

January - March 2000

Mech

The Naval Safety Center's Aviation Maintenance Magazine

Five-Minute Move

**Hey, Chief!
Did You Hear
What I Just Said?**

Waukesha Was King

LT J.C. McNEEL
OTTER

Mech

THE NAVAL SAFETY CENTER'S AVIATION MAINTENANCE MAGAZINE

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On the cover:

AEAN Brian Yokley of VFA-125 troubleshoots a problem in an FA-18. *Photo by PH2 D.A. Webster*

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Five-M

by AE2 Thomas B. Learn

An aircraft director's leadership is the key to a successful move.

Anything can go wrong when you tow aircraft. A breakdown in situational awareness and leadership can turn a 5-minute move into a nightmare.

Salty Dog 101, an FA-18C, needed a compass swing, so we towed it to a compass rose. Halfway through the swing, maintenance technicians repositioned the aircraft.

As the tug towed the Hornet onto the taxiway, the move director turned his attention to a fellow technician to explain how the Hornet should be aligned for the next procedure. That distraction was enough to assure the aircraft wouldn't get there.

As the Hornet re-entered the compass rose, the tractor driver pressed on without the attention or direction of the move director. The driver misjudged the clearance from the edge of the

The "Uh-Oh squad" met at the compass rose to view the stuck Hornet.



Minute Move




The troops used shovels and a bigger tow tractor, but it took a crane to get the Hornet back on the concrete surface.

taxiway, and the port mainmount rolled off the concrete and onto the soft grass. It took only a few seconds for the 39,000-pound aircraft to sink into the unpaved surface up to the axle. The crew leader immediately notified Maintenance Control.

A bigger tow tractor couldn't move the aircraft. We defueled the Hornet and removed the wing fuel tanks to lighten the load. Hours later, well after sundown, a crane lifted the Hornet back onto the hardtop.

We towed the bird back to the hangar, but the day didn't end there. Many difficult questions needed to be answered, and the workload had increased dramatically for nightcheck.

AIMD spent many extra manhours completing a non-destructive inspection of the landing gear, and the airframes shop had to drop-check the bird and do a conditional inspection. It was nearly 24 hours before we were able to finish the compass swing that we had been so close to completing the day before.

That was a costly 5-minute task, but at least our aircraft wasn't damaged. The possibility of a mainmount rolling off a taxiway must get the same focus we give to clearing buildings and other aircraft. Anytime you move aircraft or are given a maintenance task, follow SOP and give the job your full attention no matter how simple it seems. 

AE2 Learn is now assigned to VS-31.

TROUBLED SHOOT

by AE2 Ambros Browning

It's amazing how fast a troubleshooter's day can go from fine to funky. Right after the first recovery of the day, a PC told me that aircraft 342's starboard mainmount tire was flat. To conserve our limited supply of rubber, the work-center supervisor had told us not to change tires if we didn't have to. Armed with this knowledge, I gathered my tools and headed to aircraft 342. I'd serviced FA-18 tires countless times—no sweat, right? Wrong! You wouldn't be reading this if everything had gone well.

Usually, I park in front of the tire and stand well forward while servicing it. Unfortunately, an electrical station restricted parking for the NAN cart. I had to wedge the tow tractor between the aircraft and the electrical station, leaving the NAN cart in the deadly no-standing-I'm-airing-up-tires zone.

The tire was low, but still on the bead, so I figured I could air it up and be back in the shop in 10 minutes.

Everything was proceeding smoothly; I put on my cranial, hooked up the NAN cart, applied pressure, moved to my comfort zone up by the intakes, and began servicing the tire. I always check the pressure gauge at 30-second intervals. The tire started to rise at 125 psi. As the tire filled, I heard a slight creaking sound. Check pressure, add air. Creeeeak. Check pressure, add air. Creeeeek. Check pressure (200 psi), add air. Ka-pow!

The concussion almost threw me to the ground. My instincts were screaming for me to move or die. I remember seeing what I thought was a spark going toward the aft part of the Hornet. I also remember thinking three things:


First, exactly where had I parked the NAN cart, and what was facing it? The rim of the tire! Second, I had to move quickly, because if the rim shatters and hits the nitrogen bottles, they would explode and kill me! Finally, the spark I had seen was the tire blowing apart at 200 psi. But tires don't blow like that at 200 psi, do they?

My next thought was a line from a movie, "Pain is your friend. It will let you know that you are still alive." I felt no pain, so either I was dead or unhurt. It was the latter. I convinced my heart to stop beating so fast, did a turn-around inspection on my body parts, and then calmly told Maintenance Control about the blown tire.

Later, I sat down with the QAO to go over what had happened. We decided that I had serviced the tire in accordance with MIMs (A1-FA18AC-LMM-000). I had been wearing my cranial, which saved my hearing, and my equipment had been recently calibrated.

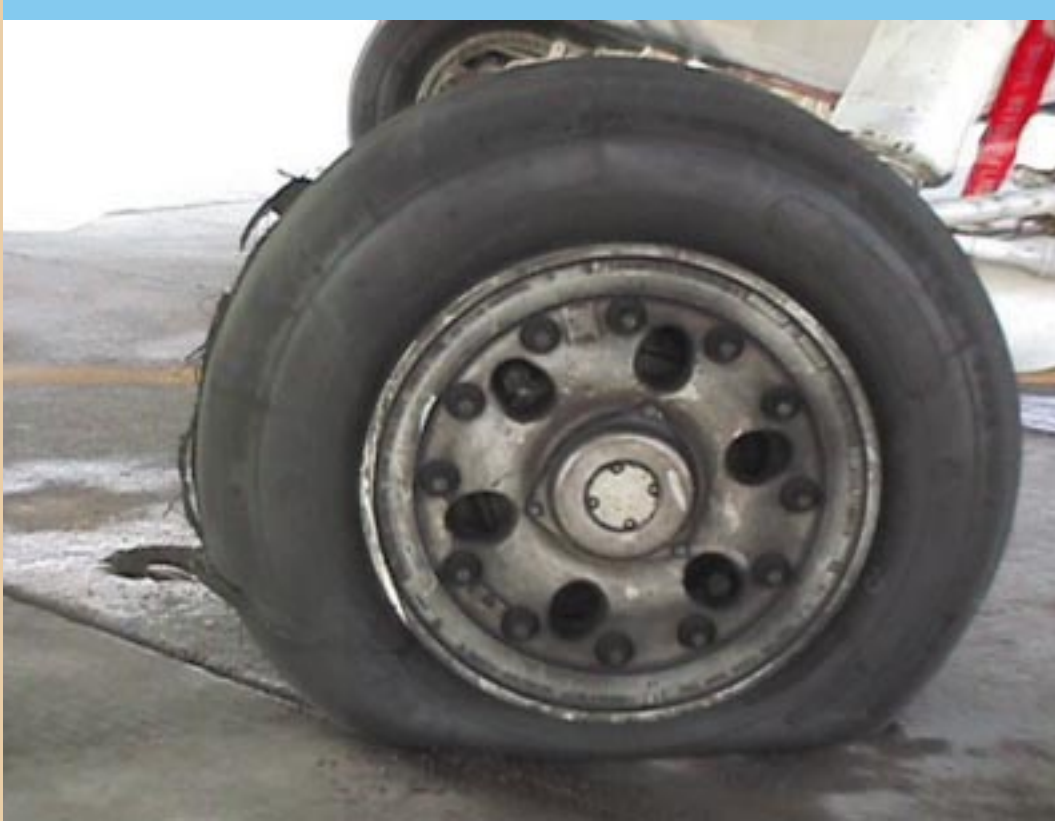
The manual states, "To prevent death or injury to personnel, always go toward MLG tire from forward or aft direction."

This tire exploded toward the rear of the aircraft. I can't hammer that point home hard enough. I'd been in the right spot when you consider which way it blew, but I had a 50-50 chance of being injured servicing that tire either fore or aft.

We estimated that if the Hornet had been pulled forward just 18 inches, or if I'd chosen to service from aft of the tire, that entire blast, accompanied by rubber shrapnel, would have been directed at me. That's a slim margin for someone with so much more living to do. 

AE2 Browning is a troubleshooter in StrkFightWingPacDet (SFWPD).

TER ON THE RUN



**Check
pressure,
add air.
Creeeeak.
Check
pressure,
add air.
Creeeeeeeak.
Check
pressure (200
psi), add air.
*Ka-pow!***



As someone once said, "Never be afraid to do your job, but be afraid of what your job can do to you. Respect the danger that comes with it."



Hey, Can Did You Ho

Artwork by John Williams

Chief!

Hear What I Just Said?

by AEC Mitchel Sparks

The point of a conversation is not usually driven home as harshly as the title of this article — especially if a junior airman recruit is doing the talking. However, that might be what it takes to point out a hazard.

Maintenance managers spend most of their busy workdays interacting with seniors and subordinates, trying to make sure everybody gets the support they need to do their jobs. That's why we have to keep our ears open and take onboard what is being said to us and around us.

My story begins with a dreaded zero-dark-30 telephone call. With no emotion in his voice, the nightcheck maintenance control chief told me, "Your line crew just buried an aircraft in the mud and your presence is requested." Although I was still in a sleep-induced fog, that statement got my attention.

As I drove to the base, I had a feeling I knew what had happened. We'd had an aircraft at the black-top area we call the "compass rose" when dayshift secured. The line crew must have gotten a mainmount stuck in the grass and mud that surrounded the rose, or maybe they ran all three landing gear into the mud.


When I arrived at the line shack, I could see the lights of the fire trucks and the outline of the aircraft in the distance. I also could see that the aircraft was leaning to one side. When I got to

the plane, the CO, XO, MO, and a host of maintenance people were looking at the No. 4 prop, only inches above the soggy turf, and the starboard mainmount buried to the axle. As I surveyed the situation, I couldn't help but notice how narrow the compass rose was. With some quick work by the fire department and an excellent tug driver, we got the aircraft out of the mud and onto a solid taxiway again. We cleaned off the mainmount and drop-checked the bird that night. It was undamaged.

Later that day, I thought about why this incident had happened. My linemen had previously commented about how tight the area was out at the compass rose, and how hard it was to position an Orion on a site designed for an A-6 Intruder.

However, as typical can-do Sailors, they had great success 99.9

percent of the time. I should have listened to what they'd been saying, gone to the compass rose and looked it over before there were any problems.

As a salty E-9 once told me, "You got two ears and only one mouth; I suggest you listen twice as much as you talk." 

Chief Sparks was line CPO for VQ-1 at Whidbey Island when the P-3 got stuck; he is now production control CPO at NAS Lemoore AIMD.

"Your line crew just buried an aircraft in the mud and your presence is requested."

The Empty Drop

by AO1 Steven Bell

Less than 48 hours ago, the command had recalled all hands to tell us we would deploy to the Red Sea in 96 hours to support Operation Desert Shield. We cancelled leave and cut liberty to a minimum. This was a stressful situation because we'd just returned from a full set of work-ups, a mini-cruise for a drug-interdiction mission in the Caribbean, and we had just begun to stand down. Not only would we have to leave our families for an indefinite time, we weren't ready to deploy.

It was the middle of a chaotic workday; all work centers were trying to put a dent in their workloads. Reports had to be written, engines changed, aircraft accepted, and dailies completed; you name it, and it was happening on this most memorable of days.

We'd given two of our four birds to other squadrons when we returned, and a third aircraft had no engines, so the pressure was incredible. We had to do three aircraft-acceptance inspections, and a fourth bird needed engines; only one bird was flyable. As if that wasn't enough pressure, aircrews had to start flying FCLPs in 24 hours.

At the time, I was both IMRL manager and the squadron's tool-control PO, so I spent very little time in the ordnance shack. On the second day of preparation, I wished I'd been assigned to the ordnance work center. Ordies handle bombs all the time—500, 1,000 and 2,000 pounders. You name it; we've handled it. On this particular day, though, nobody was prepared to deal with a 2,000-pound jettisonable store!

Maintenance Control (MC) ordered power plants and the ordnance shop to remove a drop-tank from one of our Prowlers to get it ready to remove an engine. This is a routine task for both work centers, but it requires a CDI to verify the tank is empty. Keep in mind that this particular mid-August day was anything but routine, and everyone felt the sense of urgency generated by a no-warning deployment.

When MC called the two work centers, neither supervisor was in his shop, so MC told junior personnel about the needed tank removal. Being hard-chargers, two AOANs and an ADAN mustered at a Prowler in the hangar to remove a drop-tank.

The ordies positioned themselves fore and aft on the tank; the mech would release the store from the bomb rack. The players were in place and ready to turn-to, but none of the three had checked out a dipstick or a checklist for the job. The mech assured the two ordies that the drop-tank was empty. The ordies hesitated, but decided to trust him. After all, he was highly experienced compared to the two of them.

This situation screams for operational risk management (ORM): Maintenance Control didn't speak to the supervisors, the can-do crew didn't use a checklist or a dipstick, and there wasn't a CDI or supervisor on the scene. In using the ORM process to assess risk and then manage it, keep in mind that change is the Mother of all risk.—Ed.

The ordies supported the store from either end, and the mech confirmed both were ready to lower it. When he released the tank, the unsuspecting ordies were trying to support 2,000 pounds of dead weight. You could hear the screams through closed doors in the hangar.

"Men down in the hangar!" Both ordies were badly injured—one had a broken back—both went to the hospital immobilized on backboards. The mech was visibly shaken and emotionally scarred for months. The ordie with the broken back was discharged with permanent disabilities, and the other made the deployment with chronic back pain.

There were several reasons for this accident—none justifiable:

- Our SOP and safety procedures should have prevented this tragedy, but our people got ahead of themselves while pushing hard to catch up.


o-Tank

- MC never should have told the most junior personnel in the shops to do a job without speaking to the supervisors first.

- Without supervision, no CDI certified that the drop-tank was empty—the airmen didn't use a checklist or a dipstick.

- Also evident were the lack of training for standard maintenance procedures, poor communication, and a lack of control in the work centers.

All three airmen, with the best of intentions, violated proven maintenance practices while trying to show they were part of a can-do team. If anyone in the chain had paused to use ORM and thought about the experience level of the airmen who were hurt, we would not have permanently injured two shipmates and emotionally scarred another.

This wasn't the first time a drop-tank mishap occurred. It's happened repeatedly over the years for one simple, inexcusable reason: Someone tries a shortcut to expedite a maintenance procedure. The most important lesson re-learned here is, no matter what position you hold in a command, don't let the urgency of the situation overwhelm you. Work at a safe pace and have the smarts to stop the job when you need help. Too much of a can-do attitude will result in a can't-do situation. 

Petty Officer Bell is LPO in the AO shop at VAQ-142.



Step 1
“Thump tests” don't work, and you can't always believe gauges. Dip the tank before you try to drop it.



Step 2
After dipping the tank to make sure it's empty, be sure the people at both ends of the tank are ready before you release it.



Step 3
If the man releasing the tank from the bomb rack doesn't dip the tank first, the Sailors at both ends are going to be holding roughly 2,000 pounds of thump-tested grief.

CATCHING



by Lt. Tim Hill, AMS3 Roderick Carnes and AMH3 Kedrick Joseph

During the tactile inspection of a right-wing down, roll-control cable in an S-3B, AMS3 Carnes felt a few small nicks or “catches” as he ran his lint-free rag along the cable. He told QA, did some research, and wrote a MAF to change the cable.

VS-30 had been ordered to verify a MRC deck for a proposed 602-day, special-inspection cycle. The new inspection called for checking flight-control cables. There is a similar requirement in the 448-day inspection. The difference is that you have to remove the Spectrum Analyzer Unit (SAU) for the 602-day cycle to do a tactile inspection of approximately 35 percent more of the roll-flight-control cable.

Later, while AMH3 Joseph was removing the nicked cable, he found more damage in

another location. Seven of eight wire strands had frayed, leaving only the “core” wire to bear the load. He reported the new fray, and a QA investigation determined that the cable had not been correctly routed through a pulley.

“Attention to detail and correct maintenance procedures probably saved that airplane and possibly some lives.” That’s what the skipper told us while pinning on our Navy and Marine Corps Achievement Medals. You can’t take shortcuts ever; you never know what you might find.

Seeing a flight-control cable so close to failing was quite a wake-up call. This cable was supposed to be removed at 3500 hours, but it still had more than 400 hours to go. We wanted to know what caused that cable to fray so badly.

A BIG ONE

The first step was to find exactly where the fray occurred. Two QARs, AMS1 Jon Hein and AT1 Jack Carlsen, and airframes-supervisor AMH1 Kurt Thornall, measured the location of the fray in the old cable and applied the measurement to the airplane. They determined the fray had been at the fairlead, behind the left-hand load-center.

The team decided that the cable must have been misrouted outboard of a pulley near the SENSO seat. The mis-routing caused the cable to engage the fairleads on either side of the pulley at an angle, rather than straight-on. The angle caused the cable to rub against the outer-corner side of the fairlead and, over time, fray to the point of near-failure.

This mis-routing must have occurred the last time the cable had been replaced or when other maintenance had been done that required disconnecting it from the cable tensioner.


The procedures to install and inspect the cables are sound. The MRC deck specifies inspecting the routing of the cable through the pulleys, both at installation and upon each 448-day inspection.

The lesson learned here is attention to detail. If you replace a flight-control cable simply by splicing the new one to the old cable and pulling

it through, the new cable will be routed the same as the old. If the old cable was misrouted, your newly installed cable also will be misrouted. Additionally, the mis-routing of this cable had not been discovered during any 448-day inspection or other maintenance since 1990.

Keep in mind that the most serious damage to the cable wasn't discovered until the cable had been removed. It was actually the small "catch" that prompted the initiation of a MAF for the removal. The major fray was probably hidden inside the fairlead during past inspections. The MRC deck requires moving the flight controls to expose hidden areas of the cable when inspecting it. This is a must and needs to be emphasized.

This is not a new problem in the S-3B. You might assume that the flight-control cables are the strongest parts of this system; in reality, cables wear much more easily than pulleys and fairleads. Proposed airframe changes are in work to correct this deficiency, but until then, we have to rely on diligent maintenance practices to prevent repeating old mistakes.

If the two metalsmiths had not done their inspection correctly and conscientiously, the cable could have failed in flight. 

Lt. Hill, QAO, AMS3 Carnes and AMH3 Joseph are assigned to VS-30.

Control Cable for Aileron Right-Wing-Down



This frayed cable is what one cause of a Class A mishap can look like before it happens.

Have a Cup on Us




There's nothing like experience to teach a lesson, and *Mech* wants you to share yours. We operate on the principle that you won't live long enough to make all the mistakes yourself,

but you can learn by reading about the mistakes and adventures of your peers without suffering the pain.

Your experiences and observations are valuable because what you've learned may save a life, make a job less dangerous, or redefine a burdensome task. You're living proof of the successes of the Navy's safety policies and operational risk management.

Your experience is a powerful tool when you share it with *Mech*. To show our appreciation, we

will recognize published contributors with a coffee mug that identifies you as a "*Mech* Author." You'll also receive a letter of commendation from the Commander, Naval Safety Center.

We've been getting lots of great articles. Please keep them coming, and write them as if you were talking to a friend—you are. 

For more information, contact Joe Casto, Mech editor, at e-mail: jcasto@safetycenter.navy.mil, or AMSC(AW/NAC) Darryl Dunn, in the Aircraft Maintenance and Material Division, at ddunn@safetycenter.navy.mil



Please Cut Off My Wedding Band

by AT2 Brian Dale

It was, for a change, not raining at NAS Whidbey Island. It was one of those stress-free summer days that don't happen often enough. There wasn't anything going on in the shop, and I wasn't doing much good sitting there, so I thought I'd go help a shipmate post-flight one of our Prowlers.

As we strolled out to the line, I sucked in the fresh salt air, enjoyed the sun, and whistled a little tune. I walked to the starboard side of the

jet and climbed the boarding ladder as I'd done hundreds of times. As I made my way from the aft cockpit to the forward cockpit, I felt an intense pain shoot up my arm. At first, I thought I'd lost a finger. I regained my balance on the boarding platform, and looked down at my hand. All the digits were there, but blood covered everything.


My wedding ring had gotten stuck on the aft canopy rail and nearly pulled off my finger.

The ring had scraped off several layers of skin all the way up to my knuckle. I was amazed at how far human skin will stretch. What was even more amazing was how a finger could hurt so much. I quickly went back to my shop where a shipmate used a pair of wire cutters to remove the bent ring.

Did I learn anything from this? You bet I did! I once believed my ring would never get caught on anything. Those stories I'd heard about people losing fingers were just that—stories. To my surprise, I didn't catch it on machinery or anything that normally takes

fingers, just a small ridge on the outside of the aircraft.

The pain made me think I'd lost a finger.

My mishap didn't occur during intense flight-deck operations or during a rush-maintenance job at night. It was a nice, sunny, stress-free day at Whidbey Island; a time, as I've learned, that is just as capable of ruining your day as a busy, stressful one. 

AT2 Dale is assigned to VAQ-131.



The author in the cockpit of an EA-6B; note the difference in thickness between his ring finger and the rest of his digits.

Blown Away

by AT3 D.J. Cuenca

I learned a harsh lesson about jet exhaust one beautiful, sunny afternoon on the roof for a hot-pump crew-switch. I was waiting for our E-2C. It trapped, and yellowshirts taxied it to elevator 1 for the grapes to refuel. Everyone in my flight-deck crew took their places in the safety chain.


Fifteen minutes later, the yellowshirts taxied an EA-6B toward us, and warned us they would have to turn it around in front of us. I saw the warning first and alerted the rest of my shipmates.

Preparing for the Prowler to turn, I grabbed a padeye and turned my back to the taxiing aircraft. When the yellowshirts turned it, the jet exhaust was right on top of me! The sheer force of the blast flipped me onto my back; I panicked and let go of the padeye. That's when my tool pouch spilled, scattering tools across the flight deck and sending me sliding toward a turning propeller. I was 18 inches from certain death before I got my wits back. When I realized how close I was to that prop, I grabbed a padeye and scrambled out from under the Hawkeye as fast as I could crawl. A squadronmate in the safety chain helped me up.

I had the shakes for the next week, and I was also angry. Why didn't the yellowshirts consider the people in the E-2C safety chain? That EA-6B had been the last bird to recover—they could have taxied it elsewhere. The Air Boss could have given the flight-deck crew a heads-up on the 5MC about the impending jet blast.

I complained to my shipmates and discussed my anger. One of them made me realize that if I hadn't done everything I'd been trained to, i.e., grab a padeye, I would

be very dead instead of very scared. He said, "You may think the rules and precautions are unimportant and stupid, but they saved your life."

As hazardous as others may make it for you on the flight deck, you are still responsible for your own safety. Had I used the ORM process, I'd have moved out of danger instead of trying to save a few steps and almost getting blown into that spinning Cuisinart. It was me against the jet wash, and I almost lost. 

AT3 Cuenca is assigned to VAW-123.



Standing guard near a propeller sounds easy, but it can get tricky when other aircraft are taxiing nearby.

Watch Out!

Nothing's Happening on the Flight Deck!

by AE3 Mathew D. Smith

The flight deck is dangerous even when aircraft aren't turning up. This was my second cruise—the roof wasn't new to me, so I felt like a veteran because I knew how to avoid hazards up there, at least I thought I did. It was slow that night aboard USS *John F. Kennedy* (CV 67). Flight ops were over, so turning aircraft were not a problem.

At about 0100, my supervisor sent me to remove a faulty attitude-direction indicator from one of our Hawkeyes. I checked out my tools, read the removal procedures in the MIMs, and was on my way.

After pulling the indicator, I climbed out through the main-entrance hatch of the E-2C and walked around the propeller making sure I cleared it—but there was another problem. I was so engrossed in avoiding the prop arc that I didn't see an FA-18's horizontal stabilizer in my path. I caught it across my nose and just under my left eye—it really hurt.

I gathered my tools and headed back to the shop. I didn't realize how badly I'd been hurt until I arrived back at the work center. From



there, I went straight to sickbay where it took 11 stitches to sew me up. I didn't lose an eye, but the laceration was just a fraction of an inch below the eyelash on my lower eyelid.

FA-18s usually aren't spotted where this one happened to be that night, and I learned a valuable lesson the hard way. Don't think the flight deck is safe when flight ops are over, because about the time you let down your guard, a Hornet just might sting you. 🦅

AE3 Smith is assigned to the Screwtops of VAW-123.

Getting comfortable on a flight deck at night can affect your vision.

Oops! Did

by LCdr. Mark Horn

At 2330, a ringing telephone woke me up. A familiar voice said, “We have a fuel spill in the hangar. You may want to get down here.” Twenty minutes later, entering the hangar, I was hit by the pungent smell of JP-5. As I rounded the final corner, I saw dozens of people using fuel diapers and fuel-collection barrels; others were acting as safety observers and a few were conferring with the fire chief.

Although the troops had handled the situation well, and the fire chief complimented our efforts, we had spilled about 300 gallons of jet fuel from one of our aircraft and managed to soak three of our people with fuel. For years, our superiors had lauded our safety record. We had 113,000 hours and 28 years of Class-A flying without a mishap. Now we had proven that hazards still could bite us. Where did we go wrong?

Welcome to Operational Risk Management 101.

At 2100, work-center (WC) 110 told maintenance control they were short one fuel-access panel to complete work on aircraft 707. After reviewing projected aircraft-use charts, the maintenance control chief (MCCPO) identified a rob-panel; it was on the phase-inspection aircraft (703).

Whenever we open a fuel cell, maintenance control assigns someone to verify the fuel load. They assigned WC 310 the job and were told “only a trickle of fuel came out, and the



Cleaning up a fuel spill is slow work, a pain in the tail-feathers and messy—did I also mention dangerous?

We Do That?

gauge read less than zero.” Armed with this knowledge, the MCCPO assumed that 703 had been de-fueled and that the A-sheet (which read 4.1k) had not been updated. The MCCPO then directed WC 120 to remove 703’s panel.

The WC supervisor directed his people to comply. Without consulting the MIMs, the assigned crew leader, an ADAN, and another AN drew tools and PPE and went to work. As they removed the panel fasteners, fuel trickled out. Using good judgment, the AN re-installed several fasteners and secured the trickle. The two mechs then told the WC 120 supervisor, who together with WC 110’s supervisor, directed jacking one wing to move residual fuel inboard of the panel. After jacking the wing, the troops once again tried removing the panel, but it was stuck, even with all the fasteners removed. The AN hit the panel to knock it loose, and 300 gallons of JP-5 gushed down on him and his crew leader. An immediate collection effort contained the fuel within the footprint of 703.

Failures that led to the spill:

- Not trying to defuel. You always should assume the worst case—a fuel load.
- Misunderstanding the trickle of fuel. If something leaks, there is fluid behind it.
- Jacking one wing is not in the MIMs.
- Beating a panel damages the panel. Why was the panel stuck?
- Not checking the fuel dump and fuel-tank drain. These procedures are in the MIMs.

Let’s break ground by conducting an investigation and applying ORM to this potentially deadly and wet incident. Monday-morning quarterbacking can be educational.

Step one—Identify hazards of removing fuel panel:

Fuel spill; slippery deck; fire; personnel injury (fuel in the eyes, on the skin, fuel-

soaked clothing, exposure to fuel vapors) falling objects; falling off ladder; equipment damage (fuel-soaked, corrosion, rubber damaged by petroleum); environmental damage to plants and animals; fire (smoke by-products, heat, explosions).

Step two—Assess risks associated with the hazards:

1. Fuel spill - medium
2. Personal injury - low
3. Equipment damage - low
4. Environmental damage - medium
5. Fire - medium

Step three—Make risk decisions:


Does the benefit outweigh the risk? Yes—we safely repair down aircraft.

Step four—Implement controls:

1. Fuel spill—good housekeeping, PPE, fuel-spill kit; emergency SOP.
2. Personal injury—PPE, training, command fire bill.
3. Equipment damage—spill kit, training, command fire bill.
4. Environmental damage—emergency SOP, spill kit, safety instructions.
5. Fire—fire-protection systems, fire bottles, training, fire bill.

Step five—Supervise:

- Review all procedures,
- Make no assumptions,
- Assign level of supervision,
- Review personnel qualifications,
- Ensure tool control,
- Follow maintenance instruction manuals,
- Make sure everyone understands,
- Follow up.

If we had applied ORM, we could have prevented the fuel spill. 

LCdr. Horn is the safety officer at VS-31.

Maintenance Work

by GySgt. Richard Hutchins

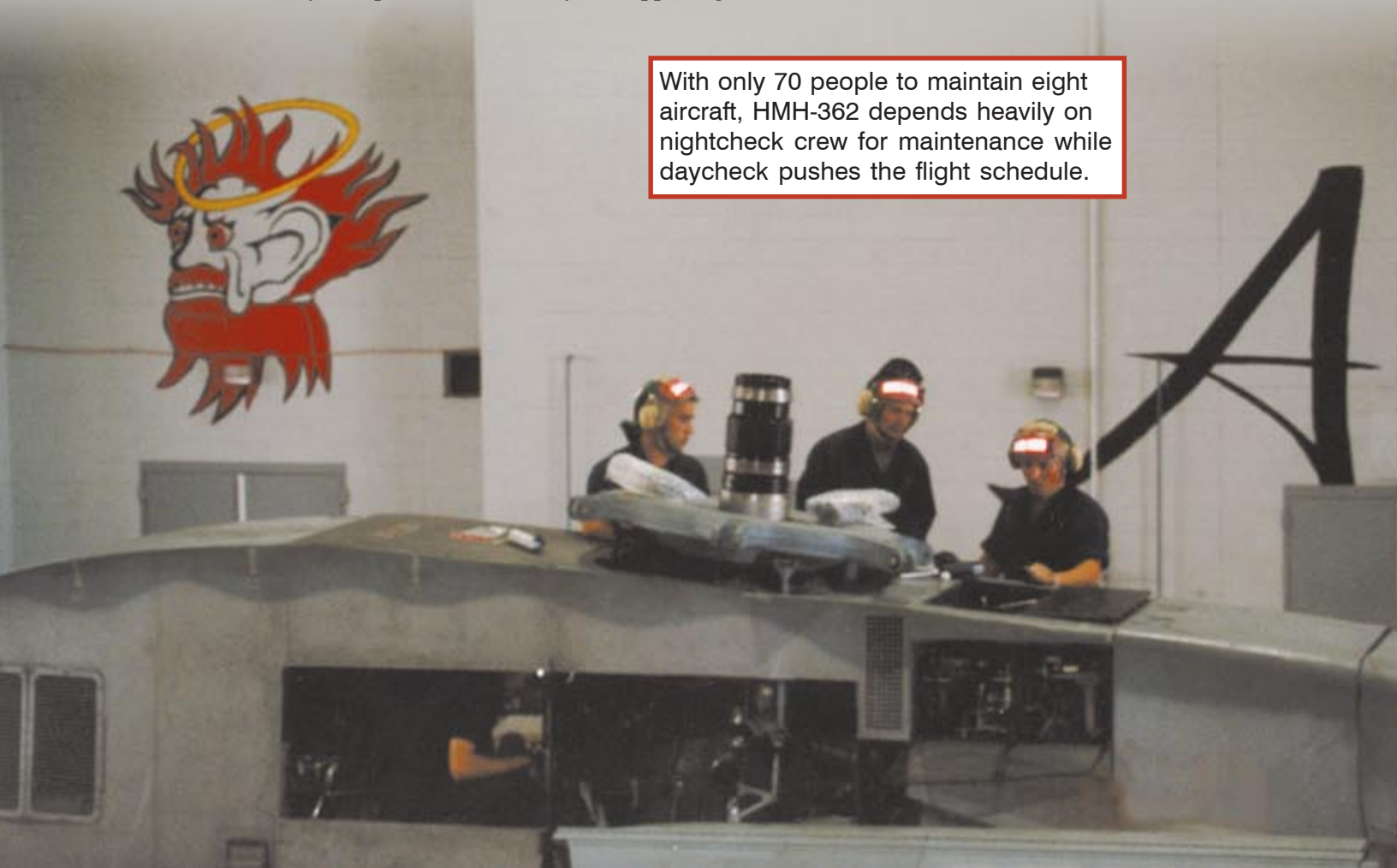
As a maintenance controller in a helicopter squadron, I find it refreshing to start the week after a weekend with the family. However, our maintenance department had worked through one weekend to get four aircraft up for the week's flights, plus the flights that didn't get out last week. So this Monday was different; our precious day of maintenance had been canceled because of the low number of sorties flown last week. I thought, "No biggie," maintenance days have been canceled before. We'll just have to make it up somehow." Besides, Sunday's nightcheck crew had managed to get four aircraft up by staying until early Monday morning—just another 14-hour day.

Manning levels in an eight-helicopter squadron include about 70 maintenance personnel. When we work a night crew, daycheck gets very little production done beyond supporting our

flight schedule. That's why we rely heavily on our night crew to do the bulk of maintenance. Daycheck comes in at 0600 and leaves at 1800, while nightcheck reports at 1600 and leaves at 0500. This week looked to be no different, as the day crew began preflighting aircraft for today's flight schedule.

The first wave on the flight schedule launched without incident, but 20 minutes after the launch, Ugly-14 called to tell us they'd landed on the one-oh-one pad with a main-gearbox chip-light. They had shut down without incident. We pulled the chip detector, and QA said we would have to R&R the gearbox because of the size of the chips we found. To make matters worse, we had to extend the flight schedule to include two frags from Friday. Any other flights that didn't make it today would be tacked onto tomorrow's schedule.

With only 70 people to maintain eight aircraft, HMMH-362 depends heavily on nightcheck crew for maintenance while daycheck pushes the flight schedule.



Load or Overload?

No problem—the maintenance department likes a challenge; we just had to make a few adjustments, that's all. The troops heard, "Daycheck will come in an hour earlier and stay an hour later to augment nightcheck's efforts. Nightcheck will do the same. Any questions? OK, lets get to work." There was the typical grumbling from the troops, but we had been hearing it a lot lately.

Ugly-14's main gearbox was maintenance intensive, and the pressure was on to change it quickly and test it in time for Friday's frags. At the same time, nightcheck was putting an aircraft back together from an ASPA inspection, which could make it a player Friday.

Wednesday I began to lose my sense of humor. I found myself being short with some of the shops about piddling things, which in the past, hadn't seemed to matter. I also noticed that most of our people were dragging their feet—they took longer to finish jobs. "I'll fire 'em up a little," I thought to myself. Gunnies have to do that every now and then.

Daycheck was still trying to get the flight schedule out each day, but the number of flyable aircraft had dwindled to three, while the flight schedule had expanded to two full pages. Combining this with trying to get an aircraft out of phase inspection put extra helpings on our plate of things to accomplish by Friday. We'd make it just in the nick of time like we always do.


On Thursday the entire squadron seemed to be cursed. Everything we touched broke. Simple jobs were getting done, but in the process, bigger things were breaking. Changing a fan belt, a mech couldn't stretch the belt over the pulley. Adjusting the pulley, he bent the shaft and created 20 more man-hours of work. Then another mech stood on a cowling he wasn't supposed to, and punched a hole through it—two days extra work. Two missing tools cost us even

more precious maintenance time inspecting all our aircraft—we only found one of them. Everybody was feeling pressure.

Suddenly, the MO shouted, "Stop!" He had convinced the CO that progress had been nonexistent for two days. The MO and Ops O cancelled the frags; then the rest of the week's flight schedule got canceled. Friday became a promised maintenance day, and the weekend was ours to do with as we wished. The following Monday was also a maintenance day to fix our abused aircraft.

With the end of the month near, we slowed our flight schedule to concentrate on readiness numbers—which had taken a beating over the last couple of weeks. The following week, the MO got all the SNCOs together to discuss what had happened the week before. The common denominator was fatigue and maintenance overload.

Suddenly, the MO shouted, "Stop!" He had convinced the CO that progress had been nonexistent for two days.

The can-do spirit is high in our community, and I'm forever amazed by what we accomplish with so small a work force. However, we have to set realistic goals for flight and maintenance schedules. Using risk management, we could have avoided the trap of piling on missed flights. That just complicates the maintenance effort by compounding the normal operations-versus-maintenance contest. The pressure felt by the troops was fierce. I'm learning to recognize when maintenance personnel and squadron resources are overworked. Fatigue is tangible and dangerous to both people and aircraft; using the ORM process can protect both. 


GySgt. Hutchins is assigned to HMH-362 in Kaneohe Bay.

Where There's Smoke...

by LCdr. Gary D. Brose

Our LAMPS detachment had done a good job getting the hangar ready for sea. They had found a place for everything, and everything was securely in its place. Unfortunately, in trying to maximize the available space in overhead storage trays, the Sailors had tied a NALCOMIS-transport container directly in front of an overhead floodlight.

An alert technician in the det noticed the problem and didn't like the way the box had been secured. When he climbed up to rearrange the shelf, he saw that heat from the floodlight was so intense that the box had begun to smolder. The container was made from a material that didn't burst into flame.

The lesson learned: Keep flammable materials away from high-intensity lights. 

LCdr. Brose is O-in-C of an HSL-48 detachment.



BRAVO ZULU



AE3 Frank Knoll
VF-14

During a night launch aboard USS *Theodore Roosevelt* (CVN 71), AE3 Knoll, a troubleshooter, was helping launch Camelot 202 from cat 2. After one aircraft launched with a green deck-status light, Camelot 202 went into tension and full afterburner, awaiting final launch approval from the catapult officer. AE3 Knoll looked back and noticed that the deck-status light had switched to red. He immediately suspended the launch.

AE3 Knoll's sound judgment and prompt action prevented an aircraft from launching when the deck wasn't ready, thus preventing a possible mishap.



AN Mericdieu Accuis and AN Terrence Roach
VS-31

AN Accuis (plane captain) and AN Roach (plane-captain trainee) were guiding the crew of Topcat 700 through their final-systems checks prior to launch. As the engines roared and the final-checkers scurried, the plane-captain duo noticed a hydraulic leak under an engine cowling. After signaling the pilot to secure the engine, they directed troubleshooters to investigate.

The troubleshooters found that a hydraulic-cooler gasket had failed, resulting in the system losing most of its fluid. The observation and quick response by Accius and Roach prevented a possible in-flight hydraulics failure and preserved vital hydraulic-system components.

AMHAA Philip A. Aurelio
VFA-203

AMHAA Aurelio was a nozzle man refueling FA-18 aircraft in the hot-pit. While securing his area, he saw a Hornet taxiing from an adjacent fuel pit to the ordnance-loading area, with the fuel-servicing door and fuel cap not secured.

He quickly ran to the aircraft, stopped it, and secured the cap and door. His quick thinking and take-charge attitude prevented a possible engine FOD and an aircraft mishap.

AMHAA Aurelio was awarded the Navy and Marine Corps Achievement Medal from Commander, Carrier Air Wing Reserve Twenty for the superior performance of his duties.



Navy Photo by PH2(SW) Jackie Henderson



Cpl. Michael J. Hartnett II
HMH-362

Cpl. Hartnett, a flight-line mechanic and aerial observer, was checking the automatic flight control system (AFCS) compartment of a CH-53D during a post-phase inspection for hydraulic leaks. He noticed the yaw servo shifting almost imperceptibly with control movement. He called for airframes and QA support.

After airframes had tightened the servo, Cpl. Hartnett took the initiative to re-inspect and again observed the shifting. He believed others were having difficulty perceiving the movement because the compartment floor the servo was mounted upon also shifted with control movement.

Upon closer inspection, QA found a support brace under the AFCS compartment had separated from the floor. The aircraft would require a planner and estimator (P&E) and field team for repair.

Cpl. Hartnett averted a possible in-flight emergency because of flight-control failure.



AMS2 Wilbert Wiggins
VAW-125

AMS2 Wiggins was in the safety chain on the port side of Tigertail 603 during Operation Deliberate Forge in the Adriatic Sea. The E-2C was spotted aft of elevator 2, just forward of the island, with very little room between the safety chain and the forward part of the island.

While the pilots prepared to taxi, ordies began moving a missile between the E-2C and the island. As they passed the safety chain, a plastic cover blew off the missile and flew toward the spinning No. 1 prop. One of the ordies ran right at the prop trying to retrieve the cover. AMS2 Wiggins, realizing the danger, grabbed the ordnanceman and pulled him away from the turning propeller while the FDC signaled for the pilot to shut down the port engine.

The missile cover rolled to starboard, beyond the wing, where another member of the chain retrieved the cover before it could FOD other aircraft. AMS2 Wiggins and the safety chain saved a shipmate's life.

AMS2 Wiggins has since transferred to VAW-120.

BZs require the squadron CO's endorsement, or the O-in-C of a detachment (serialized letter or memo addressed to Commander, Naval Safety Center and only signed by the CO). Include a 5-by-7 inch photo of the candidate, in correct working uniform by a squadron aircraft. We will accept e-mail submissions if the photos are at least 300 dpi, in JPG or GIF format. If you send a squadron zapper, we'll use it. A BZ is above and beyond the norm—not just a job well done. Include a phone number in case we have questions. Send e-mail to jcasto@safetycenter.navy.mil.



AD2 Todd M. Ennis
HS-7

During a routine inspection of the tail-rotor drive-shaft and axial-fan assembly on an SH-60F, “Dusty Dog” 613, AD2 Ennis noticed that the outer edge of the elastomeric bearing on one main-rotor blade-spindle was displaced approximately a quarter inch.

Although the discovery was beyond the scope of his job, AD2 Ennis reported his find to Maintenance Control, then inspected the bearing more thoroughly. He found that the elastomeric bearing had split and was 75 percent separated from the inside of the spindle, which is where the rotor blade attaches to the main-rotor hub.

Had he not followed up on his discovery while working in a different section of the aircraft, the bearing could have failed in flight.

AN Patrick Soliman
VAW-117

During a turnaround inspection on Wallbanger 603 aboard USS *Carl Vinson* (CVN 70), AN Soliman, an E-2C plane captain, discovered a cracked fitting on the port-forward MLG door as he completed the MRCs. He immediately told the FDC and a QA rep.

Close inspection determined that the landing gear door had to be replaced before another flight. Airframes quickly replaced the door and returned the aircraft to up status.

AN Soliman identified an elusive discrepancy that could have caused an unsafe landing-gear indication and severely damaged the aircraft.



AO2 Troy T. Paulin
Naval Weapons Test Squadron
Point Mugu

AO2 Paulin, an ordnance-arming crew leader, was watching troubleshooters complete their final checks on a squadron F-14. He saw a rivet fall from the aircraft’s nacelle, caught in the vortex of the Tomcat’s starboard engine. He immediately reacted by maneuvering under the nacelle and grabbing the rivet in midair.

AO2 Paulin’s cat-like reflexes averted FOD damage to a Tomcat’s engine, which costs approximately \$65,000 to repair.



CROSSFEED

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ALSS

“HABD” Doesn’t Mean “Have Another Breathing Device”

by PRC(AW) Bill Yeager

HMRs have warned of discrepancies with the new SRU-40/P HABD (helicopter aircrew breathing device). Among the major reported problems are:

- Loss of some or all pressure during flight in either open or closed position in cold environments.
- Second-stage purge covers fall off, possibly because of aircraft vibrations.
- Second-stage exhaust valve covers have cracked, possibly because of the user mishandling the HABD.

The Naval Air Warfare Center Aircraft Division (NAWCAD) and US Divers, the manufacturer of the HABD, are fixing these problems.

When the outside temperature is 0 degrees Celsius or below, the HABD leaks because of the degradation of O-rings, diaphragms and rubber seats. US Divers has developed a cold-weather kit for the HABD that is in the fleet now. NAWCAD is developing an IACC to install the cold weather O-rings as part of an annual inspection.

NAVAIR and the manufacturers are doing their best to correct fleet-reported deficiencies, and the fleet must do their part to protect their survival equipment. Only then can we be sure that when it's needed, it will work as advertised.

Consult COMNAVAIRWARCENACDIV PATUXENT RIVER MD 041125Z AUG 99 for in-depth information.

PRC(AW) Yeager is a maintenance analyst at the Naval Safety Center.

Torso-Harness Fitting and Parachute-Packing Update

by PRC(AW) Bill Yeager

Recent hazreps from the E-2 community emphasize the importance of a properly fitted torso harness. An ill-fitting harness can injure the aircrewman who uses it. An article in China Lake's *Parachute ISST Notes* expands on this topic and gives detailed fitting procedures. The article says, in part: "All harness rise (the amount the canopy-release rises when the aircrew is suspended)

comes from the saddle. Body fat, muscle tissue, and saddle size all play a part.

"The correct harness fit begins with the correct size saddle. The cross-through of the leg strap and the main sling should be near the hip joint. Also, the saddle anti-rotation straps (cinch-straps) should be adjusted to prevent the pelvis from rotating out of the saddle. If the saddle anti-

rotation straps aren't adjusted, everyone will rotate out of the saddle. Over-tightening these straps can put the crewman's legs to sleep; they only hold the harness in place and are not an adjustment."

The article also details how to fit the main-sling webbing and canopy-release fittings. Tests being

conducted will change the inspection cycles of the NES-14 and NB-8 parachute assemblies from 672 days to 4 years.

For more information on any torso harness issue, contact Michael Martin at DSN 437-0822 or your Fleet Air Introduction Liaison Survival Aircrew Flight Equipment (FAILSAFE) representative.

Guess What? It Isn't Optional

by AMCS (AW) M. W. Callahan

I usually visit the liquid oxygen (lox) servicing area during Safety Center surveys. Recently, I spent some quality time with a "lone man from lox." I call him that because after a few minutes, I learned he'd had his lox license more than a year but wasn't aware of the mandate for two qualified people to fill converters. The discussion switched to personal protective equipment (PPE) for working with lox; he was wearing flight-deck boots instead of molder's shoes and missing an apron. He thought those critical items were optional.

We even went to his work center to train on what PPE you must wear when servicing lox

converters. I showed him paragraph 3-46 of NAVAIR 13-1-6.4, which directs you to wear a cotton-duck, rubber-coated, impermeable apron, an industrial faceshield, explosive handlers coveralls, molder's shoes, and leather welder's gloves. Nowhere in that paragraph did it say that any of the PPE is optional.

Supervisors, make sure everyone who works with lox understands the physical requirements for servicing converters, and be certain your people are correctly equipped. Handling lox is dangerous enough without worsening it with no training and incorrect PPE.

AMCS(AW) Callahan is a maintenance analyst at the Naval Safety Center.

HAZMAT

Hazmat – Don't Wear It, Drink It or Splash It in Your Eyes

by AMCS(AW) Joe Huerd

If you're a work center supervisor, you have to give your people job-specific training on hazardous material when they report aboard and annually thereafter.

People must understand protective measures by training on personal protective equipment (PPE), work practices and emergency procedures. For your next scheduled HAZCOM training, conduct a drill in your work center. Simulate an emergency where a shipmate swallowed a chemical, got it in his eyes or inhaled the vapor.

Monitor your people's responses. Observe how they use the MSDS binder as they rush through it looking for the emergency or first-aid

procedures in that five- or six-page information document.

The health-hazard section shows the mixture, route of entry, acute health hazards, chronic signs and symptoms of overexposure, medical conditions aggravated by exposure, emergency and first aid for skin, eyes, stomach and lungs. Because all the sentences in this section are single-spaced and the information blends together, it's easy to overlook the information while trying to find it in a hurry.

You easily can see the words "Emergency and First Aid Procedures" when they're highlighted. If you tab the frequently used hazardous-materials

page, highlight the item and the “Emergency and First-Aid Treatment” section, you immediately will focus on the information that will save your shipmate’s eyes.

Note: OPNAVINST 5100.19C section B, OPNAVINST 100.23E chapter 6, and appendix 6-

B give training requirements for management, supervisors, and non-supervisory personnel. All hands must be trained on the dangers and precautions found in the MSDS before using those materials.

AMCS(AW) Huerd is a maintenance analyst at the Naval Safety Center.

MAINTENANCE MANAGEMENT

Tired of Audits? A Spreadsheet Solution

by Cdr. Stephen C. Jones, Jr.

When trying to improve a process, managers should reduce paperwork. One of my pet peeves was the amount of time my QARs, CDQARs, CDIs, and senior POs spent running, reviewing and routing the paperwork for programs and work-center audits. Each shop is audited quarterly, and every program gets audited at least annually. In an AIMD with 50 or more work centers and most programs running, my knowledgeable leaders were shackled to clipboards or desks.

Once, through a coincidence of paperwork routing, I reviewed a work-center audit immediately after reviewing a program audit. Many questions in the program audit were identical to those of the corresponding section in the work-center audit. I asked the QACPO to pull down a copy of the CSEC checklist for a work center covered by most of the programs and the corresponding checklists. We saw that not only were the two sets of questions the same, the question numbers were identical! We’d been asking the same questions twice in different contexts. No wonder the collateral-duty POs hated audits. I wondered if we could look at the information already collected to satisfy a different question? I asked the QACPO to prepare a spreadsheet for a program covering multiple work centers.

	Program A			
	W/C #1	W/C #2	W/C #3	W/C #4
QUEST 1	y	y	n	y
QUEST 2	y	y	n	*
QUEST 3	n	n	n	n
QUEST 4	*	y	n	y

Fig. 1

Fig. 1 is an example of the spreadsheet we

prepared for each program. We then filled in the results of the questions. For ease of management, Y for a correct answer, N for an incorrect answer, and an asterisk for not applicable.

We placed the spreadsheet in a program folder with a copy of the CSEC Checklist. With this overview, the first thing we questioned was the number of not-applicable answers—particularly whole programs that the work-center supervisors had convinced the QARs didn’t apply. This sent a few QARs back to the work centers to ask more in-depth questions, and we got a better picture.

Previously, I never had a real feel for how things were going or if the work center had problems. The spreadsheet permitted me to look at a work center by itself or in terms of the overall program.

	Program A			
	W/C #1	W/C #2	W/C #3	W/C #4
QUEST 1	y	y	n	y
QUEST 2	y	y	n	*
QUEST 3	n	n	n	n
QUEST 4	*	y	n	y

Fig. 2

Figure 2 shows that no one correctly answered question 3. That indicates either a misunderstanding on the part of the auditor or a need for training in this area for the collateral duty petty officers.

	Program A			
	W/C #1	W/C #2	W/C #3	W/C #4
QUEST 1	y	y	n	y
QUEST 2	y	y	n	*
QUEST 3	n	n	n	n
QUEST 4	*	y	n	y

Fig. 3

Figure 3 shows a work-center perspective—the program in W/C #3 is dead and needs attention. The first spreadsheet seemed to provide such clear direction, we decided to use the previous quarterly audits and apply them to all the programs.

We taught the program managers how to fill out a spreadsheet. (The first round was labor intensive.) Then they reviewed the spreadsheet with the QAR who monitors the program. That's when the QAR and the program manager reviewed the few questions applicable to the manager. Initially, we chose 70-percent 'Y' as indicative of a healthy program or work center. If the QAR was uncomfortable with the condition of a work center or program, he involved the QACPO, who decided if the AIMD Officer should review the situation.

Once the system was fully operational, it became easy for me to review the programs each quarter. Also, we could bounce the previous spreadsheet off the new one and tell at a glance whether we were declining or improving.

After the first effort, everyone wanted to continue the procedure. The next quarter, after a work-center audit, the program manager (or QAR if he was feeling generous) would update his spreadsheet. The spreadsheets were maintained in QA's computer so the monitor could review it. Frequently, they identified problems before the end of the quarter and began working on a solution, which was forwarded with the spreadsheet. My life became easier. Rather than wading through checklists, I had a quick overview and a plan for correcting problems.

The benefits were obvious:

- one less person coming through a work center with a checklist
- almost immediate feedback on the health of a program or work center
- the ability to focus on an area to correct
- less paper in the pipeline.

There were no downsides.

Cdr. Jones is an avionics LDO and the NAMTGHQ liaison officer in PMA-205. His previous tours include AIMD officer, squadron MO and CAGMO.

POWER PLANTS

Why Control Rags?

by ADCS(AW) Val Calderon

Maintenance people sometimes don't understand that rags should be controlled the same as tools. Even though rags can become FOD hazards, Sailors at some commands I've visited regard rag control as an inconvenience.

Whether you use red rags, a cut-up assortment of bundled clothing, paper towels or lint-free cloth, treating rags as tools will diminish your FOD hazard.

Rag control wasn't an issue at one of my previous squadrons until we almost had a mishap because of a rag that had been left near the transmission area. We felt we'd been blessed that day, and we began using tool tags to track rags; it works.

Consider this near-miss by another helicopter squadron: During a post-flight and daily-turn-around inspection, a nightcheck plane captain discovered a rag wrapped around the NR 1 section of the tail-rotor driveshaft (short shaft). The rag had become entangled in the engines' cross-

feed fuel lines. It severed one fuel line, damaged the other, and disconnected the starboard fuel hose from the cross-feed breakaway valve. Fortunately, the tail rotor drive shaft sustained minimal damage.

Line personnel found small pieces of the rag all over the area. The rag had been used during a daily inspection to clean the bifilars after an aircraft wash. The pilots who preflighted that night also missed the rag. Because damage to the shaft was minimal, the cost of mishap was less than \$1,000—it easily could have become a Class A mishap.

The commanding officer summed it up well: "Naval aviation has a strict code for tool control that has been written in blood over the years. We were extremely lucky that we didn't add another statistic to that book. Rags must be treated just like any other tool. They are used for a specific job at a specific time and must be accounted for just like any other tool in the inventory."

“A number of factors contributed to this incident; key among them were improper tool control, lack of attention to detail by the individual who left the rag on the aircraft, and the aircrew responsible for the preflight. Whether it was simple

complacency, or a perceived pressure to accomplish the mission that allowed the rag to be overlooked, this incident had all the necessary ingredients for a mishap.”

ADCS(AW) Calderon was a maintenance analyst at the Naval Safety Center before he retired.



A rag become entangled in the engines' cross-feed fuel lines and damaged them.



A plane captain found these remains of a rag wrapped around the NR 1 section of the tail-rotor driveshaft.

ORDNANCE

Look for Common Mistakes in Your Ordnance Program

by MSgt. Randy Leer

NAVSEA OP 5, Vol. 1, CH 2 Para. 2-3 directs, “All military personnel, including reservists, who handle explosives or explosive devices, or operate motor vehicles or power-operated handling equipment, shall be given physical examinations every five years.” While doing aviation safety surveys for the fleet, I’ve found some common discrepancies. The most common is personnel handling ordnance without being certified medically to do so.

I began one survey by checking training records for physicals; none existed. I also found qualifications and certifications had expired for several people who handle ordnance. Be aware that two of the first things investigated in explosive mishaps are medical certifications, and whether ordnance qualifications and certifications of the people involved are current.

Ordnance supervisors and QA safety officers are responsible for keeping their people current.

Listed below are the more common discrepancies noted during surveys. How does your shop stack up?

- No training syllabi or ordnance OJT.
- The resistance of ordnance grounding straps is not checked annually and documented.
- AEPS/CADS are not marked with indelible ink with the open-container date and the expiration date for after the sealed container has been opened.
- The material condition of ordnance-handling equipment is not being maintained or inspected according to MIMs and MRC decks.
- A NARS manual and file has not been established or isn’t current.

- AEPS/CADS stored in the ready-service locker are not tracked according to local safeguard measures.
- The work center does not have a key custodian for the ready service locker designated in writing by the command.
- The work center doesn't maintain an authorized-access list for the ready-service locker or the list isn't current.

- The work center has not verified their weapons-loading manual or weapons checklists for currency against NA-01-700 Airborne Weapons/Stores manual.

Review your ordnance program. How well does it stack up?

MSgt. Leer is an ordnance and weapons analyst at the Naval Safety Center. You can call him at (757)444-3520 ext.7140 (DSN 564), or e-mail him: rleer@safetycenter.navy.mil.

How to Shoot Photos for Naval Safety Center Magazines

by Derek Nelson



Photo by PH2 Matthew J. Thomas

make them not look posed. It takes time for people being photographed to relax and forget about the camera. Since the best photos show action, instead of having the subject pretend to do a task, try having them actually do it.

People

Simply put, people like looking at photos of people. Photos of inanimate objects are very hard to make interesting. If you can't think of any way to involve people in your photos, give the editor a call to discuss this problem, and we'll try to think of some alternatives.

Digital cameras

Use the highest resolution setting available on your camera. Magazine print quality is at least 600 dpi; 300 dpi is acceptable, but below that, photos start to look fuzzy and crude. We realize that high-res settings take more memory and create larger files, which make them harder to store and e-mail, but they are necessary for professional magazines.

Traditional film

We still use lots of 35mm color photos, of course. We can scan either transparencies (which are preferable) or prints.

Posing photographs

Although it is often necessary to pose or stage the photos that accompany articles, the trick is to

Light

Natural light is best for photos, although skilled photographers can use strobes effectively. In hangars and workshops, getting enough natural light is a challenge, but do your best. If you use a strobe or other types of artificial light, make sure that the background isn't too dark or your subject will be too bright. This problem is called "flash burn".

If you're unsure of the quality, have your local photo lab (aka Imaging Command) send you a photographer to do your shoot. They are very cooperative and skilled at their trade; then mail us the glossies with a copy of your article. Give us their name and we'll make sure to give them credit. All photographers like seeing their work in print.

WAUKESHA WAS KING

by Joe Casto



In the '50s and '60s, guys from the public works department repaired check stands, cherry-pickers and jacks. People from the transportation department fixed tractors, NC-8s and hydraulic jennies. It took a long time to get equipment back from the civilian mechanics, but it was in good shape when you got it. The problem was in keeping it that way. You see, the squadrons that used the equipment day to day were responsible to keep it operating. And they did, sort of.

Our SE usually went belly-up fast, so we set up temporary shops to apply band-aid fixes to the equipment until it got so bad we had to send it back to the civilian mechanics. CPOs ran those temporary shops with “volunteer” mechs, metalsmiths and electricians TAD from the supported squadrons. Sometimes the volunteers weren't real happy about their temporary vocation—that's when you couldn't keep SE running.



There were always parts on order, and batteries mysteriously disappeared from NC-8s, tugs and Waukeshas. Spark plugs, brake pads, generators, starters, radiator cores and tires also disappeared from stock shelves as if by magic, and the equipment was perpetually out of gas.

That's when we established the AS rate-aviation support-equipment technician. Soon thereafter, SE evolved into state-of-the-art technology because CPOs and maintenance mustangs (LDOs) running the new shops met once or twice each year and made their needs known to DCNO (Air), now N-88. The fleet got new support equipment; it was technically more demanding than the old Waukeshas, NC-8s and tow tractors, but much more reliable.

In self-propelled equipment, for instance, engine operation is controlled electronically with speed ranges selected through circuits. Mobile-electric-power units electronically control frequency, voltage and protection modules. SE technicians even maintain integrated computers, microprocessors and fiber-optic circuits in the A/S32A-35 and A/S32A-36 shipboard cranes. As you can see, the equipment had become too sophisticated to maintain with temporary help. Today's support-equipment technicians have to learn metallurgy, hydraulics, pneumatics, refrigeration, cryogenics, internal combustion engines, gas turbines, turbine compressors, and chemical corrosion to keep our SE in good shape.

Sophistication is also why we have SE operator schools, and the Naval Aviation Technical Engineering Corps (NATEC, formerly NAESU) with tech reps (such as Ralph Holland and Dwight



Fraser in Norfolk) available worldwide. NATEC reps will support you with teams that aren't restricted to particular disciplines or systems, but possess a broad range of technical skills. The fleet's skill level varies from year to year because of transfers, cutbacks, and a shortage of skilled SE technicians.

For help repairing all aviation support equipment (including SE, power plants, avionics and hydraulic systems) in the AIMDs, you must first determine if the asset is an I or O level repair. If it isn't, you tell the IMRL manager in your command. He will send a request to the TYCOM. Each TYCOM has an aviation SE rework-and-repair manager who will schedule a repair team. Otherwise, you just turn it over to AIMD.

Fifty years ago, you had to lift and push a very heavy Waukesha auxiliary power unit (APU) that had only two wheels. You moved it like a pushcart (and you fixed it yourself) out to start a Hellcat, Spad, or T-28. Now you have self-propelled huffers and APUs with specially trained operators in your outfit. You can even call maintenance control on a battery-powered radio and have them send out an SE-troubleshooting van. You don't have to fix SE before you can use it anymore. That really makes me feel like a dinosaur.



Flight, Flight-Related and Ground Mishaps

Class A Mishaps

Aircraft	Date	Command	Fatalities
F-14B	10/21/99	VF-143	0
A Tomcat crashed into the water following a cat shot.			
FA-18A	10/24/99	NAVSTKWARCEN	0
A Hornet on a low-level flight ingested a bird in the port engine but landed safely.			
FA-18B	10/28/99	NAVFLTDEMSQD	2
A Hornet crashed while it's pilot was checking ground-reference points for demo.			
UH-60A	11/12/99	NTPS	0
A helo sustained structural damage and lost its tail rotor from a hard landing.			
S-3B	11/14/99	VS-32	2
A Viking crashed in the Arabian Sea after a left roll off cat 3.			
FA-18A	12/03/99	VFA-201	0
A Hornet departed controlled flight during air-combat maneuvering training.			
FA-18C	12/04/99	VFA-34	0
A Hornet struck the round-down during night-CQ recovery.			
CH-46E	12/09/99	HMM-166	7
A Sea Knight crashed at sea attempting VBSS training to a single-spot oiler-18 on board.			
C-9B	12/19/99	VR-59	0
A Skytrain II departed the runway during a landing.			
FA-18D	01/10/00	VMFA(AW)-242	0
A Hornet departed controlled flight during 1V1 air-to-air training.			
AH-1W	01/31/00	HMM-261	0
A Super Cobra had a birdstrike, lost tail rotor authority and crashed.			

Class B Mishaps

UC-12B	10/07/99	COMCABWEST EI Toro	
A Huron's NLG collapsed upon touchdown.			
S-3B	10/26/99	VS-33	
A Viking jettisoned an ARS and an Aero 1D fuel tank in flight.			
T-44A	12/02/99	VT-31	
A Pegasus' wings and nacelle buckled and deformed during a cross-country flight.			
FA-18C	12/09/99	VFA-37	
A Hornet pilot extinguished dual engine fires before landing.			
E-6A	12/29/99	VQ-4	
A Mercury's No. 2 engine sustained burn-through damage from bleed-air ducting.			
MH-53E	01/20/00	HC-4	
A Super Stallion's swash plate and scissors were damaged during utility-hydraulic system maintenance.			

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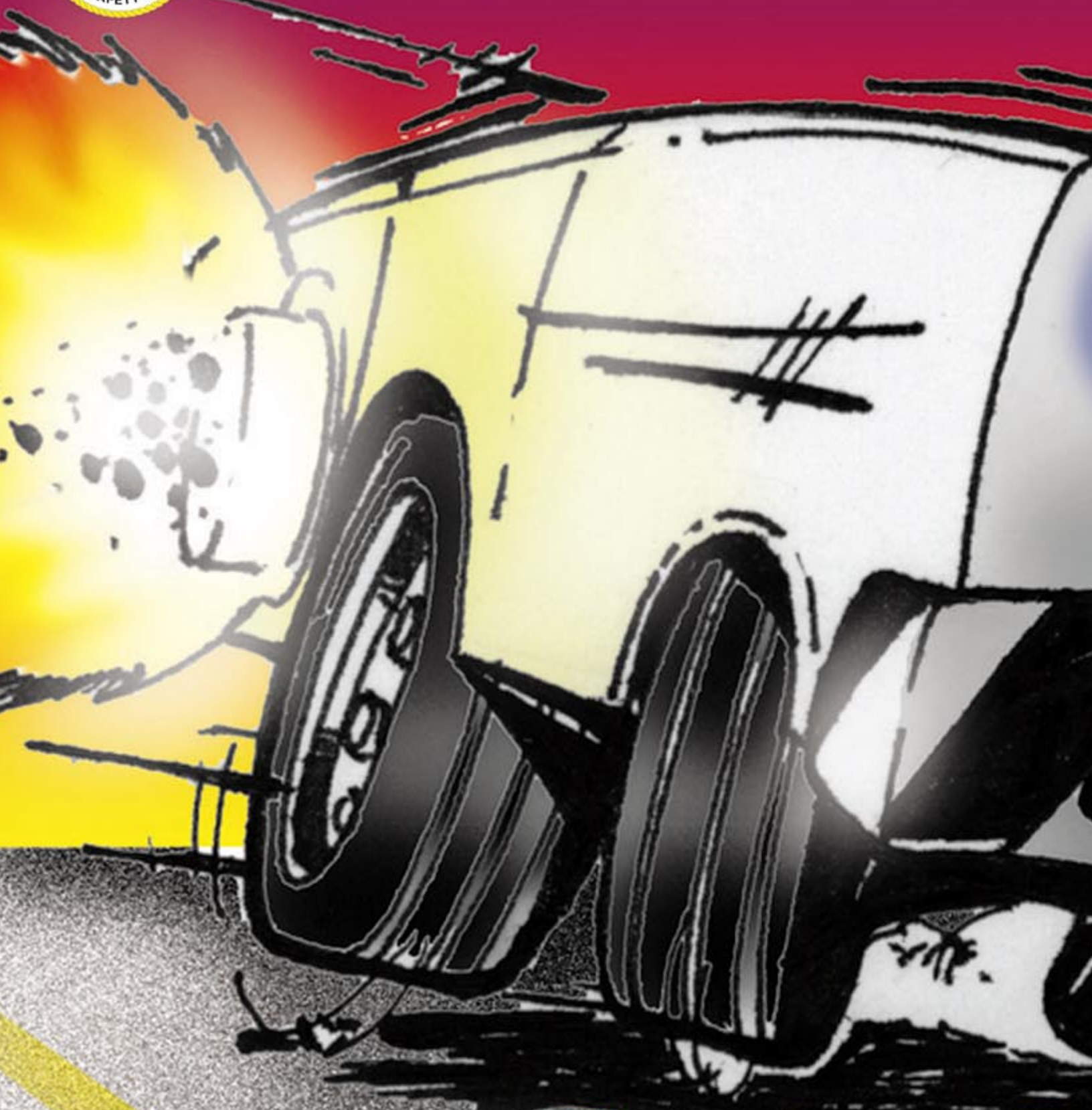


Illustration by DM2 Chad Dulac,
USS John C. Stennis (CVN 74)

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