

and follow through on your actions to ensure that your evolution progresses as expected.

The evolution had not been progressing as expected, but I put myself in a worse position by assigning myself a duty for which I wasn't qualified. Had I slowed down and done things correctly, this mishap may not have happened. As it was, this incident forced both my command and me to reevaluate the way we perform aircraft move evolutions. We have since used this incident to show junior Sailors why we have rules and procedures, and how the ORM process can be put into everyday use.

I know that I should not have attempted to act as move director since I was not qualified, nor should I have even attempted the move without a thorough pre-move brief, putting ORM principles to work and analyzing the situation. Had we used ORM, we might have decided that doing an unfamiliar evolution with a qualified but inexperienced crew at night in the cold for a low-priority maintenance task was not worth the risk. We might have accepted the risk but mitigated the hazards by implementing controls such as folding the wings, familiarizing ourselves with the layout of

the hush house before putting the aircraft inside, and making sure only qualified personnel were used in each position. We might have started the job with hazard controls in place, then reevaluated the situation and determined that more precautions were needed.

I hope everybody who reads this article learns something from my experience. Although I got to dance on the carpet for the CO, I learned more from this incident than any other in my naval career. On a positive note, we now conduct thorough pre-move briefs and work hard to incorporate ORM practices into everything we do. We have a hush-house checklist and make sure the wings are folded before we move aircraft into the building. We remove the ALQ-126 antenna housing since even a properly positioned jet is less than a foot from the rear wall. We use this incident as a training lesson to prevent future mishaps and we even ORM'd the hush house itself, figuring out that the aft limit lines for the main mounts were missing and needed to be repainted.

In the end, however, everything that I have written about all adds up to one thing: always look before you leap. A careful ORM analysis allows you to do just that. 

## 2,000 Man-Hours Later

*By AD1 Thomas Miles, VFA-37*

**N**ot following tool-control procedures will keep a squadron's maintenance effort from flowing smoothly. My squadron experienced two incidents of missing tools within weeks of each other.

A workcenter lost a 6-inch extension while doing maintenance in the hangar bay on aircraft 306. Before notifying maintenance control and quality assurance, the technician and CDI did an immediate search. After their unsuccessful attempt to locate the tool, a missing-tool report was generated and a more extensive search of maintenance areas was conducted, including the workcenter and outlying areas of the squadron. All maintenance that had previously been performed was reopened and inspected by the quality-assurance investigator. The search was extended to all aircraft on the line for a period of three shifts, but all attempts to locate the missing tool were unsuccessful.

Convinced that the tool wasn't in any of our aircraft, they were released safe for flight, and the squadron began training ops in preparation for an upcoming

Airwing Fallon detachment. After completing preparations, we packed up and departed for NAS Fallon. After four days of flying, a runway maintainer entered maintenance control after inspecting the runway for debris and turned in a six-inch extension to the maintenance chief. Investigation revealed this tool was the one that had been lost two weeks earlier. The tool was bent and severely nicked, and groove marks ran along its entire length.

Maintenance control initiated conditional inspections for all squadron aircraft. The inspection team discovered damage to the brake-hub assembly and inner rim on aircraft 303's starboard mainmount. The extension had migrated from the wheelwell and made its way into a small crevice between the rim and brake-hub assembly. This tool remained in place for 17 flights until it dislodged itself during takeoff.

The second incident began with a nightshift supervisor's daily routine of inventorying tools in preparation for the maintenance meeting. Tools were inspected



Photo by Matthew J. Thomas

and accounted for, the passdown was reviewed, and the workload was scanned to establish workcenter priorities. Upon completion, the shift supervisor set out for the nightshift maintenance meeting; upon return, he assigned the task of installing aircraft 301's starboard engine accessories to two workcenter technicians. A technician and CDI checked out a toolbox and departed to accomplish the assigned task. When they were done, they turned in the toolbox and returned to the workcenter. The CDI assigned to the job updated the VIDS-MAF and entered his in-process inspection on the MAF. After a lengthy night of maintenance, the supervisor directed shop personnel to wipe out all tool-

boxes and prepare for departure. After the boxes were wiped out and inspected, the night supervisor signed the end-of-shift tool inventory. When the oncoming dayshift held tool inventory, the 3/8-to-1/4-inch stepdown was missing.

Dayshift workcenter personnel conducted an immediate search but were unsuccessful in finding the missing tool. A report was generated, and the offgoing shift was recalled. The quality-assurance representative traced every step performed by the maintenance crew the previous night. The search extended to all aircraft and squadron spaces. All flight operations were secured, and the search continued for two-and-a-half shifts, totaling more than 2,000 man-hours. The tool was located in the tracks of the hangar-bay door.

In comparing these two incidents, distinct problems were noted after completing the investigations. The phrase that comes to mind is "before, during and after." All tools are required to be inspected before, during and after each assigned task. As a fail-safe method of tool control, local standard policy requires quality-assurance representatives to inspect each toolbox before and after completing every task.

Simple practices, if adhered to, will prevent the hassle of having to perform searches for missing tools. Although all procedures were followed during the loss of the missing extension, the result could have been catastrophic. In the case of the missing stepdown, several vital things were missed. It was determined

the CDI never inventoried the tools before or after completing the task; neither was the box inspected by QA. In addition to those three infractions, the stepdown was missed during the offgoing inspection.

Standard procedures are developed and implemented for a specific purpose: to prevent mishaps. Many lessons have been written in blood. Failure to adhere to policies established in the tool-control program can prove catastrophic. ✈

*How does the missing extension mentioned in the first scenario migrate from aircraft 306 to aircraft 303? What can you do to ensure this does not happen in your command?*  
—Ed.