

January – March 1999

Mech

The Naval Safety Center's Aviation Maintenance Magazine



Launch the Grapes

Our Filters FODed Our Engines

“Please God, Don’t Let Them Find My Pliers”

Mech

THE NAVAL SAFETY CENTER'S AVIATION MAINTENANCE MAGAZINE

Vol. 2, No. 5, Jan – Mar '99

On the cover:

A final checker signals "go" for a cat officer to shoot a Tomcat off the flight deck of USS *Constellation* (CV-64). Photo by LCDr. Ken Newbauer

RAdm R.E. Besal, Commander, Naval Safety Center
Bill Mooberry, Executive Director
John G. Mahoney, Head, Media and Education Department
Derek Nelson, Editor in Chief

Mech Staff
Joe Casto, Editor
Patricia A. Eaton, Design and Layout
John W. Williams, Illustrator

Address comments and contributions to:
Commander, Naval Safety Center
Attn: *Mech*, Code 711
375 A St., Norfolk, VA 23511-4399
(757) 444-3520 Ext. 7247
e-mail: jcasto@safecen.navy.mil

For questions about distribution, contact Ginger Rives
(757) 444-3520 Ext. 7256
e-mail: vrives@safecen.navy.mil

Web Site address: www.norfolk.navy.mil/safecen
NAVSAFECEN BBS (757) 444-7927
DSN 564

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. 6

MECH FEATURES

4 Danger in the Dark

The need for teamwork between aircrew and flight deck personnel increases at night.

ATC Mike L. Hott

6 Sick With Guilt

"Please God, don't let them find my pliers."

AMCS (AW) Keith Dennis

8 Don't Wait for Someone Else To Make the Call

Either it's leaking or it isn't. Check the MIMs, then decide if you can live with it.

AMSC (AW/NAC) John Salgado

10 Help! Help! I Can't See

Painting without goggles isn't smart.

AECS (AW) Robert Mireles

11 Bushwhacked by a Hydraulic Jenny

Why you should wear a cranial when working around or under aircraft.

AMS3 Dwayne Phillips

12 Spare Parts

A 30-cent screw can cripple a multi-million dollar airplane.

AD2 Brian Hildreth

13 Thanks, Chief

If you pull on a hot solder joint, you might eat some solder.

AT1 (AW) Donald Ewing II

14 You Have To Look in the Right Place

It's almost impossible to check every strato-tube in an EAPS barrel for FOD, but you can protect them.

MSgt. Jay L. McKay



pg. 14



pg. 16

DEPARTMENTS

16 As Flight Ops Continued . . .

There isn't much time to identify a chunk of metal while birds are launching and trapping. You need a QAR.
Lt. M.R. Butkis and AMS2 J.D. Willis

17 NC-8 On the Run

If you're not a licensed operator, stay off the support equipment
ATAN Scott Lewis

18 The 101st Time

You can't get away with shortcuts forever.
AD3 Jonathan Evans

20 Has Anyone Seen My Screwdriver?

It isn't cool to leave a tool in an airplane about to go flying.
Ens. S.L. Phares

22 You Want To Be Like Superman?

How the "man of steel" copes with paralysis.
Rae Mack

24 Bravo Zulu

VAW-117; HS-3; HS-4; VR-54; HMM-261

26 Crossfeed

Straight talk from maintenance specialists about airframes, maintenance management, quality assurance, the line, power plants, supervision, and support equipment.

Air Wing Toolbox: *Centerspread Pullout*

Man Overboard! Man Overboard! *by Joe Casto*

- Most recent Class A and Class B mishaps
- LOX poster

Danger in

I was startled to see three grapes standing by the aircraft with the fueling hose still connected.

The night was dark and nasty as we crossed the Atlantic. Our SH-60F had returned earlier than scheduled for a hot refuel and crew swap. I had both my duty LSEs, an AD1 and an AT3, doing daily and turnaround inspections in the helo hole by the island. I sent the AT3 to recover the aircraft and monitor the crew switch and refueling.

the Dark

by ATC Mike L. Hott

After the helicopter landed, I thought how strange it looked in the sodium-vapor lights on the flight deck. The refueling began, and the crew switched. The left-seat pilot swapped first. Then the call came for an avionics troubleshooter to look at an IFF gripe. I sent the AD1 to replace the AT3 so he could investigate the gripe.

I asked the AD1 if he was comfortable taking over as LSE. Although he was qualified, he hadn't done it for a while, but he said he was OK. The AT3 quickly took care of the IFF gripe, and I switched him back to the LSE position because he was more current than the mech.

A short time later, the aircraft's position lights went steady, a signal the aircrews use at night when they're ready to launch. The LSE asked Primary for permission to remove chocks and chains. Primary gave the go-ahead, and the LSE signaled the brownshirts to break it down. The chock-and-chain runner on the starboard side of the helo quickly retrieved those items and waited anxiously for his counterpart to join him.

That's when I saw the port-side runner out front frantically signaling the LSE. I ran to where I could see the port side of the helo and shined my flashlight there. I was startled to see three grapes standing by the aircraft with the fueling hose still connected. They removed the hose, and the Seahawk launched without further incident.

Our port runner had prevented a serious mishap.

We discussed the incident with the pilots later. The simultaneous crew swap, LSE swap and refueling led to a breakdown in communication and situational awareness all around. The left-seat pilot had signaled the LSE to cut fuel shortly after the hot-seat switch. The LSE passed the signal, and the pilot watching the gauges saw the fuel increase stop—most likely caused by the aircraft's high-level shutoffs. But the hose was still charged, and the fuel crew stayed by the aircraft.

The pilot in the left seat couldn't see the people standing in the shadows. The new crewmen also didn't notice the fuelers by the helicopter. The chock-and-chain runner said he didn't see the fuelers until he was right on top of them.

We had made a lot of assumptions. The LSE and the pilot assumed the refueling crew had seen the signal to stop fueling. They both assumed the grapes had quit fueling and left; the LSE couldn't see well enough to verify it. Again, the same was true of the pilot. The flight-deck coordinator assumed the LSEs had given each other good passdowns, and the grapes assumed the helicopter guys knew what was going on. The Air Boss assumed the same.

The following factors contributed:

- The area on the port side of the helo was very dark. The combination of the drizzle and darkness had completely hidden the grapes' activity.
- The starboard side of the Seahawk and the darkness and drizzle also blocked the scene from Primary Flight Control.
- The flight-deck coordinator did not ensure the LSEs briefed each other when he switched them.
- Everyone assumed everyone else always knew what each person was doing.

Don't let familiar activities become routine. If you have to swap, wait until all other events have stopped. Monitor every happening.

ATC Hott is a flight-deck coordinator with HS-15.



PH2 Matthew J. Thomas

Missing safety-wire pliers caused a couple of sleepless nights for a brand new PO2.

Sick with Guilt

by AMCS(AW) Keith Dennis

Welcome to hell; I couldn't sleep or eat. The guilt burned in me like acid. I still hadn't mustered the courage to admit that I was missing a tool from my work center.

It seems incredible that I let a pair of missing safety-wire pliers go without reporting them, but the thought of captain's mast promised by the MMCPO scared me. I'm sure now that the threat was directed at people who didn't follow SOP for tool control, but that's not how I took it. I didn't want to get hammered for losing a tool. I also didn't want to get the LPO in trouble, but those are just excuses.

I'd been in my new A-7 command for about six months after decommissioning a

Vigilante squadron. Tool control was lax compared to my last duty station; I thought I could help, so I volunteered to be tool-control PO for airframes.

Finishing up an at-sea period, we left a team of troubleshooters aboard to finish carrier quals. Upon our return to the hangar, I dutifully inventoried our tools and found a pair of safety-wire pliers missing from a tool pouch. I told my supervisor; he replied that we'd left an extra pair on the boat with our troubleshooter. I was uncomfortable with the answer, but being a brand new PO2 with all of three years' experience, compared to my supervisor's 17, I figured he knew best. He went on leave, and I anxiously awaited the boat det's return.

When a tall, lanky metalsmith walked in with his gear, I yanked the trouble-shooter's pouch out of his hand. A cold shiver streaked down my back when I didn't find the extra safety-wire pliers he was supposed to have. Questioning him didn't yield anything but dumb looks.

I called my supervisor at home, but he'd left town. I knew I had to tell maintenance control, but the master chief had just told us that the next person who reported a missing tool was going to see the old man—not exactly the kind of encouragement I needed. I went through the shop with a fine-toothed comb looking for those pliers and came up empty-handed again and again.

I didn't sleep that night. I even discussed the problem with my wife. She convinced me to come clean with the MMCPO and take my lumps. The situation obviously wasn't going to fix itself, and the consequences were too risky to ignore.

The 10-mile trip to work took forever. It was a crisp, fall day with the sun shining brightly, but I made the trek from the parking lot filled with dread. With the first few steps into the hangar, I heard the chaos and excitement associated with something big. One of my co-workers dashed past me exclaiming, "The Skipper had to bail out; his flight controls jammed, uncontrolled roll." Time compression made him sound like a bad eight-track tape. I prayed that the aircraft had crashed without hitting a hospital or school, and that it had burned and disintegrated. "Please God, don't let them find my pliers."

Three days later, I was walking up the stairs to admin when I heard a slow, shuffling sound ahead of me. Looking up, I stared straight into the eyes of my CO. Ejecting at more than 400 knots at 30,000 feet with his visor up hadn't helped his complexion. His face was a sickly montage of purple, green, blue, black and yellow from the windstream hitting him. He was stiff and sore from the rocket ride, and he moved with slow, deliberate steps.

He sniffled and was kind enough to ask me how I was doing. I wanted to scream out, "How am I doing? My God, I almost killed you!" We exchanged small talk, and then I excused myself to go vomit.

That chance encounter was bad enough, but the clincher came when I took my wife to a pre-deployment brief for dependents. I guess it was divine chance that the CO's wife sat next to me. The skipper's face had lost most of its grotesque hues, but he was still plenty sore. He addressed the audience and made a wise crack about "being glad to be here—literally!" The crowd laughed politely, and I glanced over to see his wife's reaction. She sat there with a broad smile, arms wrapped around their two young daughters—tears streaming down her face. The chilling realization that we could have been attending his funeral sickened me once more.

The Corsair had landed in a Georgia swamp. The investigation attributed the mishap to a burst hydraulic line.

The safety-wire pliers? Our berthing PO returned from the ship and handed them over to me. He had walked into the shop while

everything was being packed up for the off-load and just grabbed them to go hang bunk curtains! To the best of my knowledge, no one ever knew what happened except me.

Tool control has gone through a lot of refinement since that awful incident. I realize now that I misinterpreted the MMCPO's warning. No one should be threatened with NJP for losing tools, but maintainers need to understand how deadly important those procedures are. For the past 10 years I've told this story to my troops. It gets their attention. ☺

Senior Chief Dennis is assigned to VAW-126. This incident happened in 1980.

"Please God, don't let them find my pliers."



Don't V Else to

Dream job: Crew chief on a day-VERTREP mission, moving supplies from one ship to another. The HAC briefed a long day; it began with a very thorough preflight that identified a hydraulic pump that might have been ready to fail.

SOP directed us to check exterior panels for security and to look for internal leaks before takeoff. I asked my second crewman to do the outside walk-around while I looked over the interior. I would check for normal pressures on our gauges and thoroughly inspect around the transmissions and hydraulic areas for leaks.

I worked my way aft in the aircraft, checking systems along the way.

Approaching the aft transmission, I saw a small puddle of hydraulic fluid collecting on a hatch directly below the transmission. I traced the fluid to the utility system's hydraulic pump, which is driven by and mounted on the aft transmission. The fluid was coming from the drain line of a shaft seal mounted on the pump. The pump

The hydraulic pump leaked fluid at a rate of 10 drops a minute for three minutes, then the leak stopped for three minutes.

Wait for Someone to Make the Call

by AMSC(AW/NAC) John Salgado

cycled fluid through the line, which leaked at a rate of 10 drops a minute for three minutes; then the leak stopped for three minutes.

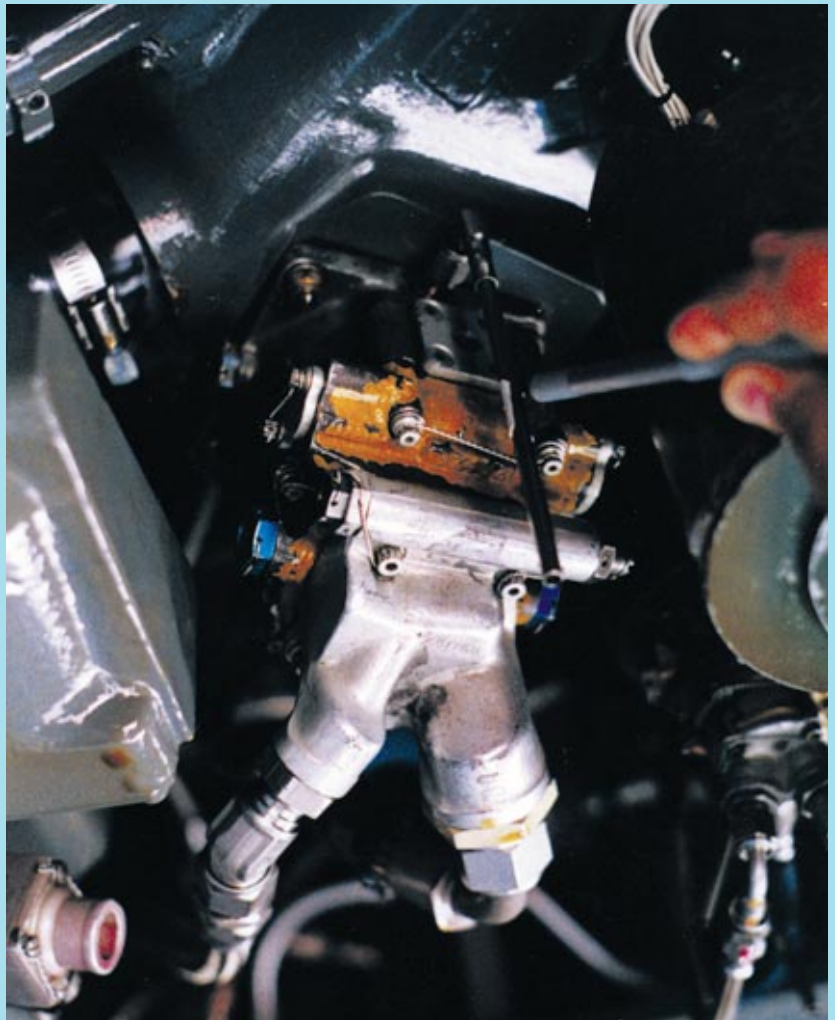
I told the pilots about the leak. My experience as a crew chief and airframes CDQAR assured me that the leak was well within limits, but I wanted to follow procedures, so I told our QA rep about the leak. We held up the flight and double-checked the allowable limits in the MIMs.

Publication A1-H46AE-450-000 wp 01400 contains the leak rates for the utility system's hydraulic pump and says that 15 drops per minute with the system operating is too much. I relayed this information to the HAC, who asked everyone if they were comfortable flying with a leaking pump. Everyone was OK about the within-limits leak, so we continued the mission. We conducted in-flight, aft-station checks every 15 to 20 minutes (as briefed before every mission) and updated the status of our leaking drain line. We finished the flight with no problems.

After the flight, the det's maintenance LCPO and the MO decided to remove and replace the pump because of the high failure rate of H-46 hydraulic pumps. An indication of an impending failure can often be a leak that is still within limits. I'd hate to think that someone "sorta" knew about a problem with an aircraft but did nothing to solve it and didn't tell anyone about it.

Don't wait for small problems to turn into big failures. If you suspect a component problem, make the call! Correct problems as soon as they occur.

Chief Salgado is Det Three LCPO in HC-8.



A leaking hydraulic pump may not have to be changed if it leaks less than 15 drops per minute. Will you VERTREP if your utility-systems pump leaks only 13 or 14 drops per minute?

Help! Help! I Can't See!

by AECS(AW) Robert Mireles

“Help, help!” yelled a frightened airman working at corrosion prevention under an SH-60B’s forward-port ESM antenna. Shipmates hurried to the aircraft and found the airman’s face covered with gray paint. We quickly took him to the frigate’s eyewash station and began flushing his eyes. A corpsman joined us and took the airman to sickbay to continue treatment. The embarrassed airman didn’t suffer any permanent damage.

The airman had checked into the det only weeks before we deployed to the North Arabian Gulf, but he’d worked around SH-60Bs for several months and was familiar with the environment. The mishap happened on a calm day during a no-fly period at sea. So how did he get paint in his eyes? The airman had been touching up some ESM mounting screws. This job doesn’t require a lot of technical skill, just a little situational awareness. As he lay on the deck beneath the antenna, he spilled the cup of paint on his face. He wasn’t wearing protective goggles.

If you have to work under something, especially with paint, protect your eyes with safety goggles. And always wear a cranial.

Senior Chief Mireles was aboard USS *Elrod* (FFG 55) with HSL-48 Det 4 when this incident took place. He is assigned to AIMD aboard USS *Enterprise* (CVN 65).



Face-painting on Navy ships? No, just an airman who didn’t wear goggles while painting the underside of an aircraft.



AMSAN Erma Trujillo wears her cranial the right way. The author didn't—and paid the price.

PH2 Matthew J. Thomas

Bushwhacked by a Hydraulic Jenny

by AMS3 Dwayne Phillips

I've been in the Navy 10 years and, like most Sailors, complain about the personal protective equipment (PPE) we have to wear. The cranial, for instance, is hot and uncomfortable. One night, however, I learned how this equipment serves as a buffer when we have a lapse of judgment.

An airman and I were checking for leaks on the hydraulic pump of a Super Tomcat. We already had hooked up the jenny, but we hadn't noticed that one of the jenny's doors was held up only by safety wire. I know the jenny is a noisy unit. So I was wearing my cranial, but in such a way that it protected only my ears and part of my head.

Getting down by the pump, I signaled the airman to run the jenny at 3,000 psi.

That much pressure on a hydraulic system will make something move. In this case, the horizontal stabilizer moved up, then down, pushing the door of the jenny free of its makeshift brace, and swinging the door down onto my head.

Fortunately, most of the force was absorbed by my cranial, but the door swung under the cranial and cut my head. I blacked out for a time and was taken to medical for treatment, then released.

I learned a few lessons that I'd like to pass on and maybe save you a headache. First, always be aware of your surroundings. If things don't look right, fix them before you begin to work. Wear all your protective equipment correctly—you can get comfortable again faster than you can heal.

Petty Officer Phillips is assigned to VF-31.

Spare Parts

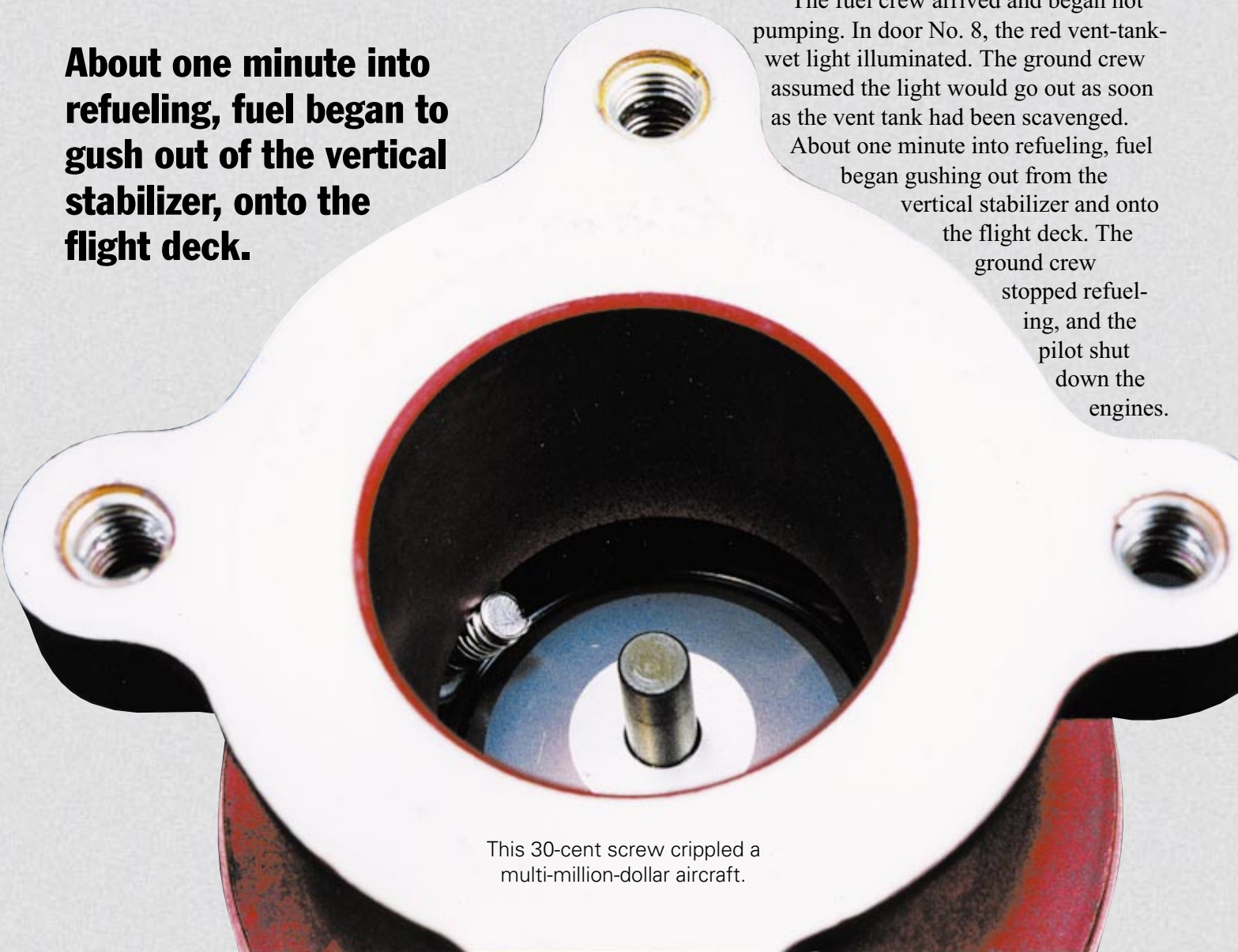
by AD1(AW) K. D. Johnson
and AD2 Brian Hildreth

About one minute into refueling, fuel began to gush out of the vertical stabilizer, onto the flight deck.

Six weeks into a WestPac deployment, Talon 201 developed a fuel-vent gripe. Power-plants troubleshooters looked over the bird during a fast turnaround and determined that the external-fuel tank on station 3 was not pre-checking properly. We removed and replaced the tank before the next event, but not in time to refuel and check it; the pilot was already doing his walk-around inspection. He manned up and started the Hornet's engines.

The fuel crew arrived and began hot pumping. In door No. 8, the red vent-tank-wet light illuminated. The ground crew assumed the light would go out as soon as the vent tank had been scavenged.

About one minute into refueling, fuel began gushing out from the vertical stabilizer and onto the flight deck. The ground crew stopped refueling, and the pilot shut down the engines.



This 30-cent screw crippled a multi-million-dollar aircraft.

After shutdown, a power-plants supervisor requested a complete de-fuel and a re-spot into the hangar bay to do a pressure-refueling test with electrical power. During the test, we determined that fuel cell No. 1 was taking fuel aboard under pressure with the refuel valve in the closed position on the digital-display indicator.

After defueling, we opened the No. 1 cell, purged it, and had the gas-free engineer check it for safe entry. We isolated the cause to No. 1 cell's fuel-level-control shut-off valve and high-level pilot valve. We removed and replaced the shut-off valve.

Inspecting the valve we'd removed, we saw a hex-tip cap-screw lodged in the inlet side of the fuel-level-control valve, jamming the valve open. The jammed valve caused cell No. 1 to over-fill and vent overboard. We removed and replaced both valves and inspected cell No. 1 for a missing cap screw. All hardware and fasteners were accounted for and secure.

We couldn't determine whether the screw came from an outside source during refueling or from the aircraft's fuel system. We inspected cell No. 1 to be sure it was free of FOD and closed it. Our refuel-pressure test checked good and Talon 201 was ready to fly.

One lost sortie, five days in the hangar, 54.8 man-hours, and several refuel and defuel requests—all because of one screw less than a half-inch long. Consumable parts are assets to operational readiness only when accounted for; otherwise, they are FOD. ✈️

Petty Officers Johnson and Hildreth are assigned to VFA-115.



YNSR Mary McLoyd of the Naval Safety Center illustrates a technique that will launch molten solder in your face.

Thanks, Chief

by AT1(AW) Donald C Ewing II

Some tasks seem harmless, but that is usually an illusion. A shipmate and I re-discovered this truth while de-soldering a LAN-line connector. As we began that simple task, neither of us considered personal protective equipment (PPE). After all, this was one of the easiest jobs an AT could do; we'd probably done it a thousand times.

Ten minutes later, the chief walked in and ordered us to put on our goggles. We did so, grudgingly, thinking, "Is this really necessary?"

A few minutes later, I was pulling on the wire while my partner applied the hot soldering iron. The wire whipped loose and hurled a piece of molten metal through the air. Before I could holler, "Watch out," my partner jumped back; I could see, quite plainly, a glob of molten solder stuck to his goggles.

If we had not been wearing the PPE our chief forced on us, my partner could have lost an eye. ✈️

Petty Officer Ewing is assigned to VP-30.

You Have To



Covering the EAPS prevents them from collecting FOD when the engines aren't running.

Sgt. Jonathan C. Knauth

Engine-air particle-separators (EAPS) are large filters designed to prevent debris from entering engines while they are running. One small piece of debris can cut through an engine's guts, damaging inlet guide vanes, compressor blades, and power and exhaust turbine blades. But in spite of those filters,

H-53 engines are still getting FODed, and numbers have risen sharply. Seven of the 10 FODs reported this year happened at Kaneohe Bay, Hawaii. The reason surprised us; our EAPS filters were FODing our engines.

As a result, our QA department scheduled immediate training for maintenance

Look in the Right Place

by MSgt. Jay L. McKay

personnel, pilots and aircrew on FOD awareness. The main focus was on the EAPS. Each separator has hundreds of strato-tubes encased in the barrel that eject debris when you run the EAPS blower. The system works, but engines can still be FODed.

When a technician inspects an EAPS barrel for FOD, it is virtually impossible to check every strato-tube. Therefore, he usually inspects engine intakes more closely. For years, I've suspected that engine FOD in the H-53 is caused by the EAPS. The sealing system allows debris to enter the engine intake without passing through the EAPS. With 20 years' experience, I can remember only one bolt that migrated through the engine cowlings, past the EAPS seal and into the engine.

Our QA department noted that we paid attention to engine intakes and exhaust, but not the EAPS. You can look at any H-53 parked on a line and see that if the EAPS are opened for extended periods or removed, engine intake plugs are installed. This is an excellent precaution for the engine but not for an EAPS barrel left unprotected. A technician working on another part of the aircraft could easily allow a piece of rivet, cotter pin, safety wire, or even a piece of tool, to enter an unprotected EAPS barrel.

We don't allow fasteners or tools to go unaccounted for, but occasionally FOD does get left on or around the aircraft.

A piece could easily enter an unprotected EAPS, settle in one of the tubes and not be found on preflight. Upon start-up, the FOD in the EAPS barrel will get into the intake.

HMT-301 protects EAPS barrels during maintenance with a cover made in the flight-equipment shop. It covers the large opening of the EAPS at the engine end, adjacent to the engine intake.

QA also made people stop using safety wire to secure EAPS latches and made them start using barrel-latch clips listed in the MIMs. Over time, substituting safety wire for the clips had become acceptable, but there have been times when a technician went out to the aircraft and there was no safety wire on the latch. We can only hope it found its way into a FOD can.

The correct procedure is to secure a clip with a section of nylon string, tying one end to the clip and the other to the EAPS barrel. If a clip is missing, you file a missing-fastener report, and the aircraft is not released for flight until the clip is found or the MO certifies the aircraft FOD-free and safe for flight.

MSgt. McKay is assigned to HMT-301.

When a technician inspects an EAPS barrel for FOD, it is virtually impossible to check every strato-tube.

As Flight Ops Continued...

by Lt. M.R. Butkis and AMS2 J.D. Willis

CQ ops were uneventful and becoming routine as the rust from no recent shipboard flying flaked from everyone's brains. Then flight-deck control announced someone had found a chunk of metal in the corral. Hornets, Tomcats, Prowlers, Vikings, Seahawks and CODs launched and recovered as usual while squadron flight-deck coordinators took a gander at an unidentifiable piece of cast-aluminum about an inch by one-half inch.

After the prowler trapped, purple-shirts refueled Skybolt 622, then the flight-deck crew respotted it to the finger. Our FDC told an AMS troubleshooter to do a 10-10 cat-trap lube. This inspection revealed that the adapter-crank mechanism on 622's NLG holdback for the tow-link had broken at one of its lobes. The mysterious chunk of metal belonged to our EA-6B.

The aircraft probably could have taken another cat shot, but the broken crank could have kept the tow link from stowing and would have damaged the airframe and the nosegear when it retracted. It's possible the aircraft had taken multiple cats and traps in that condition, but because the landing gear was not raised during pattern work around the ship, no problems were reported.

The biggest flaw in this incident was the lack of follow-through to identify the aircraft that had lost a chunk of metal. Somebody's airplane was apparently coming apart, but flight-

deck control, squadron FDCs, troubleshooters and safety observers glossed over the incident while flight-deck ops rolled on.

Lt. Butkis, QAO, and Petty Officer Willis are assigned to VAQ-131.

Note: If an FDC cannot identify a piece of FOD while launching and recovering aircraft, and can't dispatch a troubleshooter, he should request maintenance control to send a squadron representative, preferably a full-systems QAR, up to flight-deck control immediately. – Maintenance analyst.



AMS2 Willis shows the broken adaptor that could have damaged Skybolt 622's airframe and nose gear when it retracted.

NC-8 On the Run

by ATAN Scott Lewis

We had just returned from an unexpected five-month cruise in the Persian Gulf. I was working mid-check at 0500 and planned to go to breakfast in a half-hour. The maintenance-control supervisor (an AT1) asked me to look at a gripe on the pilot's HSI in aircraft 702. We discussed the gripe and concluded the HSI probably should be changed. No big deal; I thought I could knock it out and still make it to chow on time.

Aircraft 702 was the first bird on the line. I walked out to it, intending to use an NC-10 to power the aircraft, verify the gripe, and, if need be, swap HSIs. Much to my surprise, the NC-10 wasn't where it normally was parked.

I weighed my options, taking into account that mid-check had a small crew (just six people). I could use the S-3B's APU, but that would require a safety observer, plus someone to monitor the APU while I worked. Since everybody was busy, I decided to use an NC-8A that I could operate alone. I didn't have a license for it, but I'd gotten some training before we deployed to the Gulf. I'd even done some phase II work with it as on-the-job training.

I did a quick pre-op but didn't check the brake fluid. I started the engine. All the lights and instruments looked OK, but when I tried to put the unit in reverse, the brake pedal went to the floor. I pumped the brakes and built up the pressure again, then drove in reverse for about 10 feet and hit the brakes again. The pedal was soft, but I kept going. I aimed the NC-8 at the

main-entrance hatch to the S-3B (where the external power receptacle is). That's when things turned to guano. When I was about 12 feet from the nose of the aircraft, I pushed the brake pedal again—straight to the floor!

I pumped the brakes like mad, but the unit wouldn't slow down. The rear end of the NC-8 passed the nose of the aircraft, and I *still* wasn't slowing down.

I tried to steer the NC-8 between the starboard engine and the drop tank. I knew that if I had to hit something, the drop tank was my best option. I was still in reverse, trying to squeeze the NC-8 between the engine and the drop tank. **Slam!** I didn't make it. The NC-8 came to a sudden stop by crashing into 702's starboard intake. I killed the NC-8's engine and went to tell my maintenance-control supervisor what had happened.

Three mistakes stand out from that incident: Why did I drive the NC-8? I wasn't qualified to run it, and I didn't have a license. Next, why didn't I stop when I realized the brakes might be faulty? I let my can-do mindset take over. Third, why did I approach the aircraft head-on when I should have approached from an angle that didn't aim the NC-8 directly at the aircraft? Because I wasn't qualified to drive it.

Next time you're in a hurry to get a job done, and you're not licensed to operate the support equipment you need, tell maintenance control. They will get someone who has a license to operate the gear for you.

ATAN Scott Lewis is assigned to VS-21.

I pumped the brakes like mad, but the NC-8 wouldn't slow down.



The 10

...you can be lulled into thinking it's safe because the engines aren't running.

I pulled the maintenance requirement card (MRC) and gathered all the tools I needed to do a seven-day inspection. Even though I'd done the job at least 100 times, I still took a minute to read the MRC before starting.

I went out to aircraft 600, checked both nacelles to make sure the latches were secured and checked the position of No. 1 prop blade. Each was at 12 o'clock as directed by the MRC. From inboard of the starboard engine, I signaled the ADAN in the cockpit to start cycling the propeller. When he got to the last cycle, I saw hydraulic fluid leaking around the intake. I told the ADAN what I'd seen and investigated the problem.

I climbed down the ladder and moved the propeller to an "X" position in order to remove the forward cowling. I looked for open caps on the pump housing, but all were secure. I then gave the signal to cycle the prop to check

01st Time

by AD3 Jonathan Evans

for the leak, and the fluid poured out again. It looked like it was coming from the bottom of the pump housing, so I climbed down the ladder to take a look. I reinstalled the cowling and latched it. Then I removed the prop-drain panel. I placed the ladder under the pump housing and made sure the cowling latches were down, then signaled the ADAN to cycle the prop. The next thing I heard was a pop followed by a dreadful crackle!

I scurried back down the ladder to check the cowling latches again. The outboard side looked good so I went around to the inboard side. It looked good from the ground, but when I climbed up the ladder, I could see the forward latch was up, and the trailing edge of the propeller blade was split. The latch had popped up while the blade was moving; it was ruined.

I'd learned how easy it is to foul up the maintenance and flight schedules. You wouldn't think a propeller could cause problems for so many people. The damage was bad enough to force us to change the prop. Three aircrew had to fly a functional check flight that required an engine to be shut down. Finally, the ADAN, the duty section and I had to work a long weekend to help make up the lost time.

I learned some other important lessons: First, read and use the MRC cards or pubs while doing maintenance. It doesn't

matter if the job is an easy, repetitive task. Next, when doing maintenance that causes parts to move, you can be lulled into thinking it's safe because the engines aren't running. The truth is, if something is moving, it can touch something else. Make sure all latches are flush and their screwdowns secure before you cycle a propeller on an aircraft. ✈️

AD3 Evans works in the power plants division of VAW-125.

***Note:** If you review that seven-day special MRC for checking propeller oil, you'll see a caution that reads, "Ensure cowling latches are properly latched prior to cycling propeller." MRCs for frequent tasks, such as checking fluid levels, are used the least. If technical publications are used as intended, the chance of damage to equipment and injury to personnel is dramatically reduced.*

The next thing I heard was a pop followed by a dreadful crackle!

Has Anyone Seen

by Lt. Steve Phares

We'd been flying the same schedule in support of Southern Watch for two weeks.

Everyone was adjusting to life at sea; we were well on our way to a successful deployment.

The IMC interrupted our routine one night with "This is a drill, this is a drill, general quarters, general quarters." That was followed by "Launch the alert." Troubleshooters grabbed their PPE, gas

"This is a drill, this is a drill, general quarters, general quarters."

masks and tool pouches, and dashed to the roof.

After the alert launch, which didn't involve our aircraft, our troubleshooters remained on deck for the next scheduled man-up in 45 minutes. They wanted to avoid the mobs in the maze trying to make their way back to their shops during GQ.

During man-up, a QAR inspected all the troubleshooters' tool pouches; that's squadron SOP. When the pilots started the starboard engine, the QAR took up his position on the starboard side adjacent to the copilot's window, which allowed him to watch the starboard side while the flight deck coordinator monitored events on the port side of the aircraft. After engine start, the pilot called an AT troubleshooter inside the aircraft to check the IFF. He was in and out of the bird before anyone realized there was a problem. The plane

captain gave his signal for the final tool check, got thumbs up from everyone (including the QAR), then turned over control of the aircraft to the yellowshirt.

Returning to the shop, the AT handed his pouch to a CDI for a tool inventory. The CDI saw that a six-inch screwdriver was missing. We told maintenance control, who immediately assigned a QA investigator. The investigator could not tell where the tool had been lost because of the troubleshooter's quick checkout of the tool pouch from his shop. Searching the work center and three aircraft on deck turned up nothing. We concluded it had to be in the aircraft that was airborne.

The aircrew was 20 miles out on their approach. Their brief search did not yield a screwdriver either. After they trapped aboard, the QAR and the troubleshooter entered the aircraft and found the screwdriver right where the troubleshooter had left it next to the transponder.

What went wrong, you ask? The troubleshooter had grabbed a tool pouch and asked for it to be issued on the run as he headed to the roof for the alert launch. The people in the shop couldn't remember which numbered pouch the troubleshooter had grabbed and logged out the wrong one. This led to the confusion of where the tool pouch with the missing screwdriver had been used last. Next, the troubleshooter should have placed the screwdriver back in his pouch after using it instead of setting it down in the aircraft. Third, the troubleshooter should have had his pouch inspected after leaving the aircraft, which is squadron SOP. Last, when the plane captain signaled for the final tool check,

My Screwdriver?

the troubleshooter should have opened his pouch and looked in it, which he did not.

This incident caused us to modify SOP. To improve our launch-maintenance practices, we re-positioned our QARs on the port side of the aircraft to observe people entering and leaving the bird. The flight-deck coordinator would watch the star-board side, and the safety observer would shuttle back and forth to scan both sides of the aircraft. We strictly enforce this change in SOP. When the plane captain signals for a final tool check, everyone opens their pouches and visually accounts for their tools.

Lt. Phares was QAO in VAW-126 when the incident happened. He is now the 900 Division Officer at AIMD Norfolk.

The avionics troubleshooter's pouch is designed to be easy to inventory, but people still get in a hurry.



PH2 Matthew J. Thomas

YOU WANT TO BE LIKE

Superman?

by Rae Mack

ACTORS often portray quadriplegics, who are paralyzed from the neck down, and paraplegics, who have the entire lower half of their body paralyzed. Except for having to sit in wheel chairs until the show ends, they look normal and have well-toned bodies. That's because they're actors and are playing parts. But one actor isn't playing a part. He is Christopher Reeve, perhaps the most famous quadriplegic in the world. Reeve, who brought Superman to life on the screen, is still broad-shouldered and handsome, still has muscular thighs and a full chest, and seeing him in a tuxedo sitting in his industrial-strength wheelchair, you may think that life for him is not so bad after all.

Think again.

Reeve has written a book titled *Still Me* that tells how his life changed drastically since May 27, 1995, when he fell from a horse during a jumping competition. For reasons he will never know, his horse, Buck, put on the brakes in midjump. The actor went flying over the horse's head, unable to break his fall because his hands were tangled in the reins.

Reeve was taken to the University of Virginia Hospital in Charlottesville, where doctors devised a never-before-performed operation to reattach his skull to his spinal column. He had what is called a hangman's injury—the same trauma produced by being dropped through a gallows trapdoor with a noose around your neck.

This kind of injury can happen if you dive in shallow water, get knocked down in waves, fall off a motorcycle, slam into the roof or windows of a car during a wreck, or get ejected during a collision. Since 1993, 23 Marines and nine Sailors have suffered hangman's injuries and are quadriplegics or paraplegics.

Despite having the best available medical care since his mishap, Reeve has been in shaky health since his fall. Eleven times he has returned to the hospital, often with life-threatening trouble: pneumonia, a collapsed lung, two blood clots, and an infection that nearly forced doctors to amputate part of his leg.

In his book, Reeve describes what his life is like as a quadriplegic. There are days when the ritual of getting up in the morning and getting in bed at night takes five hours.

A nurse and her aide appear at 8 a.m. and serve him 20 pills—vitamins plus drugs to control spasms, keep his bladder from shrinking, and maintain bowel function.

He sleeps in arm and foot splints, and after being in one position all night, his joints and muscles are frozen. His arms and legs go into wild spasms when the splints come off, and it takes the full power of the nurse and the aide to hold them down.

Then follows the morning hello from his 5-year-old son and an hour of so of "ranging"—the slow manipulation of his limbs by the nurse. This prevents atrophy, for as Reeve notes, you can't stand or walk

with atrophied leg muscles. (Reeve has vowed to walk again by the time he turns 50. That will happen in September 2002.) After that, he's ready to be dressed. "When two people have to roll you back and forth in order to put on your underpants at age 45, it's a difficult lesson in acceptance," he writes.

"I used to have to control my anger with myself for having ended up in this situation. Often I listen to music or watch TV so I don't have to think about being taken care of like a baby."

Frequently through the day, he blows into a little tube that's placed before his face. This causes the chair to shift his weight, helping prevent the ulcers that are a constant worry.

The nighttime ranging is almost pleasant after so many hours in the chair, but it is followed by perhaps the hardest part of the day: the "bowel" program.

"I'm turned on my side, and the aide pushes on my stomach with his fist to force stool down through the intestines and out onto plastic sheets placed under me. Sometimes it can take nearly an hour...It seems like an eternity."

Reeve takes a sedative to control nighttime spasms and finally drifts off to sleep.

That's how a privileged person with the resources to pay for round-the-clock nursing care at \$40 an hour spends his days. That care costs him \$960 a day, or \$350,400 a year. He has three medical-insurance policies, one of which has run out. And his exercise equipment cost him more than \$100,000.

The lance corporal who dove headfirst off a boat ramp into shallow water, the AO2 who dove headfirst into a 3-foot-deep children's wading pool, and the SH3 who fell out of a tree in his backyard don't have these resources. Neither do most of the civilian employees of the Navy and Marine Corps.

How would you fare if you were in the same situation as Christopher Reeve? Think about this before you dive into shallow water, before you drive around without being buckled up, or before you ride that ornery bull at an amateur's rodeo. ❦

Rae Mack is the editor of *Ashore* at the Naval Safety Center.



BRAVO ZULU



AMH1(AW) Steven Lefler
VAW-117

After a plane wash, AMH1(AW) Lefler, a line-division CDI, was inspecting an E-2C's vertical stabilizer when he noticed part of a bolt sticking out under the upper outboard rudder on the starboard side. He figured the bolt had vibrated loose and told the MMCPO, who downed the aircraft and ordered an integrity check.

Inspectors found a six-inch bolt wedged between the rudder and the horizontal stabilizer. Troubleshooters believe the bolt had been left inside the rudder during maintenance at another command.

AMH1(AW) Steven E. Lefler's discovery prevented a possible in-flight emergency from binding flight controls.



Sgt. Timothy Henshaw
HMM-261

While checking G's during the ground portion of a CH-46E post-maintenance, functional check flight, Sgt. Henshaw saw a piece of metal fly through the cabin and hit the floor. He examined it and determined that it was a balance-weight from a synchronization shaft. He called for immediate shutdown, looked at

the open access panel by the No. 4 synchronization shaft and found a utility-hydraulic-pump handle wedged beside the shaft.

Further checking revealed that the pump handle had been left below No. 2 intake the previous night when the engine had been removed and replaced during other maintenance. Qualified personnel had inspected the engine; however, they missed the pump handle.

This incident typifies what can occur if you violate SOP and use the wrong equipment. Sgt. Henshaw prevented a possible in-flight emergency.



A utility-hydraulic-pump handle jammed against the shaft could throw the rotors out of sync and cause an in-flight emergency.



AMS1 Raymond Francis
HS-3

Deployed aboard USS *John F. Kennedy* (CV 67), AMS1 Francis was doing a phase inspection on Troubleshooter 610. Looking at components not normally checked during this inspection, he discovered a crack in the tail-cone assembly. This component is a primary load-bearing structure in this helicopter. If it had failed in flight, the crew would have faced an in-flight emergency.

Petty Officer Francis dedicated many off-shift hours helping a depot-team repair the assembly. As a result of his using the 18-inch rule and his extra effort, he prevented a costly mishap, and the aircraft was restored to a full mission-capable status in minimum time.



AMS2 Kerry Gros
VR-54

by LCdr. Ken Skaggs

AMS2 Gros was reviewing the aircraft discrepancy book of a C-130 scheduled for transfer to his command when he found a suspicious discrepancy about a fuel-cell leak in the dry bay of No. 4 fuel tank. The discrepancy had been signed off with a temporary repair that had an expiration date. There was no evidence in the book of any further repair work having been done, but the aircraft had continued to fly past the expiration date.

The easy approach would have been to assume that since the aircraft had been flown, the repair work had been sufficient. However, further investigation by Petty Officer Gros revealed that the plane needed more extensive work and was not safe for flight.

Petty Officer Gros prevented a possible in-flight emergency. He was recognized as "Safety Pro of the Month" for his unusual find.

LCdr. Skaggs is safety officer at VR-54 and a former Approach editor.



AD3 William Enriquez
HS-4

AD3 Enriquez was doing a scheduled retorque of an SH-60F's No. 1, tail-rotor-drive shaft. The outside plate of an adjacent Thomas coupling was severely bent, but it was in a position that made it extremely hard to find. Petty Officer Enriquez' application of the 18-inch rule prevented an in-flight emergency.

CROSSFEED

LCdr. Rick Sanders
Head, Aviation Maintenance
and Material Division
AMCS(AW/NAC) Darryl Dunn
Editorial Coordinator
ddunn@safecen.navy.mil

Airframes

Seeing Red

by AMH2 Ed Jones

We were off the coast of San Francisco, on the second half of a six-week training period. At 0730, after the morning passdown, and waiting to get the morning assignment, one of our new airframers asked to be shown how to do a hydraulic-patch test. I volunteered.

The trainee asked, "How and where do you take a sample?"

"Ok, that's easy enough," I said, "follow me."

We hunted for an A/M27-5/7 hydraulic test stand and came across one that happened to be right next to an FA-18. I showed the new guy the drain point and explained how to pull a sample. More questions followed about the test stand. I pointed out all the important items, including how to turn the pressure up and down. Of course, the question came up, "How do you turn on the test stand?"

That's when I did what no AMH ever should do: I checked over the equipment without a pre-op card. I hit the on button and started it up, let it run for about 10 seconds, and then pointed out the cut-off pull-handle and the emergency cut-off pull-handle. That's when we saw red fluid coming out of the bottom of the Hornet.

We watched two to three gallons run onto the deck and into the drip pans. I realized then that I hadn't checked to see if the test stand was hooked up to the aircraft. In my squadron, it is SOP to disconnect the hydraulic test stand when it is not being used; now I understand why. So if you want to train someone on a hydraulic test stand, be sure you use pre-op cards, and make sure the equipment is hooked up to the aircraft.

Petty Officer Jones is assigned to VAW-117.

Maintenance Management

Keeping Our Edge Through Training

by ADCS(AW) George Jubert

There was a time when once you were assigned to a specific aircraft platform, you stayed in that community throughout your career. Times have changed. It's now common for senior personnel to transfer to different communities. A 10-to-12-year veteran of the fighter community might go to a helicopter squadron, or an experienced "I" level technician may be ordered to an "O" level command.

Training is more important now than ever before. In doing safety surveys, I've found that the commands who have successful training

programs follow basic training principles. Here are some of their guidelines:

- Training can be done anytime; conduct it whenever you get a chance.
- Use training aids to illustrate whenever possible; get permission from maintenance control to use command aircraft that are awaiting maintenance or supply.
- Invite local tech reps to participate in training.
- Work-center supervisors should make sure instructors are familiar with the subject matter before training day.

- Make the lectures interesting; encourage questions.

Planning by work-center supervisors, support throughout the chain of command, and full participation will make training more productive and decrease future mishaps.

Senior Chief Jubert came here from NAMTRAGRUDET. He's a maintenance analyst who does maintenance-malpractice presentations for the Naval Safety Center. If you'd like to schedule a presentation, contact the Naval Safety Center at (757)444-3520 Ext. 7206 (DSN 564).

Quality Assurance

Oscar Sierra!

by AMCS(AW) Joe Huerd

The plan was for three maintenance people to lower a centerline drop tank. The cockpit fuel gauge read zero, and when one of them slapped the side of the tank, it sounded empty, so they decided it was ready to lower by hand.

Slapping the side of a drop-tank can be misleading. Squadron SOP outlined a better procedure for seeing how much fuel is in a tank: open the cap, look inside and use a dipstick. These Sailors were aware of this SOP but chose not to use it. The tank actually contained 150 gallons of fuel and weighed more than 1,000 pounds. Once released from the aircraft, the tank overwhelmed the three people, fell to the deck, and injured one of them. This shortcut resulted in a Class C mishap.

After servicing an oxygen system, a PR2 discovered that the filler-check valve leaked when he disconnected the oxygen servicing line. He reported the problem to maintenance control. A little later, an AME2 arrived at the aircraft and reconnected the servicing line to the valve. He told his co-workers he was going to increase pressure from the servicing cart by quickly opening and closing the servicing-line valve to re-seat the aircraft's filler-check valve.

As the PR2 increased pressure on the servicing trailer's pressure regulator, the AME2 quickly opened and closed the servicing valve. In less than a minute, a white cloud formed, followed quickly by a gray cloud and a lick of flame. Something went flying, and the aircraft caught fire and burned to the ground. This unauthorized technique learned from a previous command destroyed the aircraft.

An unheeded general precaution for this procedure warned personnel to open servicing valves slowly to avoid rapid pressure surges.

Rapid surges can damage sensitive equipment and cause extreme temperature rise in small orifices in equipment.

One more, then I gotta go:

An airframe mechanic replaced the starboard main landing gear's shock absorber on an S-3. The MIM says to jack the aircraft at three points to change a shock strut and verify the aircraft's gross weight before you start jacking the bird. The gross weight cannot exceed 45,915 pounds; this aircraft weighed 49,256 pounds.

Maintenance personnel tried an unauthorized alternate method by seating a single jack against the starboard jack-point. This jack supposedly would relieve pressure on the main landing gear enough to allow changing the shock strut. Guess what happened next? That's right! The jackscrew failed. It cracked at the base but remained intact long enough to support the aircraft until a forklift could take over and the crew could finish installing the strut.

An experienced, second-class CDI had been aware of the three-point requirement but deemed the single-point procedure an acceptable, normal alternative way to change the strut while deployed aboard ship. Neither the CDI nor the supervisor consulted the MIM.

According to the 4790 (Vol. 1 Chapter 14.7a), CDIs assigned to production or MTU work centers are responsible to the QA officer for required inspections while maintenance is being performed by their respective work centers. CDIs must spot check all work in progress and be familiar with the provisions and responsibilities of the programs managed and audited by QA.

Can you explain why these mishaps happened? In some cases, maintainers whom we

call professionals showed reprehensible ignorance and negligence. There's no other way to describe failing to follow the MIMs and SOP.

Some know-it-alls out there teach their shipmates "tricks of the trade" instead of what the book says. Those students then pass on the tricks to others, often trying to impress them

with their newly acquired skills, not knowing how or where to find the correct procedures in the book.

Refer to the tech pubs for procedures. Your subordinates or co-workers won't laugh at you for reviewing the checklist at the job site.

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

Line

Aircraft Washing

by PRC(AW) Bill Yeager

The aircraft wash is an integral part of the planned maintenance of any airframe. Periodic washing reduces corrosion, improves aerodynamics, and makes the aircraft look great. However, the aircraft wash is an undeniably dangerous undertaking and, in most cases, is done by our least experienced personnel, usually plane captains and their trainees.

Here are some examples of how **not** to wash aircraft: A plane captain straddling the folded tail section of an H-53 fell off and broke his ankle. An airman lost part of his fingertips to a P-3 when a second airman extended a ladder the first airman had been cleaning. A plane captain severely injured his legs and feet when he slipped off the wing of a C-130 and fell 18 feet. An airman fell off the horizontal stabilizer of a Hawkeye, injuring his face and shoulder. An H-60 pilot burned his eyes during an all-hands wash in port.

The common thread in these mishaps is that wash accidents know no boundaries. Dangerous cleaning compounds and wet, slippery surfaces, coupled with all the sizes and shapes of the airframes themselves, make aircraft washes very hazardous.

Wash jobs generally are supervised by a leading airman. In most instances, the only time you see a "crow" on the wash rack is when the wash is about to be inspected by a CDI. Some washes are done without the correct use of PPE, and cleaning compounds sometimes are used wrong.

On your next training day, break out the MRC deck and review wash procedures before your next wash. This, in addition to increased vigilance on the part of your wash party, will reduce the chances of a mishap.

Chief Yeager is a maintenance analyst at the Naval Safety Center. He recently transferred from VF-41, NAS Oceana.

Power Plants

Tanks Away!

by ADCS(AW) Val Calderon

A message summary stated that maintenance personnel were injured when a partly full drop-tank they were downloading fell to the deck. I dug through the database and found that since 1980, there have been eight other reported instances of this mishap. Of course, the working word here is "reported"; many mishaps weren't reported. I thought, "People never learn."

Some of the victims assumed the drop-tank was empty. Others didn't make sure they were at the right aircraft and that the drop-tank was empty. Others didn't use established procedures, or didn't accurately dip-check the tank.

A supervisor didn't inspect a drop-tank for fuel with a red-lens flashlight. Others didn't comply with a maintenance requirement to inspect drop-tanks, or didn't adequately super-

wise a download. A team leader ignored the ordnance-loading manual and didn't check for fuel with a flashlight, and local maintenance procedures didn't mandate using an airborne-stores checklist. Eleven people were hurt by those mistakes.

After a few close calls with drop-tanks, I've developed the following list that I call "Calderon's assumptions":

- A fuel-quantity gage is always wrong.
- The thump test for checking watermelons does not work on drop-tanks.

- A slight amount of visible fuel in the front of a hundred-gallon tank weighs more than 180 pounds in the aft end.
- Put the biggest maintenance technician on the back end when dropping tanks.
- Approach drop-tanks with the same respect you use to download bombs.
- Personnel who have downloaded a lot of drop-tanks will work harder than inexperienced personnel to prove a tank is empty before downloading it.

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

Supervision

Who's Checking on Whom?

by AZCS(AW) Joe Meyers

We examine this question frequently at the Naval Safety Center. Let's try to determine who is at fault in the following case.

Two airframe mechs installed a bolt on a follow-up arm of the forward servo of an H-53 that had been in the hangar for quite a while. The original bolt had been installed backwards. After removing and re-installing the bolt, which required disconnecting the lower sloppy link, the two metalsmiths left the link disconnected. This would save time later when they would do a full flight-control rig. The CDI (one of the two metalsmiths) didn't think more maintenance had to be done in that area. He directed the other metalsmith to create a new MAF stating that the lower sloppy link was not connected. The CDI then signed off the original MAF for installing the arm bolt.

Later that day, maintenance control authorized another work center to work on the same aircraft. That second work center had to run the auxiliary power plant. You guessed it—when they applied power, it drove the swash-plate well forward of its normal position, causing it to strike the cowling on the forward-hydraulics compartment. Inspection showed the swash-plate's spherical bearing had moved past its normal position. This little time-saver cost the squadron 141 man-hours to remove the main rotor head and swash-plate for repairs.

Did the metalsmith who did the work make a mistake? What was his level of experience? Did

he understand (when he left that link disconnected) exactly what he was doing? Did the CDI explain it to him and then make sure the metalsmith understood the need to have a MAF written up?

Next, did the CDI help cause this mishap? When he signed the MAF, did he verify the metalsmith had initiated a new MAF for the lower sloppy link? Did he mention it to his supervisor or to maintenance control? Should he have signed off the MAF without ensuring this had been done?

We can't ignore the work-center supervisor. As the last person to sign the MAF, shouldn't he have asked questions and checked with the CDI to make sure there were no loose ends?

Lack of communication and misunderstanding are two of the worst problems in maintenance. This mishap is a classic case of communication breakdown—especially in light of the old time-saving trick of leaving that lower link disconnected. We didn't save any time, but we can learn something from it: CDIs and supervisors, before you sign a MAF, check that every item has been addressed. Make certain your people understand the significance of their involvement, and most important, don't forget maintenance control. Two-way communication is a key factor in the fast-paced world of aviation maintenance.

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

Dangerously Comfortable

by ATC(AW) Darrell Hohensee

Complacency is an attitude we develop once we get familiar and too comfortable with our work environment.

In QA, I once saw the central technical publications librarian stacking pubs into crates stacked three deep. The crates were about eight feet high and leaning toward the librarian, and rocking back and forth each time a pub was added. Even though the space was filled with senior enlisted personnel, no one seemed concerned that an accident was imminent.

Here's another one: I walked into a ship-board tool room, dimly lit by three single bulbs. I found one with no protective cage surrounding the bulb. It was a very low ceiling, and the unprotected bulb was directly over the tool-room custodian's desk waiting for him to stand up and smash into it.

Every now and then, I see things that make the hair on the back of my neck stand up. Some squadrons use hydrostatic bottles to service the

aircrews' HEEDS bottles. I've found these pressurized bottles standing upright in workspaces and not secured to anything. Just imagine a bottle falling over, the neck breaking off, and 3,000 psi trying to escape all at the same time. Not a pretty sight.

Be sure to post your sewing machine eye-hazard sign: "Eye hazard area: eye protection required." Use goggles while operating sewing machines, and make sure the safety guards are installed around the needle and belt.

Is there non-skid on both sides of the hatches you step over? A little water or other fluid on the bottom of your shoes will definitely send you for a ride.

These are some of the typical hazards I find on my trips. I'm confident there are others waiting to strike. Quality assurance personnel and supervisors can identify these hazards and have them fixed. If something doesn't look right to you, it's probably not.

Chief Hohensee is an aviation maintenance management team member at COMNAVAIRPAC.

Hazmat? What Is That?

by AMCS(AW) Darryl Dunn

Want to get your skipper fired? Want to have a private room with three hot meals a day? Then just ignore all the warnings and rules about AULs (Authorized User List), HW (Hazardous Waste), MSDSs (Material Safety Data Sheets), the SHML (Ships Hazardous Materials List) and HM (Hazardous Material), and you just might make it. Acronyms and abbreviations were a part of the Navy's jargon before USS *Constitution* earned the nickname "Old Ironsides," but those listed above are relatively new.

Every day, the message traffic is loaded with reports of mishaps involving chemicals, liquid cleaners and other common items we use in aviation. As a supervisor, do you make sure the mech or tech checking into your shop knows what an MSDS is, or do you just send them down to the hazmat locker after telling them what to bring back?

A supervisor is responsible for training all new personnel within their first 30 days in the shop on hazmat procedures. How often is it done during a check-in brief, or while trying to launch a sortie, or during a pack-up for deployment?

Deployments aboard a carrier may enable us to avoid some of the problems in dealing with hazmat, but what if your next set of orders is to a helicopter squadron that deploys on a CG (guided missile cruiser) or an AOE (fast combat support ship)? Does the ship's SHML support all the corrosion materials needed to maintain your aircraft? Shop supervisors who coordinate with the squadron's hazmat PO enjoy easier work-ups and smoother deployments.

OPNAVINST 4110.2 (Hazardous Material Control and Management) and the 4790.2G define those terms, abbreviations and acronyms.

Senior Chief Dunn is a maintenance analyst at the Naval Safety Center. He reported aboard from HC-6.

Support Equipment

All Hands Accounted For

by ADCS(AW) Val Calderon

A staff sargent was at home working on his car when his right hand got caught in the cooling fan. He injured his forefinger and thumb, spent two days in the hospital, lost four workdays and was on light duty for 30 days. Ouch....

This mishap is remarkably similar to a mishap I use in our maintenance malpractice presentation: A support equipment technician was

troubleshooting a coolant leak on the engine of a running NC-10. Believing he'd found the source of the leak, he wiped the area with a rag. While he was focused on the job, the rag got caught in a spinning fan blade and dragged his hand into it. The fan cut him deeply, almost splitting the hand in half and resulting in a permanent partial disability.

Senior Chief Calderon is a maintenance analyst for the Naval Safety Center and does maintenance malpractice presentations. To schedule one, contact him at (757)444-3520 X7218 (DSN 564).



What's on Our Web Site?

- Operational Risk Management tools
- Survey schedules
- Staff directory
- Text for Ashore, Approach, Mech, Fathom, and Aviation Weekly Summary

www.norfolk.navy.mil/safecen

Man Overboard! Man Overboard!

by Joe Casto



Like you, I've had my share of man-overboard drills. But until I saw USS *Abraham Lincoln's* (CVN 72) message about a real man-overboard incident in WestPac last June, I'd never thought about jumping off the flight deck to save myself, much less a shipmate. I'm not sure I have the guts for it. Think about it. WestPac: sea snakes, 150 varieties of shark (including the Great White), and with my luck, they'd all be there waiting for me.



It took tremendous courage for the ABH3 in that message to leave the comparative safety of the flight deck and jump 65 feet into the ocean from a moving CVN to save an airman. It was brave and dumb at the same time because then there were two people to rescue instead of just one—but I'm getting ahead of myself.

It was a comfortable 79 degrees with 10 knots of wind and seven-miles visibility, just before the start of flight operations. An ABH3 was directing the respot of a Hornet onto No. 2 elevator. An airman (the aft observer for the move) had been walking backward directly behind the aircraft while a tug pushed it toward the deck edge. The AN kept walking backward as the aircraft approached the edge until she tripped over the coaming and lost her balance. Before the ABH3 could stop the aircraft, and just as the AN was about to regain her footing, she was nudged by the port drop-tank onto a bomb-jettison ramp and overboard. The ABH3 saw the AN go over the side and called "man overboard" on his flight-deck radio. He removed his cranial and radio and jumped over the side after the AN.

A plane-guard crew preflighting their helo hurried through their checks and launched. They recovered both victims within 23 minutes. Both yellowshirts suffered internal injuries: a lacerated liver and ruptured spleen for him; a closed head injury with bleeding for her. Both Sailors' lungs were jarred so severely that



doctors found blood and air in their chest cavities, and both experienced symptoms of hypothermia, even after a relatively short immersion in the 72-degree water. Combined with shock from the trauma, their injuries could have been fatal.

Although the director acted instinctively in trying to save a shipmate, he risked his own life and complicated the SAR effort. Because of this, the flight-deck crew received immediate training on the severe risk of injury by falling or jumping into the sea from the flight deck. In this case, the risk was magnified by the speed of the ship, which was more than 30 knots.

The ship's air wing is re-emphasizing the following rules these days:

- Never walk backward.
- Maintain situational and spatial awareness by keeping your head on a swivel.
- Be careful near bomb-jettison ramps, because they provide unobstructed paths overboard—no safety nets.
- Finally, seawater temperatures are nearly always cold enough to cause hypothermia. Even temperatures in the 70s can quickly incapacitate you, particularly when you're hurt.

There have been 1,015 man-overboard incidents since 1980; 854 of them were unintentional. There were also 133 deaths—and many serious injuries. Crewmen must be taught to follow strict procedures when someone goes overboard and leave the actual rescue to trained personnel.

Flight, Flight-Related and Ground Mishaps Class A Mishaps

Aircraft	Date	Command	Fatalities
FA-18A	07/18/98	VFA-97	0
A Hornet had engine failure and an engine-bay fire and crashed at sea. Reported in Mech as VFA-87 erroneously.			
FA-18C	09/16/98	VFA-83	0
A Hornet crashed during an over-water strafing run; the pilot ejected.			
UH-1N	09/16/98	HMLA-267	4
A Huey crashed into the water while flying DLQs.			
FA-18C	09/25/98	VFA-34	0
A Hornet crashed into the sea; the pilot ejected.			
HH-60H	09/26/98	VX-1	2
A Seahawk crashed during an over-land SAR mission.			
EA-6B	11/08/98	VAQ-130	4
S-3B		VS-22	0
FA-18C		VMFA-312	0
FA-18C		VFA-37	0
FA-18C		VFA-37	0
A Prowler's starboard wing hit the vertical stabilizer of a Viking on the angle deck during a waveoff. Burning fuel and debris destroyed three Hornets. The Prowler's crew did not survive.			
CH-46D	11/19/98	HC-8	2
An engine failed during VERTREP and the Sea Knight ditched.			
AV-8B	12/03/98	HMM-163	0
A Harrier had an in-flight fire and crashed at sea.			

Class B Mishaps

SH-2G	06/13/98	HSL-84	
A Seasprite had an NR over-speed upon initial rotor engagement before emergency shutdown.			
FA-18C	07/06/98	VFA--87	
A Hornet's port engine failed immediately after takeoff and extensively damaged the aircraft.			
FA-18D	07/11/98	NAVSTKAIRTESTRON	
A survival-systems mechanic missed the second step and fell to the hangar deck while climbing out of a Hornet.			
UH-1N	07/23/98	HMM-262	
A Huey crashed into the ground during a training flight; downgraded from a Class A mishap.			
FA-18C	08/20/98	VFA-22	
A Hornet under tow struck a parked Hornet.			
TH-57B	09/03/98	HT-18	
A Sea Ranger struck the ground and rolled over during a practice power-recovery autorotation.			
AV-8B	09/30/98	VMA-231	
A Harrier hit a bird during a low-level training flight.			
CH-53D	10/14/98	HMH-362	
A Sea Stallion's nose strut collapsed during maintenance and pinned a Marine under the aircraft; the Marine recovered.			

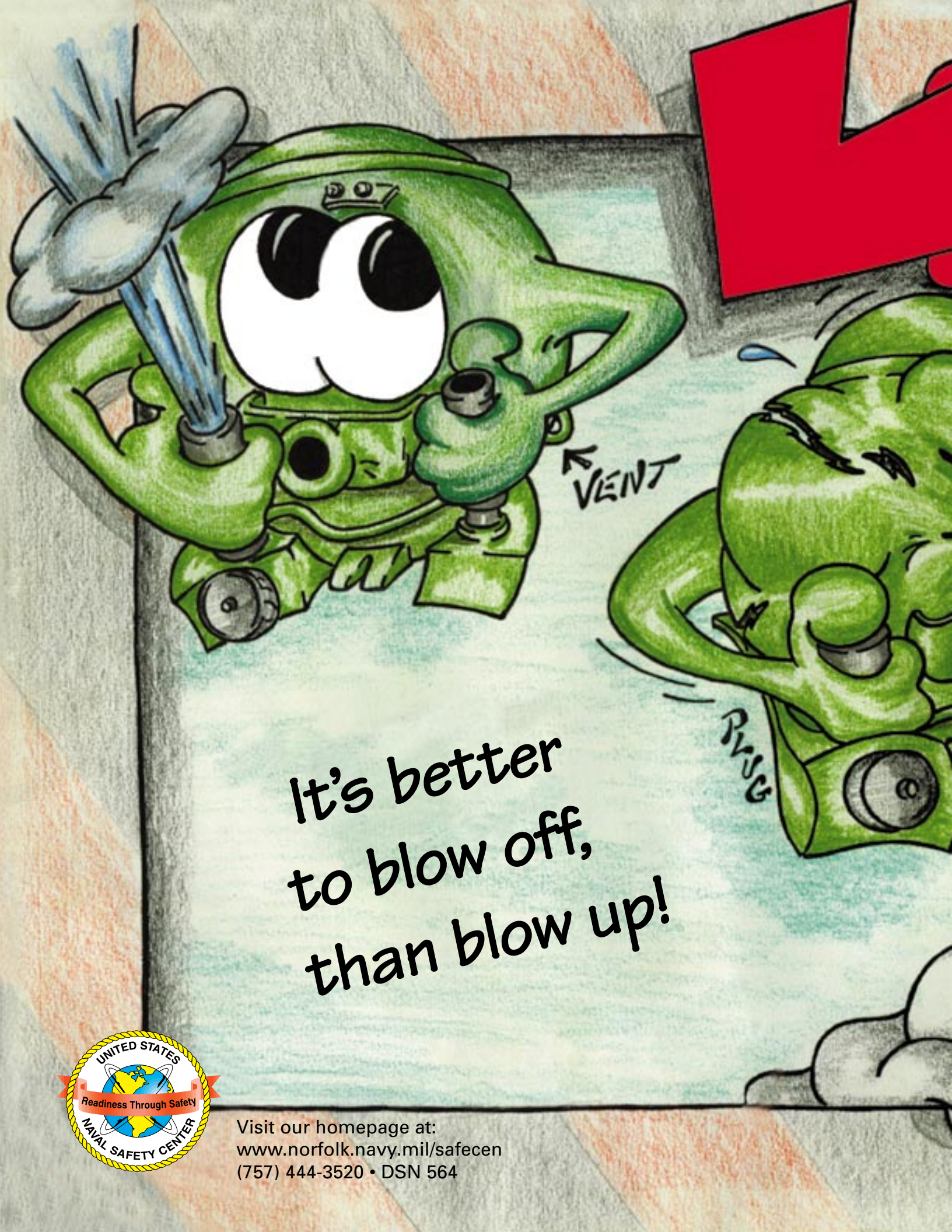
Remove this insert! Post it until it's old news, then display poster on reverse side.



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)





It's better
to blow off,
than blow up!



Visit our homepage at:
www.norfolk.navy.mil/safecen
(757) 444-3520 • DSN 564

POX



"Blow!"

AME2
W. Ryd 5.8.96

Drawing by AME2 Ryder
Submitted by VAW-78

I Get Nervous When I Can't See Your Hands

