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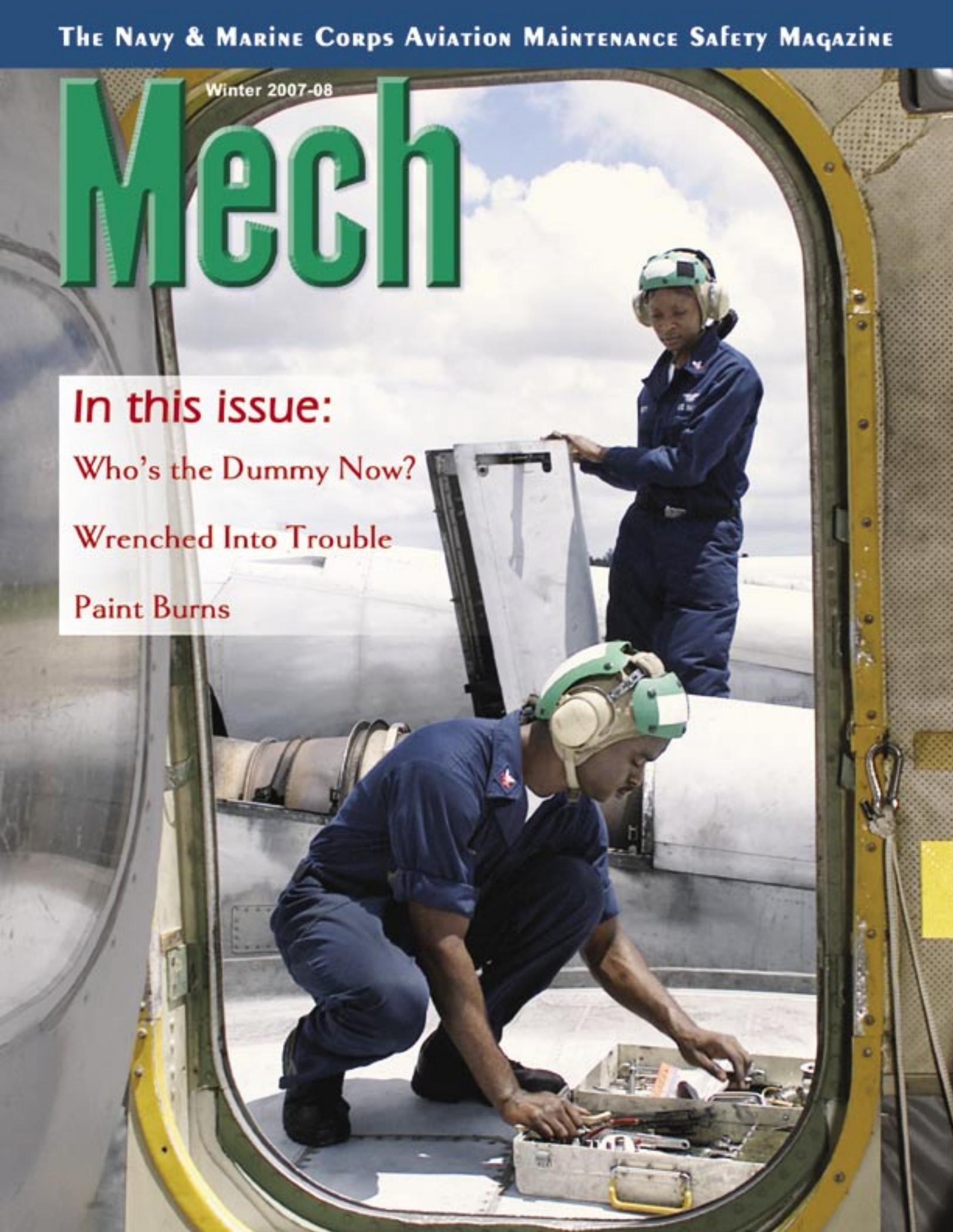
Mech

In this issue:

Who's the Dummy Now?

Wrenched Into Trouble

Paint Burns



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Mishaps waste our time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This command's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is dangerous and demanding enough. The time to learn to do a job right is before combat starts.

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Features

3 **Tool Control and Safety: How I Lost My Hair**

By Cdr. Bert Ortiz, Naval Safety Center

The Naval Safety Center's maintenance officer shares thoughts and insight about tool control from his nearly 30-year career.

4 **Who's the Dummy Now?**

By AME1(AW) Deeken, VFA-146

Tool control includes a wide area of items. In this case, dummy rounds used to empty the gun system.

6 **Wrenched Into Trouble**

By AM2(AW) Brandon Green, VAQ-142

Losing a tool is a bad thing, but it's worse when the aircraft is on a combat mission.

7 **Lost, Missing, Broken, or Worn**

By AD1 Patricio Florendo, VFA-27

These terms usually refer to hand tools, but they also can describe handles on an engine trailer.

9 **Paint Burns**

By AE2 Mike Tano, HS-2

A simple tool-control step, returning and accounting for hazmat, turns bad.

10 **Crane Gets the Drop on Maintainers**

By AD1(AW) Jude Ezedike, HS-15

Senior maintainers aren't perfect, and this story shares how important refresher training is before operating equipment.

12 **Best Practice: Turning a Bucket of Bolts Into Beauty**

By AOCCM(AW/NAC) James Thompson, HS-6

Good "best practice" story that shares ORM lessons learned putting together "hangar queens" while operating.

15 ARSIPS: The New Kid on the Block
By Darrell Monday, Fleet Support Team, Jacksonville
A retired Sailor shares useful information about the new ram air turbine on the ARSIPS.

19 Tough Guy Meets His Match
By AT1 Somkit Carter, HSL-46
Another electrician gets a lesson about electricity.

20 An Electrifying Experience
By AT3 Anna Rhees, VPU-2
The line between safe and unsafe maintenance sometimes is inches and other times miles.

22 Shrouded in Confusion
By AM3 Steve Rutledge, VFA-131
This maintainer bares his soul about poor maintenance practices and a serious in-flight incident.

24 Bravo Zulu
HSL-42 Det. 10, HSL-42, VMFA-251, VFA-81, HSL-37 Det. 2, HS-2, VMFA(AW)-225, VAW-121, HSL-48 Det 7, VAQ-130, VFA-195, HSL-37, HSL-48 Det. 1, HSM-41, HSL-37 Det 1, VAQ-137, and HSL-42 Det. 3

29 Crossfeed
Maintenance experts talk about PPE, airframes, paraloft, electrical and Class C mishaps.

IBC Sierra Hotel
Commands that have completed surveys, culture workshops and MRM presentations.

Front cover: AD3 Qunita Triplett steadies a “turtleback” on the wing of a P-3C Orion assigned to the Skinny Dragons of VP-4 as AD2 Cory Irons gets the necessary tools to secure it to the aircraft. Navy photo by PH1 Richard Estep.

Departments

2 Getting Tool Control Under Control
By Dan Steber, Naval Safety Center
The editor discusses the featured topic and shares some facts about tool control.

11 Maintainers in the Trenches
A pictorial homage to the people who keep planes flying.

14 Good, Bad and Ugly
Photos and short summaries of the best and worst found around the fleet.

16 Air-Wing Toolbox: NAVAIR Attacks Wiring Issues From All Sides
By Jim Jenkins, NAVAIR
A good look at NAVAIR’s program for aircraft wiring inspection training.

17 Mishap Stats

CNATT Returns Maintenance Training to Pensacola

By Jena Stepheson, CNATT Public Affairs

The Center for Naval Air Technical Training (CNATT) announced that all aviation electrician’s mate (AE), aviation structural mechanic (AM), aviation electronics technician (AT), and aviation machinist’s mate (AD) “A” school training will be relocated to the Naval Air Technical Training Center (NATTC) in Pensacola, Fla.

Much of the training had been moved to fleet concentration areas because of Hurricane Ivan.

“This realignment will be executed as a phase transition with no impact to fleet readiness,” explained Capt. Terry Merritt, commanding officer of CNATT. “We believe that this move will be a ‘win-win’ for everyone—manpower and equipment savings, a ready infrastructure, and the greatest flexibility for follow-on training.”

The realignment, which will occur during fiscal year 2008, is being implemented as a way of achieving the most efficient production alignment and reducing the overall “Total Force training” fiscal-constraint requirements. The consolidation all provides the lowest cost of ownership and additional investment, greatest cost avoidance, and optimal training effectiveness. It also provides right place, right time training solutions, training current to mission tasking, and support of the Naval Aviation Enterprise architecture.

Getting Tool Control Under Control

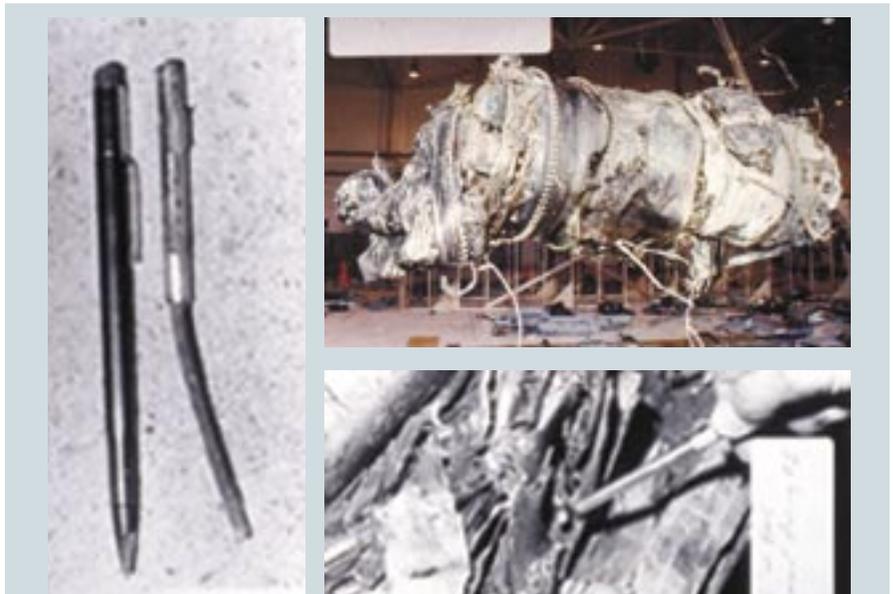
By Dan Steber

The stories begin to sound the same: Missing tool is found after an aircraft is recalled from mission. Lost tool causes an NJP and loss of rank. Tool FODs engine. And the list goes on. We can and must do better.

Lost tools cost us money, time and readiness. I'm not going to bore you with specific passages from a host of manuals and instructions. Rather, I simply want you to know the costs we incur each year in missing, lost, broken, and worn tools. Some estimates say that each year we lose thousands of tools, tens of thousands of manhours searching for lost tools, and spend more than \$1 million hunting for and replacing tools. The fact that we discuss it a lot, worry about it regularly, and train for it frequently doesn't mean we can back off or take it easy.

This issue of *Mech* has several stories that relate to tool control. Some of them are not the typical situations, but they show how broad the program is and demonstrate the problems maintainers face each day. Read the MO's story on the next page. He offers great insight from his nearly 30-year career.

I also ask you to look at photos of damage done in the past and continue to happen each year. The next time you get ready to pencil whip an ATAF, think twice, and remember these photos, stories and lessons learned in the past. The crime isn't losing a tool...it's in not reporting it or following through until you find it. Do your part to maintain positive tool control, and you'll save time, money and lives. ✚



Tools can bring down aircraft, like this hex wrench found in the wreckage of an A-6 Intruder.



Missing tools end up in the strangest places. Can you find them all?

Tool Control and Safety: How I Lost My Hair

By Cdr. Bert Ortiz

During my maintenance-officer tour at the Naval Safety Center, I have visited and worked with many Navy and Marine Corps aviation units around the world—both organizational and intermediate levels. Providing safety surveys and culture workshops gives me a unique perspective on positive and negative trends, as well as a feel on how units perceive safety in the work place. I want to share some experiences and thoughts as we enter the New Year.

Before addressing tool control specifically, I need to explain the view I get through our safety surveys—not the online type that some people confuse with my team visits. The command safety assessment (CSA) and maintenance climate assessment survey (MCAS) are online and provide a totally different but nonetheless important feedback to a unit's CO. A safety survey provides the unit with a one-day, objective snapshot of safety posture in a command. These are direct, physical surveys of units that my senior men and women do about 150 times each year.

We cover a unit's operations, maintenance, training, NATOPS, and aeromedical programs, and each area is assessed objectively and directly. I truly believe these surveys help not only the unit's leadership but also the men and women actually fixing stuff. Why do I believe it? Your feedback tells me it's good and effective.

Tool control is a specific area of the survey, and my analysts closely look at it. This issue of *Mech* features various stories on the topic. Some stories are typical, and we read about them regularly. Others are different, like checking in and out hazmat, or counting dummy rounds, as we do tools.

I have my own stories, like the time I had to recall my skipper on his last flight before his change of command. A tool had been lost the previous day, but we could not trace it to a tool box or to a JCN or MSN. We had no idea where it could have been used. The aircraft already was flying when it was reported missing. After an all-hands, thorough search, we stopped everything. A technician found it at home in a dungaree pocket.

During my white-hat days, a long time ago, I found



an open-end wrench stuck in a rib of an aircraft while doing maintenance on flight controls. Because it had been etched, I knew it was from a depot where the aircraft had been reworked. No record of that lost tool was found! I often think about the disastrous effects it could have had if the tool had migrated to the wrong area. That's what the tool-control program

is about. We must know about missing and broken tools to keep them from causing mishaps.

The tool-control program continues to haunt us all. I am amazed at the amount of issues we find in every unit with this seemingly difficult-to-manage program. But what is so difficult? The secret is controlling our tools, and I'll be blunt: You **HAVE** to lead by example on this one. If you do not inspect your tool box religiously, or lick and stamp the CDI/supervisor's tool inspection and shift inventory, maintainers will develop bad habits. What do I mean by inspecting tools? Don't just see if they are missing; pick them up to make sure nothing is broken. Many controls exist to help you, including inventory sheets and logs. They are integral parts of the program. Don't deviate from accepted practice, or it becomes engrained, and bad behavior develops, or becomes "cultured." "Johnny never checks, so why should I?" Or, "I'm just the new guy and don't want to rock the boat, even though I know to check before and after every job." "I'll just do it when I think it's really important, or just before I leave on liberty." Too often, it's forgotten then, too.

You may laugh, but these scenarios do happen, and you are kidding yourself if you think it doesn't. We see it daily. And the fix really is simple: You must have tight control of these items while working on aircraft or in your spaces. I'd include it as a hazard item and add it to your deliberate ORM list. Make it expected practice. The alternative is wasted time, money and, potentially, lives. ✦

Cdr. Ortiz is the Naval Safety Center's maintenance officer and has served the Navy for nearly 30 years.

Who's the Dumm

By AME1 (AW) Jason Deeken

Flight ops aboard USS *John C. Stennis* (CVN-74) had been going smoothly for nearly three months in the Gulf of Oman. Flight-deck personnel had fallen into a good daily and nightly routine—one that made for safe and successful operations. It stayed that way until a simple but different tool-control issue struck.

One regular, routine action is uploading and downloading ordnance from our Hornets parked on the flight deck. Anytime ordnance is involved, the job is regimented and attention to detail is critical because no room for error exists. The A1-F18AE-LWS-000 is the

publication used for airborne weapons and stores. When followed, it leaves no room for misinterpretation.

Our problem had started several months ago, when a gun made its way to AIMD, with rounds still in the drum, causing the command to have a QAR present during downloads to make sure the gun is empty. On this particular night, I was present for a gun download on elevator No. 2. The night's flight schedule was done, and the AOs had had to transfer 500 rounds from the gun of aircraft 314 to a transporter. After the gun was emptied, the transporter was moved away, and technicians started the download verification. They placed



y Now?



one dummy round in the transfer unit, closed the gate, and began to cycle the gun.

When I had witnessed gun downloads in the past, two dummy rounds always had been used, which is what the pub said to use. I asked the AO night-shift supervisor what dictated whether one or two rounds were used for verification. He said sometimes one was used, sometimes two, but no real logic existed. It didn't seem to make any difference to me, either. One or two rounds, what did it matter? It was obvious the gun was empty.

However, the LWS-000 states, "The use of two dummy rounds will ensure gun system is completely empty of ammunition when cycled completely through the gun system." I raised this point with the QALPO the next day, asking for input from him and my fellow QARs. It was clear and unanimously decided that the procedure in the pub was what we should be using. We passed that info to the AO LPO, who also agreed.

Then a problem arose; the other dummy round could not be found.

After an extensive search of the shop, all 12 of our aircraft's guns, and AIMD, the round still was MIA. A survey of the missing tool began, training on tool control was administered, and the importance of using pubs was stressed.

Downloading the gun seemed to be a no-brainer to the Blue Diamond QARs and the technicians who actually performed the task. However, had all of us been familiar with the procedures in the publication, we would have saved ourselves dozens of man-hours in a search for a tool that still remains missing. This situation made us all realize the importance of getting into the MIMs, knowing the details of every job, and doing good maintenance, no matter how easy a job seems. ✈️

Petty Officer Deeken works in quality assurance at VFA-146.



Navy photo by PH2 Casey Hutchens

By AM2(AW) Brandon Green

Just another day in Afghanistan: I arrived at work and found we had three downed jets. That left only one jet for the flight schedule, but we needed to have at least two to make our flights scheduled for the next day. We got busy. Before the day was done, me and two of my guys would learn a lesson that I thought never would happen to me.

Aircraft 523's engine was out, and my shop was trying to fix a leak in the wishbone panel on the keel. I had a couple guys working that gripe, and another person doing dailies and up gripes. On another jet, all we had was an all-shops turn, and then it would be operational. I was running around trying to keep track of all the gripes and the job on aircraft 523. Shortly before the all-shops turn on the first aircraft, my guys finished the maintenance on 523. The only work that remained on that job was doing a quick leak check and installing a panel.

Just as I was going out to leak check 523, maintenance called for the all-shops turn. I decided I could complete the leak check before running out for the all-shops turn. I did that check and looked inside the panel. I told my guys to have QA look at the panel before installing it, then ran out to the line for the all-shops turn.

When I got back from that turn, my two guys were done with 523, and they had put away all their tools. I trusted that someone had looked at their tools. I didn't think anything else of the job. I told maintenance that 523 and the all-shops turn were done. I then sat down and signed off the two MAFs.

The mechs were working hard to install the engine in 523, so we could try to have it turned before day check came in. As the night went on, they did finish, and we got the turn done on 523. We felt good because we had three jets up for the next day's flight schedule. When day check came in, we checked the tools and did

pass down as usual. After the maintenance meeting, the night checkers and I headed back to camp to get some sleep before we started the whole routine over again.

It seemed like I just had gotten to sleep when someone started yelling my name and saying we were missing a tool. I thought I was having a bad dream, but it was worse. I arose, got dressed, and started walking to work. On my way in, I tried to remember everything we had done the night before. How could I have lost a tool and missed it at our morning ATAF?

When I got to work, my LPO pulled me out of the shop and told me they had found the tool, but only after they had recalled all the airborne jets from combat missions. When 523 returned, the mechs removed the tail-pipe door, pulled back the heat shield in the area where we had worked, and found the wrench. It was a one and a quarter-inch bonnie wrench. That moment marked one of the worst days in my life.

My division chief, the QAS, and the QAO counseled me. They pulled my CDI qualification for 30 days, wrote up my first report chit, and assigned me EMI. It was an excruciating long waiting game to see if the command was going to send me to captain's mast or handle it at the chief level.

They decided to let my chief handle it, but the harshest penalty was that I recognize that I had sent a

jet flying with a tool on board. The fact the aircraft were on a combat mission to protect ground troops killed my pride.

Ever since this incident, I have been a tool freak. I check tools all the time. If my guys leave tools lying around or have more tools in the jet than they have hands, I give them a really hard time and make them fix the problem before I walk away. I also no longer trust anyone with tools—no matter who they are. If they open a box, I make sure it gets checked when they are done using it. Even if they put it away when I'm not around, I go back, pull out the tools, and check them.

I was one of those people who said "nothing bad ever will happen to me." This mistake has helped me, in a weird way, because I no longer am complacent. I don't think I ever will lose another tool because that pain is something I don't want to face again.

This incident put me in the spotlight where no maintainer wants to be. Like other stories in *Mech*, I learned the hard way. Take my lesson to heart. Make sure you are doing required tool checks, and don't trust anyone, even if they are senior to you. It's your reputation and the safety of the aircrew on the line. 🙄🔧

Petty Officer Green works in the airframes shop at VAQ-142.

Lost, Missing, Broken, or Worn

By AD1 Patricio Florendo

This story is going to read like many others in this magazine—it sounded familiar as I wrote it. That's the funny part about naval aviation maintenance. There are no new mistakes, just the same ones, with different people making them over and over again. I know because I made a simple and stupid one.

Our squadron was preparing for an upcoming detachment to the Japanese island of Iwo Jima. It was crunch time, and the maintenance pace was hectic. Part of our workload included removing two engines, with the potential for two more later that day. The

engine changes were made more difficult because the supporting activity had only one engine trailer (ETU-110 E/F) and adapter. To make matters worse, our sister squadron in the air wing already had checked out that piece of ground support equipment (GSE). I called them and arranged to get the trailer after they were finished.

Later that afternoon, I picked up the engine trailer and gave the sister squadron a tool tag. I did this because they originally had checked it out from AIMD, and I simply was borrowing it. The first shortcut had occurred because I was in a hurry.

Although not really a tool, the crank handle for this engine trailer must be accounted for before and after use.



To make matters worse, I didn't do a pre-operational inspection on the engine trailer. Of course, I didn't have an SE license for this piece of gear, either.

As is true in most other stories, we initially weren't having any problems. However, when we nearly were finished removing the engine, the spider crank was very difficult to turn. This turning is necessary to align the engine aft mount pin with the aft engine support—even if only minor adjustments are required. That tightly turning crank should have been our first clue that something was wrong, but we continued. Again, this part sounds too familiar.

One of my AD3s broke off the handle while trying to turn it, another clue that things weren't right. Again, though, we pressed on. We ignored better judgment because of a desire to get the job done.

Another AD3 took over and started to adjust the spider, and the next thing we heard was the sound of another handle breaking. At this point, common sense finally prevailed. We came to a complete stop to make sure we had all the parts accounted for. A spider crank has four handles, and we had broken two of them, accounting for the broken parts. However, we noticed that a third handle had been broken on the spider, and that handle was missing. I asked the two AD3s if either one knew where the third broken handle was. They said it already was missing when I had accepted the trailer. Of course, that skipped pre-op inspection would have highlighted that fact...another strike.

I returned to our sister squadron and retrieved the third handle. I then returned the broken piece of GSE to AIMD. Needless to say, they were very surprised when I showed up with an ETU-110, carrying three

broken handles. They also weren't too happy because our squadron hadn't checked out that piece of gear through them. As I left AIMD, the supervisor told me they would be submitting a misuse-and-abuse report.

My mistakes were obvious. First, I went to check out a piece of SE that I was not licensed to use. Second, I did not perform a proper pre-operational inspection. Had I done a static inspection and functional test, I would have seen that the ETU-110 already was damaged. Finally, I acquired a piece of SE without using proper issuing and transfer procedures. The support activity owns the ETU-110. Giving a tool tag to our sister squadron to take possession of that piece of gear doesn't keep AIMD informed of the whereabouts of their gear and doesn't properly update the transfer paperwork.

Bypassing established maintenance procedures jeopardizes equipment, safety, and your reputation. It is easy to lose sight of the big picture when we get so focused on accomplishing the task. Shortcuts or laziness, even on routine tasks, leads to bad maintenance or worse. In this case, it would have been only a matter of time before the engine would have rolled off the trailer. I was lucky and escaped with a report and damaged reputation. Learn from my mistake; it's the easiest way to learn. ✨

Petty Officer Florendo works in the power plants shop at VFA-27.

Paint Burns

By AE2 Mike Tano

The work shift quickly was coming to an end, and it was time for an ATAF. I was assigned to return some hazmat (paint) to the tool-room counter. I noticed the lid on one of the cans was not closed. I was wearing the required gloves but no goggles when I decided to force the lid closed.

I soon realized that wasn't a good idea—after a drop of paint flew into my right eye. I ran to the closest eyewash station and flushed my eye for more than 15 minutes. A few minutes later, I grabbed the MSDS and went to the hospital for medical attention.

Since that incident, I have had time to think about what I should have done differently. From now on, I always will wear my PPE, no matter how minor the work seems. As the adage goes, "It is better to be safe than sorry."

I have learned my lesson, and, in the future, I will do whatever it takes to educate my shipmates, as well as my family and friends. Looking back on the situation, I realize I could have lost my vision. My view on the importance of ORM has changed completely. I'm thankful safety programs are in place to prevent similar situations. Yet, it is up to the individual to make the right decision and wear the right PPE.

Petty Officer Tano works in the AE shop at HS-2.



Crane Gets the Drop on Maintainers

By AD1(AW) Jude Ezedike

It was a cold day aboard NAS Jacksonville, Fla. We mustered at 0645—the usual time, held the maintenance meeting, and did a FOD walkdown on the flight line and in the hangar. That's were normalcy stopped.

Red Lion 615 was in PMI. The NADEP crew needed to remove the No. 2 input module to repair panels beneath that area. Maintenance control tasked us to remove it, so I gathered my crew and headed to the PMI hangar. Because of the aircraft spot, the CAT III crane in the hangar could not reach it. We ended up having to use the utility crane—more commonly known as the seat crane.

I did a pre-operational inspection on the crane, and everything looked good. I signed the 52 card and got to work. We unbolted the input module, strapped it, and hooked it up to the crane. The component was lowered to an awaiting pallet on the hangar deck. We checked tools and removed the FOD from the work area.

We now were ready to stow the crane. I was the only person qualified to operate it, and none of us had used this support equipment since 2004. We followed all the necessary stowage procedures but missed one simple step: The cable remained in tension and hooked to the bar. As soon as we pulled the pin to the lower bar, the boom immediately came crashing down. The pin bracket on the bottom was bent and had created a large dent on the bar assembly. I never thought such a thing could happen. I was very thankful no one was hurt.

Clearly, the accident could have been prevented had we done some refresher training before using the equip-

ment. We should have asked questions about the proper stowage of the crane. After reading the publication, I found out the cable should be completely out of tension while lowering the bar. I further learned the pin should not be pulled whenever the cable is in tension.

We all learned valuable lessons that day. As the supervisor, I should have made everyone read the book and review the requirements for the equipment, since none of us had used it for a long time. ✦



Petty Officer Ezedike works in the power plants shop at HS-15.



Maintainers *in the* Trenches



Aviation ordnancemen assigned to the "Fighting Redcocks" of VFA-22 load an inert missile onto an FA-18E Super Hornet on the flight deck aboard USS *Ronald Reagan* (CVN-76). Navy photo by MC2 Christopher Blachly.



AM2 Jessica Liles, assigned to the USS *Harry S. Truman* (CVN-75) AIMD, gathers tools to perform maintenance on a set of E-2C Hawkeye brakes. Navy photo by MCSN Damian Martinez.



LCpl. Michael Enzor and Pfc. Zach Fleming, airframe mechanics with HMH-462, Marine Aircraft Group 16, 3rd Marine Aircraft Wing, screw on the cover of a tail rotor on a CH-53E Super Stallion during phase maintenance.



AD2 Thomas Worman reviews maintenance procedures for an FA-18E Hornet assigned to the "Eagles" of VFA-115 in the hangar bay aboard the USS *Ronald Reagan* (CVN-76). Navy photo by MC3 Christopher Blachly.

BEST PRACTICE

Turning a Bucket of Bolts Into Beauty

By AOCM(AW/NAC) James Thompson

We had been operating on all cylinders and at full speed for several months, completing those buzzword exercises that every squadron hears near the end of an inter-deployment training cycle (IDTC): TSTA, COMPTUEX, Fallon, and JTFEX. We now were combat ready and looked forward to the scheduled deployment that would take us into the fight.

Everyone had their eyes set on the upcoming pre-deployment leave period, but we had one minor problem: Aircraft transfers and inspections still were scheduled before getting underway. Working aggressively with our wing, we finally identified the aircraft and set a plan in motion. As the maintenance master chief, I had to make sure the arriving aircraft were inspected and all the scheduled maintenance was done before embarking for parts unknown.

One aircraft came directly from Sikorsky after a long-term overhaul, and the other one came from a command that transferred it before they decommissioned. The receipt inspections would take forever—no corporate knowledge existed about the aircraft's past. In other words, we basically were starting from scratch. With cruise imminent and our backs against the wall, we set out to do what we do best. We would make it happen.

We set a target date of two weeks per aircraft to complete the aircraft acceptance, rebase special inspections, rebuild the aircraft, and complete the ultimate and dreaded "A" profile FCF. The first hurdle was to get the multi-volume ADBs and logbooks up to date. With invaluable assistance from the SPAWAR NALCOMIS team in Norfolk, we found the last valid data for the BUNOs in question and had the aircraft "pushed" into our system.

With the aircraft now uploaded, the maintenance chiefs activated tiger teams and let them off the leash. Before long, we had taken two helicopters that once were ugly shells and looked like hangar queens, and had turned them into something that more resembled high-performance fighting machines. We had brought them back to life.

With the first leave period ending and my wrench-turners ready to run out of the hangar and start their own leave, it now was paramount for everyone involved to sit down and go over each MAF. We needed to check the workload and make sure the entire maintenance department was on the ball and the aircraft were safe.

The team was jubilant, and as leave sections crossed paths, they gave each other high-fives at the hangar door.



Holding true to form, the second group picked up where the first one had left off. The aircraft were brought to life, and system checks were running smoothly. Pilots were champing at the bit to take the new chariots for a spin around the block. With all the paperwork done, our efforts were about to pay off. The books were read, and the aircraft were set up for ground-vibration analysis.

Minutes later, the aircraft were “ground checks complete” and ready for forward flight. All the last-minute items had been checked and crosschecked, and the aircraft were released safe for flight.

As the flight line slowly filled with eager and nervous squadron members, the hard-working line rats signaled for engine starts and rotor engagement. With rotors slowly building up speed, the aircraft seemed to leap to life. I watched with pride as the pilots signaled up and ready. Ever so slowly, the aircraft crawled out of the chocks. Looking around, I saw half the squadron watching intently as the helos lifted into a stable hover and began to break in the new engines and gearboxes.

Once out of sight, we manned the base radio. With the clock hands ticking slowly, we waited for the pilots to call. It seemed like an eternity, but the radio finally crackled to life, and maintenance control went deathly silent. After the desk chief acknowledged his call, the

pilot stated, “616 on deck in 10 minutes, FCF complete, up bird!” An hour later, the radio again cackled to life with the call, “615 inbound, pro complete, up bird”. Smiles abounded. It was time to sit back and reflect on everything we had accomplished.

ORM is not just three letters in the alphabet. Communicating, training, and maintaining attention to detail always pays off. Each work center talked with maintenance control, and that was key to the plan’s success. Each work center was given a workload report to devise a plan for accomplishing all their tasks. They met with the build chief, who looked at each plan, offered suggestions to help refine it, and then worked each one into a master plan. The crews kept ideas flowing among themselves, allowing us to make changes to the schedule without severely affecting other shops.

This particular event reminded us that thorough planning leads to good execution. Teamwork and camaraderie were evident in taking on a tremendous task, with little room for error. Instilling a sense of ownership and insisting on by-the-book maintenance became the standard, and that approach turned two hangar queens into productive fleet assets. 🛩️

Master Chief Thompson is the maintenance master chief at HS-6.

Good

Well-organized shops
with positive control
and good identification.



Bad

Fire extinguisher not
in the right place and
poor housekeeping.



Ugly

How do you use this
eyewash station?



ARSIPS: The New Kid on the Block

By Darrell Monday

I remember many years ago when I first joined the Navy, walked aboard USS *John F. Kennedy* (CV-67), and asked, “What have I gotten myself into?” I’m sure most of you can relate. I’m still in naval aviation but behind a desk. I hope, with my 30-plus years of naval aviation maintenance and logistics experience, I can lend a hand in “keeping it safe.”

As an airman, I didn’t know what an FST (fleet support team) was, then known as the CFA (cognizant field activity). We are here to help, just like the many teams in the fleet associated with your wings and type commanders. Inspection teams bring a lessons-learned approach, and they learned through the loss of blood. We old fogies want you to enjoy your naval careers and enjoy life after the Navy, so heed our advice.

Before you play with this “new kid on the block,” beware that the new aerial refueling store improved power system (ARSIPS) ram air turbine (RAT), which will be installed on your old aerial refueling buddy store, weighs twice as much as the present one. The old RAT has been through a few changes, but it has been No. 1 degrader for the system. It even has slung a few blades, nearly causing serious mishaps.



The Hornet community has been learning and flying with the ARS for awhile, and other aircraft for many years before. Maybe I’m going back too far for some. You can’t be the one-man show and remove and replace the new ARSIPS RAT alone. You need two people to remove and replace it. As you can see in one of the photos, the new ARSIPS RAT requires a handling tool for installation and removal on your buddy store. Follow the pub and listen to the first class and chiefs.

The MIM will have the added paragraphs for handling, as well as removing and replacing the RAT. No, it’s not in your interactive electronic technical manuals (IETMS); we still use paper publications.

The pubs are a great source of information, but like any tool you have, it costs money to publish and time to update them. If you find an error, please submit a Technical Publication Deficiency Report (TPDR). I can’t count how many times I have heard “the pub is messed up.” The FST and NATEC stand ready to fix it, so go to QA and learn more from the best.

The ARSIPS RAT will be around a long time. Treat it with respect, and you will keep your 10 fingers and still have a strong back. ✦

Mr. Monday works at FST Jacksonville.

the **LINE** rats





NAVAIR Attacks Wiring Issues From All Sides

By Jim Jenkins

In an average year, the Navy has 78 not-mission capable aircraft because of wiring discrepancies. NAVAIR is taking steps to identify and fix these wiring problems in several different ways: incorporating and integrating training, updating manuals, and validating new tools. Our Sailor and Marine maintainers will have access to better and proper tools, as well as the skills needed to keep aircraft flying safely.

NAVAIR's special skills training/training support branch (AIR 6.7.5.2) offers wiring-systems awareness computer-based training on the aviation maintenance training continuum system (<https://amtes.kpt.nuwc.navy.mil>). A training DVD for aircraft-wiring inspection also is available at the same website—simply follow the “MediaTrax” link. The ordering number for the DVD is 008-R-500-001-1.0-D, or simply type in the name “aircraft wiring inspection training” in the search field.

“The DVD is a great way to get refresher training on inspection techniques,” said AOC(AW) Richard Burry, of AIR 6.7.5.2. “Plus the shops/squadrons can use it as professional on-the-job training and document it in their training jackets/cycle.”

NAVAIR's wiring systems branch (AIR 4.4.5.3) coordinates the hands-on wiring awareness inspection training (WAIT). Dave Quinzani leads this effort that aims to refresh the training maintainers get in the schoolhouse. They also offer new techniques at finding faulty wires in aircraft on the line.





Quinzani and others from AIR 4.4.5.3 travel around the world, setting up training at various squadrons around the fleet. The team takes a hands-on approach to teaching Sailors and Marines the proper way to thoroughly look for, find, fix, and report wiring problems. The WAIT training generally takes two days; the first day, Quinzani and the command's CDIs and QARs assess the installation and condition of the wiring on squadron aircraft. The wiring assessment team looks for common trends such as chafing and corrosion, photographs these problem areas, and incorporates this information into a brief given on day two. Day two is a half day classroom session on the problems, causes and remedies of common wiring issues. Part of the time is spent focusing on the previous day's assessment of the squadron's own aircraft. For the rest of the day, class adjourns to the hangar where the assessors and maintainers get their hands dirty practicing the new inspection techniques.

The NA 01-1A-505 (or -505 for short), Joint Service General Wiring Maintenance Manual, is the cornerstone for wiring and fiber-optic maintenance. All platform-specific aircraft wiring manuals refer back to it for general/common tasks. Back in 2002, NAVAIR tasked the aging aircraft IPT (AAIPT) to update the manual, which hadn't been revised in approximately 15 years.

The AAIPT coordinated the effort with the wiring systems branch (AIR 4.4.5.3), design interface and maintenance planning (AIR 6.7) and the Naval Air Technical Data and Engineering Service Command (NATEC)

(AIR 6.8) which resulted in reducing the 31-volume Navy (as well as seven-volume Air Force manual) -505 to four joint volumes. The result is a practical document for all maintenance-specialty rates to refer to when researching information on the proper way to maintain aircraft-wiring systems. With more than 1,000,000 maintenance man-hours (MMH) spent on wiring maintenance annually in the Navy, the AAIPT expects the

Flight, Flight-Related, and Ground Class A and B Mishaps 09/20/2007 to 12/16/2007

Class A Mishaps

Date	Type Aircraft	Command
09/24/2007	MH-60S	HSC-25 SEA COMP
Aircraft crashed into FENA reservoir. Three personnel rescued and one fatality.		
09/27/2007	T-45A	VT-21
Aircrew ejected from aircraft during RTB to home field.		
10/01/2007	T-45A	VT-21
Goshawk impacted ground in landing pattern. Aircrew ejected safely.		
10/11/2007	FA-18A	VFA-87
Hornet crashed into water. Pilot ejected successfully. Aircraft destroyed.		
11/01/2007	T-45A	VT-22
Aircraft had engine failure immediately after takeoff and struck the ground.		
11/06/2007	MV-22B	VMMT-204
Aircraft had nacelle fire on short final to LZ. Damage/injuries TBD.		
11/09/2007	HH-60H	HS-2
Helo struck water while in transit to carrier.		
11/27/2007	AV-8B	VMA-513
Harrier crashed during night air-to-surface training. Pilot ejected safely.		

Class B Mishaps

Date	Type Aircraft	Command
10/01/2007	FA-18E	VFA-105
Gun bay door blew open on takeoff. Left engine fodded. No injuries.		
10/02/2007	E-6B	VQ-4 SHORE
Upon landing, damage was discovered on port and starboard inboard flaps.		
10/08/2007	AV-8B	HMM-261
During aerial refueling, tanker refueling aircraft stuck the canopy refueling.		
10/10/2007	E-6B	VQ-4 SEA
Aircraft landed and blew all four tires on starboard side, damaging flaps and landing gear.		
10/30/2007	T-45C	VT-9
Goshawk had a bird strike after takeoff. Aircraft damaged. No injuries.		
11/09/2007	FA-18C	VFA-195
CATM-88 departed aircraft on landing and was lost at sea.		
12/03/2007	FA-18A	VMFA-232
CATM-88 departed aircraft after arrestment. No injury.		
12/08/2007	CH-53E	HMH-361
Crew chief dragged under right mainmount during ground taxi.		
12/12/2007	AV-8B	VMA-214
Unmanned and parked aircraft rolled and struck light cart during maintenance.		



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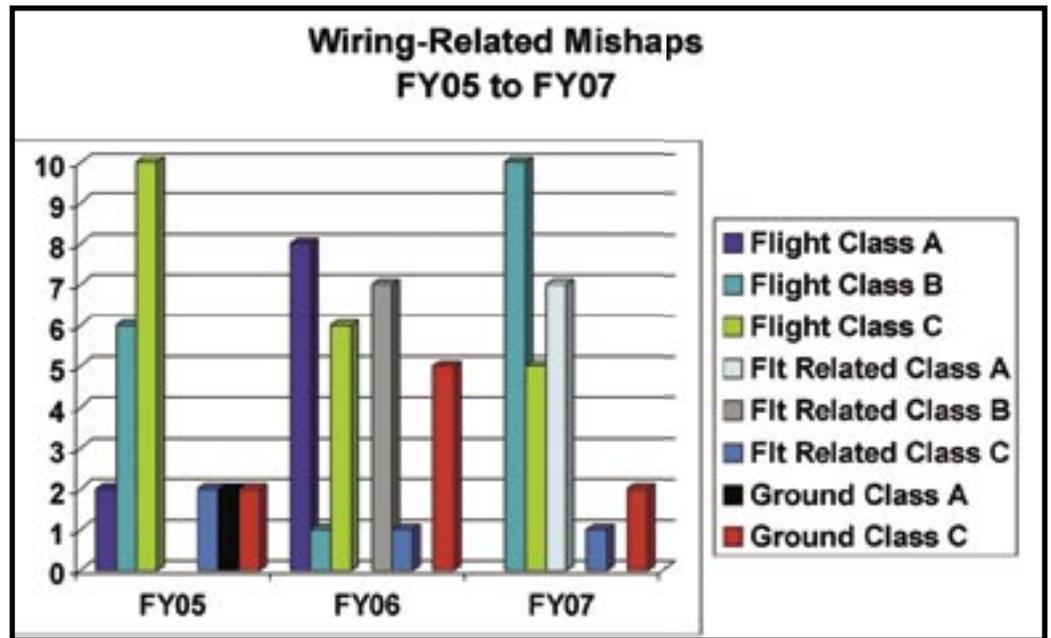
updated manual alone to produce a 20,000-to40,000-MMH reduction per year.

Volume 4, the manual referring to fiber-optic maintenance, is new and is the only general-series manual in the DoD that addresses fiber-optic maintenance. The NAVAIR team has taken great efforts to make the -505 a living document, encouraging maintenance personnel to submit technical-publication discrepancy reports (TDRPs), which go directly to the coordinator of the -505, ensuring they get into the proper manual.

This strategy is effective, and Volume 1 (NA-01-1A-505-1) already has undergone two revisions since the initial re-write in 2004, mostly from inputs received from fleet users.

“We tried to balance required updates and replacing obsolete tools and processes, with the incorporation of text and clarification to make it easier for the end user to understand,” said Bob Ernst, director of the aging aircraft branch.

Forty percent of the 470 updates in Volume 1/Change 1 came from fleet users. Other changes in the -505 occur because of the rapid technology refresh rate of three to five



years. Some of those changes included adding new tools and instructions on how to use them. These items have been validated for use and help maintainers solve wiring issues. It also includes new diagnostic and fault-location equipment, as well as information on digital multi-meters, time-domain reflectometers, meggers and procedures for using the Eclipse ESP+ and 3M 900AST fault-location meters. Also introduced were procedures for wrap-around heat-shrink repairs, new connector potting and cleaning compounds.

Change 2 incorporated new lead-free solder guidance, authorized Loctite for backshell screws, and incorporated the electromagnetic interference test results for the ESP+ and 900AST handheld meters. In November 2006, the new Volume 2 was released with updated information on all military circular connectors, which will be followed this October by Volume 3, which will address all rectangular connectors.

The NA01-1A-505 joint-service general wiring-maintenance manual is a living document dependent upon fleet input. Maintenance personnel are encouraged to follow their squadron’s TPDR process. NAVAIR relies on fleet feedback to give the warfighters the best tools and processes available. The entire NA01-1A-505 manual series can be accessed at <https://www.natec.navy.mil> and is made available to end users in digital format. ✚



Jim Jenkins works in the NAVAIR public affairs office for aging aircraft.

Tough Guy Meets His Match

By AT1 Somkit Carter

Finishing up on the last gripe to prepare for my detachment's participation in SUSTEX II, I was working on the SH-60B's weapons delivery system and had determined the culprit was a bad armament signal data converter. I received the part at the last minute and wanted to install and test it one last time before going home. I should have waited and not rushed.

I ran the part out to the helicopter, which sat on the flight line, and installed it in the seat well. I then walked over to the power cord, unraveled it, and pulled it over to the aircraft's power receptacle. I always made it a habit to check both ends of the receptacles, looking for FOD or damage before plugging it into the aircraft. This time, I noticed some debris on top of the power-cord plug. You already might see where this story is going.

I brushed off the debris with my left hand, assuming that power was off because the cord still was reeled up. Needless to say, I got "bitten." My pinky finger had touched one of the contacts, sending electricity up my arm. I evaluated myself and decided I was OK, since I wasn't dead. I plugged in the power cord and continued work. My junior AT and I ran up the aircraft weapon systems and finished the paperwork, detailing the work that had been completed on the aircraft.

Having all but forgotten the shock incident, I left the hangar and went home to be with my family before deploying for our work up. All was well until I woke up the next morning. It felt like I had struck the funny bone in my left arm. I didn't think anything about it and assumed I simply had banged my elbow while sleeping. The day went on, and the tingling sensation in my left arm eventually went away. The same thing hap-



pened the next morning, though, and that's when I finally made the connection to my run-in with the power cord two days earlier.

I was supposed to muster that next morning at 0730 to fly off to Norfolk to embark our ship. I immediately notified my chief about what had happened and that I still felt the effects of the electricity. He sent me straight to the hospital for a check up, while my detachment boarded the C-9 to Norfolk.

I was trying to be a tough guy and to avoid this whole situation. Had medical deemed me not fit for duty, the squadron

would have had to find another qualified AT to send out as a replacement. As it turned out, a doctor released me fit for duty. I now had to get to Norfolk before the ship pulled out.

Anyone qualified to work with or around electricity must understand the hazards that exist. We shouldn't assume we will get zapped sooner or later. It may be inevitable, but we should strive to avoid it. Also, the correct way to handle a jolt is to report it immediately, no matter how little the pain may be. Had I seen a doctor much earlier, the situation would have been resolved on day one.

Maintainers need to verify power cords are not energized before handling them, and we never should put ourselves in a situation where we may contact an electrical lead. As a senior technician, I know better, and I always teach my juniors the proper techniques and procedures. ⚡⚡

Petty Officer Carter works in the AT shop at HSL-46.

An Electrifying Experience

By AT3 Anna Rhees

It was a typical day, except the schedule had changed slightly, and that difference caused me to vary my routine. The important point is I nearly lost my life.

Normally, we wait until after the morning meeting to begin our assigned tasks, but, in an effort to expedite the workload, I was asked to start prepping the plane first thing in the morning. Right before the birds launch, the ATs “button up” the plane, including spot-tying newly added cables and reinstalling boxes that had been removed for other maintenance.

I had to reroute a cable. Typically, this simple job requires one person. However, this particular cable was far back in the rack, behind boxes, monitors, computers, and wires. It required a good flashlight and someone able to fit into a cramped space.

Aircraft power was secured, and I crawled into the rack and began pulling off the nuts and clamps holding the cable in place. Through experience and training, I have learned to take note of my surroundings and look for potential hazards associated with such a small work area. I noticed a power outlet next to one of the clamps that needed to be removed. With no power to the aircraft, the outlet was not a threat, but I stayed aware of it while working.

After 20 minutes, I successfully had rerouted the cable and all that remained was to replace the post nuts on the clamps. I decided to tackle the hardest one first. The post right next to the power outlet was the most difficult because of its challenging angle; my arm was bent around the back of the outlet and out of sight. The post also was unusually long, and none of our sockets were deep enough to fit over it. I grabbed a wrench from the toolbox and started working the hardware down the post little by little, still unable to see it. I could see the post I was working on only if I moved farther into the rack, blocking what little light was available.

Frustrated at not being able to reach the clamp, I crawled out. A fellow maintainer, working on a separate gripe, asked if he could turn on aircraft power. Knowing



that with power would help me see my work better, I agreed. As the aircraft power whirred on, I made another mental note of the outlet sitting in the way of my post and reached as far around and away from it as I could. I fixed my eyes on the outlet and used my hands to work



Taking every precaution, the paramedics loaded me onto a stretcher and drove to the hospital. Once there, I had calmed down. The shaking had decreased, and I felt totally exhausted. A heart monitor was attached to check for arrhythmia or other problems. They took blood samples, too. The medical folks hooked me to an IV and pumped me full of saline. After two hours and a much-needed nap, the docs gave me a clean bill of health.

After three days SIQ for rest, to give my muscles time to heal from the convulsions, I was back at work with a small burn on my arm and a sore arm and leg.

What did I learn? More than I had planned to on that day. No matter how cautious you are, unplanned situations occur, and you always need to be watchful. It is OK to ask for help, even for something as simple as having someone

on the post through touch. Since the post was long, I was using a wrench instead of a ratchet. Unfortunately, it had been slipping off the nut all morning.

I was careful, but the wrench suddenly slipped again. So did my arm, which hit the back of the power outlet. The shock went through my arm, and it felt like lightning had struck my whole body. I should have released the wrench when I felt the shock, but it was hard to do while huddled in the rack.

I fought and freed myself from the compartment, only to slump onto the ground. I must have screamed because a shipmate came running and asked if I was OK. I sat on the floor, with my body shaking and arm tingling. I also began to feel really cold. I don't know if I was shaking more from shock or the cold.

My shipmate took me to maintenance, and someone called for an ambulance. My teeth were chattering, and a small burn had started forming on the inside of my right wrist. A couple maintainers led me to a couch and told me to lie down. I was fine physically, but I continued to shake, feel cold, and suddenly became scared. Several people covered me with jackets and sleeping bags to keep me warm; they stayed by my side to make sure I was OK.

The CO heard about the incident and made a trip downstairs a few minutes later to check on me.

The ambulance arrived shortly after, and the paramedics hooked me up to an EKG machine. They took my vitals and questioned my chief and supervisor about what had happened. They told him I had been hit for approximately two seconds with 120 volts and an unknown amount of amps. This is a small amount of voltage, but even a tiny amount can be fatal with enough exposure.

sit and hold a flashlight. I learned that even the simplest jobs can be difficult and dangerous. I appreciate the people I work with much more now. They came to my side at the first hint of trouble and stayed throughout the whole process. I'm extremely lucky. Far more dangerous pieces of equipment reside in the back of the aircraft, and that gear would have given me a much more dangerous shock. After preparing for my safety stand-down presentation and seeing pictures of "bad" electrical burns, I'm glad my incident didn't turn out any worse.

Three months, 1,000 jokes, and a few new nicknames later, I have nothing wrong with me, except for the small scar on my arm that serves as a constant reminder of what could have happened. ●●●

Petty Officer Rhees works in the avionics shop at VPU-2.

A note from the commanding officer: Since this incident, VPU-2 has made several changes to the way we operate to prevent a recurrence and to facilitate first aid and emergency response. We have fabricated a shock-strap to be used to pull personnel off of live electrical equipment should they come in contact that gear. These straps are mounted in the AE and AT shops, on the hangar deck, and are available on the aircraft. At the first safety stand-down following this incident, we gave a presentation on electrical-shock hazards and prevention tips to better inform the squadron of this danger. We have purchased and mounted an automatic external defibrillator (AED) on the hangar deck for first-response use. We also now have an AED program incorporated into ground safety and NAVOSH instruction.



Shrouded in Confusion

By AM3 Steve Rutledge

Mishaps usually occur because someone fails to follow rules, resulting in preventable damage or injury and the need for a mishap report. Navy or civilian maintainers never want to face that reality; yet, I must share how a proper pass down caused me to put my Class C mishap on paper.

Halfway through our Arabian Gulf cruise, maintenance had become the same, day after day. I had done every type of job many times with no problems and with plenty of time to complete each task. Early one evening, though, things changed. I was installing the port and starboard TEF shrouds, and a mishap resulted because I failed to put in a few cotter pins. The shrouds subsequently came apart in flight, damaging the starboard trailing-edge flap and the horizontal stabilator. The steps leading up to the mishap are a perfect study of what happens when maintainers are pressed for time, simultaneously are doing various jobs, and are tired.

I started on the port side of the FA-18C Hornet and made the first in a series of mistakes. I had the wrong pin for the port TEF shroud. Unfortunately, I already was on the aircraft when I noticed this problem. Why hadn't I checked the hardware in the shop? In this case, the hardware and tools already were on the aircraft from a previous task. I simply took over the box and hardware. My second mistake was not getting a pass down from the previous maintainer. That fact led to my third mistake: I took over a toolbox I hadn't inspected, assuming responsibility for it as if I had.

More mistakes followed these three, but let's get back to that wrong pin. I realized it was too short just as my LPO walked toward me. He asked how I was doing, and I replied, "I have a pin that is too short for the outer bushing." I gave him the pin and continued my work, installing the remaining pins and cotter keys. I also put down the safety panels and installed the fasteners. I then went to the starboard side and repeated what I had done on the port side.

When installing TEF shrouds, you work from inboard to outboard—at least that's what I thought. My next mistake was simple and stupid: I didn't have the pubs with me and, for all I knew, could have been installing these shrouds improperly from the start.

My LPO returned with the right pin for the starboard side. When I went to finish the starboard side, the hangar-deck chief asked me if I would ride the brakes. I agreed to do so—another mistake because it distracted me. They wanted to put the aircraft in a turn spot, so I installed the outboard pin and cotter keyed it. However, I did not "butterfly" the cotter key, a serious error.

I gathered up my hardware, put it in the toolbox, and handed the box to an airman, who returned it to the shop. I then climbed into the cockpit and rode brakes, so we could move the jet to a turn spot. I sat in the cockpit for about 20 minutes before the hangar-deck crew was ready to move the jet. That turn took priority over finishing the job I had started.

The jet finally was respotted, but, as luck would



The missing shroud and other damage to the aircraft is visible in these photos.



A missing pin is a simple mistake that can cause huge problems.



The right hardware can mean the difference between success and failure.

have it, we were delayed for 10 to 15 minutes more, waiting to figure out the engine problem. I sat on the LEX (leading-edge extension), waiting for an AE so the low-power turn could proceed.

When the electrician showed up, we turned the aircraft for about 45 minutes. Then I got up from the LEX, ready to leave the jet. Our hangar-deck chief grabbed me and asked if I could put on the covers for the canopy and windscreen. I did so, got off the aircraft, and was ready to go to the shop. I remembered that I had to take panels 53L and 53R with me, which I happily did because the job finally was done.

My final mistake would be the most costly. We had a shop meeting that had nothing to do with maintenance; when it was over, I finally was secured. It was time to go to the rack, but I didn't tell anyone that the panels and pin still needed to be installed. I instead assumed that the person checking my tools would see the pins and panels, ask someone, and would get a pass down. As it turned out, night check didn't know anything about the job. They knew only that panels 53L and 53R had to be installed. The TEF shrouds weren't discussed.

I walked past the aircraft on my way to berthing and saw them prepping it for another turn. Maintenance wasn't on my mind; I just wanted to hit the rack! I found out about the situation when the damaged aircraft returned.

I spelled out these errors because my lapses reflect the human-factor problems that Navy personnel face on a daily basis. Day—to-day maintenance, fatigue, and a steady routine can consume you. It did with me—to the point where I wasn't thinking any more. I just was doing maintenance over and over in a fog—not a good thing in a combat environment, where it's essential to have up jets for the flight schedule. A perceived rush develops, and it builds pressure on maintainers, leading to shortcuts and hurried procedures. This happened to me, and our CDIs and QA personnel never checked the work.

I could have avoided this situation had I done a proper pass down, taken ownership of the jet, and made sure the work was done correctly and completely. Instead, I'm left with a black mark on my Navy career that I never will forget. I'm grateful the pilot was able to land safely with minimal structural damage to the aircraft. My failures are clear, and I'm working to regain my reputation and trust in my maintenance ability. I'll succeed, but it would have been easier to have done the job right...the first time. 🙏

Petty Officer Rutledge works in the airframes shop at VFA-131.

Sailors and Marines Preventing Mishaps

BRAVO Zulu

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AD2 Marshall Reeske
HSL-42 Det 10

BZ
of the
Quarter

Petty Officer Reeske, a CDQAR, had to inspect the main rotor blades with centering sockets aligned. Even though the socket alignment is based solely on torque values and no prescribed visual-inspection procedure exists, he felt that the whole setup “just didn’t look right.”

Petty Officer Reeske immediately ordered the sockets realigned, but one blade’s lower centering socket slid forward with no torque at all. Reaching into the rotor hub, he could feel the socket, and it moved freely. After the blade was removed, the socket was cracked in two places, most likely from material failure. This find was remarkable because it was a non-routine visual inspection and done by a CDQAR—work above and beyond his normal duties.





ADAN Roberto Vargas
HSL-42

Airman Vargas accompanied the crew of Proud Warrior 420, an SH-60B, to Ambouli Field, Djibouti for a routine personnel transfer. Working as a plane captain at the field, he noticed a large amount of hydraulic fluid on the upper housing of the aircraft and expeditiously instructed the crew to shutdown.

After shutdown, Airman Vargas discovered a blown damper seal on the main rotor, leading to the loss of all hydraulic pressure and fluid in the rotor head. He then ensured the aircraft was secured and steps were taken to clean the area of hydraulic fluid.

Airman Vargas' actions prevented the helo from returning to the ship with a damaged main-rotor damper, a problem that could have caused a mishap.



Sgt. Delagarza, Sgt. Thomas, and Cpl. Johnson
VMFA-251

These Marines were pre-positioned at the departure end of runway 31 at NAS Fallon, Nev. to arm aircraft ordnance. As two FA-18s loaded with four Mk-82 general-purpose bombs taxied past, they noticed the second aircraft's port tire was flat and smoking. They ran after the aircraft, trying unsuccessfully to get the pilot's attention. The Marines subsequently called the control tower with their hand-held radio. The tower notified the pilot, who taxied clear of the runway and shut down the aircraft.

An inspection revealed the left brake was dragging, which caused the brake to heat up and deflate the tire. Their actions prevented a fire from developing that could have cooked off the ordnance.



ADAN Kyle Jones
VFA-81

Aircraft 400 was being pushed back on the bow. Airman Jones noticed the move director was positioned on the starboard side of the aircraft and could not see he was dangerously close to backing 400 into the nose of another aircraft. Jones immediately signaled the tow-tractor driver to stop.

The port horizontal stabilator was within 18 inches of the radome of aircraft 411. Airman Jones' quick thinking and assertiveness averted what would have been a crunch between two SUNLINER aircraft, saving the Navy more than \$90,000 in repairs.



AD2 Pabbie Perez
HSL-37 Det. 2

While doing a 14/28-day special inspection on an SH-60B, Petty Officer Perez felt a sharp point protruding through the protective lagging on the compressor bleed-air line of the No. 2 Engine. A closer look revealed a half-inch crack and depression in the line. He immediately notified the detachment maintenance chief, downing the aircraft until the line was replaced.

Petty Officer Perez showed keen attention-to-detail and extra effort that prevented a serious in-flight engine problem.



AMAN John Alba
HS-2

With sunset fast approaching, the flight crew was pressed for time to complete an FCF. Falcon 611 just had

returned from one of many FCF flights it had flown that day and was shut down to make rotor-head adjustments. Airman Alba was a troubleshooter, and he noticed a fastener for the tail-gear-box cowling had popped. He tried to tighten the fastener, but a closer look revealed the anchor nut was missing. He removed the cowling and found the anchor nut lodged between the spring capsule and flight-control cable. This FOD could have caused control problems, possibly causing a mishap.



LCpl. Jan Archie Aporongao
VMFA(AW)-225

Lance Corporal Aporongao was doing a daily inspection on an FA-18D when he noticed the brake wear indicator on the right main landing gear was worn beyond acceptable limits. He immediately downed the aircraft, and it was taken off the flight schedule.

Upon removing of the tire and wheel, shop personnel discovered that the brake had not worn down; it had shattered, leaving multiple pieces of the brake loose inside the wheel assembly. Had LCpl. Aporongao not been so thorough in his inspection, a mishap clearly would have occurred.



AD2 Christian Davis
VAW-121

Assigned to repair a fire-light discrepancy on the port engine, Petty Officer Davis noticed a broken insulating Micarta block on the aft inboard segment of the engine. Further inspection revealed several loose clamps and missing hardware.

Petty Officer Davis' thorough inspection and prompt notification of the discrepancy led to removal of the port engine and discovery of several more discrepancies, including a pinched fire-warning element and loose vent-seal line.



AM3 Robert Shultz
HSL-37 Det. 2

While troubleshooting a tail-wheel-lockpin discrepancy on an SH-60B, Petty Officer Shultz noticed excessive fluid around the top of the shock strut on the tail landing gear. He also noticed the packing was unseated and was working its way out of the tail strut.

Petty Officer Shultz paid attention and used the 18-inch rule to find a hazardous and potentially catastrophic condition.



AD2(AW) Tyson Brown
HSL-48 Det. 7

While troubleshooting a fuel selector-valve discrepancy on Venom 511, he noticed a nut on the aft bridge that appeared loose. Closer investigation determined that the port, aft bridge support had backed off. Had this situation gone undetected, the bolt could have fallen out, resulting in a loss of aircraft control.

On the helo's final QA inspection, Petty Officer Brown also noticed a cracked lower bushing on the lockpin-fitting assembly for the tail pylon.



AR Crystal Robles
VAQ-130

Airman Recruit Robles prevented an incident that could have seriously damaged equipment and cost lives.

She was working in the line division, refueling a Zapper aircraft at NAS Fallon, Nev., when she suddenly discovered the refueling truck was operating at 80 psi. The NATOPs states the maximum fueling rate is 55 psi. The newly qualified truck operator was confused, so Airman Recruit Robles jumped in, preventing over-pressurization, a chimney buckle, or worse.

Her keen attention to detail and prompt action is what you'd expect from a more senior and experienced plane captain.



AE3 Robert Boswell
VFA-195

Petty Officer Boswell was troubleshooting a complex pressurization and ECS-flow discrepancy on Chippy 401. He was doing an in-depth inspection of a wire bundle in the aircraft belly, near the ECS turbine, when he discovered a splice point, internal to the bundle, had melted. He repaired the splice point, and the ECS discrepancy checked good during aircraft ground turns and in flight.

Petty Officer Boswell's thorough troubleshooting techniques and diligent work practices returned a valuable fleet asset to service quickly and efficiently. He clearly prevented a potentially catastrophic problem with cabin-pressurization.



AT2(AW) Brian Burney
HSL-37

While working on a daily-and-turnaround inspection on an SH-60B, Petty Officer Burney discovered the first-stage hydraulic line, which leads to the tail-rotor servo, chaffing against the airframe in the tail section of the aircraft. He immediately notified maintenance control, and wrote a downing discrepancy. The first-stage hydraulic line was removed and replaced.

Petty Officer Burney was pivotal in breaking a mishap chain of events that could have led to the loss of tail-rotor control.



AMAN Jonathan Harris
HSL-48 Det. 1

During work-ups on board USS *Hue City* (CG-66), the night shift flight-deck director, Airman Harris, noticed the ship start a turn. This movement was a problem because the aircraft was in a "straightening evolution." He quickly informed the LSO, stopped the task, and secured the aircraft. Seconds later, the ship took a heavy roll, and the bridge confirmed they were turning (with an amber deck).

Had it not been for Airman Harris' alertness and safety attitude, this simple task may have resulted in aircraft damage or worse.



**AM2(AW) Michelle Reynolds
HSM-41**

Petty Officer Reynolds was a troubleshooter on a routine hot seat of Island Ruler 17. During the crew swap, she noticed unusual sounds and vibrations coming from the SH-60B's tail rotor. Recognizing the seriousness of the situation, she immediately told the PC to shut down the engines.

QARs inspected the aircraft and found seven of 16 outboard retention-plate bolts had backed off torque. Petty Officer Reynolds' assertiveness and keen attention to detail averted an imminent and catastrophic tail-rotor failure.



**ADAN Justin Atchley
VAQ-137**

During a troubleshooter walk-around inspection of Rook 501 with a new trainee, Airman Atchley found a problem with the heat shield while closely inspecting the ram-air scoop. A sizable hole was in the heat shield. He immediately notified maintenance control, and the aircraft was repaired in time for the next launch.

Although not a published procedure, Airman Atchley's meticulous inspection, thorough work ethic, and detailed training steps led to his timely discovery.



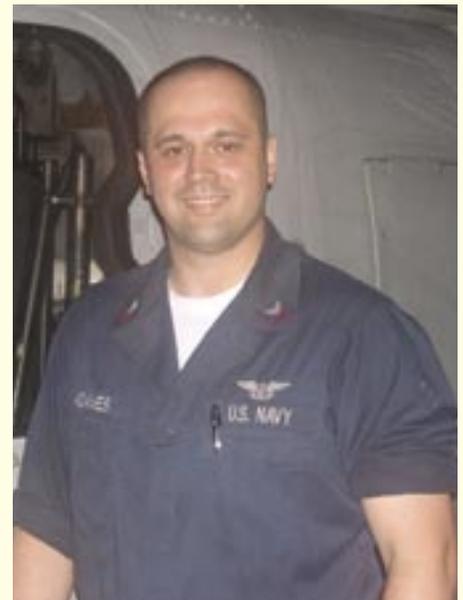
**AD2 Micheal Sabia
HSL-37 Det. 1**

During a phase "D" inspection on an SH-60B, Petty Officer Sabia found a small crack in the spherical bearing of the blue blade spindle, using just

a penlight and magnifying glass. He immediately told the detachment's maintenance control and downed the aircraft. Further inspection revealed several of the metal strips inside the spherical bearing were cracked and de-laminated, rendering the bearing unserviceable.

**AO1(AW) Javier Adames
HSL-42 Det. 3**

On a daily inspection of Proud Warrior 432, Petty Officer Adames used the 18-inch rule while inspecting the transmission oil-cooler access. He found a cracked B-nut in an obstructed location on the underside of the No. 2 engine's fuel-selector line—a good find in a tough area. He told the lead mech and immediately downed the aircraft. A subsequent inspection revealed another cracked B-nut on the No. 1 engine's fuel-selector line.



Petty Officer Adames' keen eye found a possible fuel-system malfunction in an area outside his normal duties, preventing a potentially catastrophic outcome.

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PPE

Problems and Solutions for Respirator Storage

By AMCS(AW) Robert Chenard

Problem: Almost half of the commands surveyed in FY-07 did not store respirators properly. This error can lead wearers to inhale particulate matter, or the respirator becoming distorted to the point that it no longer provides adequate protection.



Solution: OPNAVINST 5100.19E, Paragraph B0609 tells users to place respirators in a clean plastic bag or other container. It goes on to say that zip-lock bags are preferred, and users should make sure the respirator is completely dry to prevent mildew. It also addresses the fact that they should be stored “flat” in a clean, dry and uncontaminated area, urging that users not “crowd them” to avoid distorting the face piece. This hint especially is true for respirators that are not used frequently—like those in small composite repair facilities or those used for fit test.

Best Practice: MALS-31’s 500 division, which has a light respirator workload, has a good idea.



They use sterile storage bags from Georgia Steel and Chemical Company, Inc. One box has 48 bags that are 8 inches by 5 inches by 26 inches and comes with bag seals, which they use to write down the date last cleaned and inspected. This technique doesn’t eliminate the need to maintain a historical record of the inspections, but it quickly identifies that the respirators are stored properly and are readily available to protect their people—the real purpose behind specific storage requirements.

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

Airframes

Let's Talk Nuts, Bolts and Structural Hardware

By AMC(AW) James Litviak

Problem: Thousands of incidents have occurred since the beginning of naval aviation because of the improper use of structural hardware. We experienced everything from loss of life, catastrophic failure of critical components, foddied engines, to a simple locknut missing for the jumper wire on a landing-gear door. In the fleet, we often see pre-expended bins that have screws mixed with nuts, washers mixed with cotter pins, and hardware that doesn't even apply to aviation.

Solution: The illustrated-parts manual for specific platforms and the NA 01-1A-8, "Structural Hardware Manual," are the bibles to follow. All airframers should be familiar with these manuals and become experts on the content. You should know the difference between tensile and shear strength and cad-

mium plating vice stainless steel. Supervisors and CDIs must make sure the right hardware is available when tasked to do a job. Supervisors, also must inventory pre-ex material, and get rid of that "100 year bin." Hold training on using the right hardware, and discuss the effects of using substandard items. These steps will make equipment last longer.

Best practice: The best squadrons I've seen have centralized and controlled pre-expended bins with accurate inventory, and they are managed in accordance with COMNAVAIRFOR 4790.2. Specific shops in these commands accurately document consumable parts, by part number, on the VIDS/MAFs.

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

Fixing Airframe-Related Problems — Part I

By AMCS(AW) Robert Chenard

Problem: During my surveys, it is evident that a number of program managers are not following their program references.

Solution: I look at six programs and do so around the fleet. If you want to make your program "above average," you need to follow all the related program references. Here are some helpful hints:

Hydraulic Contamination: The electronic particle counter (EPC) logbook and the QA trend-analysis record go hand in hand. COMNAVAIRFORINST 4790.2, Vol. V, para. 6.3h(11) says that the worker must "ensure all hydraulic samples performed are sent to QA for hydraulic contamination control, trend analysis." So a sample in the EPC log must be in the QA trend record, too.

I also recommend taking this requirement a step further and document patch-test results, as well. This step will ensure your people record and deliver hydraulic-sample results, regardless of the method used—then make sure any required sample entries are annotated in the aircraft logbook or support-equipment record.

Tire and Wheel: Check your jacks! If the load-

test date is expired, the jacks must be turned in. If you don't, this error will set your command's SE PMS program below average.

CNAF 4790.2, Vol. V, para. 7.3c(2) says the program manager shall "provide follow-on training as necessary." Your supply/expediter personnel handle tires frequently, but they aren't getting regular safety reminders like the "tire changers" do. I recommend you provide training for them on a quarterly basis and document it. A simple tip is to put a muster sheet in the program binder, as well as the individual training record, to track who has missed the training, so you can get them up to speed.

Corrosion Control—CNAF 4790.2, Vol. V, para. 14.4a(5), (6) and (7)(a)(b), is very clear on the make up of the corrosion-control work center. CNAF 4790.2, Vol. I, par. 1.4c(2)(a) covers "deviation requests based solely on manpower constraints."

CNAF 4790.2, Vol I, Chap 10.3.1, "Aircraft and Support Equipment Painting," is three pages of revisions that you and your respiratory-protection program manager need to be aware of. This section should be included in your program references.

Volatile organic compound (VOC) is defined in CNAF 4790.2, Vol. I, Chap. 10.3.1c., NAVAIR 01-1A-509, Vol. 2, App. A, para. A-4.1.1. states, "It is the responsibility of the user activity to ensure that applicable rules are understood and obeyed." Check with your local base environmental office to see if this area applies to you. App. A discusses VOC in great detail and provides a list of VOC-compliant chemicals.

Emergency Reclamation—CNAF 4790.2, Vol. V, para. 14.3b(14) says to "conduct and document quarterly training and drills" and that "the drills shall encompass specific maintenance and all emergency-reclamation procedures." I recommend you keep a memo about the drill, muster report of the members who attended, and description of the scenario. Keep this information in your program binder for easy reference.

NA01-1A-509, Chap. 9, para. 9-3.3 and table 9-2 describe the items you need to have in your ERT kit. Table 9-2 specifically calls for full-face respira-

tors and para. 9-9.1.5 explains why. 29 CFR, Part 1910, para.1910.134(h)(3)(i)(b) requires your RPPM to inspect and clean the respirators every month, unless they are new and never have been removed from the manufacturers, original packaging—take time to document this fact.

Respiratory-Protection Program Manager—The RPPM needs to be designated in writing by the commanding officer, and the CO cannot delegate this signature authority. For commands with long-term detachments, I recommend assigning RPPM assistants to manage the program at the detachment site, but program responsibility still rests with the RPPM.

OPNAVINST 5100.23G, dated December 2005, required the RPPM to do an annual self-audit on the program. This review is different from the QA audit on the corrosion program. OPNAVINST 5100.19E, App. B6-A, has a useful checklist.

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

Paraloft

Riggers Making More Work for Themselves

By PRC(AW) Brian Westcott

Problem: Parachute riggers are cited in too many HMRs, and risk assessments on the ALSS gear often come out coded as a 1E. The result: A bulletin likely is issued, and PRs receive more of them than any other group in NAVAIR.

Unfortunately, most of the HMRs we're seeing often are because riggers didn't pack ALSS in accordance with the pubs. We simply are overlooking basic CDI steps. I understand that our shops are undermanned, but how many more errors can we accept?

In the last eight years, parachutes had 39 bulletins, life preservers 50 bulletins, and life rafts 59 bulletins. In 2007 alone, NAVAIR issued 11 bulletins for life preservers and 15 on life rafts. These items are a direct result of non-compliance with procedures, and that performance is unacceptable.

In just one week, NAVAIR saw the following HMRs: Life preservers packed with the wrong CO₂ bottle, retaining nut missing on an LRU-18 inflator, new quick disconnect on the LPFC misrouted, and buckles falling off. Any of these items could result in a bulletin.

Solution: Every mistake we make means more work. Visit the EI website and see the reports received on a daily basis. Do the job right, and you'll help reduce the workload.

It's time we get back to basics. Open the publications and read them. Use training time to really get into the weeds and find out what we are responsible for. Ensure CDIs and CDQARs actually are doing their work.

Best Practices: I have seen some good commands but don't have one to single out. However, the best squadrons know publications change, at times, daily. The PR rating is becoming more complex, and good commands use the book to find out about changes. Those that don't are doing an injustice to their aircrew. We need to get a handle on this major issue, or bulletins will continue to be sent. It raises the question: Will ALSS work correctly when needed?

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

Electrical

Multimeter Test Leads Can Cause Trouble

By AEC(AW) James Esslinger

Problem: Too many avionics workcenters are using safety wire on the ends of multimeter test leads used to probe connector-plug pins during troubleshooting. The big hazard is a real potential for being electrocuted during troubleshooting, as well as inducing voltages to circuits which otherwise should be de-energized.

Solution: Get your supply or tool-room coordinator or the wing to buy the right test-lead kits to troubleshoot connector-plug pins, such as the kit model No. TL 82 available from Fluke corporation. These kits can run from \$60-70. With a little help from the PR shop, a neat pouch can be built with individual slots for easy accounting of the



test probes, test leads, and probe ends. Safety is the main concern, and with today's high-end electronics, we need to reduce unintentional energizing of other circuits, too.

Best Practice: I'm new to the Naval Safety Center and can't name a specific command using the right leads. But from feedback, I know some

squadrons are using them. More will do so after reading this story.

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

Class C Mishap Summary

By ADCS(AW) Mike Tate

From May 16, 2007 to September 19, 2007, the Navy and Marine Corps had 20 class C Mishaps involving 21 aircraft. The cost of these incidents was \$1,605,607.

Some of the incidents during the quarter included several TFOAs, a passenger falling in an aircraft, aircraft damage while towing, SE damage while moving, and drop-tank while dropping.

The TFOAs often involve poor maintenance and inspection techniques. We need to tighten up our game in those areas. Loose gear coming off aircraft in flight is a danger to the aircraft, aircrew and people on the ground. Crunches continue to be a problem. We must follow all the rules about towing aircraft and equipment. If the sea state is high or the deck is slick, we need to identify those problems, set controls, and move the aircraft when safe. Dropped drop-tanks have been a problem that

has plagued maintainers in the past, and, after a period of inactivity, it appears that the problem has reared its ugly head, again. Fortunately, no one was injured, but we need to check the tanks to make sure they are empty—the thump test doesn't work. Open the cap, look inside, and use a dip check. Those simple steps are the only way to make sure tanks with fuel aren't dropped.

Senior Chief Tate is a maintenance analyst at the Naval Safety Center and coordinator of the Crossfeed section of Mech.

Survey Schedule

February 2008

NAF Atsugi

March 2008

NAWS Point Mugu

April 2008

NAS Lemoore

May 2008

MCAS Cherry Point

NAS New River

Helping Sailors and Marines Help Themselves

Sierra Hotel



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

Safety Surveys

VFA-131	VAW-125	HSL-40
HSL-37	VFA-34	HSL-44
HMH-463	VFA-32	VP-62
VP-4	HMM-774	VFA-103
VPU-2	HSL-60	NFDS
HSC-25	HS-5	Trelew, Argentina
HMM-262	AIMD Jacksonville	Punta India, Argentina
HMM-265	VP-5	Bahia Blanca, Argentina
VMGR-152	HSL-42	



MRMs

VPU-2	Punta India, Argentina
CMO-2	Bahia Blanca, Argentina
CVN-71 AIMD	AMO School
Trelew, Argentina	ASO School

Culture Workshops

VP-46	VT-4	CVN-77 AIMD
FRC-SW	VMGR-234	VFA-154
VAQ-139	VMGR-452	VFA-37
HS-10	HMLA-167	VFA-94
VR-59	HSC-2	VQ-7
VR-62	HSC-26	HM-15
VR-64	HSC-84	VT-28



For more information or to get on the schedule, please contact: Safety Surveys: Capt. Chris Foley, USMC at 757-444-3520 Ext. 7223, MRM: AEC Matthew Cooper at 757-444-3520 Ext. 7275, Culture Workshop: Cdr. John Morrison at 757-444-3520 Ext. 7213.

What's the most important question you should ask before working on an aircraft?

**Where's the
PPE?
It's not just
for looks!**

