Recently, I was embarked onboard the USS *John F. Kennedy* (CV-67) during a carrier landing practice detachment. As a final checker, I was responsible for ensuring aircraft were safe to launch. On one particular event, a functional check flight (FCF) was required because a trailing-edge flap (TEF) servo had been replaced. While the pilot was doing his normal checks, I discovered that a cotter key was missing from an attachment bolt that connected the scissor-arm assembly to the TEF assembly. It was on the same side as the TEF servo that had been changed the night before. The nut was tightened down on the bolt, the cotter pin hole was lined up, but no cotter pin was installed. I know that it is easier to overlook things while working at night; however, these discrepancies obviously must be caught and corrected, long before a pilot walks to the aircraft.

When anyone removes and replaces flight-critical equipment that will require an FCF, a minimum of three sets of eyes must look over the job. First we have the maintainer who removes and replaces the defective piece of equipment. Next is the collateral duty inspector (CDI), who is responsible for inspecting the maintainer's work and making sure the job is complete. When the CDI determines that the maintenance action was completed in accordance with the MIMs, the CDI tells maintenance control that the repair is ready for a final inspection. This inspection is done by a quality assurance representative (QAR). From my experience, I knew that the bolt in question didn't have to be removed to replace the TEF servo. I assumed that the cotter pin mistakenly had been removed and not replaced. Due to a lack of communication between the maintainer, the CDI, and the QAR, the removal of the pin hadn't been mentioned, so no inspector looked over the area.

After discovering that the pin was missing, I looked for the QAR who was on the flight deck acting as the safety observer. I told him the pin had been missed in the launch sequence, while preparing for this FCF. I said, "We could safety wire the cotter-pin hole and that should secure the nut for the flight." The cotter pin could then be replaced when the aircraft returned from the flight.

The QAR agreed, partly because he had done the walkaround on the aircraft earlier that morning, and he had overlooked it as well. That's when we "knowledgeable" maintainers decided to cover up the mistake and not to inform anyone. I had nothing to lose except my integrity, and at that very moment, I did exactly that. I

Photo by PH2 Michael Sandberg

Quick Mistakes

let my friendship get in the way of doing what was right. I was more worried about saving my old work center and peers the hassle of dealing with the problem, than I was about the outcome. I knew it was wrong, yet I decided to jury-rig a fix, without documenting it. It did not seem like that big a deal, but it was not authorized, and I did not tell the flight-deck coordinator (FDC) about the problem. If I had, the launch would have been suspended until the problem was corrected.

I was called away from this aircraft to troubleshoot another aircraft on the bow of the ship. Before I left, my conscience started to weigh on me. I told a first class petty officer of the plan to safety wire the nut and to fix it when the aircraft returned. We both agreed that it should be kept quiet so as not to cause all the hassles associated with CDI and QAR adverse monitors. The first class and the QAR both agreed, and after I departed, they installed the safety wire without telling anyone. As the jet taxied to the catapult, I asked whether the nut was safety wired. I was told it was. It seemed, at the time, that we had gotten away with an improper maintenance action.

The aircraft returned from the FCF with no discrepancies. After debriefing the pilot, the QAR and I removed the safety wire and replaced it with a cotter pin. As the day progressed, the QAR who helped safety wire the bolt told his LPO about the events of the day. That's when the red flag went up.

The LPO was a QAR with great integrity. He told maintenance control that there was a serious training issue at hand and that it needed immediate attention. Maintenance control had been unaware of the situation. Once they were informed, all individuals involved were called in to hear the details of the incident.

I was on the flight deck when the call came up to the FDC. I was told to go down immediately to maintenance control. My heart sank. As I made my way back through the hatches and knee knockers to maintenance control, I kept wondering; "How did they find out? What are they going to say?" I knew that I should have told someone about the missing cotter pin instead of trying to cover it up.

The maintenance chiefs asked for details: What happened with the safety wire? Was it still in the flap attachment bolt? Was it replaced? Did anyone see that it was replaced? Were we flying an unsafe aircraft? I told them that as soon as the jet landed, a new cotter pin had been installed, and QA witnessed the installation.

The jet was safe, but that was not the point. I had made a very immature and very dangerous decision. Instead of living up to Navy Core Values, I acted without considering all of the factors involved in the launch of the aircraft. I had failed to consider the aircrew, the maintainers, others working on the flight deck, and the maintenance chief that signed "Safe for Flight," all in an effort to save someone from the repercussions of poor maintenance practices.

I learned a valuable lesson that day: Covering up things is not the way to go. The others involved and I had our qualifications revoked. We have conducted formal training in all maintenance work centers in hopes that this situation will never happen again. I lost a lot of respect and integrity with one hasty decision. It will take a lot of hard work and a very long time to regain it.

How Low

By LCdr. Larry Young, HSL-51

It was an ugly night, the flight deck on the frigate was pitching, and the rain was beating down on my guys as I sat in the cockpit going through the FCF checklist. This was not the way I wanted to conduct maintenance ground turns, but my options were limited because we were supposed to fly off the ship the next morning.

Warlord 707 was spotted on the flight deck of USS *Vandegrift* (FFG-48). Mechs just had completed a No. 2 engine change, removal and replacement of the HMU, LDS, LDS cable, LDS cable-support bracket, and collective-boost servo assembly. The plan was to do ground turns the night before to expedite the following morning's in-flight requirements. I was the FCP, and another HAC was in the aircraft reading off the FCF checklist while I executed the procedures.

My lead AD2 and junior AD3 were inside the cabin setting up to run the VATS ground turns. We started the No. 2 engine, but, as we engaged rotors, we experienced distinct droop-stop pounding. Startled and somewhat humiliated, I started to search for the "sweet spot" with the cyclic to stop the pummeling of the rotor head. In doing so, I must have placed the cyclic slightly forward of neutral.

The plane captain under instruction (PCUI) and the PC on the flight deck stated that, over a period of about 20 minutes, they witnessed the rotor-tip-path plane gradually lower in front of them—to not more than

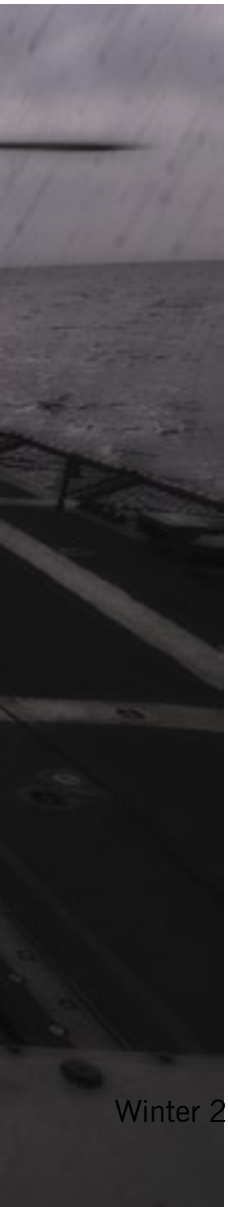
Photo by PH3 Gary B. Granger

Nothing on the flight deck is ever "routine," especially when you've got a rotor head spinning at 258 rpm in the tight confines aboard an FFG.

Can You Go?

three feet above the flight deck. My copilot and I were completely unaware of the motion of the tip-path plane due to the darkness and rain; visual cues from the cockpit were a challenge. Also, the prevailing conditions did not allow the LSO to notice that the tip-path plane was lowering in front of the aircraft.

As near as I can tell, my placement of the cyclic must have caused the tip-path plane to descend. Concurrently, the tail strut must have lengthened—eventually to its fully extended position. Once this occurred, my copilot and I experienced abnormal vibrations in the cockpit. In retrospect, my suspicion is that the helicopter was pulling forward against the RSD on the flight deck, possibly causing the abnormal vibrations. Still unaware of the overall situation, we decided something was not right. Shutting down seemed like a good idea.



As we disengaged rotors, we again experienced droop-stop pounding—only much more pronounced this time. My PC signaled to reengage rotors, which we did. At this point, we suspected a "hung droop stop" and started the NATOPS emergency procedure. However, adding to our confusion was the PC (actually, the PCUI because the PC had repositioned to get a view of the tail strut) was not signaling a hung-droop stop. We still were unaware at this point that the tip-path plane was low, and we didn't know why we were experiencing the abnormal vibrations.

In my frustration with the circumstances and thinking that my PCUI was not calling the hung-droop stops appropriately, we contacted the LSO and asked him to have maintenance send a more experienced PC to the flight deck.

As if to add to our confusion, my copilot and I then witnessed a more experienced plane captain twice stick his head outside the hangar door, only to go back inside. We later learned the experienced PC was notifying the LSO about our tip-path plane.

I will remember what happened next for a long time. I had begun to lose patience with the ensuing confusion and directed my lead AD2 in the cabin of the aircraft to step out and call the hung-droop stops for us (to proceed with the shutdown). He stepped out of the aircraft and was trying to get permission from the PCUI to leave the rotor arc. All he got, though, was a very firm stop signal—thank God!

About that time, maintenance was able contact the LSO and inform him that the rotor-tip-path plane was extremely low. Upon receiving this information, we pulled our AD2 back into the cabin, reset the struts, and completed the shutdown without further incident.

We probably can glean many lessons from this story, but a review of events that evening led me to a few I'd like to share:

First, nothing on the flight deck is ever "routine," especially when you've got a rotor head spinning at 258 rpm in the tight confines aboard an FFG. Events that can develop into a mishap never seem to follow a set script. Confusion is the mother of mishaps, and there certainly was enough confusion on the flight deck that night for a mishap to occur.

Second, my own impatience with the course of events only added to the confusion and tension level and could have resulted in a fatal mishap had enough safeguards not been in place. Our helicopter had experienced an inordinate number of problems over a two-month span underway, resulting in less than 40 non-FCF hours being flown in 50 days at sea and two exercises. To give you an idea of the issues we'd been having with our helicopter, this was the 10th FCF we had done in that same time frame.

Third, thank God for an observant PCUI. If not for his assertiveness, I don't want to think what the outcome could have been. The critical nature of observation during maintenance ground turns on a flight deck at night and in a driving rainstorm cannot be overstated. I'm thankful he had the presence of mind to stop the AD2 from exiting the rotor arc. And I'm also thankful my mech was well trained to pay close attention to directions from the PC/LSE before trying to exit the rotor arc.

We ended up changing out three of four droop stops before flying off pierside the next day. Considering what could have happened, I'd gladly pay the $1,250 bill.

Sailors and Marines: Reducing Mishaps

BRAVO Zulu

Send BZs to: SAFE-Mech@navy.mil

AM3 Michael Monroe
HM-15

Petty Officer Monroe noticed a broken section of the cowling screen on the tail gearbox while preflighting the tail-rotor driveshaft on Hurricane 07. Although the daily and turnaround inspection had revealed no discrepancies in that area, he notified his crew chief. Upon closer inspection, the crew chief found the screen had separated and peeled back from the airframe.

Petty Officer Monroe's actions prevented a possible in-flight cowling failure that could have resulted in severe damage to the tail rotor and loss of the aircraft and crew.

AM2(AW) Kenneth Hassler
HS-11

During a daily and turnaround inspection, Petty Officer Hassler discovered a half-inch-by-7-inch delaminated section on the blue tail-rotor blade. He immediately downed the aircraft until critical repairs could be completed.

Petty Officer Hassler's action prevented the tail rotor from departing the aircraft and resulting in loss of aircrew and aircraft.

Sgt. Timothy O'Connor
HMM-165

While conducting humanitarian missions in Indonesia during Operation Unified Assistance, Sgt. O'Connor (a CH-53E crew chief) discovered a worn pitch-control rod and bearing. He checked the integrity of the rod on a preflight inspection of the rotor-head assembly and noticed an unusual amount of play between the inner bearing and outer race. The Teflon that surrounds the bearing had worn down, allowing the bearing and the race to make metal-to-metal contact.

If Sgt. Connor had not discovered this condition, it would have caused the bearing to break loose and would have allowed the rod end to strike the sleeve and spindle, causing a total loss of control of the main rotor blade and supporting assembly.

AM1 Flennoy Bellinger
HS-5

While preparing to launch aircraft 615 as part of a two-helicopter launch, Petty Officer Bellinger glanced at aircraft 617 departing off the starboard beam of the ship. He noticed that the tail driveshaft cowling didn't look right. He immediately went to the tower and requested radio contact with 617. He told the pilots to have the aircrew visually check the cowling to make sure it was secured.

The aircrew checked and confirmed that it wasn't secure. Petty Officer Bellinger then safely and expeditiously shut down aircraft 615 and directed that it be moved into the hangar to make a ready deck to recover 617.

Petty Officer Bellinger quickly made the necessary repairs and got the aircraft airborne in just 15 minutes.

Cpl Adam Gomez
HMLA-169

During a daily and turn-around inspection while deployed to Iraq, Cpl. Gomez found severe scoring of the No. 2 tail-rotor driveshaft in multiple locations of an AH-1W. A broken Dzus fastener receptacle had fallen off the driveshaft access panel and lodged against the driveshaft. The driveshaft was removed for further inspection, and a crack was found from excessive scoring.

Cpl Gomez's thorough inspection potentially saved the aircrew and aircraft from a catastrophic tail-rotor failure.

AMS3 Robert Tiller
HS-5

Petty Officer Robert Tiller noticed something a little peculiar while working on a turn-around inspection of a squadron SH-60 helicopter. Upon closer inspection, he discovered and immediately reported a small tear on one of the plastic-coated, power available spindle (PAS) cables on an SH-60 helicopter. Had it not been for his keen attention to detail and quick response, the helo and its crew could have been in grave danger.

AMAN Ricardo Amezcua
CPRW-5

While helping to move an aircraft at night and in the rain, AMAN Amezcua heard a scraping noise coming from the port main mount on a P-3C. He halted the move and called for an immediate inspection of the main mount. That inspection revealed the wheel assembly was canted slightly and was broken.

Had the move continued, the wheel could have departed the aircraft, causing major damage to the aircraft and possible injury to ground personnel.

AMEAR Bryan Cunningham
VAQ-135

While on a weekend security watch and during a walk-through of the hangar, AMEAR Cunningham noticed the whistling sound of a leaking liquid oxygen tank in aircraft 500. Upon further investigation, he found two of the aircraft's three liquid oxygen tanks nearly encased in ice.

After consulting with a senior CDI/QAR for advice, he removed the tanks from the aircraft and drained them, a task made arduous by the dangerous and volatile nature of liquid oxygen.

Had this situation gone unnoticed, the liquid oxygen tank could have exploded.

Mark Oakes
NAVAIR Pax River

On an MH-60R's 30-hour inspection, Mark Oakes discovered evidence of a crack that warranted further investigation.

The area was stripped, and the NDI lab inspected it, confirming a 1.8-inch crack at station 327 and just forward of the main beam, preventing the potential loss of aircraft and crew.

AD1 Mike Williamson
VAQ-142

While troubleshooting compressor stalls on the port engine of aircraft 522, Petty Officer Williamson went the extra mile to determine the cause. Despite a thorough external inspection and ground maintenance turn that wasn't able to duplicate the problem, he decided to do a borescope inspection of the engine and found foreign object damage in the sixth stage.

AM3 Craig Powers
VF-213

While doing flight-deck familiarization training from vulture's row onboard USS *Theodore Roosevelt* (CVN-71), Petty Officer Powers noticed a problem while pointing out hazardous areas in and around the landing area. He saw that the cable-support spring for the No. 3 arresting gear had broken after an E-2C Hawkeye did a touch and go landing.

Realizing that the flight-deck crew had not noticed the problem, Petty Officer Powers sprung into action and alerted a member of the crash crew. Flight-deck and primary control were notified in time to wave-off the air wing commander flying Blacklion 205, averting a possible mishap.

AM3 James Bales
VAW-115

While doing a turn-around inspection on aircraft 603, Petty Officer Bales noticed a torque stripe was broken on one of the starboard wing-fold connecting points. He meticulously inspected the wing's hinge and discovered catastrophic failure on the upper section.

Petty Officer Bales promptly reported his finding to the flight-deck coordinator and also notified maintenance control, averting a potentially catastrophic condition. The repair required the removal and replacement of the entire starboard wing.

AMAN Amy Harmon
VFA-204

On a daily inspection of River 403, Airman Harmon noticed a very faint defect in the trunnion on the starboard main landing gear. During a closer inspection of the trunnion, she determined the problem likely was a crack. She immediately notified maintenance control that the aircraft was down.

After removing the item for NDI inspection, maintainers found a nine-inch crack in the trunnion. Because of the obscure location of the defect, Airman Harmon found this defect only because of her thorough inspection and extreme attention to detail. This find prevented the catastrophic failure of the landing gear.

ADCS Gene Casterlin
VF-31

Flight-deck crews reported a grinding noise coming from Felix 100 after it landed on USS *Theodore Roosevelt* (CVN-71). The aircrew hadn't noticed any engine abnormalities throughout the flight, but they did feel a slight aircraft vibration just before landing. The aircraft was downed for further inspection.

External inspection of the aircraft and motor casings, inlet and exhaust sections revealed no discrepancies. Senior Chief Casterlin, the QAS, directed a thorough borescope inspection of both engines' combustion chambers and turbine sections. The inspection revealed that 83 percent of the port engine's high-pressure-turbine blades were cracked and beginning to deteriorate. Senior Chief Casterlin's persistence found the root cause of a potentially deadly discrepancy.

AME2 (AW) Michael Floate
VFA-151

Petty Officer Floate was supervising the installation of FA-18 ejection system components in aircraft 301 when he discovered the aft-support bracket for the canopy rocket motor had been manufactured incorrectly.

Had this bracket been installed it may have resulted in serious injury to aircrew, or even loss of life, if a pilot had to eject. Petty Officer Floates' initiative, attention to detail, and in-depth knowledge of the F/A-18 systems prevented this situation from happening.

CROSSFEED

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Airframes

Best Practice in the Fleet—Ingenuity at Work Within VFA-211

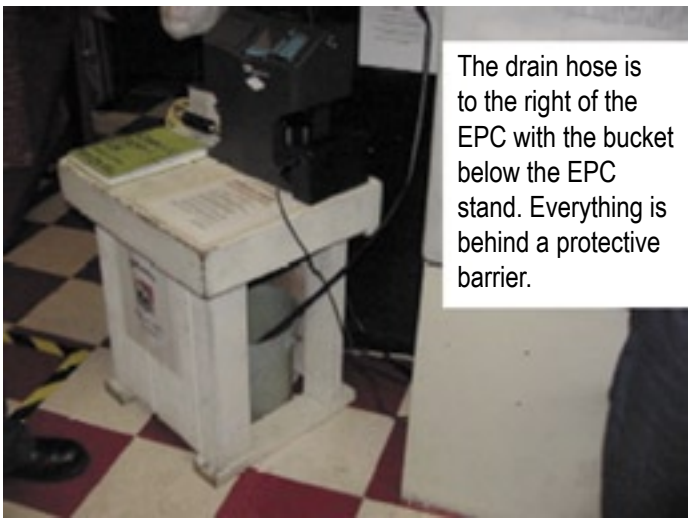
By AMC(AW) Paul Hofstad

Normally, when we write our articles for *Mech*, we focus on a problem we see in the fleet. This article is different; it announces that airframers in VFA-211 have developed a new concept to fix an old problem regarding hydraulic contamination.

Surveys routinely reveal problems with the way commands drain their sample bottles after performing patch tests. One of the CSEC questions asks if sample bottles are clean and transparent. Approximately half the commands we look at do not have a designated area to drain their bottles after using the patch-test kit. Instead, they just put the bottles back into the kit, with residual fluid still in them. Other commands have a method to drain their bottles, but it is not very effective because they turn the bottles upside down and place them directly on poly-wipes. This method sometimes works, but more times than not, commands leave the poly-wipes in place until they are full of hydraulic fluid and become a hazmat issue.

Airframers at VFA-211 designed a platform that allows bottles to drain with a canted catch pan under the table. The fluid then collects at a drain in the lowest point of the catch pan. At the drain, a hose is attached that allows the fluid to drain into a bucket. The drain table is not used solely for patch-test-kit bottles. They also use it for their electronic-particle-counter sample bottles.

These young men and women used their resources to overcome a problem with both hazmat and hydraulic contamination. They thought outside the box and have developed an outstanding hydraulic station.



The drain hose is to the right of the EPC with the bucket below the EPC stand. Everything is behind a protective barrier.

Chief Hofstad is a maintenance analyst at the Naval Safety Center.

Keep Your Guard Down

By AMC(AW) Paul Hofstad

After being assigned to the Naval Safety Center for a little over a year now, I'm still learning there's a lot of room for improvement in the way maintenance is performed in the Navy. One issue in particular is the correct operation of mechanical or hydraulic shears. These shears normally are found in Navy AIMDs and Marine MALS. In larger squadrons, shears also can be found in the airframes work center.

Mechanical and hydraulic shears primarily are used to cut large sections of sheet metal. When the handle is pulled down or the foot pedal is depressed, a large guard comes down; then, the shears come down to cut the metal.

Here is where the problem begins. When the guard comes down, the maximum distance allowed between the metal or plate and the bottom of the guard is one-quarter inch. This clearance is designed to keep our hands from entering the cutting section (point of operation) of the job.

CFR 1910.212(a)1 states, "Machine guarding shall be provided to protect employees in the machine area from hazards such as those created by point of operation, nip points, rotating parts, flying chips, and sparks." Furthermore, "The point-of-operation guarding device shall be so designed as to prevent the operator from having any part of his body in the danger zone during the operating cycle." Shears are one of many machines that require guarding.

This article would not be complete without a sea story to emphasize the need to use guards on our shears. I recently walked into an airframes shop at an AIMD we surveyed and told the LPO that the guards on his hydraulic shears were set too high. I did not need my safe-distance scale or a ruler, for that matter, to tell that the distance between the plate and the guard was too high. But, to be on the safe side, I measured the gap anyway and found the distance was set at approximately two inches. I'm not the smartest person in the world, but I know that if those shears can cut three-eights-inch thick sheet metal, they certainly can remove my fingers.

The LPO, however, wanted to argue with me. His whole argument was that the manufacturer of the shears had set the gap on the piece of equipment, and if the manufacturer set it, then it must be right. Wrong! The point of guarding machinery is to protect our folks. Finally, the LPO disgustedly blurted out, "Chief, I wish you would have looked at us a few weeks ago. One of my guys was using those shears, lost track of what he was doing, and chopped off the ends of his fingers."

Sometimes, we just need to measure things with common sense. Most folks can get their entire hand between a two-inch gap. Our job as supervisors is to recognize safety problems and act on them. I'm sure the LPO was unfamiliar with the Code of Federal Regulations. But I am equally sure that we all have the ability to ask questions and not let down our guard.

Chief Hofstad is a maintenance analyst at the Naval Safety Center.

Ordnance

Ordie Material—Did You Know?

By AOCS(AW) Fred Christian

The NAVAIR 01-700 Airborne Weapons/Stores Manuals Checklists Publication Index is published/distributed quarterly; it is a NATEC Electronic Manual. Oddly enough, I am finding that a few dispersed technical publication librarians (DTPLs) and, in some cases, even the central technical publication librarian (CTPL) have no idea how to use the manual. Our Sailors and Marines must have current references with the most recent information. It is equally important to ensure that the NA 01-700 is current. If neither the CTPL nor the DTPL know what this item is used for, then they

probably don't know whether their loading manuals and checklists are current. Make sure the right personnel are assigned to the appropriate duties. Incomplete checklists (pages missing)—changes or Interim Rapid Action Changes (IRACS) not incorporated or improperly incorporated are some of the deficiencies found during surveys.

This index is designed to provide using activities with a guide to ensure that all existing changes or revisions have been incorporated in aircraft conventional weapon loading, release and control, airborne weapon support equipment (AWSE), and weapon assembly/disassembly checklists and manuals on hand. In the event of a conflict with dates between the index and associated publications, the most current date shall take precedence. Publications and checklists with issue dates after the release date of this index take precedence over earlier releases and will be added to this index during the next update. In addition to the above information, the publication index provides other information, as well. It provides point-of-contact information for applicable aircraft and weapon-loading manuals and checklists. It also lists deleted publications.

Another recurring TPL deficiency is activities not having the current Explosive Safety Technical Manual (ESTM) CD or NAVSEA ordnance-related publications. The ESTM (formerly ESTD) CD is an excellent source of required/recommended NAVSEA publications, such as your basic OP4 and 5. The current version of the ESTM CD is dated 15 August 2005. Naval Ordnance Safety and Security Activity (NOSSA) point of contact for distribution of explosives safety-related publications is Mr. John Majka, NAVSURFWARCENDIV Indian Head Detachment Earle, Code 7121JM, commercial (732) 866-2923 (DSN 449-2923), or e-mail john.majka@navy.mil.

The Weapons and Explosive Safety Newsletter provides current information and status on the ESTM CD, as well as pending changes and revisions to individual NAVSEA ordnance publications. It is published quarterly. Your POC at NOSSA for distribution is Mr. Donata Dow at (301) 744-6048 (DSN 354-6048), or e-mail donata.dow@navy.mil. This newsletter is a vital source of information that can enhance explosives-safety awareness at all levels. In addition to excellent ordnance-related articles, the newsletter contains other information: status of NAVSEA Explosives Safety Technical Manuals, Explosives Safety Courses/AOOCP calendar, Conventional Ordnance Safety Review/Explosive Safety Inspection, (COSR/ESI) findings and common discrepancies, and NOSSA points of contact.

Many command librarians, both CTPL and DTPL, have ESTM CDs but are not aware of what publications they contain. The librarians often don't know they have paper copies of the same publications, which sometimes are not current. Aside from the NAVSEA OP4 and OP5, a variety of other publications, directives, and information is provided. It is recommended that you list each publication that is on the CD individually in the CTPL listing.

About four out of five activities surveyed had NAVSEA or other ordnance-related publications or instructions that were either obsolete or not current (missing changes or revisions). Here are some other publications that deserve mentioning. In the past six months to one year, the following discrepancies were found:

NAVSEA OP2239 (some still found in ord truck glove boxes), and NAVSEA OP3681 superseded by SW020-AF-ABK-010,

NAVSEA OP4461 superseded by SW023-AG-WHM-010, NAVSEA OP4098 superseded by SW023-AH-WHM-010, ESTD CDs dated as far back as January 1999.

These are all examples of publications that were superseded by more current publications many years ago. Many people probably are aware of this, but some still don't know.

Some NAVSEA, SWO and NAVSUP publications can be ordered through the NAVSUP Naval Logistics Library (NLL) website: http://www.nll.navsup.navy.mil. A limited number can be viewed online. The Naval Operational Logistics Support Center (NOLSC) (formerly NALC) publishes the NAVSUP P-800 Ordnance Publications CD bi-annually in April and October. Questions regarding distribution should be submitted via e-mail to mech_nolsc_nardesk@navy.mil.

Other common discrepancies among instructions are: OPNAVINST 8600.2 is now 8000.16B.
OPNAVINST 8000.16A is now 8000.16B.
OPNAVINST 5530.13B is now 5530.13C.

I could go on, but that's a whole different article. Meanwhile, ordies, keep the powder dry.

Senior Chief Christian is an explosives/weapons analyst at the Naval Safety Center.

WESS Update

The WESS Barrier Removal Team (BRT) is working to improve the program. Help us make WESS better, use the on-screen feedback form or call the WESS help desk at 757-444-7048. Let's work together and tell us what we can do to help.

Workcenter Leadership

Where Has All the Leadership Gone?

By AMCS(AW/SW) Cheryl Poirier

At the risk of dating myself, there was an anti-war song, "Where Have All the Flowers Gone," sung by Peter Paul and Mary that I used to sing when I was growing up. The last line in the last stanza is "When will we ever learn, when will we ever learn?" We continue to crash aircraft and kill and injure both aircrew and maintainers because of maintenance errors, so I ask you, "Where has all the leadership gone? When will we ever learn?"

Maintenance-related mishap is a phrase that makes the hair on the back of my neck stand up. In previous maintenance-related A/B mishaps, fellow knuckle-draggers have contributed to the loss or damage of a multi-million-dollar aircraft and the injury or death of squadronmates. A recent analysis revealed the top four Class A/B maintenance-related causal factors for 61 mishaps analyzed (FY99-04).

Maintenance-Related Mishap Causal Factors Top 4:

No. 4. Quality Assurance—19 instances

No. 3. Lack of Communication—22 instances

No. 2. Attention Failure—37 instances (stress, fatigue, improper documentation, judgment error, decision error, overconfidence, motivation misplaced or excessive).

And the number 1 reason we crash aircraft and kill Sailors…

No. 1. Failure to Follow Procedure—53 instances (failed to use/follow PUB and/or directives, technical information incomplete or confusing, failed to follow W/C procedures, failed to follow safety procedures).

When I was stationed on the USS *Harry S. Truman*, I was strolling through the hangar bay and came upon a young Sailor standing on an overturned trash can, no cranial, impact goggles protecting the top of his head, getting ready to drill a hole above his "protected" head into the aircraft. I think I did a double take and uttered a couple of four-letter expletives because I couldn't believe what he was getting ready to do. I found his supervisor holding up the workcenter bulkhead, counting sheep. The first question I asked him when his eyeballs were able to focus was where his chief was so we could go explain the situation to him.

During a recent survey, I observed fellow airframers jacking an aircraft. The CDI was in front directing, but no pub could be found, and the aircraft wasn't roped off.

While checking tools on another survey, I found a tool missing a part. I found the chief in the shop surfing the net and told him about what the NAMP defines as a missing tool. He told me his guys would get to it when they got back to the shop. I had to pick up my chin off my chest as I watched him nonchalantly go back to surfing the net.

From my perspective as a senior chief, with 20 years in the Navy, it looks to me that all the preceding factors and the sea stories could be related directly to leadership, or the lack thereof. How many planes do we have to crash, and how many people do we have to kill before we start doing things right? Now, don't get your knickers in a twist; I'm not pointing fingers at anyone specifically. We are all to blame. I bet if you brainstormed, you could come up with a lot of ways to avoid these "top four." Here is what I came up with:

No. 1. LBWA, Leadership By Walking Around. Know what your people are doing.

No. 2. Use the correct publications, procedures, and protective equipment.

No. 3. Know your people and their capabilities.

No. 4. Communicate, communicate, communicate.

No. 5. Quality maintenance—If you feel really comfortable performing a job or acting as a CDI, take a step back and re-evaluate. Comfort can lead to complacency.

No. 6. ORM—It is a way of life both on and off duty.

If you're not a part of the solution, you're part of the problem. Together, we can keep flying birds off the pointy end, dropping warheads on foreheads, and sleep soundly at night, knowing the aircrew will come home because we did our jobs right.

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

Category 3 Crane Operator's Safety Course Just Got Easier

By ASCS(AW) Phil LeCroy

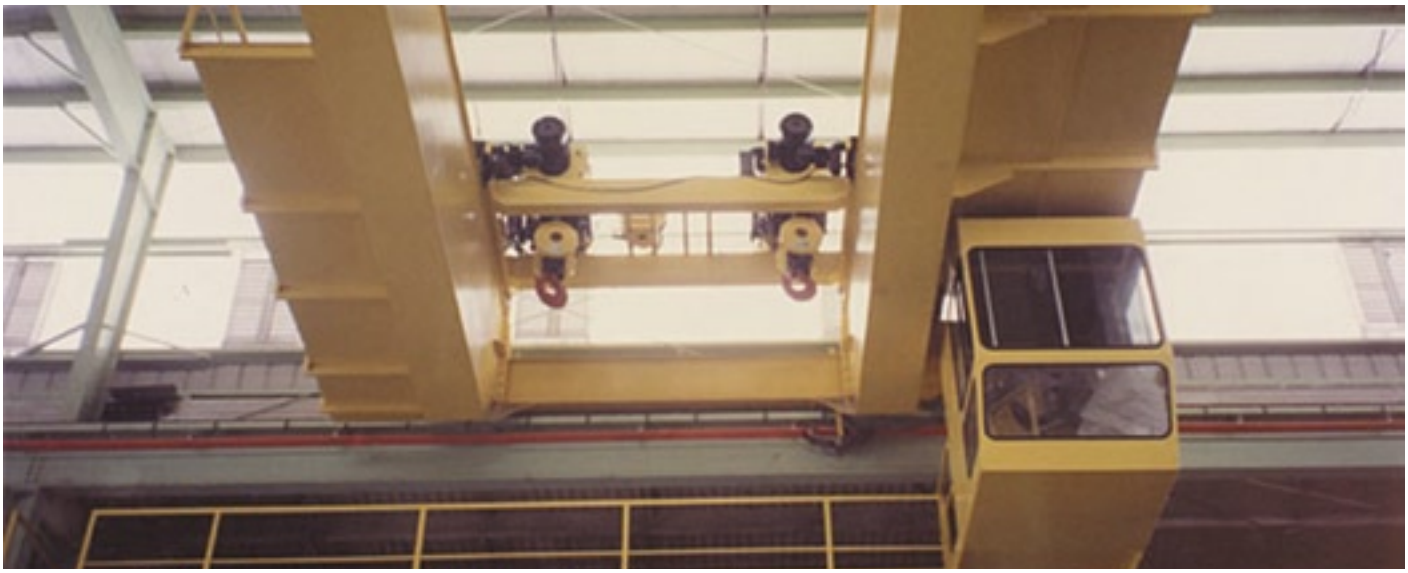
One of the most useful tools in the inventory is the category 3 crane (overhead-mounted crane), which is found in most hangars. This device can be used to move helicopter blades, aircraft engines, supplies, and support equipment. Too many operators, however, are not aware that a safety course is required before using these cranes.

SECNAVINST 11260.2 assigns Commander, Naval Facilities Engineering Command the overall responsibility of directing and overseeing the Department of the Navy's weight-handling program for shore commands. CNO message 291049Z Oct 97 directs Navy shore-activity commanders to ensure that weight-handling equipment is maintained in strict compliance with NAVFAC (Naval Facilities) Manual P-307. They also must support the Navy Crane Center (NCC) in implementing P-307. The requirement for the crane course is found in Chapter 13 of the manual and clearly states it must be completed before operating any category 3 cranes.

These courses are held at any one of the seven Navy Crane Centers. Prospective students need to submit an enrollment request, wait for confirmation, receive a class convening date, get orders cut, and attend. A problem has developed when a class is held on one coast (say San Diego), and the student is stationed on the East Coast. The required per diem ($320 per student) doesn't paint a pretty picture.

The Navy recognized this issue and developed a course that is available at Navy Knowledge Online (NKO).

The on-line course takes about eight hours to complete, and a test is given at the conclusion. Successful course takers will earn a completion certificate.



However, they also must meet OJT requirements and demonstrate proficiency to a qualified operator. Once finished and once paperwork has been routed for endorsements and authorizing signature, the student is a qualified operator.

The cost savings are obvious, but, more importantly, trained operators will reduce the number of "Do not use" labels found on some cranes due to cable entanglement (bird nests) and other problems caused by untrained operators. Reducing non-RFI time on the cranes improves the command's efficiency.

Senior Chief LeCroy is a maintenance analyst assigned to the Naval Safety Center.

Class C Mishap Summary

By AMC(AW) Paul Hofstad

From July 1 through Sept. 30, 2005, the Navy and Marine Corps had 42 Class C mishaps that involved 40 aircraft. The damage total was $2,338,873.

During maintenance checks on an E-2C, the flap actuator damaged the starboard aileron. The aircraft had been downed for stuck flaps the night before the mishap, and initial troubleshooting had indicated that a faulty screw jack on the port wing needed to be replaced. Further troubleshooting the morning of the mishap indicated a load limiter needed to be replaced on the port wing, as well.

Concurrently, a flap brake and asymmetry switch on the starboard wing were found to be faulty and needed replacement. The port screw jack and load limiter were removed and replaced by day check. Night check airframes were directed to rig and perform checks on the flap and aileron-droop system, using organizational maintenance manuals. Avionics was to install a new asymmetry switch and flap brake on the starboard wing. The night-check maintenance meeting included details on the specific duties of each workcenter.

Immediately following the night-check meeting, a second meeting was held with applicable personnel to focus on a practiced (but not published) corporate-knowledge technique. This technique involved safety wiring the aileron-droop actuator (ADA) to prevent the inner bearings from backing out of the actuator, in the event that the flap brake or asymmetry switch were uninstalled. Night-check airframes completed the rigging of the flap and aileron system and began operational checks of the flap system.

At the time these operational checks started, the team did not have a flap brake or asymmetry switch installed on the starboard side, and the maintenance crew did not safety wire the ADA, as required by maintenance-control representative guidance. However, they were using the correct publications and felt confident this measure would prevent any problems.

The flaps eventually were run full throw three times before the airframes night-check supervisor noticed the new screwjack was not lubricated properly. After performing this task, the flaps were run full throw two more times before the hydraulic generator operator heard metal twisting metal in the area of the starboard wing. He yelled out to stop and cut the hydraulic generator power, and the maintenance evolution was stopped at this point.

Four popped rivets and an 11.5-inch crack was discovered on the starboard, outboard, aileron-droop actuator's attachment point. The inner bearing had worked its way out of the starboard, outboard, aileron-droop actuator, and the associated screwjack was bent. Aileron skin also was discovered twisted near the outboard aileron-droop actuator.

There is a moral to this story: If there are known ways to do a job better and the publication does not cover it, then incorporate that technique into a TPDR. Other type commands also can benefit from better ways to do our job.

Communication and coordination are the keys to continued success in the maintenance arena of all type commands. As these ingredients degrade, so does our safety posture. It is imperative that we continue to ask the "what if" questions and demand feedback when facing a maintenance evolution, especially when the variables seem to be piling up. Coordination between shifts and work centers also is paramount. Recognize the signs of confusion, stop the process, and refocus your efforts safely and efficiently. People have died because of a lack of communication and coordination.

Chief Hofstad is a maintenance analyst assigned to the Naval Safety Center.

FOD...

...does not sleep
...does not take leave
...does not take special liberty
...does not care how tired you are
...does not need foul weather gear

The only thing FOD does is **KILL**.

What's in your pockets?

Poster idea submitted by AM1(AW) Adam Johnson (VP-40)

www.safetycenter.navy.mil