Reducing Mishaps—Saving Lives—Improving Readiness

Fall 2005

Mech

The Navy and Marine Corps Aviation Maintenance Safety M

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THE NAVY AND MARINE CORPS AVIATION MAINTENANCE SAFETY MAGAZINE

Mech

Vol. 44, No. 4 Fall 2005

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On the Cover:
A chock and chains crewmember runs to secure aircraft to the flight deck aboard USS *Theodore Roosevelt* (CVN-71) during flight operations.
Photo by PH2 Robert McRill

Features

STOP!
Story Tellers Wanted!

Sailors and Marines, ***Mech* magazine wants you!**
Send us your lessons learned, best practices, and Bravo Zulus.
Share your experience in the world of aviation maintenance safety.
Be heard! This magazine belongs to you.
Submit your story: What went right? What went wrong?
What happened? What did I learn?

SAVE A LIFE: Send submissions to SAFE-Mech@navy.mil and include high-resolution digital photographs.

Departments

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Strengthening Your Command's Safety Culture

A Navy C-2 Greyhound (COD) recently departed Naval Station Norfolk's Chambers Field on a seemingly routine mission to fly 20 aviation maintainers to Florida. Suddenly, the mission became anything but routine. It evolved into an in-flight emergency, covered live on the evening news as a local television station's helicopter crew filmed the C-2 circling Chambers Field, unable to lower its main landing gear. After a picture-perfect, arrested belly-landing on centerline, news coverage ended with the crew and passengers safely egressing the aircraft in an orderly column—exactly as procedures dictate.

This emergency landing was flawless because the pilots' and aircrew's training and adherence to procedures. They discussed options, dumped fuel, and shut down the starboard engine. We ultimately will find out why the gear malfunctioned, and then we'll fix the problem. What is critical is that the trained crew knew what to do, coordinated with ground personnel, and professionally worked through the problem.

We often talk about the value of crew resource management. In this case, the C-2 crew used their CRM training to mitigate risk. Operational risk management (ORM) was evident when they shut down the starboard engine to minimize the prop hazards upon landing. Everyone in this scenario did a lot of things right.

Having recently assumed command of the Naval Safety Center after heading the Naval Air Training Command, I am well aware of the dangers our pilots, flight crews and maintainers face daily. I also know that most mishaps are preventable. We are ending a two-year challenge for across-the-board mishap reductions, both on- and off-duty. Although we didn't reach all of the numerical goals, we have made measurable progress. We have identified trends and areas of concern. Most importantly, our current efforts and initiatives will serve as the foundation of future mishap reductions. As we carry out our mission—in the air, afloat, sub-surface, or ashore—we must all work to create a new, powerful safety culture.

Every squadron essentially has a 100-percent turnover in personnel every three years, meaning all "corporate memory" must begin anew every three years. That's why we continually must review procedures, conduct refresher training, review NATOPS, and continuously bring new Sailors and Marines up to speed. The Safety Center offers tried-and-true resources to help strengthen your command's safety culture: We offer safety surveys and culture workshops, and our website has a wide variety of information, tools and presentations. Our staff is dedicated to helping you reduce and eliminate mishaps; your POCs are listed on the inside front cover of this issue. We are here to help.

I look forward to the challenges ahead and to working with dedicated safety professionals throughout the fleet. Our efforts will serve to strengthen the Navy and Marine Corps and render us more mission-capable and ready. I firmly believe we can eliminate mishaps. To quote the late Winston Churchill, "For myself, I am an optimist—it does not seem to be much use being anything else."

RADM George Mayer

Naval Aviation and Maintenance Transformation

Improving Readiness for the 21st Century

By Dan Steber

NORFOLK, Va.— *Mech* recently interviewed the Commander, Naval Air Systems Command, VADM Wally Massenburg. He had a lot to say about the transformation in naval aviation and its impact on maintenance and readiness.

VADM Massenburg discussed several programs and tools related to Naval Aviation Enterprise (NAE), including AIRSpeed, Boots on the Ground (BOG), the Naval Aviation Readiness Integrated Improvement Program (NAVRIIP), Lean, Basic Theory of Constraints (BTOC), and Six Sigma. These terms and programs may sound strange to some, but they have been around for several years, and already have allowed the fleet to reap the benefits in readiness.

BOG is an event that brings together the leadership of the NAE to walk through the AIMDs, MALS and the squadrons to hear their concerns and provide points of contact to resolve their readiness barriers.

"Shake a thousand Sailors' hands," said VADM Massenburg as he described his metric for success with BOG. "Senior leaders have to get out from behind a desk and go face the customers. Everything that 'providing organizations' do starts with Sailors and Marines and ends with Sailors and Marines. If you aren't always focused on them, you have missed the boat."

The NAE and associated programs essentially started in 1999, after the Navy's early attempts to recapitalize the force fell short. "People with good hearts said the only way to get new equipment is to get rid of the older equipment quicker," said VADM Massenburg. "But we mortgaged on the backs of our Sailors and Marines the attempt to recapitalize our force."

The admiral mentioned that BOG allowed Sailors to vent about the lack of supply parts on the shelf, about old support equipment—much of it older than the planes we're flying—and tech pubs that were falling apart, or NATOPS manuals that hadn't been updated in three years.

He went on to explain that as budgets and buying power went down, the cost of aircraft and equipment went up. "We had to get the money from some place," VADM Massenburg commented. "That scenario made it clear that the effort to recapitalize was going to be tough."

His point, though, is that the initial strategy had to change. "Naval Aviation was a two-headed giant and each head had its own ideas," said VADM Massenburg.

A catalyst in that effort was the new CNO at the time, Admiral Vern Clark. Adm. Clark placed CNAP in charge of all naval aviation, making him the single process owner, accountable for all of its problems.

With CNAP, now called Commander Naval Air Forces (CNAF), clearly in charge and accountable, a strategy began to develop. The leadership of CNAL, NAVAIR and OPNAV saw the benefits of breaking the traditional chain of command lines and as VADM Massenburg put it, " I called VADM Malone, CNAF, and reported for duty. You see, I work for the fleet and CNAF represents what the fleet needs."

With this, a triad began to take shape. CNAF at the top directing requirements, NAVAIR at one corner as a provider, and OPNAV N-78 and N-43 in the other corner with the resources—the cash. The fleet sits in the center.

"The NAE is working to define better metrics that tie what we work on directly to readiness and aircraft ready for tasking at reduced cost. NAVRIIP and AIRSpeed are leading the way. These metrics will help the NAE manage its cost so we can afford our future aircraft without sacrificing readiness like we had to do in the past," said VADM Massenburg.

This triad began working together toward a fleet goal of aircraft ready for training by attacking the shortfalls in material readiness with NAVRIIP and it's enabler, AIRSpeed.

As the triad drilled down to the root of naval aviation's material readiness issues, it became apparent more commands would need to be brought on board. The organization expanded into the Naval Aviation Enterprise. Composed of over 22 commands, the NAE is a forum where interdependent issues affecting multiple commands are resolved using the measurement of aircraft ready for tasking at reduced costs as the goal for all decisions. With a little stick and rudder, NAE was born.

In the early days, the work to improve readiness through the triad began to show promise. From those successes, the Naval Aviation Integrated Improvement Program (NAVRIIP) and Enterprise AIRSpeed was born. It used the tenets of Lean Manufacturing, Basic Theory of Constraints and Six Sigma, and is teaching maintainers a new language that includes a variety of tools and terms, such as value-stream mapping, the 5 Ss, Kaizen events, Kanban, and a host of others. They are part of a new revolution in thinking that is a critical part of the Naval Aviation Enterprise and something every Sailor and Marine should learn.

VADM Massenburg urged Mech to speak to the fleet about this change in maintenance, supply and readiness. He suggested we contact AIMD North Island, since they had recently transformed their work process using the above tenets.

"Enterprise AIRSpeed has had a huge impact on the way we do business," said PR2(AW/SW) Jason Moore. "It was a major shift in the way we think and act. Before AIRSpeed, we might work on every part, regardless of priority. Now, we concentrate on high-priority parts and don't work on pri 3 parts with little or no demand."

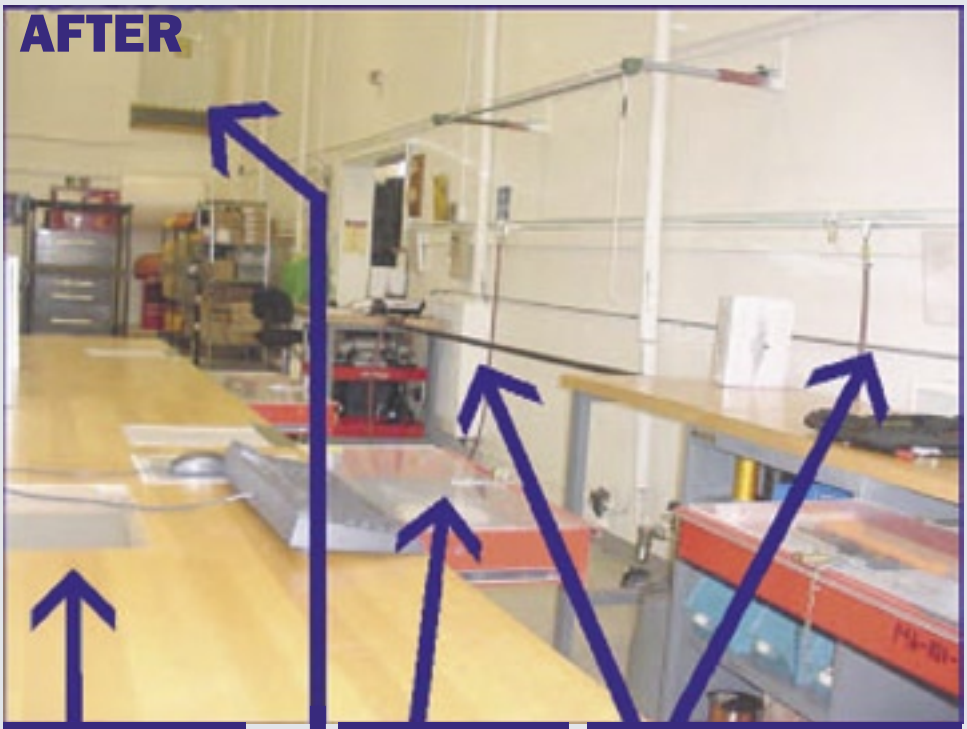
He explained that the time saved through that approach and a reorganization of work flow, tools, and consumable parts has allowed AIMD North Island to make dramatic financial savings and to produce a greater number of items of higher quality.

"In our T-700 engine shop, we reorganized the flow of work, put the right tools into our maintainers' hands, increased and moved consumables closer to the worker, and made tremendous improvement," Petty Officer Moore said. "The turnaround time went from 72 to 48 days, using the Basic Theory of Constraints and from 48 to nine days, using Lean and Six Sigma."

This transformation in naval aviation maintenance is dynamic and ensures that effective, efficient and more productive work is being done to improve current and future readiness. Petty Officer Moore said the biggest difference is that maintainers are being empowered to make change.

"AIRSpeed has changed the way we think and work," said Moore. "Earlier efforts didn't have buy-in from junior troops. Now E-1s through O-5s meet in team meetings where junior Sailors interact with senior members, get a voice in the final decision, and see their suggestions come to life. That is real change."

"We found last year that AVDLR consumptions went way down," said Massenburg, "because a Sailor on the hangar deck is being empowered and is being held accountable and responsible at his level for how much parts or equipment cost, not just for how to install them. We get away from 'smoke checking' R/Ts or using parts in supply to troubleshoot aircraft and those kinds of things. Another benefit is that our Sailors and Marines now have a way to feel proud about what they're doing, have the necessary tools and all elements of Integrated Logistics Support in place, and we have folks with the same patriotic feelings about their job and want to serve."



Bob Dylan said it best, "The Times They Are A-Changin'." The Naval Aviation Enterprise is moving forward and will be coming to a squadron near you. It's time the entire fleet prepares for the lean, clean, readiness-improvement machine.

For more information on the Naval Aviation Enterprise, AIRSpeed, NAVRIIP, and the "lean" tools mentioned, visit the Naval Aviation Enterprise website at www.nae.cnaf.navy.mil or NAVAIR site at www.navair.navy.mil/navairairspeed.

The Safe Way

By the VFA-14 Safety Department

One of the biggest challenges facing any safety department is keeping people interested. We've all heard the safety officer who sounds like a broken record and have seen the outdated safety stand-down videos from the '70s. People seem to spend more time making fun of the "cheesy" mustaches than listening to the message.

AO1 (AW) Jeffrey Campbell, VFA-14 Safety Petty Officer, recognized the need for a new communication tool to deliver information about current operations shortly after joining the Tophatter Safety Department. He noticed as soon as copies of *Approach* and *Mech* were distributed throughout the squadron, people quickly would sit down to see what the new issue had to offer. Hoping to capitalize on the popularity of fresh reading material in the shops, Petty Officer Campbell began publishing a squadron safety newsletter titled *The Safe Way*.

The newsletter is published twice per month and it is focused on issues that are most relevant to the current operations of the squadron. The VFA-14 Safety Department uses the newsletter to publish information from daily airwing safety meetings when embarked, as well as lessons learned from recent hazard reports.

The Safe Way has proven to be a very effective way to highlight individuals who have contributed to keeping the squadron running smoothly. When a Sailor prevents an accident or uncovers a discrepancy that might have gone otherwise unnoticed, their actions are described in the newsletter as a reward and as evidence to others that we all are responsible for correcting any hazards we find.

es in the Fleet

Strike Fighter Squadron
FOURTEEN
Safety Department

CDR. TAYLOR
COMMANDING OFFICER

CDR. PENNINGTON
EXECUTIVE OFFICER

LCDR. FINNEY
SAFETY OFFICER

VOL. II — THE SAFE WAY — 15 MAY 2005

PLEASE EXERCISE CAUTION

Shipboard life can be a very dangerous environment for everyone. Slippery conditions, obstructions and attention to detail can have an impact. We must be vigilant of our surroundings 24/7. This member of our family has received 11 stitches now in two separate incidents. We need to ensure that we all are taking the extra precautions that will keep us safe, day-in and day-out.

GREAT JOB TO AT3 GORDON!

While performing an 84-day inspection on Camelot 210, Petty Officer Gordon discovered a 1/8" raised surface blemish on outer skin panel 71 and immediately notified his supervisor. Further inspection revealed the actuator hydraulic line located directly below the panel protruding upward. The hydraulic line was impinging on the panel greatly increasing the possibility of a hydraulic system failure and fire. Had this discrepancy been undetected, this severe hazard would have remained endangering the pilot and the aircraft.

A Look at Ship Safety

Question - What is that yellow box located in my work space?

Answer -
It is called a Battle Lantern.

In the event of loss of power in a compartment aboard the ship, the Battle Lantern is a substitute source of light. Think of it as an emergency flashlight. The Lantern should be checked regularly for proper operation. If discovered not to be working correctly, please notify your supervisor immediately so that a trouble call can be reported.

Question - How do I activate the AFFF station?

1. Put 1 ½" and 2 ½" nozzle on deck. 2. Ensure 1 ½" valve is open, 2 ½" valve closed. 3. Press activation button for 5-8 seconds. 4. Pick up X50-J and establish communication with High Cap station. 5. Ensure entire 2 ½" hose is out of basket and faked on deck. 6. Slowly open 2 ½" valve. 7. Maintain communications on the X50-J at all times.

SAFETY IN THE WORK CENTER

The Aviation Structural Mechanic - Safety Equipment (ASE) maintains and repairs utility systems throughout the aircraft. They work on systems such as air conditioning, heating, pressurization and oxygen, plus multiple safety devices. These technicians may also volunteer to fly as naval aircrew. Aircrew performs numerous in-flight duties and operates aircraft systems in turbojet, helicopter, or propeller aircraft. Aircrew earns additional pay for flying.

The duties performed by ASE's include:

- maintain the various aircraft systems such as seat and canopy ejection (egress), gaseous and liquid oxygen, life raft ejection, fire extinguishing, air conditioning, cabin and cockpit heat, pressurization, ventilation;
- remove and install oxygen system valves, gauges, converters and regulators;
- Inspect, remove, install and rig ejection seats, shoulder harnesses, lap belts and face-curtain mechanisms; perform daily, preflight, post-flight and other periodic aircraft inspections.

This rate keeps the aviators safe!

FITNESS SAFETY

You've committed to a physical activity routine and you're ready to roll. But after your first week of working out, you're sore all over and think you may have pulled a muscle. What happened?

Many times, people who decide to start working out throw themselves into a fitness routine, overdo it, and hurt themselves. The same thing can happen to "weekend warriors" - those who put off exercising all week and then go overboard trying to cram it all in on the weekend.

Rules Of Thumb

If you're new to physical activity, haven't been active in a long time, or are trying a sport or activity for the first time, it's important to start out slowly and build up your activity gradually so you don't get hurt.

For instance, if you decide to start walking, begin by doing 10 minutes at a time. After a couple of weeks, you can increase your time to 20 minutes and then 30 minutes, 45 minutes, and eventually an hour. To realize health benefits, aim for at least 30 minutes of moderate physical activity, such as brisk walking, at least five days a week.

If you're starting a strength-training program, talk to a fitness instructor about how much weight to begin lifting, what exercises to do, and how often. If you're working with weight machines, learn how to use them correctly. Don't work the same muscles two days in a row. Instead, vary your activities daily to work different muscles and keep your routines interesting. Don't forget to warm up with some simple stretches before your routine, or by walking or marching in place.

Critical Eye Award

Dear Editor,

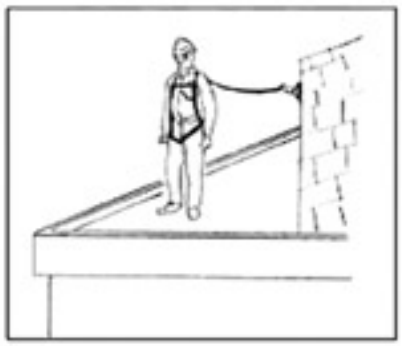
The summer 2005 *Mech* magazine rear cover is a poor example of how to work safely. Yes, the service member is wearing gloves and eye protection and yes, a harness to prevent him from falling in the hole. The problem is that that lanyard needs to be connected to a 5,000-pound tie off point. Having another service member wrap it around his body and hand is totally unsat. If the welder falls in that hole, the shock load will pull the second service member in also, especially on the surface he's on (asphalt with loose gravel on it). It will be just like he's on marbles. Please say something in your next issue so service members won't think this is an acceptable practice. Thanks.

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

Thanks for your input. We always welcome a reader's critical eye and suggestions for improving safety in the fleet. Now we ask you to take the same critical eye to your work center and identify safety hazards that may have become routine. We all share responsibility for practicing risk management both on and off duty. Some additional guidance on fall protection can be found below and on the Naval Safety Center website. —Ed.

Marine Corps Occupatonal Safety and Health Program
http://safetycenter.navy.mil/instructions/osh/MCOP51008F.pdf
19003.2.c – Personal Fall Arrest System. Composed of a body harness, lanyard with shock absorbing device, self-locking connectors, and horizontal, vertical, or self-retracting lifeline, and anchor point. All system components must be rated at 5,000 pounds breaking strength and compatible for use together as a system. Anchorages for lifelines must be independent of any anchorages used for suspended platforms, scaffolding, etc. Personal fall arrest system cannot allow worker free-fall distance to exceed six feet.
NOTE: Marine Corps personnel will not use body belts due to potential to "fall through" the belt if turned upside down.

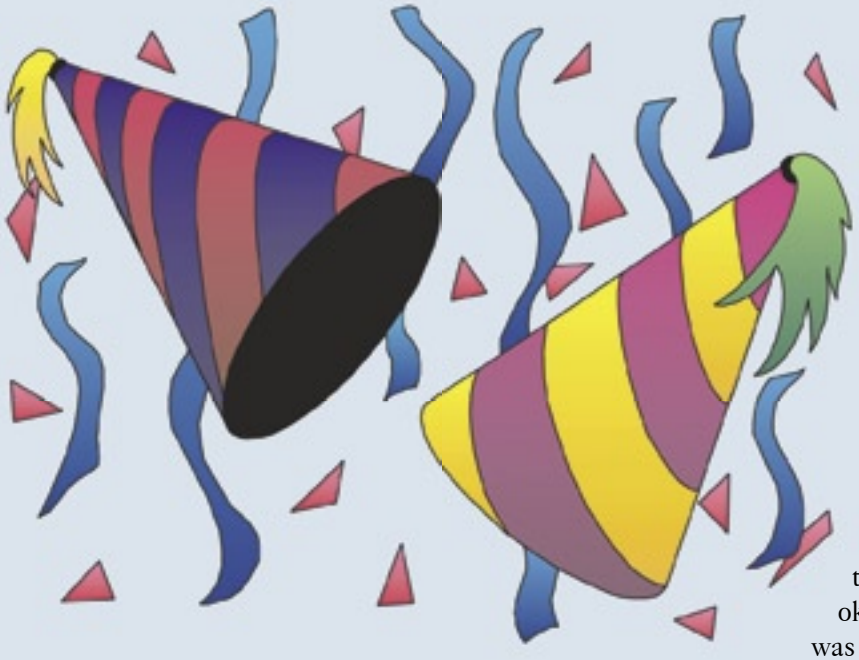
Department of the Navy Fall-Protection Guide for Ashore Facilities
http://safetycenter.navy.mil/osh/downloads/AshoreFallProtectionGuide.pdf
Body Restraint System: An application of the fall protection equipment, in which horizontal travel is restricted, preventing exposure to fall hazards. The system consists of a strap device, such as chest harness or full-body harness that can be secured around a worker and attached to a load-bearing anchorage in order to restrict travel and limit fall hazards. The strap can be single or multiple. (See figure below.)



Body Restraint System

11.0 Identification, Use, Selection, Certification, and Re-certification of anchorages
Anchorages can either be engineered or improvised. An anchorage system is a combination of anchorage point and anchorage connector(s). Improvised fall-arrest anchorages and anchorage connectors shall withstand a force of 5,000 pounds for every person attached to the system. Positioning and restraint anchorage shall withstand a force of 3,000 pounds.

Never Too Tired to Drive?



By SK1(AW/SW) Don Lebow, VAQ-139 Material Control LPO

I was 23 years old, a new AK3 and had just returned to Jacksonville, Fla. from my first cruise with HS-9 the Sea Griffons. My wife and I had missed Thanksgiving with her family, and I had duty during Christmas. In an effort to please my young wife, I promised we would make it to the big New Year's party her family threw every year.

The day of the party was drawing near, and I had the mid-watch from the night prior to New Year's Eve. After shift change, I rushed home to take a shower, clean up, and help my wife pack. We were on the road by 0930 that morning and drove 112 miles to her parent's house in Umatilla, Fla. By noon, we were at the lake, swimming and enjoying the beach and the beautiful weather all afternoon. As everyone prepared for the party, I helped my father-in-law set up the bonfire on the beach and get the grill ready for the night.

The party was great, and everyone had a good time. It was wonderful for me to be back with family and friends. We all had a drink with dinner to toast the New Year and sat around the fire talking and having a good time. After a little while I looked at my watch and realized it was already 0130. I was supposed to be back to work by 0700 the next morning, so my wife and I packed everything up to drive home. Everyone asked if I was okay to drive, but I kept insisting that I was fine.

We got on the road and made it most of the way home. All of a sudden, I noticed those dreaded flashing lights in my rear view mirror just outside of Green Cove Springs. My first thought was "Great, just what I need, a speeding ticket." Looking around, I realized what had really happened: I had fallen asleep at the wheel with my pregnant wife asleep in the passenger seat! My heart felt like it was going to explode out of my chest, and I knew I could have killed my family and myself. Fortunately, the only "injury" suffered was to my wallet in the form of a $150 speeding ticket.

I got out of the car and the state trooper told me that I had been speeding and weaving. I thanked him for stopping me and giving me the ticket. I explained that I had fallen asleep at the wheel, and his siren had awakened me.

Since those early morning hours of January 1, 1993, I think about it every time I get ready to go on the road. Since then, I make sure I get enough sleep and adjust my travel plans so this doesn't happen again.

What on Earth Is

By LCdr. Edwin Grohe, VAQ-135

Have you ever seen icing like this? I hadn't until I made a detachment to NAS Fallon in January 2005. This icing is called "pogonip," a meteorological term originally used by Native Americans to describe the frozen fogs of fine ice crystals that settle on trees, fences and plants. NAS Fallon normally only sees one pogonip episode per year, and it usually lasts only one or two days. However, two significant episodes occurred during the winter of 2004-2005. This particular incident started around Jan. 15 and continued into February. A temperature inversion settled over the valley, trapping the cold, moist air between the Sierra Nevadas. Meanwhile, warmer El Nino air from the south moved over the dense, cold air, packing it down and holding it.

What does NATOPS say? It prohibits operating the J52 motor in ice-fog conditions, unless operational necessity dictates. Most commanding officers will agree that training missions do not qualify as operational necessity, so NAS Fallon airwing events don't launch in ice fog. NATOPS warns specifically of rapid ice build-up on engine-inlet vanes and blades in extreme low temperatures, high humidity, or visible moisture conditions. The engine's anti-ice capability cannot overcome the tremendous ice-producing capability of ice fog being sucked through the high-velocity inlet of a Prowler intake.

The Prowler community has had a close call in these weather conditions. In 1992, a Prowler at NAS Fallon started engines in ice-fog conditions. Ice fog had been moving in and out of the area for several hours. The crew started engines and immediately turned on the anti-ice system. The aircraft taxied for takeoff. While waiting for departure clearance, the port motor flamed out with no abnormal engine indications. While the crew was taxiing back to their line to investigate the problem, the starboard engine also flamed out. After towing the aircraft back to the line, mechs dove the ducts. They found a half-inch of ice buildup on the back of the first stage compressor blades. The anti-ice capability of the motor at idle could not handle the ice build-up.

Interim Rapid Action Change (IRAC) 34 to the EA-6B General Information and Servicing Manual changed the temperature/ humidity restrictions for turning a J52-P408A/B motor. It says, "at temperatures between 28 and 42 degrees Fahrenheit, with a relative humidity above 50 percent, engines being turned with FOD screens should be monitored constantly for ice build-up on the screens. If ice starts to form, the engine should be shut down immediately." Common sense would dictate that, in any extremely low temperature, high-humidity, visible-moisture conditions, constant monitoring of the engine inlet/FOD screens should be the norm.

The recent IRAC change affected one major area. Turn-qualified personnel used to be able to turn the motor on deck in low-temperature, high-humidity con-

Pogonip?

ditions without monitoring engine FOD screens. Now, observation of the screens offers a better chance of detecting ice build-up, which could cause FOD damage to the motor.

What else can you do? During times of operational necessity, you can take a few steps to limit the motor's exposure to damage from ice build-up. Once anti-ice/deicing steps have been taken, you must limit deck operation to four consecutive minutes at idle rpm. After four minutes, the engines should be run up to full power, retarded to 75 percent, and stabilized for one minute. Then, the engines can be retarded to idle and the four-minute counter reset. Also, NATOPS says to run engines for a minimum of five minutes before moving any control surfaces; this will limit damage to hydraulic lines and seals. Cold hydraulic fluid moving through cold rubber seals can cause leaks. NATOPS also warns of oil-pressure problems in extremely cold temperatures and recommends running the engine at idle for a short time after initial start-up. This initial idling should pre-heat the engine oil and increase its viscosity, allowing easier pick-up by the oil pump and easier movement through oil bearings and injector heads.

In any case, if engine limits are exceeded in any regime, or if you hear abnormal engine noises, discontinue start attempts and shut down the motor. Engine-inlet preheating can be applied, depending upon the availability of such equipment.

Take care of yourself and your aircraft. If you ever witness these conditions, remember to review your procedures. Ice fog can damage the J52 motor, and we cannot afford to waste your valuable time repairing an engine problem that could have been avoided.

Never Assume

By ATAN Chadwick Richards, VQ-1

Assumptions are dangerous, and assumptions concerning work that you should have completed yourself are the worst. Everybody knows this, but can you say you've never allowed yourself to assume something critical in a job you've done or a responsibility placed upon you? I did, and it cost my squadron greatly.

A second class CD/QAR, an AD2, and I were directed to take a propeller from the Prop Shop to the shipping center. The prop was needed for a P-3C that was stranded at McChord AFB in Tacoma, Wash. We put it on a stand-up prop dolly and delivered it to the shipping center, but were told that the prop and dolly were too tall for highway underpasses.

We returned to the Prop Shop and moved the propeller onto a fly-away dolly that held it lower. I jumped into a tow tractor, and backed it up to the trailer. I thought the AD2 stayed out to connect and pre-op the fly-away dolly. I assumed the AD2 had readied the stand for the move and I didn't verify that it had been done. As the tow-tractor driver, the pre-op inspection of the stand was my responsibility. The importance of the phrases "never assume" and "check and recheck" had been thoroughly impressed upon me since I joined the Navy. However, I chose not to abide by these sayings.

I started the tow-tractor and moved forward slowly. I was wary of driving an expensive piece of equipment on the streets since my experience with a tow-tractor was limited to the flight line. In the AIMD parking lot, I slowed the tow-tractor to make a right turn around the corner of the building. As soon as I applied the brakes, the fly-away dolly slid around to the left and jack-knifed.

I stopped the tow-tractor and began to ask the AD2 if this particular trailer had wheels that needed to be locked. Before I could finish my question, he was out of the tow-tractor, locking the wheels in place. I thought, "Thank God we caught this early!"

My relief was short-lived. We discovered an 18-inch long dent on the back of a minivan next to the fly-away dolly. The license plate was crumpled like an accordion. I asked AD2 if we had done that, and he looked back at me with wide eyes and said, "I think so." When he finished locking the wheels, I moved the tractor and fly-away dolly to the side, chocked it, and joined AD2 to find the owner of the van: a chief petty officer, who wasn't happy.

What could have been done to prevent this? First, I could have used more training on the both dollies. I also should have told my supervisor that I was uncomfortable with this move. I had never dealt with the fly-

away dolly before, or driven the tractor off of the flight line. I shouldn't have assumed the pre-operational checks had been done. As the driver, I should have made sure everything I was towing was ready for the move.

Everyone, regardless of their rank, experience, or expertise, is liable to make mistakes. The solution is communication—not assumptions.

This incident caused the Maintenance Department to carefully look at the training syllabus for support equipment safety and handling. Our Sailors deserve the opportunity to be properly trained and receive enough hands-on experience to be comfortable performing their duties. The incident and its lessons learned were thoroughly briefed and reviewed in each shop.

Work Package 14 (Maintenance Platforms) of the U.S. Navy Support Equipment Basic Handling and Safety Manual (NAVAIR 00-80T-96) was added to the required reading board in every shop. We also recommended to the local AIMD that this Work Package be included in their tow-tractor course.

Three technical publications deficiency reports (TPDRs) were submitted, recommending the following warning be placed in NAVAIR 19-600-284-6-1 (Pre-Op Tow Tractor), NAVAIR 19-600-19-6-6 (Pre-Op Maintenance Stands), and NAVAIR 19-600-178-6-1 (Pre-Op Prop Dolly Universal): "Warning: Failure to properly secure castors on stands/platforms prior to towing could result in uncontrolled operation and damage/injury to adjacent aircraft, equipment, or personnel."

We recommended the AIMD include this warning in their local Fly-away Dolly Pre-op Card.

Ground mishaps such as this one could be avoided by stressing the importance of pre-operational checks and incorporating ORM into our everyday operations. Making sure the proper information is taught and available is essential. Taking the time to thoroughly assess all hazards and take precautions will serve to reduce the number of these unfortunate incidents.—Lt.

Lt. Doug Howard is the Aviation Safety Officer at VQ-1 based at NAS Whidbey Island.

FIRE
Under the Radar Dome!

By AMC(AW/SW) Rick Boswell, VS-31

It was a typical January morning at Naval Air Station Jacksonville, Fla.: cool, clear and a perfect day for launching and recovering aircraft. We were preparing for a deployment with CVW-7 and the USS *George Washington* (CVN-73) Carrier Strike Group. The squadron just had returned from COMPTUEX, and we were finishing the holiday leave period. We got back into the hot seat…literally!

Our pilots were "getting back in the saddle," so we had FCLPs scheduled for the entire day. Topcat 705 returned from the first round of touch-and-go landings, and another aircrew was ready for a crew swap. The PC taxied the S-3B into spot and requested permission from the pilot to open the hatch. The new crew successfully completed the swap and started their preflight checklist. At that point, the COTAC signaled for an AME troubleshooter.

As the flight-line chief, I sent AME3 Nicolas Griess to find out what was wrong. The No. 1 engine was on line, and AE3 Eric Barber, a conscientious troubleshooter, was doing a pre-final check. As he bent down to verify that the forward avionics fan was operating properly, he quickly signaled a figure eight to the PC and to me, meaning the aircraft had a fire. I entered the cockpit and, calmly as possible, said, "Sir, secure electrical power and shut down; we have a fire under the radome!"

The acrid smell of an electrical fire filled the cockpit, but we still could not see smoke. Petty Officer Griess had been troubleshooting a forward avionics circuit breaker that would not reset. After properly securing the engine and APU, everyone quickly exited the aircraft.

Once clear of the aircraft, smoke was visible around the radome. The groundcrew quickly released the radome latches, moved to the windward side of the aircraft, and got ready to raise the dome. Airman Juan Tapia was standing next to the aircraft with a Halon fire bottle. It was charged and ready to go should flames be visible. When we opened the radome, oxygen was introduced to the fire triangle, and the fire erupted. Airman Tapia was ready, and he put out the fire with a two-second burst of Halon. This entire incident lasted only 60 seconds, from start to finish.

The culprit was the Kapton wire that led to the forward avionics fan. The wire had chafed and shorted on an Adel clamp. When the troubleshooter tried to reset the circuit breaker, the wire arced and ignited the radar absorption blankets. We initiated a subsequent inspection of all other aircraft but didn't find any more discrepancies.

Looking back on the events of that day, I'm proud our training helped to prevent a more serious mishap. We were lucky, though, that the fire took place during a crew swap and not while the aircraft was in the air or taxiing. Had the short occurred while airborne, we could have lost the aircraft and possibly the crew. Airman Tapia did a great job, but he was injured slightly when a small Halon leak from the bail fitting burned his hand.

Everyone involved in this incident acted in a professional manner, didn't miss a beat, and prevented a potentially disastrous situation. Because of our team's quick reaction, the aircraft was damaged only slightly. We repaired Topcat 705, and it was flying again just a few days after the incident.

A New Kind Of Ordnance

By AO3(AW) Randall Zetwick, VAQ-137

Our squadron was deployed on board USS *Enterprise*, and we were called upon for troop-movement assistance in Bagram, Afghanistan. On short notice, we expeditiously deployed three aircraft and 27 maintainers to the area. In a combat area, aircraft carry various countermeasures to ward off attack. This day, we would have to find a way to counter a returning countermeasure.

Our Prowlers carried MJU-8s, which is a decoy flare 5.8 inches long with a diameter of 1.4 inches. It burns at 4,000 degrees F. for approximately six seconds. During day missions, the aircrew would fire flares for a "confidence check." The missions were going as planned, and ops were normal, until one EA-6B returned with a surprise.

When the aircraft landed, we began our post-flight inspection. During this process, I looked back and saw a flare hanging down from the bucket, almost three-quarters of the way out of the container. I then cleared all personnel to a safe distance and told my QASO of the situation. Our flight-line chief called the Fire Department, and our QASO contacted EOD.

On the ship, EOD also is called for a hung flare, and they usually throw the entire flare bucket over the side of the ship and into the water. Unfortunately, in Afghanistan, we didn't have the luxury of a large body of water.

On land, the procedures become very complicated. Difficulty arises when working with ordnance members of other branches, who often are not familiar with the Navy's weaponry.

While waiting for the fire department and the disposal team to arrive, a few people in the area asked why we didn't just pull out the hanging flare. I explained that it had the potential to cook off, and they were quick to withdraw their question. The fire department arrived, and the EOD team quickly came up with a plan to remove the bucket from the aircraft and to take it out to a remote area. It then would be destroyed.

This plan seemed reasonable at first glance; however, after a disposal team member looked at the flare up close, he decided the bucket was too unstable to be carried in a vehicle. A large pile of dirt did exist on the edge of a taxiway. They brought in a backhoe to dig a 10-foot-by-10-foot hole in the ground, so the bucket could be destroyed on site.

After the hole was finished, EOD put the bucket in the hole, and moved everyone away. They wired two-and-a-half pounds of C-4 to the bucket and then used a remote detonator. The first attempt to detonate the C-4 was unsuccessful, but the second try worked. The entire process took approximately six hours to complete.

Hung or unexpended ordnance of any kind is dangerous. In my short five years of being an ordnance technician in the EA-6B community, this was my first experience with hung ordnance. Had anyone simply pulled out the flare, it could have ignited and caused serious injury or death to anyone in the vicinity. This event was a good lesson for me and to those who don't work with ordnance on a daily basis. Everyone should be aware of the dangers and the potential injuries that hung ordnance can present.

Out of Focus

By AE2(AW) David Glenn, VAQ-139

Three weeks underway on board USS *John C. Stennis* (CVN-74), our AE shop was troubled by a very perplexing gripe on NK 501. Each time the angle-of-attack (AOA) transmitter rotated to give a red indexer light, all the annunciator caution lights would illuminate in the aircraft. We did all the readings we could and determined we needed to try parts.

We began with a known good AOA transmitter we robbed from NK 502 after discussion with maintenance control. While still pondering and tinkering, I sent two airmen to pull the transmitter from 502. Transmitters were simple to pull and install. We each had experience with numerous transmitters. In very little time, the airmen returned, and I patched the new transmitter into 501—no luck.

My mind was so centered on the gripe I became unaware of much else around me. I vaguely recall telling the guys to throw the transmitter back into 502, and I continued with my troubleshooting. After what may have been considerable time, while I was neck-deep in the cockpit, playing with wire bundles, the airmen returned and told me the transmitter was put back. I responded by telling them to get an annuciator panel from NK 500. They obliged, and we played the parts game, much to the annoyance of maintenance control.

At some point, I needed a break and decided to CDI the transmitter on 502 and various other parts we unsuccessfully had tried. I took along an airman to go through the checks with me, not bothering to get the book first. Numbers are right; it checked good, and it even looked good. I could see the guide pins for the index ring snuggly fit into their holes. It didn't occur to me that I should refer to the book to make sure I had checked everything for the transmitter's install. This job was the next thing up from a light bulb in parts changes.

My shift ended much sooner then I expected. I didn't write a pass down; instead, we had an on-aircraft turnover.

Photo by PH3 William K. Fletcher

I was anxious to see if day-check had had any luck when my shift rolled around again. They hadn't, but they felt they had a lead on it. At some point, aircraft 500 also had developed a problem in its AOA system, and, to top it off, so had aircraft 502. They were separate gripes, but gripes come in threes, so none of us were surprised. NK 500 had no AOA lights at all, and 502's AOA pegged to 30 units off the catapult and stayed that way until after recovery. Even the transmitters input to the A/D converter matched the indicator on 502, which narrowed the problem and pinpointed its culprit easily enough—the transmitter.

I was going to fix 501—I was determined. I directed my two airmen and a second class AE to look at 502's transmitter. Later, I heard they had ordered a transmitter—of course. On 500, they had ordered an indicator. On 501, I was clueless—nothing made sense. I had the entire AOA system's schematics memorized by this point. I was feeling burnt out, but nothing would take my attention away from it. I pondered the situation with some fellow AEs. They talked, but I didn't listen—I was in my own world.

At some point, the other guys had finished putting in the newly received transmitter and grabbed me to CDI it. I dreamily wandered over to 502 at some point and inspected it. The index ring was snugged onto guide pins, and all lights came on at the right time. Good to go; no book needed for this easy check. I signed off the transmitter gripe and went back to 500, where they were installing the new indicator.

I overheard one of the airmen saying that, when he checked AOA on 500 with the new indicator installed, all the caution lights came on with the red indexer lit. I came to life quickly when I heard that news, and nothing mattered to me more at that point than figuring out how 501's gripe, which was tormenting me, also had popped up on 500. Day-check would flip if they came in and two jets were down for something we could not find the answer to. I began finding the common puzzle pieces between 500 and 501. I fixated. We had tried each part that mattered in the system, and nothing fixed it, but if it hopped jets, then it had to be part-related.

It didn't occur to me that I should refer to the book to make sure I had checked everything for the transmitter's install.

After talking to my supervisor, we agreed something was burning up something else, and it must involve two, possibly three parts. Some things my supervisor had said began making sense to me. I was sure we had fried the diode of the red index leg inside the annunciator panel, which allowed power to feed back through to the other lights. The part was fried after it had been in 501. By the time day-check had come in, we had 500 fixed, and I was exhausted. We thought we were in good shape, until NK 502 came back down because its AOA had pegged to 30 units off the cat stroke. Day-check had other things to deal with, so the gripe came back to night-check again.

I was stumped. The transmitter, schematically, is all that could cause this. I decided to look at another aircraft's angle-of-attack index setting, which I compared to 502's setting. They were both at 19 units, but 502's setting was on the wrong side of zero. That's

a 40-unit difference in angle-of-attack. I began taking out the transmitter and could feel my throat tightening up because I already knew what I would find.

The transmitter has two guide pins, which go through the lip of the case and stick out on the back and front. The front pins are for the index ring to sit on; the backside pins are for the transmitter to be seated into the aircraft properly. These pins were not sticking out on the back—they were completely flush. By this point, my heart was pounding rapidly, and I was red with anger at myself.

I tapped down the pins and properly seated the transmitter, then stopped to call a CDI. He came up with the book and did a proper look-over as I installed the transmitter. It now was installed and CDI'ed properly.

I was upset with myself and knew I was in for it when I told maintenance control. I didn't give them a bull story but, instead, explained I had improperly inspected the installation of the transmitter the last two times. In fact, we had created the discrepancy from the start and had forced the pilots to land on the ship with no angle-of-attack input—twice.

I spent a lot of time contemplating how I had failed to do my job right, and, with input from my shop, we determined it came down to tunnel vision. I had allowed nothing else to be as important as the gripe I was obsessing over. When I CDI'ed a job, I wasn't thinking about what I was looking at; I still was rolling schematics through my mind for another gripe. Even though I found the mistake I had made, my head wasn't in the game. To top it off, as 502 prepared to fly and aircrew were given a big assurance from the AEs the AOA gripe would not come back, the aircraft went down for AOA again. We lost that sortie before an AE really had a chance to hop up there to discover the plug wasn't completely on the indicator.

The disappointment of my poor performance, and the question of how much confidence the aircrew may have lost in me have been punishment enough to keep me focused and alert. I'll never repeat the problem. I'm an excellent maintainer and a diligent CDI, so my pride was deeply affected by my carelessness. I was embarrassed. I now try to step back and take a breather when my head isn't in the game. Training, better communication, and watching out for one another when we're not focusing is key. And, don't forget the books.

High Is Lo

By AM1(AW) John Elmore, VFA-151

It was a Thursday just before a three-day weekend. I was short-handed because of the leave period, with only a few junior personnel. At the morning meeting, the maintenance chief told me he wanted 306 ready for Monday's flight schedule. The aircraft had a momentary unsafe tone for the landing gear upon landing, and, based on previous gripes of unsafe-gear indications, our squadron was troubleshooting these occurrences as unsafe gear. In each case, we jacked up the jet, serviced the landing gear, and did a thorough visual inspection of all landing-gear components.

I printed out the publications and handed them to my third class. I had complete confidence in his doing the FA-18C strut-servicing because he had done this task dozens of times with assistance.

After catching up on my paperwork, I went to the aircraft to check on the third class. He asked if I would operate the NAN cart because he didn't have a license. After double-checking the pubs for the correct pressures, I pressurized the lines with nitrogen while he serviced the shock struts. Because of the position of the NAN cart, I only could see his back. Then it was time to perform the operational test of the landing gear. Late afternoon was upon us, and the entire maintenance department was waiting for us to finish before we could all secure.

With pub in hand, we supplied the jet with hydraulic and electrical power and began the operational check. I told the person in the cockpit to select gear up. The hydraulic jenny groaned as it began forcing 3,000 psi to the actuators. Suddenly, we heard something snap. A thousand thoughts raced through my mind in a split second. What could have gone wrong? One phrase seemed to stand out in my mind. From the time I first had started working on Hornets, I always had heard, "High is low, and low is high."

On FA-18C landing gear, the top servicing port must be filled with low-pressure nitrogen, and the bottom servicing port must be filled with high pressure. After I checked the gauge on the struts, I knew where we had gone wrong. My AM3 had serviced them backward, which resulted in the shrink link breaking

w, and Low Is High

in two like a toothpick. By servicing the top port with high pressure and the bottom port with low pressure, the landing gear didn't shrink down to fit in the wheel wells. In a split second, the aircraft went from almost ready to fly to hard down.

I asked the AM3 about the servicing, and he simply said he had forgotten the procedure. I explained to him that was why I had given him the publication and that, if he was unsure, all he had to do was ask.

This story is similar to many I have read in *Mech*, especially all the distractions we had had that day: just coming back from leave, being short-handed, a long weekend approaching, and having the whole maintenance department waiting for us.

Photo by Matthew J. Thomas

Several things could have prevented this mishap, starting with me, the supervisor/CDI. I could have queried the third class on the procedure he just had completed, verifying he had serviced both struts according to WP. I could have moved the NAN cart so I would have been able to watch the work he was doing. I could have ensured we had enough time to do the maintenance on this jet and monitor the progress throughout the day, making sure we weren't swinging the gear late in the afternoon right before a three-day weekend.

Following procedures and supervising are critical in our business as a means of checks and balances. Whether it's a frequent task or one that only is done periodically, we always double-check our work before operational testing. We missed a very important step this time, and the gunshot sound of those links failing never will leave my mind. I was glad the gear had failed on test and check. What if the plane had flown? We could have lost the aircraft and a pilot. Follow the MIMs, supervise your people, communicate critical steps, and train to prevent mistakes, instead of learning from them.

The "A" Panel That Didn't Stay Forgotten

By AD1 Aaron G. Beckman, VP-26

While deployed to NAS Sigonella, Sicily, I was assigned as CDI for a team that was preparing for a "Man on the Stand"—a P-3 engine-maintenance turn. We were trying to isolate an oil leak that had been undetectable through previous post-turn inspections.

We started our checklist, which shows all the required steps to prepare an aircraft for this job. While cleaning the outboard side of the engine, I decided to do a little extra and removed the aft "A" panel, resting it flat on top of the wing. Before my shipmates and I could finish the clean-up job, rain began pouring down. We rapidly secured the B-4 stands, checked tools, and cleaned up the area to wait out the downpour. By the time we returned to the task, I had forgotten about the "A" panel.

After an hour, the ground was sufficiently dry, and we performed our safety brief in maintenance control. The pilot, FE, QA, and yellowshirt reported to the aircraft, along with three members from the powerplants workcenter. No one—including the QA rep—noticed the outboard "A" panel wasn't attached during the safety walk-arounds. The QA rep checked the forward nose ICS, and we were ready to start engines.

With the No. 3 engine running, two CDIs went up on the B-4 stands to inspect for leaks. They took about 10 minutes to do the inspection and found the leak coming from the engine-breather line. They decided the engine no longer was serviceable, stepped off the B-4 stand, and walked to the end of the wing. Everything was going well until I saw what made my heart skip a beat. The maintenance officer and maintenance master chief were standing in the hangar bay watching this evolution and felt the same shock.

The "A" panel I had set on top of the wing took flight when the FE shifted down the No. 3 engine into low RPM, which had launched it about 50 feet aft of the wing. Sparks flew as it slid another 20 feet. After a close inspection by one of the airframe CDIs, we determined the panel hadn't been damaged significantly, but I couldn't say the same for my self-esteem.

The maintenance manual contains no cautions against setting panels on the wing during preflight; however, there is an instruction to inspect upper wing surfaces for FOD hazards before performing turns. A qualified pilot, QA representative, flight engineer, CDI, and a yellowshirt all had overlooked the panel I left on top of the wing; each of us failed to use our checklist.

The "Man on the Stand" engine turn is one of the most dangerous maintenance tasks we perform. Adhering to the checklist is imperative for the safety of all involved and for personnel in the vicinity. The rain during our work had caused several stoppages, which induced dangerous gaps in our process and opened the door wide for human error. If we only had said, "Let's start a new checklist from the beginning," this incident might have been avoided.

It Was Our First No-Fly Day

Navy photo by PHAN Refugio Carrillo

By AOAN Kinsey M. Barnes, VS-30

It was our first no-fly day since our June arrival in the Persian Gulf. The weather's reputation proved accurate: it was sweltering hot. Working on the flight deck in the middle of summer in the Persian Gulf is like sitting in a car that's been basking all day in the summer sun.

I was working night shift. Our squadron had been flying combat missions in support of Operation Iraqi Freedom, so most of the flight schedule was under the stealthy cover of night. We were pleased to have a reasonably comfortable night temperature. The night-check supervisor returned from the nightly maintenance meeting and gave us the passdown. We didn't have much to do: daily inspections for the following day's flights and two special 7-day inspections. The 7-day inspections are checks performed on the buddy-store guillotine system to ensure the circuits are receiving the proper amount of voltage to activate the CADs. Activated in flight during a store malfunction, the guillotine system will cut, clamp and jettison the hose and drogue.

We started work on the first aircraft, which was in the hangar bay. That check was completed without incident. When we returned to the shop, our supervisor told us to go to the flight deck and do the daily inspections. An AO3 who was relatively new to our shop, an AOAN, and I decided we would knock out the final 7-day inspections while we were doing the daily inspections and thus avoid another trip later in the evening —mistake No. 1.

Whenever you perform release-and-control checks, two items can't be left behind. First, you must have a qualified team leader on the crew; and second, you must have the checklist. We had neither. Moving right along, we completed all the dailies and set off for one of the aircraft in need of a 7-day check. I disarmed the inboard side of the guillotines and saw the AO3 on the outboard side. I assumed he had made the same preparations as me and disarmed the outboard CAD—mistake No. 2.

With ordnance, you never assume anything. As our LPO likes to say, "Trust, but verify," a philosophy with which I failed to comply. I got a power cord and connected it to the jet. The AO3 turned on the power, and I took position as team leader. You have heard the old saying, "three strikes and you're out." Well, I just had committed mistake No. 3 and was about to get called out.

I reasoned with myself that I had completed this check a million times before and hadn't needed a team leader or checklist. I waited for the AOAN to set up the test-set and held my wand in the hold position. Shortly after this happened, I saw a flash, heard a bang, and saw the AOAN running away from the buddy store. The new AO3 had misinterpreted the hold signal for the go signal. We just had committed the cardinal sin of ordnance personnel everywhere: We had blown a CAD.

The next few minutes were complete chaos. It seemed everyone on the flight deck had heard the CAD blow and were gathered around. Some were looking at the buddy store. Others were trying to calm the AOAN, who was writhing in pain. After I collected myself, I went to the shop to get the supervisor and AOC. I told them what had happened, and neither was happy to be making this trip to the flight deck.

After all the facts were gathered, we concluded we were the luckiest people on the boat that night. The AOAN had noticed the CAD was armed, and yet he placed the test set on the deck, causing the CAD to blow. It hit him squarely on the shoulder, leaving a huge welt that turned into a nasty bruise. If he had been one second later in noticing the CAD, his face would have been on the receiving end of something similar to a gun blast. Had he decided to reach in and attempt to disarm the CAD, he most likely would have lost his arm. Fortunately, our pride was the only thing seriously damaged.

There are reasons for properly used tools, procedures, checklists and team leaders. They are there to help prevent incidents like this from happening.

There Are Reasons for Rules

By AME3 (AW) Jules Moffett-Carvalho, VAQ-142

I believe that every person who reads *Mech* thinks that they will never grace its pages. I know I never thought I would see my name in an article that would appear in *Mech*, let alone be writing one.

I was the leading petty officer (LPO) in VAQ-142's line division night check. We are a Navy Expeditionary EA-6B Prowler squadron forward-deployed to Marine Corps Air Station Iwakuni, Japan. We were two and a half months into a six-month deployment and although I was the line LPO for nights and working toward plane captain (PC), I was not a qualified PC at the time. I had just finished a maintenance brief in the line shack where I informed the PCs and the trainees that we had two aircraft recoveries, four daily and turnaround inspections (DTAs), two plane moves, one high-power turn on aircraft 521, and fuel samples on four other aircraft.

My problems began when Maintenance Control called over the radio and told me that we needed to take 521 to the hush house for an engine turn. I assembled a qualified move crew, including a brake rider, two wing walkers, a tail walker, and a qualified PC as the director. I drove the tow tractor. It was cold that evening, and we towed the aircraft from the parking line to just outside the hush house. Only one person in our group, the tail walker, had ever been in a hush house before. He hadn't been in this one. I was uncomfortable with my tractor backing skills and opted to have the PC, who was also qualified to drive the tow tractor, switch places with me so he could back the jet in. I took over as director, a position I was not qualified to occupy since I was not a PC. At that point, I felt rushed, and my main concern was getting the aircraft into the hush house. I didn't consider finding another PC, because I felt I could handle it. Besides that would have taken more time. Since I was the LPO, no one challenged my decision.

I noticed two slots with raised sides that the main mount tires were supposed to fit in. I told the driver that he would have to line the main mounts up perfectly on the lines that lead into the slots or else risk damaging a wheel or brake. Once we began pushing the aircraft into the hush house, however, I noticed that the driver was having problems getting the jet lined up. I was very concerned about the tires getting into the slots and didn't pay much attention to how close the wings (and especially the tail) were to the hush house walls.

Finally, we got the jet lined up after many attempts. As we continued to push it back, I kept worrying about the main mounts, hoping we would not clip a brake line or damage a wheel assembly on the raised edge of the tire slots. Unfortunately, I wasn't the only one focusing too much attention on the main mounts. The tail walker was also concerned that we might damage the landing gear and he was trying to divide his time between watching the tail and watching the wheels. As a matter of fact, he had moved completely out of position in order to keep an eye on the tire slots and was forward of the horizontal stabilizer. This was well away from where he should have been as the tail walker, and in a position where he couldn't see how close the tail was to the back wall of the hush house.

I also didn't notice that the wing walkers did not have whistles in their mouths, and some didn't even have whistles at all. No aircraft should be moved without the proper personal protective equipment (PPE) and every person in the move crew is required to have

a whistle in his or her mouth in order to stop the evolution if necessary. Perhaps if I had been a qualified director, I would have noticed this.

At this point, I should have stopped everything and made sure the wing walkers had the required PPE and the tail walker was in the right position doing his job. Also, I should have replaced myself with someone who was actually qualified to act as director. Instead, we continued to move the aircraft and the next thing I knew—Crunch!

I heard the impact and immediately blew my whistle, bringing everything to a stop. Everyone involved with the move knew exactly what had happened. We had been so worried about the main mounts that we were not paying any attention to the tail and an antenna on the aft most part of the rudder that had hit the back wall of the hush house.

After the crunch, I called our maintenance control and told them what had happened. As everybody stood around staring at the damage to the fiberglass cylinder that covers the ALQ-126 antenna on the tail of the EA-6B, I got a call over the radio informing me that everybody involved was to report back to the squadron. We returned to the squadron spaces and were told that the tail walker, brake rider, tractor driver, and I would be going to Medical for fit-for-duty testing. Believe me, you do not want to be the guy who breaks the rules and ends up breaking an aircraft.

All of this could have been prevented if I used Operational Risk Management (ORM) techniques and weighed the benefits against the risks involved. Everybody is keenly familiar that we are always talking about ORM, but we seldom stop to consider implementing this into routine evolutions. ORM is a clearly defined, five-step process. The first thing that must be taken into account is identifying the hazards of an intended evolution. The aircraft could have hit the wall of the hush house, wheels could have been damaged by the guide tracks, or the aircraft could have rolled over someone.

File photos for illustration purposes only

Once you have your hazards identified, you must assess them. Do this by determining the degree of risk associated with each hazard. Make your risk decisions based upon the risk potential versus the benefits attained and then put controls in place to reduce the amount of risk at hand. Assigning an additional person to observe the wheels could have alleviated the risk of hitting the sides of the guide tracks. Folding the aircraft's wings could have alleviated the risks of hitting the sides of the hush house. Always take charge, supervise,

and follow through on your actions to ensure that your evolution progresses as expected.

The evolution had not been progressing as expected, but I put myself in a worse position by assigning myself a duty for which I wasn't qualified. Had I slowed down and done things correctly, this mishap may not have happened. As it was, this incident forced both my command and me to reevaluate the way we perform aircraft move evolutions. We have since used this incident to show junior Sailors why we have rules and procedures, and how the ORM process can be put into everyday use.

I know that I should not have attempted to act as move director since I was not qualified, nor should I have even attempted the move without a thorough pre-move brief, putting ORM principles to work and analyzing the situation. Had we used ORM, we might have decided that doing an unfamiliar evolution with a qualified but inexperienced crew at night in the cold for a low-priority maintenance task was not worth the risk. We might have accepted the risk but mitigated the hazards by implementing controls such as folding the wings, familiarizing ourselves with the layout of the hush house before putting the aircraft inside, and making sure only qualified personnel were used in each position. We might have started the job with hazard controls in place, then reevaluated the situation and determined that more precautions were needed.

I hope everybody who reads this article learns something from my experience. Although I got to dance on the carpet for the CO, I learned more from this incident than any other in my naval career. On a positive note, we now conduct thorough pre-move briefs and work hard to incorporate ORM practices into everything we do. We have a hush-house checklist and make sure the wings are folded before we move aircraft into the building. We remove the ALQ-126 antenna housing since even a properly positioned jet is less than a foot from the rear wall. We use this incident as a training lesson to prevent future mishaps and we even ORM'd the hush house itself, figuring out that the aft limit lines for the main mounts were missing and needed to be repainted.

In the end, however, everything that I have written about all adds up to one thing: always look before you leap. A careful ORM analysis allows you to do just that.

2,000 Man-Hours Later

By AD1 Thomas Miles, VFA-37

Not following tool-control procedures will keep a squadron's maintenance effort from flowing smoothly. My squadron experienced two incidents of missing tools within weeks of each other.

A workcenter lost a 6-inch extension while doing maintenance in the hangar bay on aircraft 306. Before notifying maintenance control and quality assurance, the technician and CDI did an immediate search. After their unsuccessful attempt to locate the tool, a missing-tool report was generated and a more extensive search of maintenance areas was conducted, including the workcenter and outlying areas of the squadron. All maintenance that had previously been performed was reopened and inspected by the quality-assurance investigator. The search was extended to all aircraft on the line for a period of three shifts, but all attempts to locate the missing tool were unsuccessful.

Convinced that the tool wasn't in any of our aircraft, they were released safe for flight, and the squadron began training ops in preparation for an upcoming Airwing Fallon detachment. After completing preparations, we packed up and departed for NAS Fallon. After four days of flying, a runway maintainer entered maintenance control after inspecting the runway for debris and turned in a six-inch extension to the maintenance chief. Investigation revealed this tool was the one that had been lost two weeks earlier. The tool was bent and severely nicked, and groove marks ran along its entire length.

Maintenance control initiated conditional inspections for all squadron aircraft. The inspection team discovered damage to the brake-hub assembly and inner rim on aircraft 303's starboard mainmount. The extension had migrated from the wheelwell and made its way into a small crevice between the rim and brake-hub assembly. This tool remained in place for 17 flights until it dislodged itself during takeoff.

The second incident began with a nightshift supervisor's daily routine of inventorying tools in preparation for the maintenance meeting. Tools were inspected

Photo by Matthew J. Thomas

and accounted for, the passdown was reviewed, and the workload was scanned to establish workcenter priorities. Upon completion, the shift supervisor set out for the nightshift maintenance meeting; upon return, he assigned the task of installing aircraft 301's starboard engine accessories to two workcenter technicians. A technician and CDI checked out a toolbox and departed to accomplish the assigned task. When they were done, they turned in the toolbox and returned to the workcenter. The CDI assigned to the job updated the VIDS-MAF and entered his in-process inspection on the MAF. After a lengthy night of maintenance, the supervisor directed shop personnel to wipe out all toolboxes and prepare for departure. After the boxes were wiped out and inspected, the night supervisor signed the end-of-shift tool inventory. When the oncoming dayshift held tool inventory, the 3/8-to-1/4-inch stepdown was missing.

Dayshift workcenter personnel conducted an immediate search but were unsuccessful in finding the missing tool. A report was generated, and the offgoing shift was recalled. The quality-assurance representative traced every step performed by the maintenance crew the previous night. The search extended to all aircraft and squadron spaces. All flight operations were secured, and the search continued for two-and-a-half shifts, totaling more than 2,000 man-hours. The tool was located in the tracks of the hangar-bay door.

In comparing these two incidents, distinct problems were noted after completing the investigations. The phrase that comes to mind is "before, during and after." All tools are required to be inspected before, during and after each assigned task. As a fail-safe method of tool control, local standard policy requires quality-assurance representatives to inspect each toolbox before and after completing every task.

Simple practices, if adhered to, will prevent the hassle of having to perform searches for missing tools. Although all procedures were followed during the loss of the missing extension, the result could have been catastrophic. In the case of the missing stepdown, several vital things were missed. It was determined the CDI never inventoried the tools before or after completing the task; neither was the box inspected by QA. In addition to those three infractions, the stepdown was missed during the offgoing inspection.

Standard procedures are developed and implemented for a specific purpose: to prevent mishaps. Many lessons have been written in blood. Failure to adhere to policies established in the tool-control program can prove catastrophic.

How does the missing extension mentioned in the first scenario migrate from aircraft 306 to aircraft 303? What can you do to ensure this does not happen in your command? —Ed.

Sailors and Marines reducing mishaps

BRAVO Zulu

Send BZs to: SAFE-Mech@navy.mil

SSgt. Everett Cooke and Sgt. Daniel Ellison
HMH-361

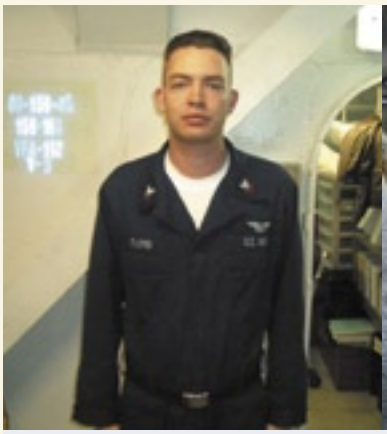
While on deployment in Iraq with HMH-361, SSgt Cooke was serving as crew chief on a routine night logistics mission. The command was moving Marines and equipment from a nearby forward operating base (FOB), and the mission went off without a hitch. After shutdown, he began his daily inspection and found a castle nut had not been installed on the bell crank for the collective flight control. A conditional inspection was done on all flight-control components to check for security and integrity.

During this inspection, Sgt. Ellison noticed that a cotter pin was missing on the servo input for the tail rotor. These two Marines identified and corrected maintenance discrepancies that could have had catastrophic results.

AD3(AW) Thomas Banach
VFA-83

While serving as a power plants technician in VFA-83, Petty Officer Banach was tasked with doing an engine turn after another maintainer had finished the pre-inspection and had installed the turn screens. Knowing that he personally had not done the initial inspection, Petty Officer Banach decided to re-inspect the aircraft and found FOD in the No. 1 engine intake just forward of the vortex generator. Had he been less diligent and skipped his own pre-inspection, this FOD would have caused serious damage to the Hornet's engine.

Petty Officer Banach's keen attention to detail and by-the-book maintenance saved the Navy $1.3M in repairs, dozens of wasted man-hours, and possibly a life.



AM2(AW) Steven M. Floyd
VFA-192

Dragon 305, an FA-18 Hornet, was being turned around for launch on the next cycle. Petty Officer Floyd discovered the mechanism bolt for the connecting link on the main landing gear planing arm had sheared at the nut section. He immediately notified the flight-deck coordinator, who then contacted maintenance control. A combat FOD walkdown was done, and the sheared section of the bolt, along with the nut and locking tab, was recovered from the landing area. The aircraft immediately was downed. Had this discrepancy gone unnoticed, it could have caused a catastrophic failure of the landing gear.

Cpl. Christopher Pierce and LCpl. David Noble
HMM-264

While operating at Al Asad Airbase, Iraq, LCpl. Noble and Cpl. Pierce did a daily and turnaround inspection on a CH-46 scheduled for a functional check flight (FCF). As part of the standard inspection of the control cables, LCpl. Noble found a flat spot on a lateral control cable. Cpl. Pierce confirmed the cable was rubbing against an airframe spar. A more detailed look revealed 5 broken strands of wire that were not visible initially. These strands were broken in a critical fatigue area where even one broken strand downs the plane.

The Marines' alertness, technical expertise, and conscientious efforts toward flight safety prevented a possible in-flight failure and the potential loss of the aircraft and crew.

AD2 Santos Rivas
HM-15

Petty Officer Rivas found loose ball bearings in an engine-drain screen on a squadron MH-53E helicopter. He quickly notified quality assurance and maintenance control, stating that the ball bearings could have come from the belt tension idler pulley on the nose gearbox. He also said the aircraft needed to be inspected further to find the source of these bearings.

Already turning, the helicopter was shut down for further inspection. While inspecting the suspect area, Petty Officer Rivas and a quality-assurance representative found it was worn, and the race was missing ball bearings.

AEAN Brandon Averill
VAW-121

On the last day of a 10-day detachment aboard USS Dwight D. *Eisenhower* (CVN-69), AEAN Averill saved the lives of two shipmates.

During the launch of his squadron's E-2C Hawkeye on cat 3, two sailors inadvertently crossed inside the shot line while working a different launch on cat 2. The Hawkeye on cat 3 had a "thumbs up" for launch and was in tension. Before disaster could strike, airman Averill noticed the fouled deck, immediately suspended the launch, and prevented the loss of two lives at the hands of the E-2's propeller.

Airman Averill demonstrated the situational awareness of a seasoned professional even though it was only his third time working the flight deck.

AE1(AW) Robert Price
VAQ-139

During a normal daytime launch, the left generator light on NJ 573 would not go off. Petty Officer Price directed the shutdown of the starboard engine to verify the condition of the port generator. Upon doing this, the aircrew lost all electrical power to the aircraft. As he began to troubleshoot the problem, Petty Officer Price found burn marks on the port engine-bay door and led to the discovery of a shorted, primary-phase wire. Had this discrepancy not been detected, it is highly probable a catastrophic electrical failure and electrical fire would have ensued, jeopardizing the safety of the aircrew and causing severe damage to the aircraft.

AMEAN Joseph Barone
VAQ-133

While performing the command sequencing-system leak-test during a 364-day inspection on aircraft 530, AMEAN Barone identified a leak. His thorough inspection revealed the command-sequencer gas-transfer line was disconnected from the ECMO-3's ejection seat. This discrepancy, if undetected, could have prevented both rear seats from firing in the event of a command ejection. AMEAN Barone's dedication, initiative, and professional knowledge saved the day and, potentially, aircrew lives.

AD2(AW/SW) Douglas Wright
HC-6

During a 28-day special inspection, Petty Officer Wright was inspecting the flexible coupling of the engine's output shaft for cracks. He rotated the No. 1 engine's output shaft and, with the use of a flashlight, searched for any visible signs of a cracked flex plate. He spotted a protrusion and used a scribe to feel for a lip. For confirmation, he inspected the protrusion with a borescope. Not only did he verify the crack, but he also found another smaller crack on an adjacent flex plate. Petty Officer Wright's attention to detail prevented a potential aircraft mishap and led to the aircraft's accurate repair.

AM2 Chad Mixon
HSL-44 Det 1

During a routine 30-hour inspection of Magnum 447, Petty Officer Mixon checked main-rotor dampner bearings for axial play. All bearings passed initial inspection with the bearing-inspection gauge. However, a closer look revealed strands of cloth protruding from between one of the bearings and its race.

Displaying uncommon initiative, he investigated further and found that the liner was separating and causing faulty readings from the bearing-inspection gauge. The gauge couldn't penetrate the space between the bearing and race. The dampner was removed and replaced.

Petty Officer Mixon's attention to detail and his willingness to go above and beyond the basic inspection led to finding a problem that could have caused catastrophic failure.

AM2(AW) Jason Brooks
VAQ-139

While performing routine post-flight maintenance, Petty Officer Brooks discovered damage to the turbine blades of the port engine of a squadron aircraft. The damage was severe, and an additional flight may have resulted in catastrophic engine failure.

His discovery led to engine removal and replacement, thus averting a potential mishap and possibly saving the lives of squadron aircrew and a valuable aircraft.

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LOX Safety

Time Critical Factors in an Emergency Situation

By AMEC(AW) Edgar Cintron

Only a few squadrons conduct follow-on training for LOX/gaseous oxygen safety precautions and hazards. Some commands also aren't adding liquid or gaseous oxygen as part of the applicable work center's hazmat Authorized Users List (AUL). Finally, Material Safety Data Sheets (MSDSs) often are not available for training. That's the gist of my findings during numerous visits.

If you're a work-center supervisor, you have to give your people job-specific training when they report aboard, with follow-on training thereafter. For your next scheduled hazcom training, conduct a drill, simulating a mishap in which someone gets splashed with LOX. Monitor the Sailors' responses, especially how they rush through the MSDS binder, looking for the emergency first-aid procedures. All hands must be trained on the dangers and precautions found in the MSDSs before they use hazardous materials.

Another concern is a lack of training in the work centers with regard to emergency pressure-relief tools. Many people involved in LOX evolutions don't check out these tools and have no idea how to use them. An emergency isn't the time for everyone to scramble for equipment and read up on how to use it.

The four emergency pressure-relief tools are located in NAVAIR 13-1-6.4, beginning at paragraph 17-28 and including figures 17-6 through 17-8. These tools usually are not included as part of the tool-control program. In most cases, they are not located in the same toolbox marked "Oxygen Use Only," which presents a time-critical factor in an emergency. Also, some of these tools are not inventoried or accounted for—I find them in cabinets, at the LOX storage area alongside the LOX PPE, in desk drawers, or IMRL boxes. Sometimes, I can't find them at all.

These tools must be kept in an "Oxygen Use Only" toolbox; if you're not in compliance, I recommend that you submit a tool-deviation request to add the four items to the toolbox. I also recommend that you have two sets—one in case you have a detachment. Most squadrons have enough LOX PPE to support home-guard, but few have enough emergency pressure-relief tools to support both. Most commands we visit also use LOX without established procedures for those converters with a dime-like protrusion (indicating a critical over-pressurization), as found in Ref. (b), page 4-8 "warning."

Here are some other helpful hints:

- The pressure-gauge/relief-valve test fixture has an oxygen gauge that requires a green "Cleaned for Oxygen Service" label and is required to be on a six-month calibration cycle.
- Make sure you have an MSDS available for the type of oxygen used on your aircraft, and make sure it's listed on your AUL.
- Remember, LOX can produce a powerful explosion if not handled correctly. Is there enough room around your LOX servicing/stowage area to allow for such an explosion without any personnel being injured or aircraft being damaged?

Be proactive in training. Don't get complacent or lose situational awareness while handling LOX converters or holding servicing evolutions. Keep your shop, squadron, ship and flight deck a safe place to work.

AMEC(AW) Cintron is a maintenance analyst at the Naval Safety Center.

QA Program

How Strong Is Your Auditing Process?

By AMC(AW) Paul Hofstad

When I do a survey, I look for consistency in the audit process. I ask other team members what they are finding in their particular programs. I then look at the most recent audits to see if they match what other surveyors are finding. When they don't match, there's a problem—and that's what I found during a recent overseas visit. More times than not, the auditing process performed by quality-assurance work centers in various commands and communities had holes.

To be more precise, if the QA audit merely states, "No discrepancies; this program is running smoothly..." and other team members are finding problems, I know one of two things is happening. The command isn't allotting enough time for the audit, or personnel aren't looking hard enough.

Some QA work centers I recently surveyed were grossly undermanned. With a command operating on two shifts, manning a vigorous flight schedule, and still performing audits, the number of assigned QA personnel may not be enough to do what's required. CNAF 4790.2, Volume 1, Chapter 14, states that QAs will be represented by all rates. Obviously, there will be caveats to this requirement, such as CDQARs in the PR shop, but, when a command has to put a CDQAR in the line division, then manning needs to be addressed.

Another area of concern is the lack of recent audits on QA itself. It's necessary you make sure your own backyard is squared away before you pass judgment on other programs throughout the command. In many cases, the most recent audit is more than two years old. Sometimes, the QA work centers audit themselves, which creates a problem with objectivity. We sometimes tend to overlook such things because we don't want to air out our dirty laundry, but, in the long run, whom are we hurting?

Remember, QA is the check and balance within a command. If audits are performed poorly, or manning isn't sufficient, then the command suffers, and another link in the chain is broken. You have to ask yourself, "Am I willing to take the chance on the safety of my aircrew and my maintenance personnel?" Fuel surveillance, hydraulic contamination, and oil analysis are just a few of the programs that can cause havoc within your command.

AMC(AW) Hofstad is a maintenance analyst at the Naval Safety Center.

Maintenance Training

Maintaining an ORM-Based Training Program

By ADC(AW/SW) Gary Eldridge

Attention to detail is especially crucial when maintainers are working flight-line or flight-deck operations. Moving aircraft can be just a mishap away, which is why all hands involved in such operations should be enrolled in a stringent training program.

Studies show that more than 60 percent of technician training is performed on the job. This statistic, however, says nothing about the quality of the training. While OJT can be an invaluable tool, it also can be a risky and costly method of training.

Usually, qualified senior technicians who have proven themselves provide the training as instructors. These instructors bear the burden of training "by the book" and leaving out bad habits they may have acquired over time. Proper training requires these instructors to research, plan, test, and evaluate before disseminating information. Remember, without proper training, we cannot determine normal from abnormal operation. Without proper training, we cannot determine if we'll be at risk.

Before committing personnel to OJT through a command-generated maintenance-personnel-minimums checklist, ask yourself these questions:

- Have I researched the MIMs/instruction/IRACs to ensure compliance?

- Do I have the knowledge to perform the task?
- Do I have the technical data to perform the task?
- Have I previously performed the task?
- Do I have the proper tools and equipment to perform the task?
- Have I had the proper training to support the task?
- Am I mentally prepared to perform the task?
- Am I physically prepared to perform the task?
- Have I taken the proper precautions to perform the task?
- Do I have the resources available to perform the task?

Practice what you preach, and preach what you practice in all training scenarios. Cutting corners starts somewhere and ends when a shipmate is hurt or killed. Unfortunately, that's when we realize we have a training deficiency. The first component of ORM is to recognize hazards—it starts with us.

ADC(AW/SW) Eldridge is a maintenance analyst assigned to the Naval Safety Center.

Tool Control

I Didn't Know That

By AMCS(AW) Mark Davis

CNAF 4790.2 clearly defines how multi-piece tools are supposed to be managed. That reference states, "All tools that are multiple-piece shall be identified in detail, for example, 'stamping dye set 10 pieces plus 2-piece case total 12,' or 'feeler/depth gauge 14 blades,' or 'hacksaw with blade.'"

You might say that most tools have multiple pieces, and, although you might be right, common sense must apply when we look at each tool. The general rule of thumb is that if a tool has parts that are removable by hand, then it must be accounted for as a multi-piece tool—it's that simple.

In an airframes work center, the most common problem we find usually concerns a tool in the metal working box. The culprit normally is a 12-inch combination square. I find this tool often accounted for as only a one- or two-piece tool. In reality, however, the combination square has six pieces, including the main body, the slide ruler, the guide pin, the adjustment knob, the spring, and the scribe (see accompanying photo).

If you're a work-center supervisor who has multi-piece tools with missing parts, it should concern you as much as it does me to find those discrepancies during my visits. Most times, though, supervisors display little if any concern. Here's the correct response, as outlined in CNAF 4790.2: "A missing/broken/worn-tool report is promptly initiated by the individual reporting or finding the missing tool." The reference goes on to say this report must be forwarded to maintenance control or production control.

Another matter that concerns me is who in the various work centers conducts beginning-of-shift and end-of-shift tool inventories. Does anyone? Is

it the CDI or tool-control petty officer? According to CNAF 4790.2, it's the responsibility of the work-center supervisor to conduct both beginning and end-of-shift tool inventories. The reference says, "The work-center supervisor shall inventory all tool containers, special tools, and PPE at the beginning and end of each shift and document change-of-shift inventories, using a logbook, such as a pass-down log. Ensure tool containers are FOD-free at all times."

Once again, though, we need to apply a little common sense. The day-shift supervisor should conduct beginning and end-of-shift inventories for days, while the night-shift supervisor should handle both inventories at night. We also understand there will be times when a supervisor may be on liberty or at a medical appointment. In those cases, a CDI may conduct the inventories. Just make sure those occasions are the exception, not the rule.

As aviation professionals, we have numerous references with which to conduct maintenance. Our "bible," though is CNAF 4790.2. How long has it been since you really sat down and read over your area of responsibility? Don't be the one who answers with, "I didn't know that" the next time we cite a passage from one of those references.

AMCS(AW) Davis is an airframes analyst assigned to the Naval Safety Center.

Respiratory Protection

It's a Matter of Life and Breath

By AMCS(AW) Mark Davis

Every Navy command that uses respirators must have a respiratory-protection program manager (RPPM) and/or assistant who is required to be a graduate of the NAVOSHENVTRACEN Respirator Protection Program Management course (A-493-0072). The first responsibility of this person(s) is to complete an industrial-hygiene survey, which will indicate all the hazards within work centers. The command's safety office should have a copy of this survey, and it's also recommended that a copy be posted in each work center.

I look for several things when reviewing a command's respirator-protection program, starting with the SOP. I want to know if it's command-specific. Most wing or base SOPs are too general and don't satisfy naval requirements. Another item I look at is the record of usage, cleaning, storage, and filter change-out. I want to make sure the RPPM maintains such a record and that it's up to date.

When it comes to the medical-screening forms, the correct one is found in OPNAVINST 5100.23F, Chapter 15, Appendix A. I see a lot of local forms that don't have all the required information. Using the form from OPNAVINST 5100.23F, though, will ensure candidates for the RPPM program are fully qualified.

My concern is with organization, accountability and training, and AM1(AW) Veiser of VQ-1, NAS Whidbey Island, is right on the mark in all three areas. I have to extend a hearty Bravo Zulu to him for maintaining an exemplary respirator program. He provides readers with an outstanding example of what a respirator locker should look like—very neat and well organized—as you'll see in the accompanying photo.

For complete details about how you, too, can maintain a squared-away RPPM program, use these references:

- OPNAVINST 5100.23f, Chapter 15
- OPNAVINST 5100.19D, Chapter B6
- NA-01-lA-509, Appendix B
- Code of Federal Regulations, 29 CFR 1910.134

AMCS(AW) Davis is an airframes analyst assigned to the Naval Safety Center.

SE Maintenance

Dotting the I's and Crossing the T's

By ASCS(AW) Phil LeCroy

How would you feel about using a piece of support equipment that had been non-RFI for the last nine years? If you're like me, not real receptive, but this very situation occurred on a recent survey. As a matter of fact it, happens more than most people realize.

A nitrogen walk-around bottle is used almost every day. We found one where the hydrostatic test was last done in 1991. That test is supposed to be done on high-pressure gas bottles every 5 years. Meaning the bottle was almost ten years overdue. Hello!

Upon further review, the /51 Card did not even list a hydrostatic test date. To make matters worse, the acceptance inspection was signed off and showed that the hydrostatic test date had been verified. The unit did not have a calibration sticker, and pre-operational inspections were not being done.

When we asked the supervisor for the /52 Card, it couldn't be found. Who was concerned about the

safety of others? Where was QA? Was anyone making sure that aircraft were being serviced properly?

The unit was taken out of service, but how many hands did it slip through in the last nine years? Many technicians, supervisors, QAR's, and analysts could have and should have caught the error.

The survey team also found a nitrogen cart at a different command with an expired calibration sticker. The unit was three days overdue for calibration. Not a long time, but what might happen if the gage was off, personnel were servicing an aircraft tire, and it blew up? What if someone had been hurt during those three days? The shop had signed the /52 Card stating a good and thorough inspection had been done. Step 10 of the pre-operational inspection clearly directs personnel to ensure that the calibration is current.

In another command, another walk-around bottle was missing a calibration sticker. A squadron representative was asked to do a pre-operational inspection on this unit. He had a checklist in hand but skipped step 3, which directs personnel to check for a current calibration. If it's missing that automatically makes the unit non-RFI because the calibration is not current.

Follow basic procedures and remember the instructions and checklists are in place to keep Sailors and Marines safe. It's time to start dotting the I's and crossing the T's.

ASCS(AW) Lecroy is a maintenance analyst assigned to the Naval Safety Center.

Class C Mishap Summary

By ADCS (AW/SW) Gary Dennis

From March 01, 2005 to June 30, 2005, the Navy and Marine Corps had 43 class C's that involved 46 aircraft. The damage total was $2,664,439.

• A Marine ordnanceman fell from an aircraft while doing a safe for flight inspection on an FA-18D at night. The Marine failed to ensure a proper foothold before transferring his weight to his right foot, which barely had made contact with the ladder. Sensing a fall, he pushed away from the aircraft to avoid hitting his head or face on the leading-edge extension or the ladder. Landing on his out-stretched left hand, the Marine's body weight drove his left arm into the concrete, fracturing his left elbow and wrist.

• A ramp-mounted weapons system (RMWS) was damaged when it departed an in-flight CH-53E. During a day aerial-gunnery shoot, the aircraft was flying at 500 feet and 90 knots. The tail gunner was firing the weapon out the left side of the ramp when the RMWS's quick-release assembly slid out of the floor interface plate. The tail gunner attempted to hold onto the weapon, but as the tension of his gunner's belt increased, he was forced to release the weapon. The barrel, receiver, ammo can, and mount landed on the desert floor. The vibration from firing the weapon, along with the weapon being pointed out the left side of the aircraft, placed force in the direction of the slotted opening in the floor interface plate. That arrangement allowed the quick-release assembly to slide out of the floor plate, and the weight and center of gravity of the weapon forced it out the back of the aircraft. An investigation revealed the RMWS was installed improperly and the tail gunner failed to inspect it properly, resulting in $38,000 damage.

• After their C-2 landed, the aircrew found the forward propeller-servicing door on port engine had struck the base of the four propeller blades. Investigators found that a technician did a CDI inspection of his own work. This lack of supervision led to a $171,468 mishap.

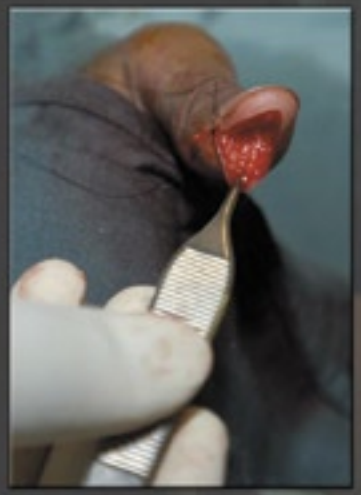
ADCS (AW/SW) Dennis is a maintenance analyst at the Naval Safety Center.

During the National Safety Council conference in Orlando, Fla., *Mech* became aware that the company Simple Green has developed an aircraft cleaner. Several aircraft manufacturers, including Boeing, have accepted the new formula. However, a MILSPEC has not been issued for this product. Until the product is approved, Extreme Simple Green Aircraft & Precision Cleaner is NOT authorized for use on naval aircraft.

SAFETY

www.safetycenter.navy.mil

Poster submitted by USS Kearsarge (LHD 3) Safety Department



IT'S AN ALL HANDS RESPONSIBILITY!

DON'T LET THIS HAPPEN TO YOU.