October – December 1999

Mech

The Naval Safety Center's Aviation Maintenance Magazine

Dodging a Nosewheel

It's Easy to Remove Radomes

Unsafe for Flight

THE NAVAL SAFETY CENTER'S AVIATION MAINTENANCE MAGAZINE

Mech

Vol. 2, No. 8, Oct – Dec '99

On the cover:

ADAA Jami Lucia removes chocks and chains from a Sea Knight aboard USS *Inchon* (MCS 12), deployed in the Adriatic Sea in support of NATO's humanitarian relief effort, Operation Shining Hope. *U.S. Navy photo by PH1 Sean Jordan*

Mech (ISSN 1093-8753) is published quarterly by the Commander, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399. Mech contents should not be considered directive and may not be construed as incriminating under Article 31 of the Uniform Code of Military Justice. Views expressed in guest-written articles are not necessarily those of the Naval Safety Center. Periodicals postage paid at Norfolk, VA, and additional mailing offices.

• **POSTMASTER:** Send address changes to Mech, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399.

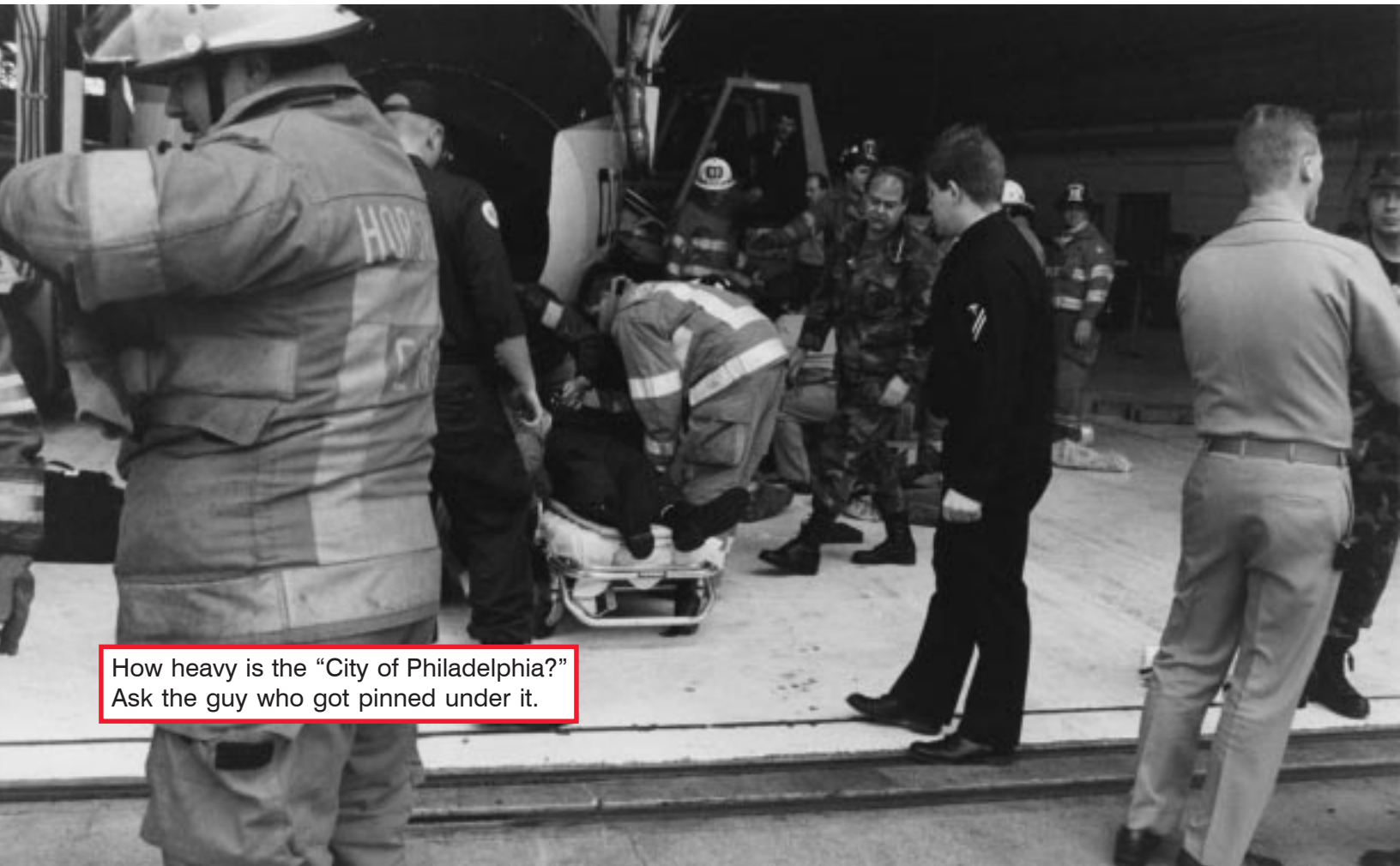
pg. 8

FEATURES

DEPARTMENTS

How City

Notice the towbar won't allow the C-9B to fall to the deck. Could that be a safety precaution for metalsmiths?



How heavy is the "City of Philadelphia?" Ask the guy who got pinned under it.

Heavy Is the of Philadelphia?

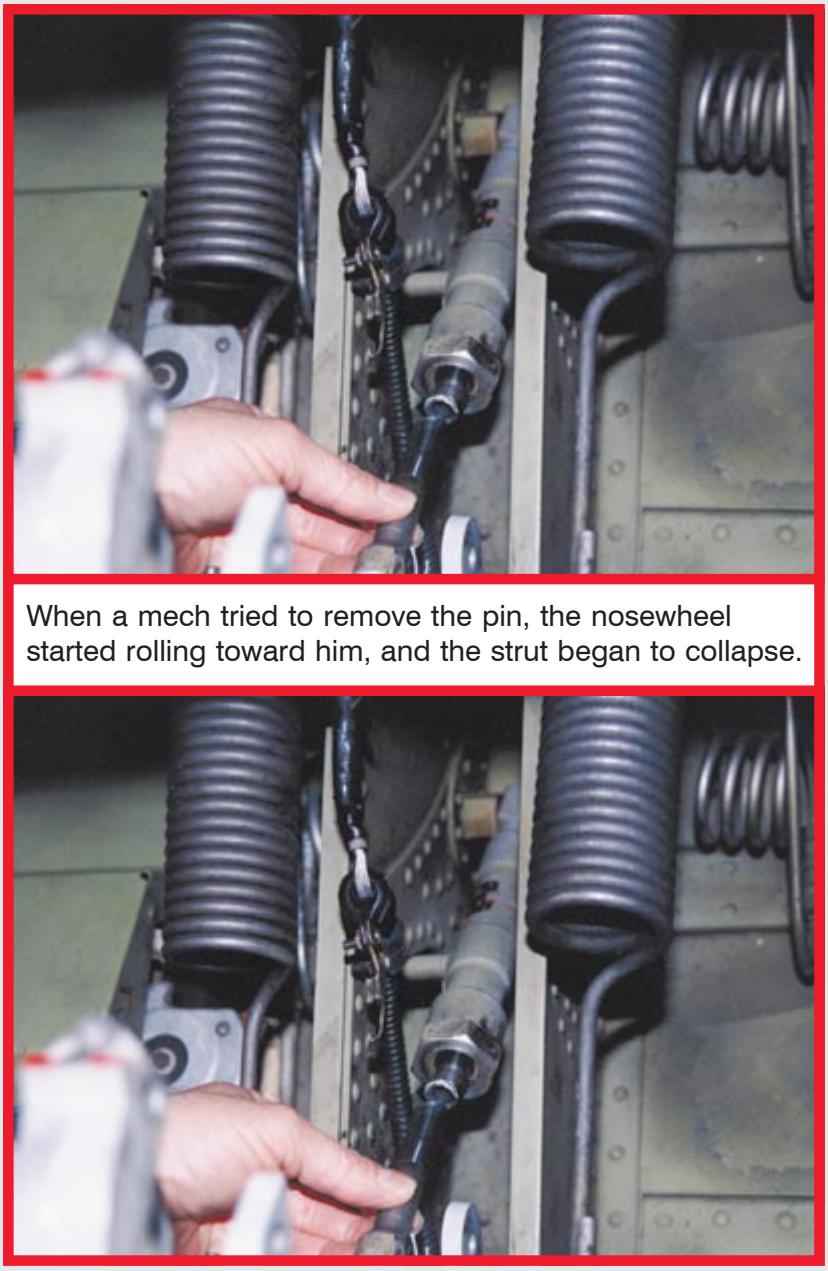
by LCdr. John Herron

While the nose gear was collapsing, I hoped it would stop before crushing us in the wheelwell. I tried frantically to dodge both the wheels coming at me and my partner running over me as we quickly backed toward the front of the wheelwell. I'd had no inkling the day would take such a scary turn. It hadn't started that way.

I had awakened that morning looking forward to an upcoming squadron det. I planned to help replace a nosegear linkage before the detachment left. This would be a relatively easy job, because my work center had begun working on the linkage a few days earlier. We should finish it in a few hours, because all that was left to do was replace a few cotter pins, torque some connecting bolts, and attach a pair of bungee springs to the linkage.

Attaching the bungee springs, which pull the linkage to the over-center position to keep the nose gear locked down, would be the hardest part of the job. I'd done this a couple of times during my eight years working on C-9s, and it didn't require jacking the aircraft.

Another metalsmith PO and I began working in the wheelwell, and we saw a cotter pin sticking out of an attaching bolt that wasn't correctly installed in the nose-gear linkage. The other PO tried to remove the pin to reinstall it. Suddenly, the nose-wheel started rolling toward us, and the strut



When a mech tried to remove the pin, the nosewheel started rolling toward him, and the strut began to collapse.

began to collapse. I tried to shift my legs to the side while the wheel was rolling my way, but the other PO backed into me. We quickly ran out of room as the nose gear collapsed. In all my years working on Navy aircraft, I never imagined such a thing could happen to me. We were trapped and helpless, but alive!

In all my years working on Navy aircraft, I never imagined such a thing could happen to me. We were trapped and helpless, but alive!

We'd been spared because we had unhooked the towbar from the tug but left the bar connected to the bird after moving it into the hangar. That's the only reason the gear didn't completely collapse. The nose of the plane had stopped about a foot short of the deck, trapping my legs. I felt pressure from the plane on one leg and managed to keep the other leg free, but I was pinned between the towbar and the plane. I yelled for help. A shipmate scrambled to maintenance control and called the fire department. I checked on the other petty officer. He had one leg pinned against the deck and the other pinned against the towbar.

Rescue personnel arrived quickly and asked us how we were doing. We assured them we were fine, considering that we were trapped under a 45-ton aircraft. About 15 minutes later, we heard the sound of air rushing into an air bag, which was how our rescuers lift large aircraft. But then, the air stopped. When we asked what was happening, nobody responded.

About five minutes later, the plane lifted a bit, allowing blood to circulate to my feet. Soon after, though, the plane lowered onto our legs again. We shouted in pain. Our rescuers worked furiously to free us. About 10 to 15 minutes later, I heard air rushing into the bags again. Slowly, the plane rose a little, then a little more. I climbed up inside the nose wheelwell so my friend, who was hurt more than I, could escape. I crawled out soon after.

As with most mishaps, several factors contributed to this incident. We lost situational awareness by fixating on a task. Also, this maintenance had been interrupted in response to higher priority gripes arising unexpectedly. A correctly written passdown is SOP in aircraft maintenance, but the NAMP doesn't specifically address written passdowns. Rather, the NAMP leaves that option to work-center supervisors and maintenance control.

We blew it again by not managing the risks associated with the job. A fundamental principle of operational risk management (ORM) is to accept no unnecessary risk. We tried to finish a job without a thorough passdown of what work had been done and what still needed doing, and by relating one maintenance task to another similar but different task. Even with the best of intentions and a can-do attitude, the risk was excessive.

Some of these lessons learned are recurring themes in naval aviation. We were not the first to be trapped under an aircraft when landing gear collapsed. Some lived, some didn't.

LCdr. Herron is the admin officer in VR-52; he was the safety officer when the nose gear collapsed.

Zapped by a Can-Do Attitude

by LCdr. Ed Weisbrod

One rainy day, Island-Ruler 10 was spotted on the line with a pitot-static-system discrepancy. Troubleshooters working the gripe had just fixed the problem when an AE1 came on the scene. A second helicopter, trying to meet its launch window, was having maintenance problems and asked the services of an AE troubleshooter. The head troubleshooter on 10 responded to the new trouble call, so the newly arrived AE1 did not get a good passdown from him.

Team player that he was, the AE1 said to himself, "These folks are done with the test set and I need it, so I'll help them disconnect it." I suppose he should have said, "Before I help these people, I should disconnect the test set, and make sure the aircraft's electrical power is secured." The AE1 reached over to disconnect the TTU-205, and got a firm grasp on the power connector. Unfortunately, he was standing in a puddle of water and the equipment was still damp from the recent rain showers. You can see where this is going; the AE1 got quite a shock. Only his cranial prevented the hair on his head from standing on end. Ben Franklin would've been so proud.

He spent three hours at medical, hooked up to an EKG machine, thinking about what he had done to get where he was and what he could do to prevent it from happening to someone else. This is what he came up with. First, never assume anything; the steps for disconnecting the test equipment hadn't been done yet, but I thought that since they were done troubleshooting, the equipment was available for the next task. Next, be aware of the weather and how it can affect what you're doing. Electricity and rain can mix, but only if you follow the rules; don't let your can-do attitude put you or your shipmates in jeopardy.

LCdr. Weisbrod is the Safety Officer for HSL-41.

P-3 wit

With the track-stops removed, it's real easy to remove the radome.

th a Tailhook

by Lt. Tim Bourdon

The supervisor of work-center 210, following orders, sent three technicians to remove the aft radar from an Orion. He didn't tell maintenance control his people were about to remove the radar, nor question why maintenance control hadn't given him a MAF for the job.

The techs had brought their tools to the aircraft, but not the MIMs. In preparing to get at the radar, they removed the aft latches from the radome, and slid the radome back to the full-open position but didn't check to see if rubber bumpers were attached to the stops. The radome slid completely off the tracks and crashed to the ground.

Earlier, at the morning maintenance meeting, the MMCO had ordered the work centers to prepare for depot-level repair on the same Orion. Preparations consisted of removing the aft radome and its antenna. Although the MMCO told the work centers about the preparations, he didn't order MAFs issued for work center 120 to pull the aft radome, or for work center 210 to pull the aft radar.

Two hours later, work-center 120 sent a four-member team to the bird to remove the aft radome. The shop supervisor was complying with his verbal tasking from the morning meeting and didn't question why a MAF had not been issued.

About 30 minutes later, the MO told maintenance control that repair plans for the P-3 had changed and to hold up preparations. Maintenance control radioed the airframe mechs and told them about the delay. At that point, airframes had already removed the aft radome's track-stops. The airframes supervisor directed the team to close and relatch the radome, but leave out the track-stops. He didn't reinstall the stops because he knew he'd have to remove them again later. The airframes crew returned to the shop without telling maintenance control the track-stops were not in place. The technicians didn't know that airframes had worked on the bird, so when the techs slid the radome open, it crashed to the deck.

The cause factors we identified during our investigation were failure to communicate and not following the book. The MIMs covering both removing the radome and the aft radar have warnings clearly identifying the danger of removing the track stops. We've relearned the importance of working by the book, communicating, and coordinating maintenance with MAFs. Not killing a shipmate is good news, but we can't take credit for it.

Lt. Bourdon is the ASO for VP-45.

Parts (tail-boom MAD-cap).... $4,975
Labor (144 manhours)..... $2,304
Total cost of mishap..... $7,279

Keep the Load
Turn In Faulty IM

by AMS2(AW) Rodney Bradford

Work pressures, nonstandard procedures, and tampering with IMRL gear almost killed a shipmate. Here's how.

Off Your Back – IMRL

On the evening before the incident, maintenance control told me to check the nitrogen pressure in the nose strut of aircraft 601. Another airframes mechanic and I positioned a nose-jack under the forward fuselage to keep the aircraft from falling on us. We connected the servicing line from the NAN-4 (nitrogen servicing cart) to the strut gauge, then connected the gauge assembly to the strut.

When I opened the strut's Shrader valve to read strut pressure, the indicator needle on the gauge didn't move. I removed the gauge from the strut to check it against the servicing pressure indicated on the NAN-4, but I still couldn't get an indication. When I removed the gauge and inspected the orifice, I found that the valve stem was rusted shut.

I took the gauge into the work center and tried to take out the valve-stem with a valve-stem remover, but the stem broke off in the gauge. I drilled out the remaining pieces, being careful not to damage the surrounding threads. I installed a new valve-stem and went back out to the job. When I finished working, I removed the new valve-stem and told the night LPO that the gauge needed to be turned in.

The next morning, maintenance control asked day-shift personnel to troubleshoot a nose-wheel shimmy. Part of their trouble-shooting procedure again involved checking nose-strut (nitrogen) pressure. Day-shift personnel were in a rush to get the job done, so they elected not to use a nose-jack. When they determined the tires were not causing the problem, they tried to service the strut. The pass-down they had received didn't mention problems with the servicing gauge.

A junior petty officer climbed into the wheelwell between the nose-gear drag-brace and the bottom of the fuselage to get at the Shrader valve. Concurrently, the safety PO and line CPO briefly turned their attention to an adjacent aircraft. When the young petty officer opened the Shrader valve, the aircraft settled onto his back. Another mech hurried to the NAN cart and pumped 500-600 psi into the servicing line. This raised the strut enough to allow the junior PO to fall clear of the aircraft. He was rushed to the hospital and later released with a severely bruised back.

None of this would have happened if everyone had adhered to SOP. A nose-jack would have prevented the entire incident. While it's true that the inexperienced technician placed himself in jeopardy when he climbed into the wheelwell, an attentive supervisor would have prevented him from staying there.

I take responsibility for using faulty IMRL and removing the valve stem. The absence of that stem allowed nitrogen to escape from the strut back into the fill line causing the strut to collapse. I also could have left a better pass-down or turned in the gear myself. It's simply not worth the risk to rush maintenance when it can hurt someone.

AMS2(AW) Bradford was an airframes mechanic in VAW-125 before he transferred to NAS Oceana AIMD.

FOD...

Deadly but

Most FOD is ingested on or near the deck while the engines are operating at high power.

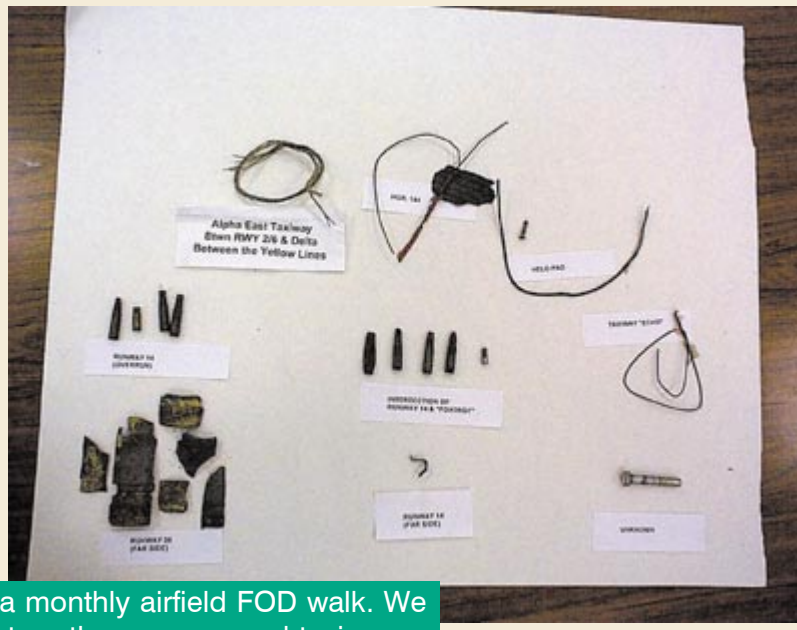
Foreign objects include nuts, bolts, ice, pebbles, coins, paper clips, ink pens, soda cans, electrical connectors, metal, asphalt — anything other than air. Some people don't appreciate the damage even the smallest foreign object can cause in a jet engine. To gain perspective, consider the effect of paper clips in a kitchen blender or nails in a garbage disposal. Envision a 2,650-pound engine, housing 560 pounds of dynamic components spinning at 16,810 revolutions per minute. Now introduce a solid object into the intake-air stream and **bam** -- foreign object damage.

In 1998, the Navy and Marine Corps team spent $24,832,000 to repair 256 jet engines damaged by poor housekeeping, improper maintenance procedures, and a lack of debris-control on airfields.

An ingested object damages one or more internal engine components, and the debris generated causes even more internal damage. This type of dynamic failure can be too expensive to repair. More dramatically, damaged engine parts can shoot out of the tailpipe and cause fires, structural damage and kill or injure people.

Internal components sometimes fail, but the number of damaged engines attributed to this is very low. Likewise, the incidence of in-flight FOD from ice, hail, birds, and dislodged hardware during flight is comparatively low. So when does most FOD occur, and how can we prevent it?

Most FOD is ingested on or near the deck while the engines are operating at high power. Of course, FOD can occur anytime an engine is running, but most often happens



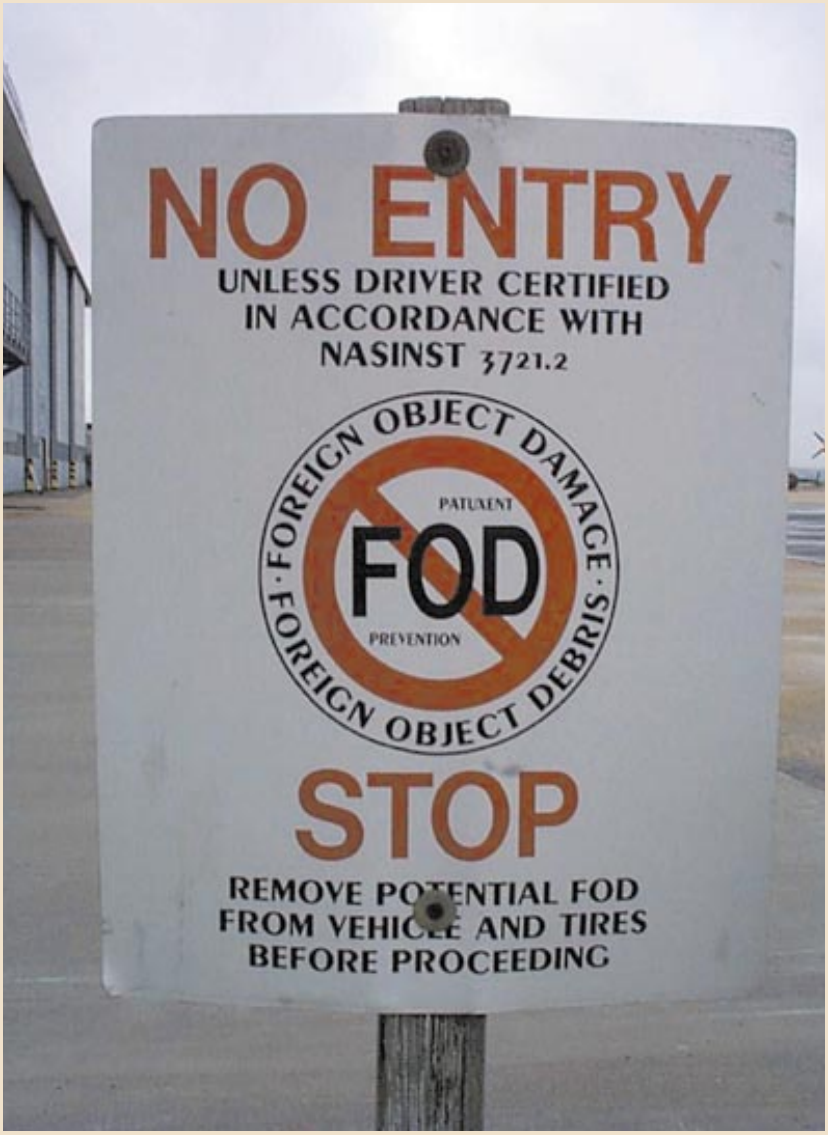
The two photos show the result of a monthly airfield FOD walk. We found the metal debris on the right on the runways and taxiways.

Preventable

by Cdr. Warren Tuthill

during takeoff and landing. At max power, the velocity of air at the intake of an F404-GE-400 engine (FA-18C powerplant) is about 480 mph. Most jet engines operated here at Patuxent River can lift a 200-pound person off the ground. Smaller objects can more easily be lifted and ingested. Small objects can be set in motion toward an engine intake by an aircraft's nose tire(s), the exhaust of other aircraft, and even the wind. That's why we strive to keep our airfield completely free of debris.

FOD can destroy mission capability, increase management time (analysis, reports, logistics), drain resources (engines and personnel), increase unscheduled maintenance, cripple morale and waste money. There is good news though - FOD is preventable, but prevention requires effort, and the solution is simple: Don't leave anything



adrift, anywhere. No pens, tools, rags, hardware, hats, soda cans, trash, coins...nothing! Don't walk over debris–pick it up.

We have an aggressive FOD awareness and prevention program. Everyone is expected to challenge improper housekeeping practices and recommend procedural changes to eliminate all FOD sources. Everyone is expected to collect debris and discard it properly, even if it's just one little piece.

The Team Patuxent FOD Awareness and Prevention Program has the support of senior leadership that sponsors:

• daily taxiway and runway servicing by vacuum trucks, magnetic bars, sweeper carts, visual inspections by airfield-facility-division personnel with airfield access control and vehicle inspections, and timely repairs by Public Works for degraded taxiways and aprons

• FOD walkdowns of hangar bays, aircraft ramps and aprons by every command at each shift change, and additional mini-walkdowns by maintenance personnel and aircrews during pre-flight inspections and man-up

• all hands airfield-FOD walkdowns the first Tuesday of every month and monthly FOD Council meetings

• daily analysis of debris collected with focusing on eliminating the source, and a daily, base-wide litter patrol

• strategically placed FOD-prevention signs and labels.

Pax River FODed eight engines in FY 1998 and four engines in FY 1999. At $24,832,000 to repair 256 engines, the average is $97,000 per engine, so we saved at least $388,000. If you consider that most engines in tactical aircraft cost between $1,000,000 and $3,500,000 each, the cost of our signs is a bargain.

Cdr. Tuthill is the Aircraft Maintenance Officer at NTWL, Patuxent River.

UNITED STATES POSTAL SERVICE

Statement of Ownership, Management, and Circulation

(Required by 39 USC 3685)

1. Publication Title: Mech
2. Publication No.: 1 0 4 5 - 0 7 5 8
3. Filing Date: 1 October 1999
4. Issue Frequency: Quarterly
5. No. of Issues Published Annually: 4
6. Annual Subscription Price: None
7. Complete Mailing Address of Known Office of Publication (Not printer) (Street, city, county, state, and ZIP+4): Commander, Naval Safety Center, 375 A Street, Norfolk VA 23511-4399
Contact Person: Derek Nelson
Telephone: 757-444-3520 EXT 7244
8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not printer): Commander (Code 11), Naval Safety Center, 375 A Street, Norfolk VA 23511-4399
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor (Do not leave blank)
Publisher (Name and complete mailing address): Commander (Code 11), Naval Safety Center, 375 A Street, Norfolk VA 23511-4399
Editor (Name and complete mailing address): Joe Ciello, Naval Safety Center, 375 A Street, Norfolk VA 23511-4399
Managing Editor (Name and complete mailing address): Derek Nelson, Naval Safety Center, 375 A Street, Norfolk VA 23511-4399
10. Owner (Do not leave blank. If the publication is owned by a corporation, give the name and address of the corporation immediately followed by the names and addresses of all stockholders owning or holding 1 percent or more of the total amount of stock. If not owned by a corporation, give the names and addresses of the individual owners. If owned by a partnership or other unincorporated firm, give its name and address as well as those of each individual owner. If the publication is published by a nonprofit organization, give its name and address.)

Full Name	Complete Mailing Address
United States Navy (Nonprofit)	Commander, Naval Safety Center, 375 A Street, Norfolk, VA 23511-4399

11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages, or Other Securities. If none, check box → ☒ None

Full Name	Complete Mailing Address

12. Tax Status (For completion by nonprofit organizations authorized to mail at special rates) (Check one)
The purpose, function, and nonprofit status of this organization and the exempt status for federal income tax purposes:
☐ Has Not Changed During Preceding 12 Months
☐ Has Changed During Preceding 12 Months (Publisher must submit explanation of change with this statement)

13. Publication Title: Mech	14. Issue Date for Circulation Data Below: All-Hazy 1999	
15. Extent and Nature of Circulation	Average No. Copies Each Issue During Preceding 12 Months	Actual No. Copies of Single Issue Published Nearest to Filing Date
a. Total No. Copies (Net Press Run)	14,481	14,784
b. Paid and/or Requested Circulation (1) Sales Through Dealers and Carriers, Street Vendors, and Counter Sales (Not Mailed)	None	None
(2) Paid or Requested Mail Subscriptions (Include advertiser's proof copies and exchange copies)	14,097	14,048
c. Total Paid and/or Requested Circulation (Sum of 15b(1) and 15b(2))	14,097	14,048
d. Free Distribution by Mail (Samples, Complimentary, and other free)	None	None
e. Free Distribution Outside the Mail (Carriers or other means)	None	None
f. Total Free Distribution (Sum of 15d and 15e)	None	None
g. Total Distribution (Sum of 15c and 15f)	14,097	14,048
h. Copies not Distributed (1) Office Use, Leftovers, Spoiled	350	300
(2) Returns from News Agents	None	None
i. Total (Sum of 15g, 15h(1), and 15h(2))	14,481	14,784
Percent Paid and/or Requested Circulation (15c / 15g x 100)	100	100

16. Publication of Statement of Ownership
☒ Publication required. Will be printed in the 2nd/3rd 1999 issue of this publication.
☐ Publication not required.

17. Signature and title of Editor, Publisher, Business Manager, or Owner
JOSEPH H. CASTO, EDITOR — Date: 9/16/99

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5. In item 16, indicate the date of the issue in which this Statement of Ownership will be published.
6. Item 17 must be signed.

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RUNAWAY PROWLER

by AN Stacy Vantassel

It was a stormy February evening in the Mediterranean Sea with 20-foot swells and a pitching deck. Snow, sleet, hail, and rain took turns all day, keeping the flight deck slick. Ops canceled the flight schedule, and CAG called for a plane captain to ride brakes on one of our EA-6Bs. I suited up and made my way to Zapper 502 waiting on the bow. I climbed in and released the brakes. The deck crew removed the chocks and tie-down chains, and we began to move.

As we rolled aft, the ship rolled hard to starboard. The tractor slid to my left, and the towbar disconnected from the nosewheel of my Prowler, which was sliding sideways and aft fast! I instinctively pulled the emergency-brake handle. The aircraft skidded to a stop about 20 feet forward of the waist cats. Blueshirts tied it down where it stopped, and the handler secured the flight deck. If the Prowler had slid another 10 feet, I'd have been swimming for my life.

I never heard a whistle during the entire event, and the director wasn't aware of what was happening until the aircraft had stopped moving. I was commended by the deck crew. They apologized to me for what had happened.

Should the flight-deck handler have tried to respot aircraft in such weather? Probably not, but whenever I'm asked to ride brakes, I will never again think of it as routine. If you expect the unexpected and pay attention to what's going on around you, you have a chance.

AN Vantassel is assigned to VAQ-130 line division. The incident took place aboard USS *Enterprise* (CVN 65).

Prowlers are large, heavy aircraft that are very difficult to move on a wet deck.

Blinded on the Flight Deck

by AT3 Demetrios Gonis

The bright flash of an electrical explosion in a power box disoriented the author.

My squadron was underway for our first set of work-ups aboard a newly assigned aircraft carrier. It was the day before our planes would join us for CQ. Several avionics techs, including me, got the call to check out the ship's flight-deck power before flight ops began. A quick check with flight-deck control (FDC) confirmed that E-Division had done all the necessary checks on the power outlets, so I went down to the support-equipment (SE) pool in the hangar bay to check out an mobile-motor generator (MMG).

After making my way back up to the flight deck, I did a pre-op check on the MMG using a deck-power outlet. I correctly connected everything and let everyone in the area know I was about to apply power. Despite the relatively few planes aboard, things were tight in the forward Hummer hole. Standing about 6 inches from the power station, I applied power; suddenly, there was a blinding explosion. The circuit breaker on the power box exploded, sending the cover plate flying into the side of my face, hitting my upper cheekbone and temple.

The force of the explosion knocked me back 5 feet into a MMG. The explosion's brightness and the force of the cover plate hitting me in the face blinded me. Another avionics troubleshooter grabbed me and forced me to sit down on the flight deck while someone else ran to alert FDC.

FDC called the flight deck's battle-dressing station, but it wasn't manned. After several tries, FDC finally found a medical team to check me over and confirm I had not been electrocuted; my blindness eventually went away.

Later, I realized there were a few things that should have clued me in to problems with this particular ship-power outlet, despite assurance from FDC that E-Division had recently op-checked the box and its operation. First, the shoddy condition of the power box was obvious. Only one bolt secured the power outlet to the circuit-breaker box. Next, the cap on the power outlet was hard to remove because of built-up corrosion. Last, once I got the cap off, I could see the electrical contacts were also corroded.

If I ever encounter a similar situation in the future, I'll tell my squadron's maintenance control and get in touch with the ship's electrical-safety people so they can fix the problem and prevent unexpected fireworks. Since the incident, E-division personnel have given a courtesy call to air-wing and squadron avionics personnel when they repair flight-deck-power outlets and power cords and are ready for an op-check. This procedure has allowed us to ensure these systems are, in fact, operational before use. We haven't had any more blinding incidents on the flight deck.

AT3 Demetrios Gonis is assigned to VAW-123.

QA— We're Ready For Torques

by AD1 Mark Gustke

The hangar is quiet, the khakis are gone, and it's just maintenance shirts getting everything ready for the next day's flight schedule — 2330 is a great time to start a shift. As my own supervisor and the lone QAR for our squadron's midcheck, I was in my normal mode for starting a shift.

While reading the passdown and checking tools in the shop, I was interrupted by an AMS1 bursting through the door, "QA, aircraft 05 is ready for you to witness the 'Jesus' [rotor-hub retaining] nut!" The AMS1, who'd supervised installation of the rotor head, seemed anxious to end the shift and be on his way home.

Holding the billet of command Safety PO for the past year and only recently returning to QA, I knew I wasn't current on some maintenance procedures. MIMs were my friends. I reviewed the manual for every job I'd done since my return. I read through each of the steps and made mental notes about what needed extra attention. A pink-highlighted, correctly-entered, Interim Rapid Action Change (IRAC) caught my eye. I turned back to the front of the manual and read the reinforcing information for the current procedure.

Cranial on and strapped, I climbed up to the forward-rotor head to join the waiting maintenance team. Sure enough, their MIM was on top with them and opened to the right page. The same IRAC markings I'd seen in the QA pub were in the det's pub. All of the special torque equipment was already assembled on top of the "Jesus" nut. With the IRAC firmly ingrained in my memory, I told the mechs to take it off so that I could inspect the washer below the nut, and then check that the J-nut would hand-tighten to its nylon locking ring before applying torque as directed by the IRAC. Satisfied that the washer was in place and the J-nut hand-turned to the locking ring, I gave the OK to reassemble the torque equipment and begin torquing the J-nut.

AE3 Denise Machleit checks the rear rotor head of an H-46 for security. Helicopters generate lots of vibration and Machleit is one of the reasons they don't come apart in the air.

The little voice in the back of my head screamed, "Something's wrong here!"

After applying only 25 percent of the initial torque, the torque adapter slipped off the J-nut; nobody gave it a second thought. The AMS1 raised the torque equipment to inspect the adapter for damage. He didn't see what caused the slippage, so he put everything back together.

When he reached 50 percent torque, the adapter slipped off again! The rapid unwinding of the torque multiplier made a loud noise, catching our attention. The little voice in the back of my head screamed, "Something's wrong here!" I told the mechs to take everything off again, and there it was plain as day. The J-nut had been run on upside down! A groove in the rotor-hub-oil tank from the torque equipment was proof we'd done something wrong.

We stopped to collect ourselves, figure out what had happened, and decide whether this situation or the hub was salvageable. The third caution on the procedure held the answer. The IRAC I had focused so much energy on was entered just below it: "Ensure rotor hub retaining nut is installed with chamfered edge of lugs facing down (toward transmission). Installing nut with chamfered edge up results in interference between nut and hub oil tank." The hub-retaining nuts are marked "top" to make it easier to install them correctly.

I learned a hard lesson: Pay close attention to all cautions and warnings. Before witnessing torques, make sure all CDI in-process steps have been followed and check to see who did them. More importantly, when using special tools, if anything slips or doesn't work as advertised, find out what caused the problem before going back to work. This lack of attention cost my squadron $3,000 for a replacement hub-oil tank, 15 man-hours and the aircraft was not available for the flight schedule for two additional days. It also cost me several mornings of tossing and turning in my sleep, scarred my perfectionist attitude, and bruised my ego.

AD1 Gustke is the mid-check QAR at HC-6.

CADs have blown away parts of hands, blinded people, or startled them into falling off aircraft. In the photo, AD3 Christopher Polk is making sure the CAD is disconnected.

Up In Smoke

by AT2(AW) John Goeres

We don't get to do a lot of maintenance with CADs. We work with them maybe five times a year. We do have CAD training, but without a lot of OJT, it isn't possible to cover every situation, and CADs can be dangerous.

Monday was a scheduled training day, but maintenance control wanted a CADs inspection done on an aircraft in phase maintenance. I teamed up with two other technicians and got everything ready for the inspection. We were doing it by the book. I knew the system, we were qualified, and I had an MRC deck in my hand.

I read each step on the maintenance cards to the other two techs. The cards directed us to remove the positive leads from the CADs. I thought it odd that there wasn't a step directing us to remove the negative leads also. I searched the cards repeatedly trying to find where the deck ordered us to remove the negative wires. I even told the senior PO, who was working with me. He agreed that it was odd.

Once ready to activate the system, I made sure that everyone was out of the way and safely on the ground. When I threw the switch, there was a loud **bang** and a white-powder cloud of firefighting agent CF3Br (bromotrifluoromethane) hovered around the aft section of the aircraft. The whole squadron heard the bang, and maintenance control was out there in a flash wanting to know what had happened. I explained the situation with the maintenance cards in my hand.

Maintenance control reviewed the cards and pointed out the step to remove the negative wire. It was in a warning that explained how to shunt the CAD. The last sentence of the warning directs you to remove the ground wire from the terminal after shunting the CAD.

I'd read the warning but it didn't sink in because I was looking for a step directing me to remove the negative wire. Being a senior avionics tech, I should have realized the danger of a negative wire being connected backwards or stray voltage. It's a good thing we are very cautious when working with CADS. If a shipmate had been on the bird when the CAD blew, he could have been startled by the blast and fallen off the aircraft, or the firefighting agent could have hit him in the face. I'm very embarrassed by this incident. Not so much that I missed the warning, but rather I could have hurt a shipmate — that would have been a lot harder to live with.

AT2(AW) John Goeres is assigned to HC-6.

You Signed For It– Did You Check It?

by AD2(AW) Michael Stanick

The squadron was getting two detachments ready to deploy for a battle-group exercise, and we had two aircraft in phase "D" inspections. With most of our detachments deployed, we had only a small number of people left around the squadron, so everyone, including QARs, were doing maintenance and inspections.

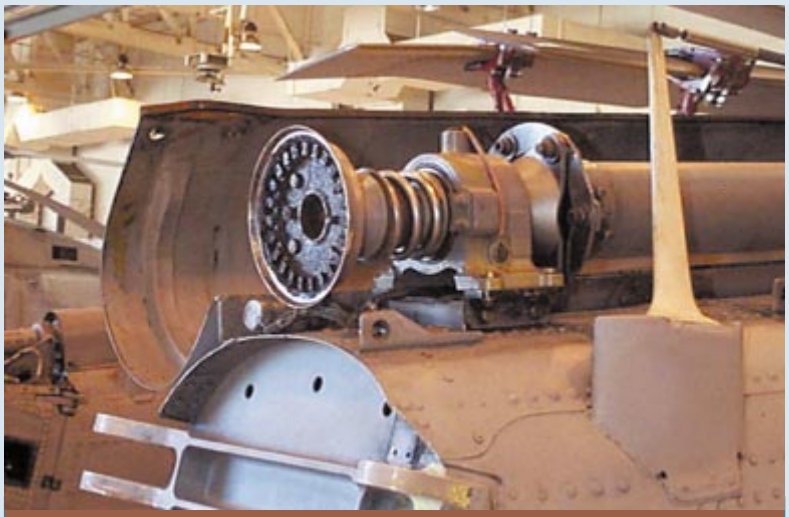
I'm a power plants QAR in an SH-60B squadron. I had been in the LAMPS community four-and-a-half years and was nine months into being a quality-assurance rep in my new command. Being a QAR had been a real learning experience for me, but I was starting to feel confident in my ability to do the job.

While I was helping break down a spindle assembly, I was asked to inspect the greasing of a disconnect coupling. I walked over to the other aircraft in phase "D" and watched mechs grease the disconnect coupling and torque the mountbolts for the aft end of the No. 5 driveshaft.

The phase card says to fold the tail, then to inspect and grease the disconnect input and output jaws. The AD3 working the task cards said he would do it when he had enough people to fold the pylon. I told him that I would sign off the cards after he inspected and greased the jaws. Then I went back to help break down the spindles on another aircraft.

Later that day, the chief and phase coordinator asked me to sign off the cards for any work I witnessed for their aircraft, so I pulled out the phase cards for the disconnect coupling and read through them to make sure I hadn't missed anything. When I came across the inspection and greasing of the disconnect jaws, I remembered I hadn't been able to witness that because the tail pylon was spread.

I asked, "Was this part of the card completed?" The answer I got was, "Yes, but we've already spread the tail again." I looked at the



Did you grease the disconnect jaws?

AD3, the chief, and the phase coordinator paused for a minute, said "OK," and signed off the cards.

Two days later, the aircraft flew a functional check flight and logged 10.1 hours over five days. After four daily-and-turnaround inspections, we discovered, during a 30-hour inspection, that the disconnect jaws had not been greased.

I was the main person at fault because I didn't inspect what I'd signed for. My shortcut could have cost people their lives or caused extensive damage to the aircraft. Still, it cost the squadron a lot of man-hours and parts to replace the couplings that had been damaged from operating without grease.

Shortcuts and high-tempo schedules can lead to disaster. I relearned some basics: Supervise all CDI/CDQAR-required maintenance. Verify each step and scrutinize the pubs and MRCs that pertain to each procedure. As a QAR, you're there to make sure everything is done correctly the first time – don't take anyone's word for it.

AD2(AW) Stanick is assigned to HSL-44 QA.

Unsafe for Flight

by Capt. Jim Theisen

SSgt. Troup (top left) instructs plane captains Cpl. Cody Johnson and LCpl. Benjamin Packard on stabilator-positioning checks, and below, discusses the safety-wire problem with Lcpl. Jeff Redd Jr. who found the same condition in a second Hornet.

During the final walk-around inspection of an FA-18D SSgt. Rodney Troup noticed something odd. From the rear of the bird, he could see a split of approximately 4 inches between the stabilators; in the cockpit, indications appeared normal to the pilot, even after precautionary built-in tests. After consulting with airframe troubleshooters and a QAR, the QAR declared the Hornet unsafe for flight.

Further inspection revealed that the safety-wire on a servo-cylinder, jam-nut had broken, allowing the nut and its tab-washer to back off the wrenching-lug to the extreme end of the rod. This allowed the servo-cylinder to travel beyond its correct distance and contact the rear bulkhead. Had the Hornet launched, further damage to this critical area could have resulted in a mishap.

A month after SSgt. Troup noted the split problem, LCpl. Jeff Redd Jr. was on a final-checks inspection and found the same discrepancy on another jet. This prompted the squadron to inspect each aircraft before any more flights. The troops found a third Hornet with the same problem. We sent a hazrep, and are still trying to determine how the safety wire on those servo-cylinder, jam-nuts broke.

Capt. Theisen is the ASO in VMFA(AW)-224.

Note: In three months, SSgt. Troup's expertise saved two squadron aircraft and quite possibly the lives of the aircrews.

Semper Fi,

LtCol. T.E. Glazer, Commanding Officer, VMFA(AW)-224

BRAVO ZULU

AE1 Jesse Scott
VP-10

While preflighting an Orion, AE1 Scott (a NATOPS flight-engineer evaluator) checked the flight-control, cable-guide rollers in the main electrical load center because of a recent hazrep. While he was in that load center, he found a pool of water beneath the No. 2 and No. 3 generators' supervisory panels.

Maintenance control downed the P-3C, and a maintenance crew removed the water.

AT2 Paul Pasley
VS-38

An S-3B aboard USS *Constellation* (CV 64) was in tension, the wipeout was complete, and both final checkers had given thumbs up to the catapult officer. Immediately prior to the cat shot, AT2 Pasley noticed a pink mist coming from the nose wheelwell and quickly suspended the launch.

There was a hairline crack in the launch-bar actuator, which soon grew large enough to completely drain the No. 1 hydraulic system. AT2 Pasley's fast action prevented an in-flight, flight-control failure.

AD1(AW) Jeffrey Zucconi
HS-15

AD1 Zucconi, a power-plants troubleshooter, was inspecting Red Lion 617, which had been scheduled to fly later in the day. While inspecting the area around the tail rotor, he discovered one of the pitch-control links' inboard bearings wasn't seated in the rod-end.

After reporting his find to maintenance control and writing a MAF, he removed the pitch-control link, and the rod-end bearing fell out. The bearing and rod- end were excessively worn. The aircraft had flown seven hours since this area had last been inspected.

Of his own volition, AD1 Zucconi habitually checks all the birds on the day's flight schedule after the line and shops do their dailies. His find that day prevented a possible in-flight loss of tail-rotor control.

Photo by PH2 Andrew Rutigliano.

AD3 Joshua Nelson
VP-47

by Lt. Stacie Milark

During a daily inspection, AD3 Nelson walked out onto the port wing and noticed blow-by on the No. 2 turtleback and hot-section panel. He removed the panels and found a burned dummy plug, and one-fourth of the ignitor-liner support missing. He reported his findings to maintenance control and the power-plants LPO, who investigated the find. He suspected fuel nozzles giving an improper spray pattern in the combustion chamber. This correct troubleshooting stemmed from an emergency one week earlier.

A squadron aircraft had had an engine catch fire during a takeoff roll and aborted. The six-o'clock fuel-nozzle shroud on No. 4 engine had broken off allowing raw fuel to stream into the combustion can. This abnormal spray pattern heated a different area of the combustion section and caused an increase in TIT (turbine inlet temperature) that caused the 12 o'clock dummy plug to split in half. One half blew forward to make a 6-by-3-inch hole in the firewall; the other half blew aft and made a 3-inch hole in the turbine trough. The excess heat burned wires in the bottom of the nacelle (pie-pan access area) which required depot-level repair.

Power plants removed all the fuel nozzles from AD3 Nelson's No. 2 engine and discovered the fuel-nozzle shroud missing from the six o'clock position. They removed and replaced the turbine and did a FOD check. Then they removed and replaced all the dummy plugs and fuel nozzles. AD3 Nelson's find prevented an engine change and a possible mishap.

AMS3 John Hallenbeck
VAW-117

AMS3 Hallenbeck, an airframes troubleshooter, was preflighting Wallbanger 602 aboard USS *Carl Vinson* (CVN 70). During his inspection, he discovered the starboard-forward bracket for the MLG's timer check-valve was cracked. AMS3 Hallenbeck immediately told the FDC and a QA rep. Further inspection proved the cracked bracket was beyond limits and required depot-level repair.

A P&E team replaced the cracked bracket with assistance from the airframes shop. The aircraft was returned to full-mission capable in time to fly in Operation Southern Watch. AMS3 Hallenbeck's find prevented an emergency during a trap.

AMS2(AW) Rodney Bradford
VAW-125

AMS2 Bradford was assigned a clean-bird inspection on Tigertail 600. Collateral duty inspectors (CDIs) must do a clean-bird inspection on aircraft that have been down or in the hangar a long time. The CDIs inspect for fastener security, FOD and panel integrity.

Checking areas outside his responsibility, AMS2 Bradford found a chafed wire bundle in the bulkhead between the forward equipment compartment and the combat information center. The exposed wires could have caused an airborne electrical fire.

AME1(W) Victor Alanis
VAQ-128

While serving as QAR for a close-panel inspection on Phoenix 670 after an AME inspection, AME1 Alanis was inspecting the flap-drive gearbox when he noticed a clump of grease on the gearbox cable. Looking more closely, he noticed that several strands of the cable were frayed.

Further investigation and consultation with airframe mechs revealed that the cable's condition was beyond acceptable limits. The aircraft was placed in a down status. Had this condition gone unnoticed, the cable might have failed and damaged the aircraft. AME1 Alanis' find prevented a possible in-flight emergency.

AMHAN Joshua G. Wemer
and AEAN Michael B. Ferry
VQ-3

While preflighting an E-6B at Tinker AFB, AEAN Ferry and AMHAN Wemer were switching from ground-electrical power to aircraft power. Upon shutdown, the NC-10 emitted smoke and sparks and began to burn. AEAN Ferry immediately ran to the aircraft while AMHAN Wemer yelled for the flight engineer to grab the fire extinguisher from the main door.

AEAN Ferry grabbed the fire bottle and extinguished the fire while AMHAN Wemer disconnected the NC-10 and moved it away from the aircraft.

AEAN Ferry's and AMHAN Wemer's immediate and correct responses prevented serious damage to both the power cart and the aircraft.

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ALSS

Jumping out of a Perfectly Good Airplane

by PRC(AW) Bill Yeager

We parachute riggers take pride in the life-saving aspects of our jobs. PRs at an overseas AIMD thought they'd help out their local EOD unit by packing their parachutes for the next day's jump. What was intended as a helping-hand turned into a nightmare. The only things that opened that next morning were the eyes of all responsible when they learned that because of a rigger's incorrect packing, a jumper could have been killed! This is not a first-time occurrence.

AIMDs pack parachutes used for emergency egress only. Sport or military free-fall jumps are intentional and do not fall into this category. We at the Safety Center frequently answer questions on all aspects of parachuting, ranging from qualifications and authorization to packing and maintaining parachutes. We'll try to untwist the shrouds of confusion (pun intended) with this article.

The Navy's Premeditated Personnel Parachuting (P3) Program, outlined in OPNAVINST 3501.225A, emphasizes safety and outlines qualifications for naval parachutists. A P3 jump is intentional. It is a plan for using a parachute to descend all or part of the way to the surface from an aircraft.

Only qualified military and DoD civilian parachutists are permitted to use Navy parachute equipment, or have access to Navy packing and maintenance facilities. Obtaining qualifications and training to participate in the P3 program are discussed in OPNAVINST 3501.225A. This instruction also identifies the training required to maintain P3 rigs. Specifically, only those who have attended Parachute Rigger School at Fort Lee, Va., can pack and repair parachutes for P3 jumps. AIMD and MALs personnel are strictly forbidden to do these jobs unless trained and qualified.

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

Your Test Equipment Might Blow Up

by PRC(AW) Yeager

A technician was seriously hurt when the oxygen source he was using to test an oxygen mask exploded. The technician had followed the pub correctly, and the work area was clean and free of grease, oil, and other hydrocarbons. The investigation revealed that the regulator used to control oxygen flow from the supply bottle to the TTU-489/E test set was aluminum instead of brass.

Because of that mishap, NAVAIR issued IRAC 1 to the TTU-489/E test set publication NA17-15BC-7. The IRAC focused on the principle that "Incompatibility of regulator components with oxygen may result in explosion or fire." The IRAC also addresses identification parameters for oxygen regulators. They include:

- Brass body construction
- Metallic diaphragms
- Teflon or Kel-F-Seats
- Porous inlet filters

Excessive use of Teflon tape is a major source of (particulate) blockage in small regulator parts; do not use it to correct bad connections. Replace badly leaking brass fittings; it's the only acceptable corrective action when dealing with high-pressure lines. Use only one turn of the tape to ensure a good seal.

POWER PLANTS

What Color Is Your Fluid?

by ADCS(AW) Val Calderon

Two days before a mishap, an H-60 det got a message from their joint oil-analysis program advising them of too much water in an oil sample from an intermediate gearbox (IGB). The message directed the det to drain, flush and reservice the IGB. Maintenance personnel complied with the message, but did not correctly annotate it in the oil consumption log, the MAF, or the shift pass-down log.

The following day, one of the det's airmen set the stage for a mishap when he serviced a PON-6 for DOD-L-85734 (transmission oil) with hydraulic fluid. Then the day-shift crew decided to drain, flush, and reservice the IGB, as outlined in the advisory. A plane captain (PC) did the job, used the PON-6 that had been serviced by the airman and, unknowingly, serviced the gearbox with hydraulic fluid.

The hydraulic fluid's low viscosity, high evaporation rate, and lack of proper additives, could not lubricate the IGB for continuous operation. This lack of lubrication caused the output-outboard bearing of the IGB to fail about 28 minutes into the flight. When the bearing seized, the torsion load caused medium frequency vibration. The output bevel gear and integrated shaft failed, and ultimately, the tail-rotor drive was lost. The mishap HAC autorotated the helo into the water; all three crew members got out and were rescued.

Servicing aircraft with the wrong fluid is a recurring problem in the fleet. No community is safe from it. At the Safety Center, we have examples of P-3, A-6 and SH-60F mishaps in which the primary cause factor was servicing with the wrong fluid. In some cases, the damage was minimal, but some led to a total loss of the aircraft and fatalities.

The many causal factors in past mishaps encourage vigilance from all of us. In the mishap above, it's easy to see how circumstances led to a Class A mishap. An incorrect or incomplete passdown, inadequate training, and a lack of situational awareness are always at the top of the causal lists.

As a young Sailor, I could easily discern a type of fluid by the color of the one-quart cans we took on deployments. The can for MIL-L-23699 was green, and MIL-H-83282 was red. Although I was trained to inspect the fluid before servicing the PON-6 and HSU-1, I found the color coding system accurate and reliable. Nowadays, the color of a can is no longer a reliable cue to determine the type of fluid inside. During a recent survey I found hydraulic fluid in three different colors of cans—red, silver, and blue. I've also seen gearbox oil in white plastic containers. At one command, a QAR told me about a Product Quality Deficiency Report submitted because the label and what was inside a 55-gallon drum were not the same. This recipe for disaster was avoided because of observant maintenance people.

Making sure we're putting the right fluid in an aircraft system entails using easy-to-follow procedures in day-to-day operations. The type of fluid and the environment dictate what procedures to use to ensure the mishap illustrated above is eliminated.

ADCS Calderon is a maintenance analyst who also emcees the maintenance malpractice presentation (MMP) for the Naval Safety Center. To schedule an MMP, contact us at the address or phone number listed inside the front cover.

TECH LIBRARY

Are We Using All Our Resources?

by ATCS(AW) Thomas Smith

I heard complaints at the Naval Aerospace Vehicle Wiring Action Group (NAVWAG) and Cable Harness Repair Or Manufacture Equivalence (CHROME) conferences that the NA 01-1A-505 manual is outdated. This is true, but the leadership at AIR 4.4.4 will soon fix the problem.

Did you know that the 505 manual is 30 volumes long? The cover page shows that information. So if you don't have NAVAIR 01-1A-505.1 through NAVAIR 01-1A-505.29, you don't have a complete 505. That's a lot of books!

While thumbing through the Naval Safety Center's tech library, I noticed several other neat things. For example, the front page tells you if the pub you're using supersedes another publication, and if all changes have been incorporated since the last revision.

To help us maintain an outstanding technical publications library, the computerized self evaluation checklist (CSEC) asks specific questions such as:

1. Have changes, revisions, IRACs and RACs been incorporated in the manual?

2. Are NAVAIR pubs, manuals, and technical directives current and readily accessible to work-center personnel?

3. Are minimum requirements done during each dispersed library audit?

4. Does the CTPL provide training and assistance to both the work-center supervisor and the dispersed librarian?

5. Is a minimum of 25 percent of the pubs in the Dispersed Technical Publications Library (DTPL) checked during each DTPL audit, making sure the same pubs are not included in the 25-percent requirement during any three consecutive audits?

6. During the annual audit of the CTPL, does the inventory list match the one in the latest NAVSUP 2002?

Knowing what these questions ask and following-up on them will help you avoid maintenance malpractice hazards. The work-center supervisor, the CTPL, the technicians doing the maintenance, the CDI, CDQAR, and QAR are all responsible for correct maintenance. We are a team!

ATCS Smith is a maintenance analyst at the Naval Safety Center.

HAZMAT

New OSHA Regs for Respiratory Protection — Are You Qualified?

by AMCS(AW) Rory Stanwood

If you need to be a designated respiratory-protection-program manager (RPPM), you should know that the NAVOSH manual (OPNAV 5100.23E) requires candidates to attend a respiratory protection course (A-493-0072 or equivalent) listed in chapter 15 (page 15-6, paragraph 1512.b.4).

The Occupational Safety and Health Administration (OSHA) has also modified respiratory standards (CFR29 1910.134 and CFR 1926.103) to create an effective respiratory program.

The following list highlights the OSHA Regulatory Bulletin published Jan. 8, 1998. You can download the complete change from http://www.osha-slc.gov/SLTC.

- Respirator-cartridge change-out schedules and conditions affecting cartridges
- Procedures and schedules for respiratory maintenance
- All fit-testing of respirators to be conducted annually
- Fit-testing procedures
- Medical evaluation procedures

Highlights from the new OPNAV 5100.23E:

- Commands must not establish voluntary respirator-use programs.
- Commands must implement a change schedule for canisters and cartridges based on objective information

or data that will ensure canisters and cartridges are changed before the end of the month.

• Military gas masks are only for Chemical, Biological, and Radiological (CBR) warfare, CBR warfare training, and nuclear accidents.

• Breathing-air quality must be monitored at least quarterly. Monitoring does not apply to ambient-air-breathing apparatus.

• If only high-temp alarms are used, activities must monitor the air supply at intervals sufficient to prevent carbon monoxide in the breathing air from exceeding 10 ppm. Commands shall equip all new and upgrade air-compressor systems with continuous carbon monoxide monitoring and alarm systems.

• If you purchase air from outside sources, you must comply with 29 CFR 1910.134.

• Select respirators with the protection listed in chapter 9 of the NEHC manual, IH Field Operations Manual.

• Use respirators to enter IDLH atmospheres.

• Medical evaluations of respirator users must conform to 29 CFR 1910.134 and NEHC Technical Manual, Medical Surveillance.

• Lead and asbestos workers don't need semi-annual fit testing.

• The 29 CFR 1910.134 tells how to conduct annual refresher training.

• New training requirements.

Our "O" level safety-survey checklist has been modified accordingly. For a copy, see the Naval Safety Center web site, www.safetycenter.navy.mil.

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

MAINTENANCE MANAGEMENT

Loose Tools Are On the Rise

by AMCS(AW/NAC) Darryl Dunn and LCdr. Rick Sanders

This has been our safest flying year ever, but a recent increase in hazreps has raised our concern. Three in a two-week period about tool control lit a warning light on our master caution panel.

The first hazrep: "During an aircraft acceptance inspection, we found a 5/16-inch socket in the lower lobe, just forward of the E-16 equipment rack. I.D. marks indicated that the socket was not from this command and was probably from someone's personal toolbox. We also found a paintbrush below the starboard-inboard spoiler beside the spoiler-control valve. The brush was not marked and was not of the type used at this command. The aircraft had just come through a major modification by a contractor at a remote location."

The next report: "We signed off a MAF after changing a mainmount tire on aircraft 919 and checking tools. About six hours later, we went in-work on another MAF with the same toolbox. We discovered a tool missing. A FOD search of the hangar, ramp, taxiways, and runway located the screwdriver on runway 17 at the 8,000-feet-remaining point, in the center of the landing zone. We determined the tool had been left in the wheelwell of 919 and had fallen out during the takeoff roll. Investigation also showed that the toolbox did not conform to guidelines set forth in OPNAVINST 4790.2G. The matting on the bottom of the toolbox did not contrast enough to provide an adequate silhouette outline of the tool."

The third: "During a postflight inspection, contract-maintenance personnel found a 13-inch flashlight protruding through the vertical stabilizer's bullet-fairing assembly. The flashlight had been left in an access compartment during periodic-phase maintenance, which had included inspecting internal, vertical-stabilizer components. The flashlight had not been reported missing by contract-maintenance personnel. The inspection had been completed on Julian date 9008. The flashlight had been (allegedly) reported missing on Julian date 9013, and a FOD search had been conducted by maintenance personnel. The flashlight was not found, and no documentation of the missing-tool report or FOD search was produced. Aircraft damage was discovered and the flashlight recovered on Julian date 9014. The damage to the fairing was repaired without documentation, and the airplane was allowed to fly until Julian date 9088, when the situation was brought to the command's attention. These events were reported by an anonymous whistleblower from outside the contract organization."

Aircraft and aircrews have been lost because of unaccounted-for tools jamming flight controls or getting sucked into an engine. OPNAVINST 4790.2G, para 13.3 lists tool control responsibilities in crystal-clear fashion. For people who deal with contract maintenance, subparagraphs I. (5) and (6) state, "The program monitor shall (5) brief and monitor work done by field teams or contractor-maintenance teams, detailing TCP and FOD policies. Conduct beginning and final tool inventories using Figure 13-4. If the volume of tools preclude a practical inventory, a modified procedure is authorized where the field-team leader lists each tool used and certifies accountability following work accomplishment.

Maintain the file for one year. (6) Conduct spot-checks of work in progress to verify compliance with the TCP."

Tool control is one of those never-ending jobs we do every day, and the job is not complete until the paperwork is signed off. This includes an accurate inventory of all tools used. No sortie, whether in the Arabian Gulf, the Adriatic or from NAS North Island is so important that we can forget about tool control.

SUPERVISION

Jury-Rigged

by Lt. Ted Rose and AD1 John DeWees

A couple of weeks ago, a packet came to my desk that brought a hazard to my attention. The packet held a misuse-and-abuse report and investigation on an engine-hoist trailer. The report stated that two casters and four safety locks on the trailer had been bent or broken, and that the hoist had been jury-rigged.

Our squadron was one month from deploying on WESTPAC, and as is usually the case, we had to change 10 FA-18 engines. Our power-plants shop checked out the trailer from AIMD, and the engine changes took place without incident – at least that's what we thought.

According to the report, a nightcheck supervisor had jury rigged the equipment. The hoist had broken while the mechs were installing an engine. Rather than halt the installation to exchange the hoist, the supervisor decided to perform "surgery" on the stand and continue working. Upon inquiry, we found that if too much emphasis is on a job's completion, this fix is all too common.

The can-do attitude of Navy supervisors is important on flight decks, but we must not sacrifice safety to complete a task. There are many problems with jury-rigging an engine hoist. First, the petty officer who performed the "rig" isn't an expert on engine-hoist repair. Would we trust an ejection seat repair to an unqualified AME? Definitely not. The stand should have been returned to AIMD as soon as the damage was noted. Second, by using a hoist that had been rigged, we violated safety rules and increased the chance of dropping an engine and damaging it. Last and most important, using a damaged stand risked injury to all involved.

We need to take a serious look at the price we're willing to pay to get a job done fast. Taking shortcuts will bite you somewhere down the line. The "can do" attitude of our shipmates is a naval tradition, but the responsibility lies with officers, chiefs and supervisors to ensure that the job is done correctly and safely, not just quickly. It isn't worth getting people hurt to save a few hours or a sortie.

Lt. Rose is the QAO and AD1 Dewees is a QAR with VFA-27.

LINE

We Can Prevent Aircraft-Handling Mishaps

by AMCS(AW/NAC) Darryl Dunn

In the past 36 months, we've had 75 aircraft-handling mishaps. Not really a bad rate when you consider that on the average day we make about 5,000 aircraft moves in naval aviation. And look at some of the environments we work in: 0200 on a cold, dark night, in the rain, we push a helicopter out of a hangar, by hand, onto a flight deck staged with cargo to be delivered to a carrier. Our only illumination is blue NVD lights. Then there's the flight deck of an aircraft carrier pushing out 200 sorties a day for three days straight during a COMPTUEX or JTFX. Or warm, sunny flight lines at North Island, Oceana, or Sigonella in the middle of the day?

Can you guess where the most mishaps happen? Of the 75 mishaps mentioned earlier, only nine happened aboard ship.

We've run over feet and crushed fingers holding onto wing tips. Some of us issued and used SE that was either overdue or out of service. Tug drivers who were unfamiliar with how to move aircraft ran into other aircraft while towing one (I wonder who signed their license and trained them?). In seven mishaps we taxied one aircraft into another and we ran one bird into a snow bank.

In most cases, one person saying stop or blowing a whistle would have prevented the mishaps. So pre-op SE, follow the rules for moving aircraft, look out for your shipmates' appendages, and don't be afraid to yell stop!

Teamwork Minimizes Damage by Brake Fire

Mech, July-September 1999

What was the date of the incident? Was the fire department notified? If so, wouldn't it have been more advantageous to mention that the fire department had been notified (as required) and that a report was submitted to DFIRS?

I couldn't find any information about a run of that nature to Diamond 116; that's why I'm looking into the article. This is not an official request by NAS Oceana; the story caught my eye and, with the release of halon, well... you know where I'm going with that. Thank you for your help, and keep up the good work.

Respectfully,
Richard J. Hack
Lead firefighter
NAS Oceana

The particulars you read are all the facts we have. VF-102 should be able to address your questions. If there is a lesson in what you learn, please feel free to send in a story, particularly about the use of halon. – Ed.

A Day in the Life of a Safety Surveyor

Mech, July-September 1999

The picture on page 4 shows a training no-no that can permanently damage someone's eyesight. One shortcut that should never be taken is not wearing safety glasses while draining fluids from GSE or aircraft. While having only 10 years aviation experience, I've seen and had to take my share of people to the nearest medical facility who have overlooked that instruction. This is one safety measure that can be assured by correct training, supervisors, QA, and operators. A 3-minute walk to your locker to get safety glasses is a small price to pay to insure a lifetime of sight and doing things right.

Richard M. Lyman, AVT2, USCG

You are correct. Although the photo caption says the surveyor was draining fuel, I was merely pointing to the fuel bowl.
Respectfully,
ASCS Edwin Guerra

Thump-test

All Hands, August 1999

Please look at the photo on the back page. The caption on page 2 identifies a Sailor performing "a professional act." Actually, it was a very dangerous act, and could be fatal.

Checking drop-tanks for fuel by the tap-and-listen method (thump-test) is dangerous because it isn't accurate; you can't hear (gage) how much fuel is in the tank. I've worked with drop-tanks for most of my 21 years in the Navy. You have to open the cap and look at the level and dip it; there is no other way to tell how much fuel is inside. Even the cockpit gages aren't reliable because the fuel-quantity probe inside the drop could be dead.

The petty officer in the photo is wearing a communications headset on the flight deck. That set hears each squadrons' communications from maintenance control, flight-deck control (Snoopy), and the Air Boss. Could this man hear how much fuel was inside that tank in spite of all the noise in his headset and the extra noise of the flight deck?

This is a great error that could cost lives. I'd like to see more photos that promote safety and professionalism at the same time. These puppies (drop-tanks) weigh at least 300 pounds empty, and hold up to 400 gallons of fuel (heavy – very heavy)!

AD1(AW) Mark Bjorndal
AIMD NAF Misawa

I agree with your comments, but the Naval Safety Center does not publish "All Hands" magazine. I recommend you forward your concern to "Editor, All Hands, 2713 Mitscher Rd, S.W., Washington, D.C., 20373-5819." Or, you can e-mail to "allhands@mediacen.navy.mil."

"Mech" magazine is written for maintainers by maintainers. Why don't you write an article and send it to us? I'll do my best to see that it gets published and that you get credit for your worthwhile efforts. You can streamline the process and enhance your chance of being published by ensuring technical accuracy. Thanks for your professionalism!
LCdr. Richard Sanders
Head Aviation Maintenance/ Material Division
Naval Safety Center

How Well Do You Float? (Update)

Air Wing Toolbox
Mech, July-September 1999
by Joe Casto and
PRC(AW) Bill Yeager

NAVSEA endorses the Chemical Pill Inflator as an alternate inflation device for the MK-1 Life Preserver (flight-deck version).

In instances where using an auto-inflator could put you at risk (helicopter and E-2 brake riders), check with your TYCOM for which configuration to use.

The SDU-39 (strobe light) will replace the SDU-5/E through attrition.

Warning –These changes apply only to the flight-deck version of the vest and shall not be used on the LPU-30.

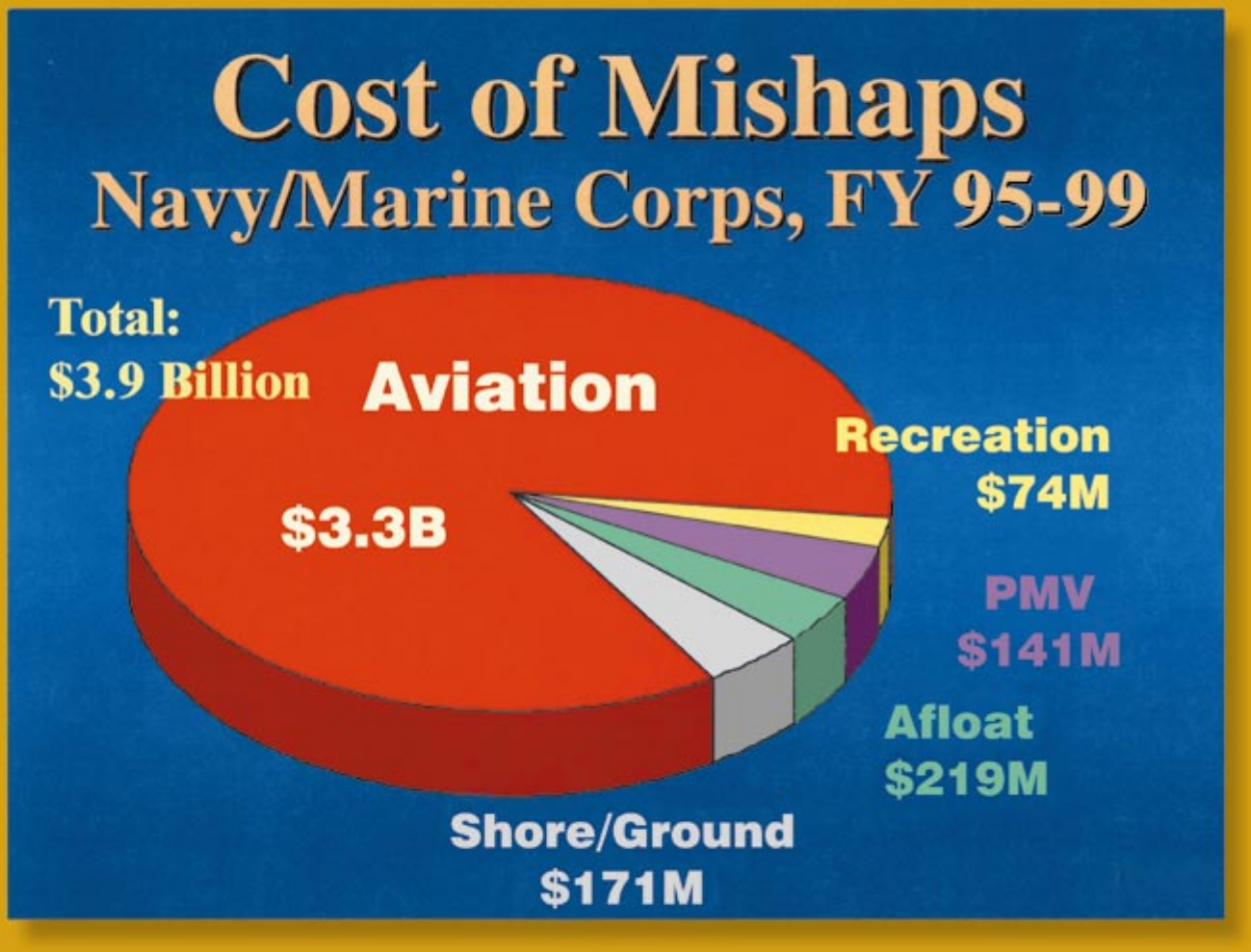
"The chemical-pill, auto-inflation assembly consists of an auto-inflator and two gaskets. The cap nut (NSN 5310-01-030-9217) and the CO_2 cylinder (NSN 4220-00-543-6693) used with existing auto-inflators shall be used with the chemical pill inflator. The cost of the chemical-pill, auto-inflation assembly (TNICN 1HM 0099-LL-H53-7707) is about twenty-five dollars. Chemical pills (TNICN 1HM 0099-LL-H53 7708) are available in packs of 10 and cost about seven dollars. The chemical-pill, auto-inflator can be used more than once and doesn't use an explosive charge to actuate the CO_2 cylinder."

For more information see:
R 301340Z SEP 99 NAVSURFWARCEN SHIPSYSENGSTA PHILA

ORM
A Great Tool for Maintenance Management

by LCdr. Rick Sanders

I know — another "flavor-of-the-month" program being added to stuff we already don't have time to do. That's what I thought at first, too, but my perspective has changed. Here's why: Aviation maintenance is a high risk, high demand, and high reliability profession. We're good, but there's a lot of room for improvement. The naval aviation mishap rate dropped from a whopping 51 per 100,000 flight hours in 1954 to 1.44 in FY99. From those figures, you might be led to believe we're doing OK, but I disagree. From FY94-98, the cost of Navy and Marine Corps mishaps totaled



$3.9 billion — $3.3 billion of it was from aviation mishaps. We must do better.

From FY91-98, four of five Class A aviation mishaps were caused by human error; 17 percent of those mishaps were maintenance related. Our goal should be zero. "Impossible," you might say. "Pipe dream?" "Not in tune with reality?" You might be right, but try looking at it this way. As a professional aviation maintainer, how many mishaps are you willing to be personally responsible for? How many mishaps have you seen that couldn't have been prevented? I'd be surprised and disappointed if your response was anything different than zero. Therefore, my argument is, if our personal goals are zero mishaps, why shouldn't we expect the same standard for all maintenance throughout naval aviation?

We owe the successes we have achieved in reliability over the years to the process improvements we have adopted. Who could possibly argue the merit of programs such as quality assurance, plane captain, CDI, CDQAR, QAR training and qualification, tool control, corrosion control, hydraulic-contamination prevention, and battery safety, just to name a few?

Properly used, ORM and associated tools such as ground-crew-coordination training (GCT) and, soon to be available, maintenance-climate-assessment surveys can help eliminate maintenance-related mishaps. In order for these processes to succeed though, they must have acceptance from the senior leadership in aviation maintenance.

ORM isn't just another program — it's a great idea whose time has come.

LCdr. Sanders is department head for the Naval Safety Center's aviation-maintenance analysts.

Flight, Flight-Related and Ground Mishaps

Class A Mishaps

Aircraft	Date	Command	Fatalities
CH-53D	06/23/99	HMH-366	0

A Sea Stallion's tail rotor struck a rock, and its tail pylon came off as it rolled over during a landing; only four minor injuries with 21 souls aboard.

FA-18C	06/27/99	VFA-86	0

A Hornet went to full throttle without a raised JBD; the exhaust blew a Hornet from VMFA-251into a Tomcat from VF-102.

AV-8B	06/29/99	VMA-211	0

A Harrier crashed during an air-to-air refueling mission.

UH-3H	06/29/99	HC-85	0

A Sea King inadvertently jettisoned a Mk-30 ASW target while flying to a SCORE range.

T-34C	06/30/99	VT-6	0

A Turbo Mentor on a PMCF went into a spiral out of control and crashed in a forest; pilot bailed out.

AH-1W	07/30/99	HMLA-267	0

A Super Cobra's skid touched the ground during lost-tail-rotor practice and rolled onto its side.

F-14B	08/14/99	VF-101	0

A Tomcat flew into a ramp during a trap, FODed one engine and collapsed a mainmount.

AV-8B	08/30/99	VX-9	1

A Harrier flew into terrain.

UH-3H	09/16/99	VC-8	0

A Sea King crashed when a BQM training shape struck the tail rotor.

F-14B	10/21/99	VF-143	0

A Tomcat was lost after a cat shot; the aircrew was recovered.

Class B Mishaps

SH-60F	06/23/99	HS-11

A carrier-based ASW helo lost its radome while manuevering to avoid collision with a ship.

FA-18C	06/23/99	VFA-137

A Hornet launched with a cat-track button in place, FODed an engine and trapped at night into a barricade.

CH-46D	06/28/99	HC-6

A Sea Knight's rotor blades hit the rotor blades of a parked Sea Knight during taxi.

EA-6B	07/02/99	VAQ-140

Diverting with hydraulic problems, a Prowler's nosegear collapsed on touchdown.

F-14A	08/15/99	VF-41

A Sparrow and an LAU-1 departed a Tomcat during a Case I recovery.

FA-18C	08/30/99	VFA-151

A HARM departed a Hornet during an arrested landing.

S-3B	09/08/99	VS-32

An aerial-refueling store departed a Viking and fell into the sea.

UC-12B	10/07/99	MARFORPAC

A Super Kingair's NLG collapsed on touchdown on a hard-surface runway.

Remove this insert! Post it until it's old news, then display poster on reverse side.

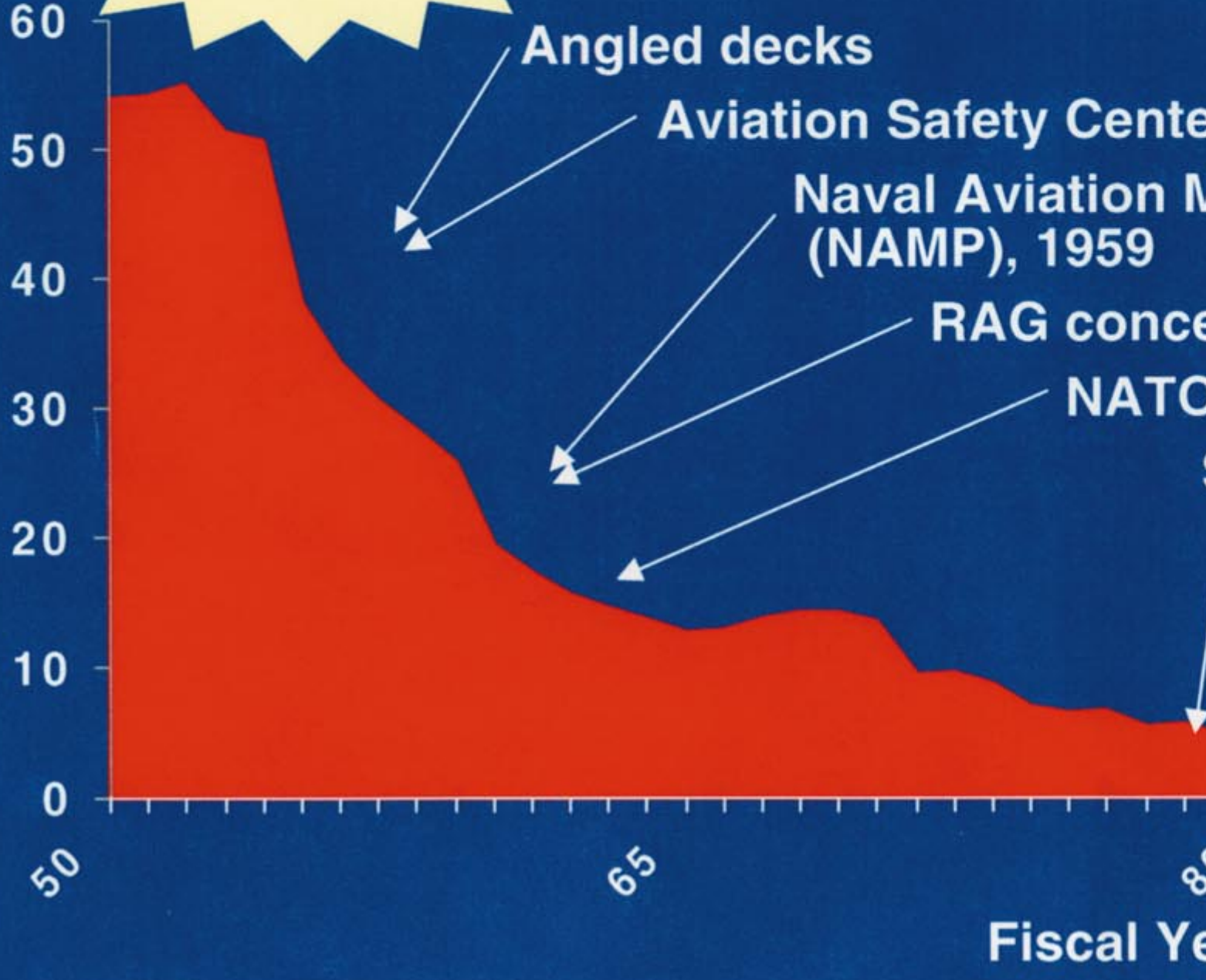
Printed as a supplement to *Mech* by Commander, Naval Safety Center
Data: Dr. Michael S. Borowsky

For questions or comments, call Joe Casto
(757) 444-3520 Ext. 7247 (DSN 564)

Naval Avi
Mishap F

FY50-98

776 aircraft destroyed in 1954



www.safetycenter.navy.mil

iation Rate

3

33 aircraft destroyed in 1998

er

Maintenance Program

ept initiated

DPS Program, 1961

Squadron Safety program

System Safety Designated Aircraft

ACT

ear

ORM

FY99

1.44

22 aircraft


FOUL LINE
by MELTON