

CROSSFEED

Maintenance Officer

Cdr. Al Stephens
allen.stephens@navy.mil

Editorial Coordinator

ADCS(AW/SW) Gary Dennis
gary.dennis@navy.mil

LOX Safety

Time Critical Factors in an Emergency Situation

By AMEC(AW) Edgar Cintron

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

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

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

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

the LOX storage area alongside the LOX PPE, in desk drawers, or IMRL boxes. Sometimes, I can't find them at all.

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

Here are some other helpful hints:

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

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

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

QA Program

How Strong Is Your Auditing Process?

By AMC(AW) Paul Hofstad

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

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

Some QA work centers I recently surveyed were grossly undermanned. With a command operating on two shifts, manning a vigorous flight schedule, and still performing audits, the number of assigned QA personnel may not be enough to do what's required. CNAF 4790.2, Volume 1, Chapter 14, states that QAs will be represented by all rates. Obviously, there will be caveats to this requirement,

such as CDQARs in the PR shop, but, when a command has to put a CDQAR in the line division, then manning needs to be addressed.

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

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

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

Maintenance Training

Maintaining an ORM-Based Training Program

By ADC(AW/SW) Gary Eldridge

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

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

Usually, qualified senior technicians who have proven themselves provide the training as instruc-

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

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

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

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

- Do I have the resources available to perform the task?

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

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

Tool Control

I Didn't Know That

By AMCS(AW) Mark Davis

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

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

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

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

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



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

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

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

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

Respiratory Protection

It's a Matter of Life and Breath

By AMCS(AW) Mark Davis

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

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

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

My concern is with organization, accountability and

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

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

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

1910.134

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



SE Maintenance

Dotting the I's and Crossing the T's

By ASCS(AW) Phil LeCroy

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

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

Meaning the bottle was almost ten years overdue. Hello!

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

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

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

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

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

inspection clearly directs personnel to ensure that the calibration is current.

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

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

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

Class C Mishap Summary

By ADCS (AW/SW) Gary Dennis

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

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

- A ramp-mounted weapons system (RMWS) was damaged when it departed an in-flight CH-53E. During a day aerial-gunnery shoot, the aircraft was flying at 500 feet and 90 knots. The tail gunner was firing the weapon out the left side of the ramp when the RMWS's quick-release assembly slid out of the floor interface plate. The tail gunner

attempted to hold onto the weapon, but as the tension of his gunner's belt increased, he was forced to release the weapon. The barrel, receiver, ammo can, and mount landed on the desert floor. The vibration from firing the weapon, along with the weapon being pointed out the left side of the aircraft, placed force in the direction of the slotted opening in the floor interface plate. That arrangement allowed the quick-release assembly to slide out of the floor plate, and the weight and center of gravity of the weapon forced it out the back of the aircraft. An investigation revealed the RMWS was installed improperly and the tail gunner failed to inspect it properly, resulting in \$38,000 damage.

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

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



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