

DoD Ergonomics Working Group NEWS



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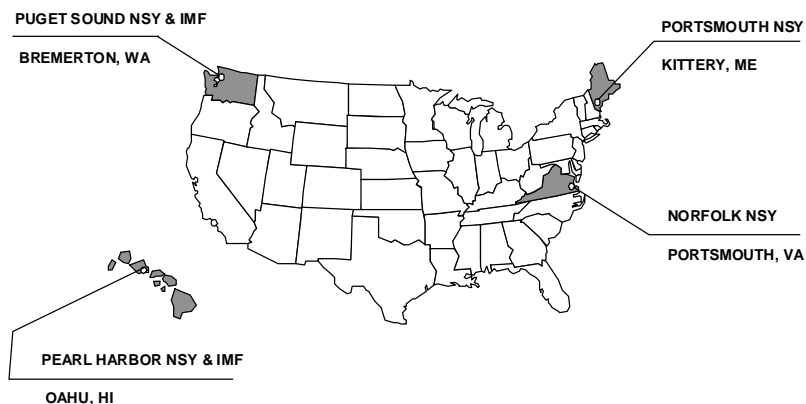
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Naval Shipyard Ergonomics: A Community of Practice

Recognizing the importance of ergonomics to the health, safety, and productivity of the Naval Shipyards' workforce, the Naval Sea System Command (NAVSEA) and the Naval Shipyards have taken a more unified approach to improving shipyard ergonomics. One step in promoting ergonomics and improving worker quality of life was the assimilation of a Naval Shipyard Ergonomics Community of Practice, with this mission: foster a collaborative environment focused on reducing ergonomics-related costs, increasing productivity, and improving worker quality of life in the Naval Shipyards.

This Community of Practice is currently chaired by NAVSEA's Naval Shipyard Industrial Operations Department, with participation of the four Naval Shipyards shown in the graphic below, NAVSEA Safety Management Office, and the Navy Safety Liaison Office.



This article highlights ergonomics initiatives that have proven successful at these four Naval Shipyards. Each initiative used a different approach to improving ergonomics: in-house development, equipment purchase, technology insertion, and management change.

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Norfolk Naval Shipyard (NNSY)

Reducing Carpal Tunnel in TLD Reading: Developing Solutions In-house

Due to a number of recorded carpal tunnel injuries in the thermoluminescence detector (TLD) reading group, an industrial hygiene study was begun. It was found that the group processes approximately 3500 TLDs per week with the majority (approximately 1100) processed on Tuesdays between 0400 and 1000.

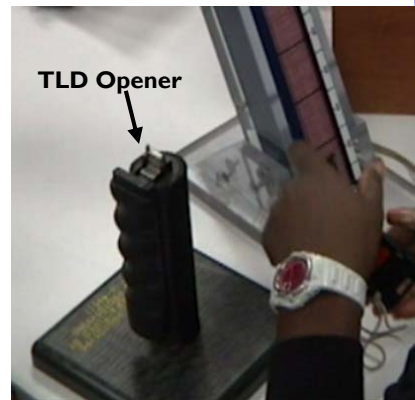
The existing tool used to snap open the TLD case is a handheld narrow metal piece that is activated by a pinch grip. Because of the frequency and speed of the process, repetitive stress is put on the hand and wrist.

The NNSY Rapid Prototype Center was contacted and, after research, a prototype of a TLD holder was fabricated for testing. The new design inserts the old tool into a holder that is activated by a full hand squeeze with the hand and wrist in a neutral position.

The TLD reading group was very happy with the results and there is a plan to make several for NNSY usage. A total of 160 holders have been made for distribution throughout the Navy—including the fleet, shore facilities, and Navy-affiliated private shipyards—to help avoid musculoskeletal injuries involved with opening TLDs. There is currently a patent pending for this tool.



Old process using a pinch grip.



New process using the TLD opener.



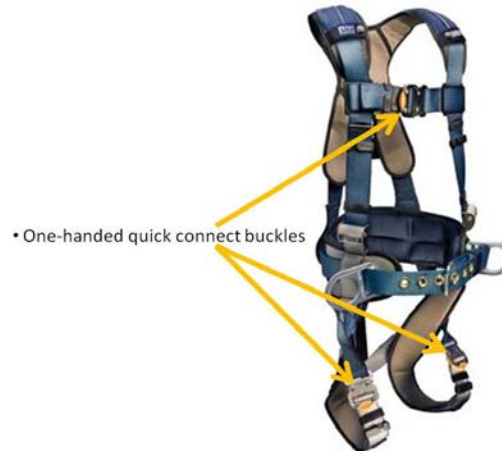
Portsmouth Naval Shipyard (PNSY)

Comfortable Fall Protection: Improved Ergonomics Through Choice

Fall protection is something that isn't taken lightly at the Naval Shipyards and is a requirement for much of the work performed shipboard. Unfortunately, some fall protection equipment doesn't offer the comfort and support desired by workers for prolonged use. PNSY is taking charge of this problem by investing in equipment that fits the worker properly and comfortably. More comfort means less worker strain and increased productivity.

One such example is the purchase of the ExoFit™* harness. This harness:

- Incorporates an ergonomic design with shoulder, hip, and leg padding that stays in place.
- Is lightweight, made of polyester webbing, and breathable—with a lining that draws moisture away from the body.
- Features quick connect buckles that help alleviate some of the hassle of putting on the equipment.



By providing their workers with comfortable, lightweight equipment that limits the burden of the equipment being worn, PNSY is showing their commitment to both safety and ergonomics.

*Use of trademarked names does not imply endorsement by the Department of Defense, but is intended only to assist in the identification of a specific product.



Puget Sound Naval Shipyard & Intermediate Maintenance Facility (PSNSY&IMF)

Unpowered Mechanical Arms: Utilizing New Technology

Unpowered mechanical arms are making an impact at the Naval Shipyards in a big way. Unpowered mechanical arm technology enables workers to maneuver equipment with an almost weightless feel, providing the ability to work longer with less fatigue and strain. This technology is one of the innovative approaches the Naval Shipyards are taking to reduce ergonomic injuries. With reduced strain and fatigue on the worker, productivity and quality are increasing as well.



Equipos ZeroGTM* with induction heating unit I

PSNSY&IMF has taken the lead in implementing and analyzing unpowered mechanical arms in the Naval Shipyard community. In the last few years, they've purchased several Equipos ZeroGTM* arms for applications that traditionally result in worker discomfort. These applications usually require workers to perform overhead work while holding production equipment (e.g., overhead grinding). PSNSY&IMF's "moonshine" lab, a rapid improvement lab that develops and modifies new tools and equipment for shipyard specific uses, is testing and implementing adaptations of the arm for multiple production applications. Additionally, Norfolk Naval Shipyard has recently purchased a unit; Portsmouth Naval Shipyard is considering a unit for their shipyard as well.

The work isn't done yet. Further testing and modifications are being performed to best adopt unpowered mechanical arms to the shipyard industrial environment. User feedback is being discussed regularly in the Naval Shipyard Ergonomics Community of Practice meetings and in other Navy ship maintenance forums. Additionally, the National Shipbuilding Research Program is currently funding a program that evaluates the general use of unpowered mechanical arms in the shipbuilding industry. The resulting data will better equip the shipbuilding industry to make informed decisions for deploying this exciting technology for shipbuilding and repair.

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Pearl Harbor Naval Shipyard & Intermediate Maintenance Facility (PHNSY&IMF)

Adapting for Success: Management Leading Change

PHNSY injury data indicates that 30% of the workforce has experienced a strain or sprain injury. The 2011 data (January-November) shows that 44 of 157 workers had strains/sprains that might have been eliminated had they performed stretch/flex exercises prior to conducting their work. More than half of the strains/sprains occurred after the workers attempted to lift/move an object without assistance or from a non-neutral posture.

PHNSY&IMF intends to increase awareness that (1) working in non-neutral positions and lifting heavy objects without assistance can cause injury, and (2) stretch/flex exercises can assist with reducing or eliminating those injuries. The Production Resources Department has put an emphasis on stretch/flex in the return-to-work briefings currently being conducted at the shipyard.

The department is conducting personal protective equipment (PPE) kiosks that pass out various forms of PPE including mats for kneeling on and numerous styles of knee pads. Kiosk personnel also provide information on the benefits of stretching and flexing when lifting items and working in non-neutral positions.

Also, the department is emphasizing the use of gloves when conducting work that might cut or otherwise injure personnel's hands (second highest in number of injuries). The PPE kiosk passes out gloves in numerous sizes and styles in order to increase workers use of these gloves. Six new styles of gloves have been issued that reduce the risks of cuts and abrasions. PHNSY&IMF intends on obtaining more styles of gloves that will cover all aspects of work, ensuring that a glove is available that can reduce the risk of hand injuries.



Safety glasses, knee pads, and protective gloves are distributed at the PPE kiosk.