

DoD Ergonomics Working Group NEWS



Issue 127, May/June 2012

<http://www.denix.osd.mil/ERGOWORKINGGROUP/>



Tool Backpack: Saves Time, Improves Repair Process

By Trevor Krick, embedded Lean Six Sigma Black Belt in the hydraulics shop of Puget Sound Naval Shipyard & Intermediate Maintenance Facility, Bangor, Washington

When tool bags no longer do their job the way they are supposed to, it's time to trade up. That's what the hydraulics shop mechanics at the Puget Sound Naval Shipyard & Intermediate Maintenance Facility (PSNS & IMF), Bangor did. They had two good reasons: to save their backs and to keep their tools together.

The hydraulics shop (Shop 31F) mechanics do a lot of back shop work (work not performed shipboard), but they also have an important role aboard boats in supporting unrestricted operations testing, also dubbed as URO-16. While they are very good at what they do, an evaluation of their current processes, along with a brainstorming session, revealed an opportunity for improvement. The team discovered the tool bag used for boat work slowed them down and caused unnecessary churn.

The "boat bag" was far from standard. While the URO-16 discrepancies accounted for most of the shop's onboard workload, the bag was tooled for troubleshooting nearly all hydraulic issues. When a job was assigned, a mechanic would grab the generic assortment of common tools, special tools, fittings and software, all of which were haphazardly thrown into the various pockets of the tool bag. A bag inventory, if conducted, was based on the mechanic's memory of tools required for the job; required items might be forgotten. So, after minutes of treasure hunting in a disorganized bag, a missing tool would result in a trip off the boat to the Delta Pier (where submarines are maintained) tool room, or even back to the main shop building miles away.

BEFORE



AFTER



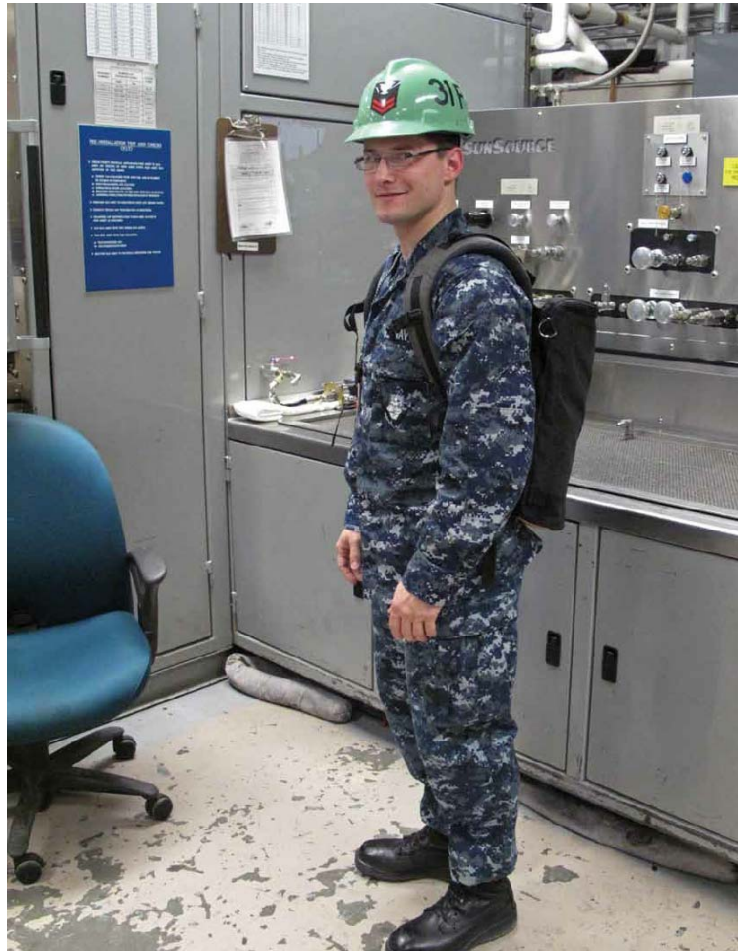
Continued on page 2

The bag was anything but ergonomic. With one strap, the boat bag would hang off the shoulder, placing an uneven load on the body. Navigating ladders and tight spaces was a problem. The 31F hydraulics mechanics knew what characteristics they wanted in the new bag. That's where the PSNS & IMF "Moonshine Lab" came in.

The Moonshine Lab is a small group that specializes in rapid prototyping of concepts brought to them from the work force. Lean Six Sigma Black Belt Tim Deverin, who works in the repair division, is the link between Shop 31F and the Moonshine Lab. From a description of the bag's function, Leo Cooper of the Moonshine Lab redesigned and customized a new boat bag. After several rounds of beta testing, a final product was developed.

The Shop 31F mechanics have realized a substantial return on their investment of time and effort spent on the project. What once was just a bag with tools is now a backpack that completely unzips, hangs virtually anywhere and allows process-specific point-of-use tooling. The mechanics found it has impacted nearly every step of their process, from tooling up for a job to performing the actual work. They calculate that using this backpack will reduce time spent searching for tools by 91 man-hours per year.

More importantly, when a mechanic arrives on the boat to do a job, he has every tool he needs, packed ergonomically. No more trips to the tool room. No more lost hours traveling back to the shop. No more tool-related churn.



MM2 Dean Frescura, from the PSNS & IMF, Bangor repair division's hydraulic branch, models the proper wear of the new backpack "boat bag." The slim size of the backpack provides not only hands-free carrying, but ease of navigation in tight spaces.

Adapted from "Salute" newsletter, November 23, 2011. Photos courtesy of "Salute."

Reprinted from the Naval Safety Center's "Decisions" magazine, Spring 2012:

<http://www.public.navy.mil/navsafecen/Documents/media/decisions/spring2012/Decisions-Spring12-WEB.pdf>