



# SHIP'S SAFETY BULLETIN

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THE OFFICIAL SAFETY NEWSLETTER OF THE SURFACE COMMUNITY

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## NAVAL SAFETY COMMAND AFLOAT SURFACE DIVISION

The Naval Safety Command's Surface Fleet Assessment Team has subject matter experts in Auxiliaries, Combat Systems, Damage Control, Deck, Electrical, Main Propulsion, SOH, Safety Administration and Weapons.

*SHIP'S SAFETY BULLETIN* is intended for informational purposes only. Copies should be forwarded to DHs, DIVOs, LCPOs, LPOs and WCS for dissemination to all hands. This bulletin is approved for official distribution to the surface force and their appropriate staffs and schools.

The SSB is intended to advise DON personnel of current and emerging safety concerns to enhance their professional development and improve operational readiness. All photos are U.S. Navy unless otherwise noted. Current and past issues are available at <https://intelshare.intelink.gov/sites/nsc/>.

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# ROUTINE TASK POSES COMMON ELECTRICAL RISK

By Senior Chief Electrician's Mate Jarrod Becker

Electrical shocks are a routine occurrence resulting in injuries ranging from simple shocks to death. Our enterprise recognizes the importance of safety to our personnel in the completion of routine tasks. Since reinstating the electrical safety module into the curriculum taught in the Electrical Strand Course A-662-002-A at "A" school, we have witnessed a steady reduction in the number of mishaps with respect to corrective and preventive maintenance. However, there are undoubtedly more forces at play that directly contribute to this positive trend.

During the discovery of our reduced mishaps from common maintenance-related electrical shocks reported in the Risk Management Information system, we received a shock of our own. Curiously, our enterprise has experienced a roller coaster effect of Sailors receiving electrical shocks during the simple and routine process of changing out fluorescent lightbulbs. In 2017, we had 25 reported mishaps and that number dropped significantly in 2018 with only 11, but rose again in 2019 with 17. In 2020, we only incurred eight such mishaps, but then were on the rise again in 2021, increasing to 22. See Figure 1.

Discussions with stakeholders have revealed unit implementation, consistent oversight, standards enforcement, training and a well-devised curriculum for indoctrination of newly reporting Sailors played a significant role in the observed

decrease. The Enterprise's adherence to the requirements detailed in references below has strengthened our Sailor's proficiency during the execution of electrical preventative and corrective maintenance.

As we embark on the chief of naval operations' vision, we must take on the good and the bad. As it relates to electrical safety during the execution of planned maintenance system (PMS) actions, we have improved, but we have also sacrificed or lost sight of other hazards that deserve the same level of attention. Our environment is fast-paced and arduous, but we can get better when it comes to receiving shocks from lighting fixtures, specifically, when replacing the fixture's starters. "Remove the bulb first to de-energize the starter circuit, then replace the starter," states NSTM 330, paragraph 2.1.7.

Since a systematic procedure, like PMS, is not in place for this routine evolution, it is incumbent upon leadership at every level to address this issue with personnel to effectively decrease the number of mishaps the enterprise is seeing. Remember, safety is merely a by-product of good risk management.

**References:** OPNAVINST 5100.19, Section A, Chapter 2 and Section B, Chapter 7 and OPNAV M-5100.23, Section B, Chapter 6.

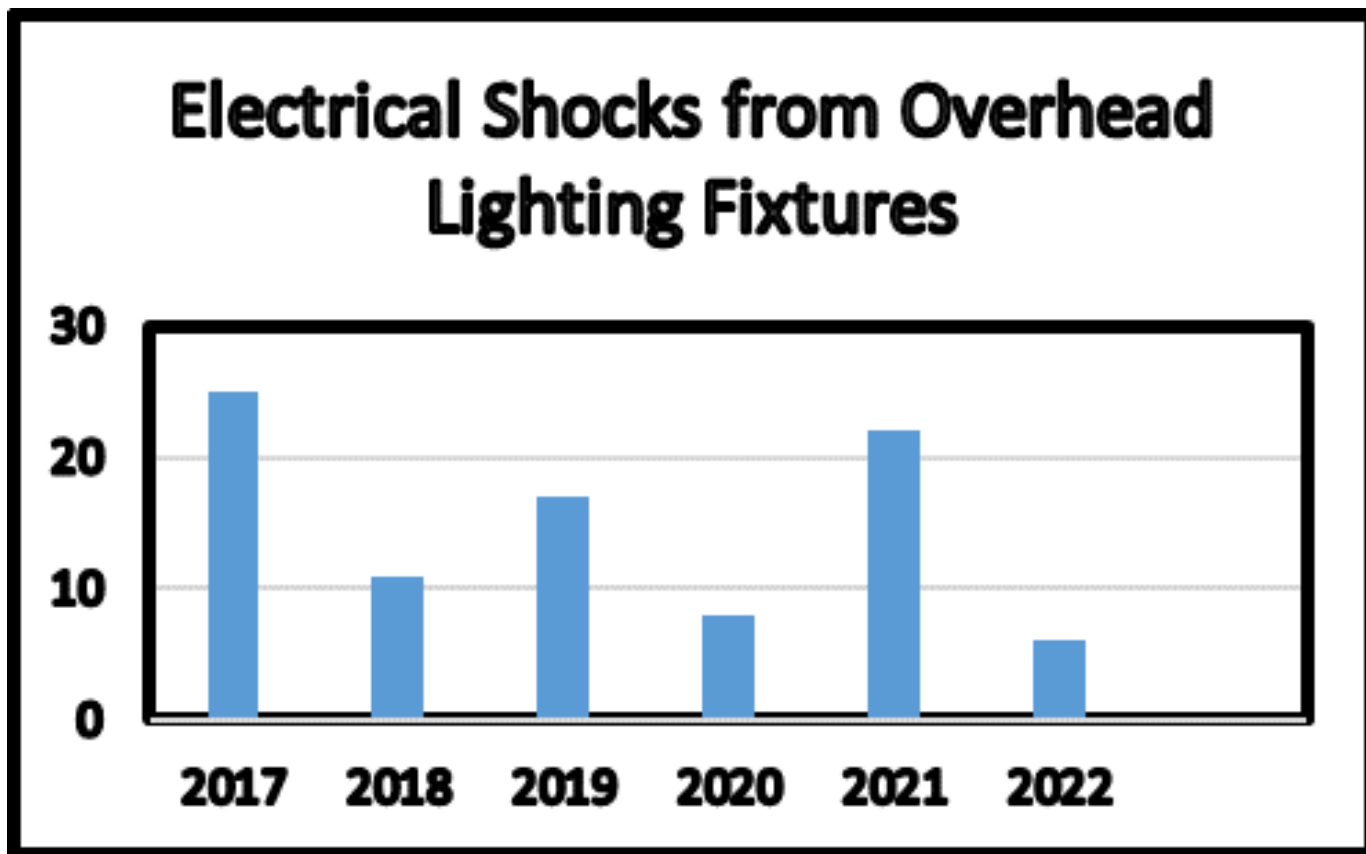


Figure 1

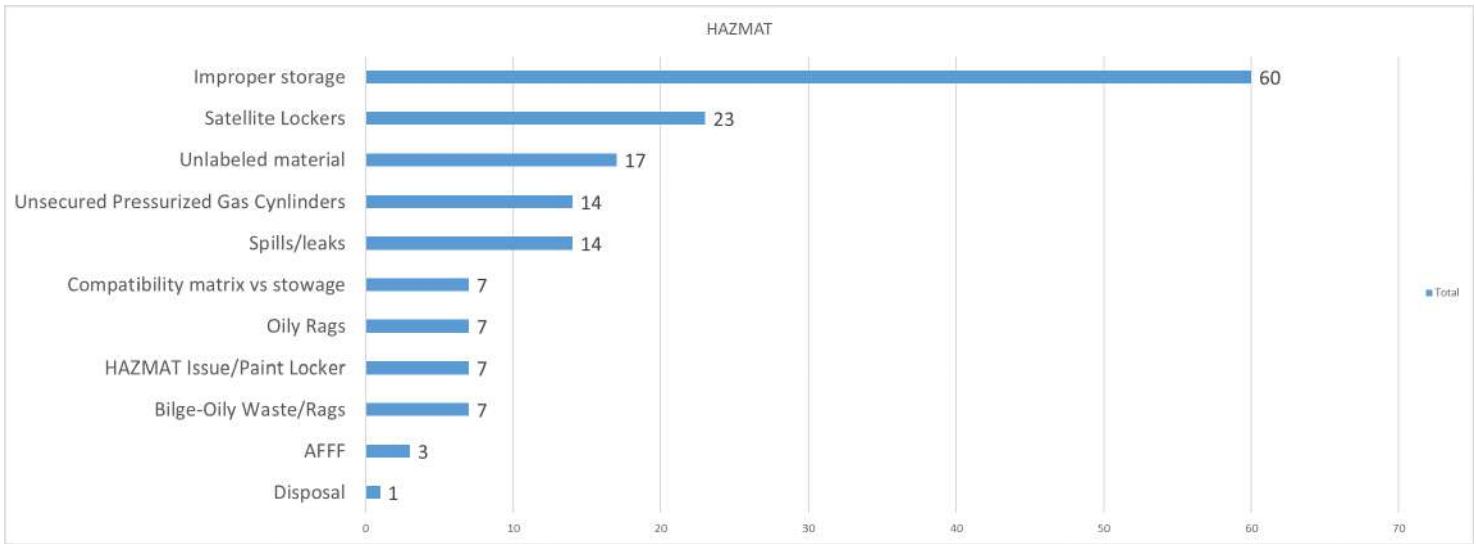


Figure 1

# HAZMAT requires special handling, stowage

## Recent assessments uncover discrepancies

By Lt. Cmdr. James Bond

Storing HAZMAT in unauthorized spaces can be catastrophic. The substances we use and store pose different hazards if not properly handled and stowed. Some of these hazards include fire, explosion, sudden release of pressure and reactivity.

There are also many potential health hazards that result from overexposure to hazardous substances. Sometimes the hazard is minor, like a headache or mild skin rash. It could also be much more serious, in some cases, where excessive exposure could result in organ damage, allergic reactions, cancer or even death.

After conducting multiple local area assessments (LAA), NAVSAFECOM noted HAZMAT storage in unauthorized spaces remains one of the top issues. This issue, if not rectified, could lead to catastrophic situations.

Here is a breakdown of discrepancies discovered during the last four LAAs.

There were more than 160 HAZMAT discrepancies, such as:

- 83 incorrectly stored materials (includes satellite lockers that were unauthorized, improperly maintained, unlocked, without inventory or containing unauthorized materials)
- 17 materials in use without labels
- Unsecured, pressurized gas cylinders and
- 14 spills and leaks (two of which occurred in close proximity to active hot work).



HAZMAT stowage poster

Other repetitive discrepancies included missing incompatibility matrices, bilges containing oily waste and rags, and Paint Lockers or HAZMAT issuing centers containing improperly stowed, excessive or expired materials.

These discrepancies lead to two questions. What's the underlying cause of unauthorized HAZMAT accumulation in the workspace? When was the last time senior leadership personally audited the process to ensure compliance with their 3M program?

Possible causes include an inefficient and ineffective HAZMAT issue and storage process, lack of access to satellite lockers (to include commands whose policy prevents any satellite locker from being used) or under-appreciation of the risk of improper HAZMAT stowage, particularly pertaining to fires.

### Recommendations

- The ship's commanding officer is responsible for ensuring all hands have completed HAZMAT awareness training. This training should be conducted at indoctrination and annually thereafter. This training must include information on the process for requesting material from HAZMINCEN, reutilization, handling, storing, using, disposal, spill response and how to use a safety data sheet.
- Department heads should ensure HAZMAT retained within their department is required for operations and maintenance of assigned equipment and does not exceed the quantity needed to satisfy operational requirements. They should review the HAZMINCEN delinquent containers report and take appropriate actions to correct outstanding and repeated delinquencies.

See HAZMAT, page 4

# Keep eyewash stations in sight; follow policies

By Chief Electronics Technician Hector Pabon

A significant aspect of the sight conservation program is eyewash station accessibility. In an emergency, the first response to an eye-related injury requires the capability to flush debris or chemicals out of the eyes. During our unit-level assessments, it's apparent the importance of the eyewash station is underestimated across the submarine community. Listed below are five common discrepancies noted during our local area assessments.

Commands unknowingly have unsecured eyewash stations. As inspectors, we perform operational tests to ensure eyewash stations are operating properly as intended. In several cases, we found the eyewash station was not restored after completed maintenance resulting in the inability to use the station. We understand the imperative of restoring any system after maintenance. We must apply that same rigor with safety equipment such as eyewash stations.

The second issue involves commands knowingly securing potable water or eyewash stations without stationing temporary eyewash stations. Without potable water, the eyewash station is inoperable. Per OPNAVINST 5100.19, Navy Safety and Occupational Health Program Manual for Forces Afloat, when securing an eyewash station, a temporary eyewash station must be in place. Remember, they are called temporary eyewash stations for a reason, they are supposed to be temporary. Don't let your temporary eyewash station become a permanent solution.

The third issue is obstructed access to the eyewash station. On several accounts, the eyewash station was inaccessible due to miscellaneous gear or items from another work site being stacked on top of or around the eyewash station, preventing access to the sink or the foot pedal. Per 5100.19, access to the

eyewash station should be clear and the actuation should consist of one motion. Having to remove items out the way defeats the purposes of the one motion actuation and delays first aid.

The fourth issue is the removal of the foot actuator. Due to the eyewash station being accidentally actuated when personnel passed, an auxiliary division decided to remove the foot actuator. By removing the actuator, the eyewash station's one motion functionality was disabled, significantly delaying first aid.

Lastly, there were eyewash stations without dust caps or that had inadequate dust caps. Across the community, units are improvising to ensure they have some type of dust cap installed. On many occasions, the improvised dust caps either didn't fall off when actuated because they were too tight or the dust caps didn't stay on because they were ill fitting. Per 5100.19, dust caps are required to protect eyewash nozzles from airborne contaminants and debris. Whatever means is used to afford such protection (plastic caps, cups, cover), its removal must not require a separate motion by the operator when activating the unit.

Eyewash stations are a critical aspect to combating an eye injury. When planning maintenance that impacts availability, ensure proper temporary systems are in place. Although this system isn't life or death, its restoration still warrants the same attention as any other system onboard. Dust caps prevent the build up of airborne containment and debris on the nozzle; ensure they are functional and when actuated, fall off the nozzle. Supervisors, incorporate these discrepancies into duty section training and keep them in mind during your tours. For more information regarding sight conservation and eye protection, read OPNAVINST 5100.19, Section B, Chapter 5.



## HAZMAT

*Continued from page 3*

3. The HAZMAT coordinators should conduct monthly satellite locker inspections in coordination with the ship's safety officer. They are also responsible for receiving, segregating and consolidating used HAZMAT and ensuring it is offloaded.

4. All authorized HAZMAT satellite lockers should be properly installed, secured and inventoried with necessary placards posted, and containers should be properly labeled as per OPNAVINST 5100.19F.

5. All hands should properly stow or return HAZMAT to approved satellite lockers or HAZMINCEN upon completion of use or no later than the end of the workday.

6. Ship duty officers should tour spaces during duty days to ensure HAZMAT isn't being stowed in unauthorized spaces. If any unauthorized stowed HAZMAT is found, it should be turned into HAZMINCEN and reported to that work center's chain of command.





Sailors prepare to conduct a RAS with the fleet replenishment oiler, USNS John Lenthall (T-AO-189), aboard USS Arleigh Burke (DDG 51), Feb. 28, 2023. (Photo by Mass Communication Specialist 2nd Class Almagis Schuring)

# RAS and FAS an enterprise staple

By Senior Chief Boatswain's Mate James Wallen

Replenishment at Sea (RAS) and Fueling at Sea (FAS) are operations unique to the Navy's afloat sector. An extensive review of the Risk Management Information system revealed the naval enterprise has spent \$5.3 million over the last decade for mishaps ranging from fuel spills, allisions and individual injuries. Most reported mishaps involve ergonomics and line handling. Sailors are being injured while moving stores and incurring friction burns while line handling during connected replenishments. To continue our initiative to "Get Real, Get Better" (GRGB), it is worth mentioning these mishaps are still impacting our surface forces today. How can we execute the initiative to "Get Better"?

1. Ensure the path for moving stores is clear of obstructions and assign a sufficient number of personnel to allow for the passing of stores to reduce twisting or exertion; and review proper handling techniques to avoid back injuries. Recommend using a staggered or "zipper" formation that allows Sailors to be positioned across from one another for smooth passing of stores without a twisting movement, per OPNAVINST 5100.19, "Navy Safety and Occupational Health Program Manual for Forces Afloat," Section C, Chapter 2, paragraphs 2 (a, c, d and e).
2. The NTP 4-01.4, "Underway Replenishment," Chapter 2, paragraph 2.10.3(6), states personnel handling lines may wear gloves. It is a common misconception that gloves and line handling do not go hand-in-hand.

3. As with all operations, COMNAVSURFORINST 3500.5, "Watch Stander's Guide," can be directly tied to these evolutions:
  - a. Procedural Compliance: Establishes consistency; "Slow is smooth and smooth is fast."
  - b. Questioning Attitude: If it doesn't look right, speak up, regardless of your rank.
  - c. Forceful Backup: Key for maintaining situational awareness between all stations.
  - d. Formality: Phraseology and effective RAS briefs and constructive de-briefs.
  - e. Level of Knowledge: Putting the right player in the right position.
  - f. Integrity: Honesty while working as one team with one goal during evolutions.

Lastly, aligning with the formality and the "Plan" and "Brief" aspect of Plan, Brief, Execute, Debrief (PBED) during RAS briefs will prepare watch standers to mentally ready themselves for any possible outcome during the evolution's execution. It is imperative to use the RAS forum to discuss the complexities of the operation.

I always like to say, "We have conducted many RAS' prior to this one, but we have never conducted one on this day." We cannot assume today's evolution will be the same as yesterday's and we cannot measure our success today on our past.

# NON-COMPLIANCE IMPEDES HEAT STRESS PROGRAM EFFECTIVENESS

**By Chief Warrant Officer 3 Angel De La Cruz**

During recent Local Area Assessments (LAA), the Naval Safety Command (NAVSAFECOM) discovered several instances of non-compliance with the Heat Stress Program. “Heat stress is any combination of air temperature, thermal radiation, humidity, airflow, workload, and health conditions that may stress the body as it attempts to regulate body temperature,” notes OPNAVINST 5100.19F, Section B, Chapter B2.

The program’s goal is to prevent heat stress-related injuries to personnel. The Heat Stress Program establishes stay times in heat risk environments for workers and watch standers using a heat stress survey. The survey results are compared periodically throughout the day against the temperature at the time of comparison to determine if a follow-on survey is warranted. Commands tend to demonstrate the most non-compliance with this aspect of the program.

Galleys, sculleries and laundry spaces are often areas of non-compliance due to the high turnover of junior Sailors temporarily assigned to perform those duties. A common

discrepancy found is improperly placed hanging dry-bulb thermometers (NSN 9G-6685-00-243-9964). The proper placement of a hanging dry-bulb thermometer is in or out of the ventilation air stream but hung at least two feet away from any supply ventilation terminal or opening. It must also hang by using a non-heat conducting material such as plastic tie-wrap or string and be positioned to minimize the influence of any adjacent or local heat or cold source.

The Heat Stress program takes an all-hands effort to maintain deckplate compliance. Unfortunately, it is a program that may appear healthy — until someone gets hurt. Deck plate compliance is best achieved through constant training and oversight.

## Recommendations

- Use Afloat Self-Assessment (ASA) check sheets to assess the health of your command’s Heat Stress Program quarterly or more often if necessary. Updated ASA check sheets can be found at [https://flankspeed.sharepoint-mil.us/sites/USFF-SURFLANT-HQ/atg\\_toolbox/layouts/15/viewlists.aspx?view=14](https://flankspeed.sharepoint-mil.us/sites/USFF-SURFLANT-HQ/atg_toolbox/layouts/15/viewlists.aspx?view=14).
- Establish and enforce a robust training program to address deck plate compliance with an emphasis on positions assigned to junior Sailors with a high turnover rate, i.e., FSA, LSA duties.
- Leadership – know program requirements and tour control watch stations with a questioning attitude regarding program compliance. Remember: Operate Safely!

Culinary Specialist Seaman Demetrius Pruett, assigned to USS Gerald R. Ford’s (CVN 78) supply department, stirs black beans in the ship’s galley, Oct. 18, 2022. (Photo by Mass Communication Specialist 3rd Class Trenton Edly)





# PROTECT EARS WHEN SHOOTING FIREARMS

By Senior Chief Fire Controlman Dan Allred

Firearms, pistols, revolvers, rifles and other weapons from which a shot, projectile or bullet may be discharged, are loud! But just how loud are they? And more importantly, are you wearing the proper hearing protection?

Let's talk for a minute about noise-induced hearing loss (NIHL). What is NIHL? It is permanent damage to the tiny hair follicles in your ears, known as stereo cilia. Hazardous levels of noise produce vibrations in these hair follicles that cause damage, sometimes permanently. These hair follicles are not replaceable and do not regrow. Damaged stereo cilia are unable to trigger electrical signals to the brain, impeding hearing. Both intense but short noises, such as a nearby gunshot and repeated and continuous exposure to loud noises, such as operating construction equipment, can damage these tiny hairs.

Each year the Navy reports significant hearing loss shifts, many of which are due to exposure to firearms. We established earlier that firearms are loud, but just how loud? Just one shot fired from a M9 pistol is approximately 156 dB while a M2 .50 caliber machine gun is about 161 decibels, according to U.S. Army Public Health Command Technical Guide 250, Readiness through Hearing Loss Prevention. These noise levels by themselves fall well within the requirement for single hearing protection, but these noise levels are elevated much higher in reverberant environments such as when shooting in rapid succession, in large groups or at indoor ranges.

Think about the last time you were at the gun range. Did you



Gunner's Mate 2nd Class Eli Carlson observes Master-at-Arms 2nd Class Levi Alvarado firing an M9 pistol during a pistol certification on an aircraft elevator of USS Ronald Reagan (CVN 76) in the Arabian Sea, Sept. 12, 2021. (Photo by Mass Communication Specialist Seaman Eric Stanton)

see Sailors *not* wearing hearing protection or only wearing it in one ear, so they could talk to their shipmate? Maybe it was you? If so, you may have contributed to significant permanent hearing loss.

Studies show people who use firearms are more likely to develop hearing loss than those who do not. But the good news is, you can protect yourself by wearing the proper hearing protection. The Navy Safety and Occupational Health Program Manual For Forces Afloat OPNAVINST 5100.19F, Section b, Chapter 4, requires that we wear single hearing protection for 85 dBA or greater but less than 96 dBA continuous or any impulse noise greater than 140 dB and double hearing protection for impulse noise greater than 165 decibels. *See article on page 8 for further information on hearing conservation.*

## Tips to protect your hearing

Without proper protection, just one shot from a firearm is enough to damage your hearing, below are tips to protect your hearing:

- Always wear at least single hearing protection when shooting firearms.
- Keep hearing protection readily available, on your person or as part of your uniform.
- Ensure your hearing protection fits properly and if you are using "foamies" that they are inserted correctly.
- Wear double hearing protection, especially when firing large caliber weapons, shooting indoors or when shooting in large groups.

# Hearing Conservation Compliance Critical to Operations

By Senior Chief Hospital Corpsman Vanessa Poland

Verbal communication is the cornerstone to life onboard submarines and ships, and to every evolution, from routine maintenance to watch standing to coordination during a casualty. The goal of the hearing conservation and noise abatement program is to reduce excessive noise, prevent noise-induced hearing loss and assure auditory readiness of all Navy personnel through engineering, administrative, and personal protective equipment (PPE). Program compliance benefits the Navy because it is more efficient to keep trained, qualified, capable people in the positions they are in rather than training new personnel. Individuals should adhere to the components of the program to avoid severe hearing loss at a young age. Lack of compliance with any part of the hearing conservation program could lead to catastrophic results for not only the individual, but the ship as a whole.

To emphasize the importance of the hearing conservation program it is beneficial to understand how the human ear processes sound and how loud noises can deteriorate that process. As sound waves travel through air, our outer ear funnels these sound waves into our auditory canal toward the eardrum. These waves cause the ear drum to vibrate and in turn cause three tiny bones in the middle ear to amplify the vibrations as they head to the inner ear. The inner ear consists of a fluid-filled snail-like structure called the Cochlea. The vibrations move the fluid causing tiny hair cells to bend. This bending converts the vibrations into electrical signals that are

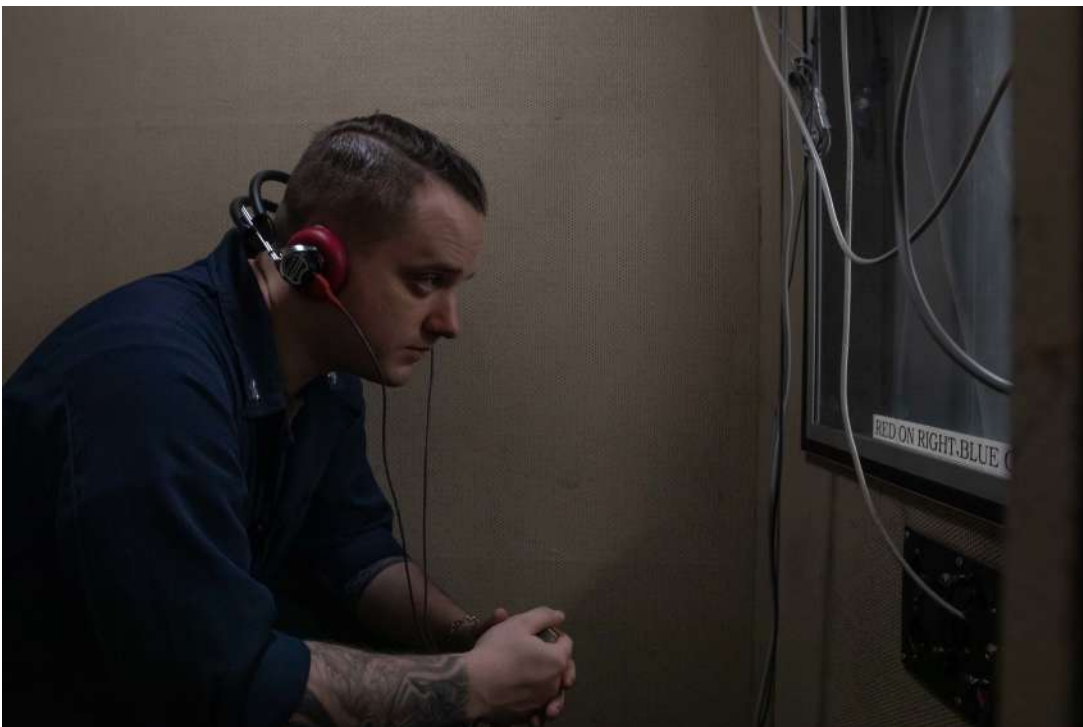
sent to the brain via the auditory nerve for interpretation. Exposure to loud noises for prolonged periods of time causes irreparable damage to the hair cells affecting the signals to the brain, decreasing our hearing capability.

There are several aspects to the hearing conservation program - medical requirements, training, industrial hygiene survey, required signage, PPE, etc. During the last three local area assessments our team focused on required signage and compliance of proper PPE.

We discovered 14 hearing conservation signs that were filled out incorrectly or blank. Having a sign posted without any information on it is as good as not having a sign at all. The PPE recommendations are based on the observed decibels and time exposed in that space or while certain equipment/evolutions are being conducted (found in the industrial hygiene (IH) survey). If personnel are not wearing adequate protection for the hazard they are being exposed to, the risk is not being properly mitigated. It is the ship's duty to mitigate risk to every Sailor onboard and not providing adequate information on required PPE and when to wear this PPE puts the most important asset, Sailors, at unnecessary risk.

There were four instances where the signs were missing or were the wrong type (requirement is NAVMED 6260/2 or NAVMED 6260/2A, per OPNAVINST 5100.19F. The Navy values uniformity, this is why we have regulations on everything from

*See Hearing, page 9*



Mass Communication Specialist 3rd Class Jacob Vermeulen takes an audiogram aboard USS Kearsarge (LHD 3) Aug. 4, 2021. Sailors have their hearing evaluated annually in order to track and prevent hearing degradation. (Photo by Mass Communication Specialist 2nd Class Jamica Ballard)



# Follow safety even during ‘routine’ ops

By Senior Chief Gas Turbine Systems Technician  
Casey Barnes

Routine operations often have us put safety in the backseat; after all it is routine. Blow in door operations are “routine operations” for our surface engineers. We conduct such checks before getting underway, after entering port, while practicing for and during assessments and the all too familiar planned maintenance system check. Stationing appropriate safety personnel at *all* locations, establishing and maintaining communications between stations and ensuring personnel are clear are actions often overlooked. We are required to visually verify all personnel are clear of the space and ensure it remains clear throughout the operation. There are two entrances, neither of which are visible to each other. This could allow someone to enter without knowing blow in door checks are being conducted. Failure to ensure the clean side of the intake is clear, remains clear and communicating that to all locations can and has resulted in injury and death.

The placement of the safety observer should be inside of the clean side of the intakes. While each access differs on each hull, this location is accessed internally from the ship. Upon entering the intake, the observer needs to visually verify the space is clear of personnel. Once it is verified to be clear, communicate that to the personnel activating the blow in doors. It is imperative the observer does not leave or lose sight of the area around the blow

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The MIP Series 2513 states having personnel stationed at the blow in door, the pressure regulator location and the blow in door control panel.

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in doors and that they maintain communications with all personnel involved until it has been verified that checks are complete. Once checks are completed, the intakes need to be verified clean and clear of all personnel and debris by the chief engineer or their designated representative. This must be logged in the engineering log for record keeping.

The MIP Series 2513 states to have personnel stationed at the blow in door, the pressure regulator location and the blow in door control panel. You must establish communications as well. Also, procedural compliance is one of the six core principals outlined in Sound Shipboard Operating Principals and when followed, ensures the safety of all hands and prevents damage to equipment.

## Hearing Conservation

*Continued from page 8*

uniforms to the terms we use in formal communication. Having the correct signage per instruction is not only procedurally compliant, but the consistency allows Sailors to perform their duties without hesitation or distraction.

Finally, we witnessed two instances in an area or during evolution where personnel were not wearing the required hearing protection. This lack of adherence to required PPE speaks to the culture of the boat. In one case, it was the supervisor who was not wearing hearing PPE during an evolution. Not only does this put that individual and the ship at risk, but it promulgates a behavior and philosophy to junior Sailors that compliance to safety is optional.

An immediate recommendation is for the ship’s executive officer, safety officer and medical department representative to ensure the IH survey is up-to-date. Once verified, use this

information to ensure all posted hearing conservation/noise abatement signs are the correct version and filled out accurately – identifying the required PPE, when that PPE is to be worn and posted in a manner that is visible for Sailors in that space. The safety officer should confirm there is a sufficient supply of PPE for Sailors in those spaces and work with the supply officer as needed.

It is leadership’s responsibility to promote a culture of safety. Hearing conservation should be practiced and enforced at every level such that it becomes an unconscious habit as part of the overall culture of safety. We recommend this article be used as a training supplement for all duty sections and divisional trainings.

For more information on noise abatement and hearing conservation, refer to OPNAVINST 5100.19F Section B Chapter 4.



Sailors conduct respirator fit testing aboard USS Ronald Reagan (CVN 76). Photo by Mass Communication Specialist 3rd Class Matthew Mitchell.

# Respiratory protection vital to life aboard vessels

By Senior Chief Hospital Corpsman Jennifer Nolen

The Respiratory Protection Program is vital to everyday life aboard naval vessels. However, as the Naval Safety Command conducted Local Area Assessments in Mayport, Florida; Hawaii, Pacific Northwest and Norfolk, Virginia, there were no less than 10 instances where proper respiratory protection was not adhered to or the program was ineffective. As a graduate of the Respiratory Protection Program Management (RPPM) course, I have first-hand knowledge of the intricacies involved with establishing an effective program for forces afloat. I have also found it difficult to find information related to respirators. It would normally require multiple hours of searching the Internet to find exactly what I was looking for. This article will re-familiarize our RPP managers and units with the program's requirements and provide resources to our fleet to strengthen the integrity of our RPPMs.

The OPNAVINST 5100.19 Series requires each commanding officer to establish a qualified RPP manager for afloat units. There are three ways a RPP manager can satisfy training requirements before appointment, per OPNAV M-5100.23:

1. OSHA Training Institute Course 2225, <https://www.osha.gov/otiec/courses/schedule?page=0&title=2225>
2. Navy's RPPM course CIN: A-493-0072 or
3. Any respiratory protection course comprised of at least 32 hours of training.

**Which respirators are approved and what cartridge should I use?**

Only respirators approved by the National Institute for Occupational Safety and Health and by the Mine Safety and Health Administration are allowed to be issued.

Air-purifying respirators absorb, adsorb or chemically react with contaminants as they pass through the cartridge. These respirators are the most common respirator found in the fleet and come in either half- or full-face piece configurations. Either particulate or gas and vapor cartridges can be used with

these respirators. Particulate cartridges protect against aerosols, dusts, toxic dusts, fogs, fumes, mists, smokes and sprays, while gas and vapor cartridges may be used up to their maximum concentration as long as immediate danger to life or health is not exceeded. The RPP manager will draft cartridge change-out schedules based on the Industrial Hygiene (IH) survey, but rule of thumb is that the change-out schedule for chemical cartridges will not exceed eight hours.

## **When is it necessary to wear a respirator?**

When directed by the IH survey or the planned maintenance system.

## **What are the requirements to wear a respirator?**

Wearers of respirators must have a current Periodic Health Assessment to be fit tested, and have no deployment-limiting medical conditions, per OPNAVINST 5100.19 Series, Appendix B6-B.

## **Recommendations**

- Refresher training is recommended every five years to meet the above requirements. To stay current on respirator information, the most effective resource can be found at [https://www.cdc.gov/niosh/npptl/topics/respirators/disp\\_part/respsource.html](https://www.cdc.gov/niosh/npptl/topics/respirators/disp_part/respsource.html).
- Units can refer to OPNAVINST 5100.19 Series to establish their standard operating procedures (SOPs) for respirator use. Command-generated worksite SOPs must be posted in the general area and should include emergency and rescue guidance as necessary and cartridge change out schedules.

Another useful resource to gauge the effectiveness of your program can be found at: [https://www.med.navy.mil/Portals/62/Documents/NMFA/NMCPHC/root/Occupational%20and%20Environmental%20Medicine/PROGRAM-15-OMPA-RPPM\\_v10\\_2021-OCT.pdf](https://www.med.navy.mil/Portals/62/Documents/NMFA/NMCPHC/root/Occupational%20and%20Environmental%20Medicine/PROGRAM-15-OMPA-RPPM_v10_2021-OCT.pdf).

# Follow procedures when using quick disconnects

## Fire prevention non-compliance raises risks of mishaps

By Lt. Cmdr. Reuben Attah

Common to all units with healthy fire prevention programs is a crew that actively and vigorously monitors and fixes their own program. However, during Naval Safety Command assessments, we routinely observe non-compliance with basic fire prevention measures. Some common discrepancies include quick disconnect fittings (QDFs) fully covered in tape and plastic or placed outside of the required proximity of a fire zone boundary (FZB), inadequate walk-throughs conducted by the fire safety council and inadequate surveys of the planned worksite to mitigate hazards as part of the hot work authorization process.

Each of these non-compliances adds to our risk and yet each of them are well within the ship's or submarine's capability to self-assess and self-correct.

Quick disconnect fittings are used to provide fast and easy connection and disconnection of air and fluid lines. Although ventilation is critical while hot work is being conducted, QDFs must be adequately installed and accurately placed to secure FZBs in case a fire aboard occurs. For temporary services routed through designated vertical and horizontal FZBs, the QDFs must be capable of being safely isolated by casualty responders.

When service lines transit FZBs that cannot be safely disconnected locally, the Fire Safety Council must approve, in advance, the method to safely secure and remove the service. All temporary services must be positively identified with highly visible, durable and unique markings that include the maintenance activity name, service type, location and shore side shut-off points. Tags must be located at the source, point of entry aboard ship, termination point and at the QDF. The QDFs must be located within 10 feet of the designated vertical or horizontal FZBs and their associated isolations must be installed so emergency responders can readily access the QDF without assistance, operate without tools and ensure the QDF is capable of being disconnected on pressurized or energized temporary systems.

For submarines, QDFs are not permitted in the supply to temporary hose reels, unless the submarine is waterborne. Fire prevention and response requirements are spelled out in the references listed below.

### Recommendations

- The best way to avert fires is to have an aggressive and proactive fire prevention program, which goes beyond just



Photo courtesy Naval Safety Command

the duty fire marshal or duty officer. Fire prevention is always an all hands effort.

- Fire safety officers tour the vessel every normal workday to monitor vessel conditions and document results to ensure conformance with reference (b) para 2.1.2.1.
- Ensure QDFs are located and installed per reference (b) para 10.4.7.

### References

- OPNAVINST 5100.19F, Section C, Chapter 11, Navy Safety and Occupational Health Program Manual for Forces Afloat
- S0570-AC-CCM-010/8010 CAN 3/A, NAVSEA Technical Publication, Industrial Ship Safety Manual for Fire Prevention And Response
- S9002-AK-CCM-010/6010, Industrial Ship Safety Manual for Submarines





## Proper use and installation of mooring line chafing gear can reduce wear, injury

By Lt. Cmdr. J. Ray Norris

During recent local area assessments, the Naval Safety Command discovered multiple instances in which ships were not properly using chafing gear on their mooring lines, subsequently causing line abrasion, the sustainment of using chafing gear on their mooring lines, subsequently causing line abrasion, the sustainment of preventable damage and the risk of serious injury to personnel. Per NSTM 582, Mooring and Towing, abrasion occurs when the line contacts and passes across rough surfaces. The outer filaments of the line break to form a “fuzzy” surface appearance and texture. In cases of very rough surfaces, excessive abrasion and cutting of the line can take place; this in turn will cause a loss of line strength and eventual failure. Synthetic line chafing can be identified by the presence of a hard outer layer composed of fibers fused together by frictional heat. Chafing in natural fiber line appears

as localized broken yarns, which typically hang from the line itself.

To protect mooring lines properly, an adequate length of chafing gear should be installed to protect the line through its full range of motion in relation to the ship’s movements. Continuous monitoring of chafing gear placement should take place to ensure the installed gear remains in place and is effective throughout high and low tide intervals, as well as during adverse weather. Chafing gear should be installed in the locations listed below:

- In spliced eyes where the eye of the mooring line makes contact with the mooring fitting.
- Around the line where the mooring line passes through a chock or along a sharp edge.
- On fixed objects, along sharp edges that are in contact with a mooring line.
- Around the line where contact is possible with the edge of a concrete pier or any obstruction during tidal changes.

### Recommended chafing gear

Chafing material is sometimes installed on mooring lines by the manufacturer; however, if it is not already installed, NSTM 582 offers a list of various recommended chafing gear below.

- Old or discarded fire hoses
- Commercially produced chafing gear
- Smaller line such as 6-thread
- Rags
- Heavy canvas wrapping
- Leather
- Rubber

### Recommendations

- Deck leadership should be familiar with all references and requirements regarding mooring line care and the installation of chafing gear and train junior Sailors to do the same.
- Duty section personnel such as the CDO, OOD and deck personnel should conduct routine visual inspections of mooring lines and installed chafing gear to verify its effectiveness. This is most critical during tidal changes and adverse weather.

Contact the NAVSAFECOM Afloat Safety Directorate at [NAVSAFECEN\\_CODE30\\_AFLOAT@navy.mil](mailto:NAVSAFECEN_CODE30_AFLOAT@navy.mil) for any mooring line care and chafing gear-related questions or assistance. For additional information, see OPNAVINST 5100.19F and NSTM 613, Wire and Fiber Rope and Rigging.

# Competent Person plays major role in Fall Protection

By Lt. Cmdr. Gary Ullrich

Recent Naval Safety Command (NAVSAFECOM) Local Area Assessments found a majority of ships lacked adequate Fall Hazard Surveys or Fall Protection and Prevention Plans. As stated in the Department of the Navy's (DON) Fall Protection Guide (July 2, 2020), the competent person (CP) is directly responsible for these program items.

Your unit's CP plays a major role in a successful Fall Protection (FP) program. They are the prime mover for preparation and implementation of all aspects of your unit's FP program. The Navy Safety and Occupational Health Manual, [OPNAV M-5100.23, CH. 13](#), outlines requirements and responsibilities for the DON FP program.

Per OPNAV M-5100.23, the Fall Protection CP is a command-designated person responsible for "the immediate supervision, implementation and monitoring of the Fall Protection, who through training knowledge and expertise is capable of identifying, evaluating and addressing existing and potential fall hazards and in the application and use of personal fall protection and rescue systems or any component thereof *and* who has the authority to take prompt corrective measures to

eliminate or control the hazards of falling. The CP for Fall Protection conducts onsite evaluation, supervision of the fall protection program and to provide hands-on training for End Users of Fall Protections."

**Fall Hazard Surveys** are conducted as a baseline by ship class and supplement any fall protection work not already covered by the baseline survey, available at <https://intelshare.intelink.gov/sites/cnsl-safety-hf/layouts/15/start.aspx#/SitePages/Home.aspx>

The CP uses the Fall Hazard Survey to identify potential fall hazards workers may be exposed to while performing work in a specific area. The CP must then conduct a hazard analysis to assess the risk, hazard severity, and fall mishap probability. This process helps prioritize hazard ranking and selection of the most viable fall protection solutions. Once fall hazards are identified and assessed, a Fall Hazard Survey report is required for each applicable potential fall hazard. The data gathered in the report will be used to develop fall protection solutions for that particular task.

**Fall Protection and Prevention Plans.** See Chapter 7 of the DON Fall Protection Guide for Fall Protection and Prevention Plan guidance and requirements. The unit's Fall Protection and Prevention Plan should be viewed as a permit or chit authorizing work at height, similar to an aloft or over-the-side chit. Therefore, it must be prepared and approved before starting work and kept at the work site at all times.

To develop an effective Fall Protection and Prevention Plan, the CP must become familiar with the location and nature of the work being done. This requires interviewing end users for accurate work descriptions and identification of existing fall protection and prevention methods already in place and those that will be used to ensure a safe work environment, such as harnesses, installed anchor points, overhead clearances, etc. The CP approves the plan and incorporates it into the overall FP Rescue plan for the ship.

The FP Program is vital to shipboard safety and the amount of planning, time and effort necessary to develop and implement a successful fall protection program is high. To ensure a solid foundation is in place on which to build an effective program, here is some guidance to consider when designating a unit CP:

- Select Competent Persons who are organized and detail oriented. Multiple CPs are recommended due to the time required to manage the program effectively.
- Provide adequate of time and resources to perform the necessary foundational work off needed to develop a robust program. This starts with your initial Fall Hazard Survey.

Contact the Afloat Safety Directorate at [NAVSAFECEN\\_CODE30\\_AFLOAT@navy.mil](mailto:NAVSAFECEN_CODE30_AFLOAT@navy.mil) for any FP-related questions or assistance. Additional information is available in OPNAVINST 5100.19F, Navy SOH for Forces Afloat.



Electronics Technician 3rd Class Michael Turner, above, and Machinist's Mate 2nd Class Richard Lettenberger, participate in a fall protection course in the hangar bay of USS Carl Vinson (CVN 70) April 8, 2022. (Photo by Mass Communication Specialist Seaman Apprentice Isaiah B. Goessl)



Hull Maintenance Technician 1st Class Jaycob Sealock uses a grinder wheel to grind metal on the fantail of USS Harry S. Truman (CVN 75), Jan. 10, 2022. (Photo by Mass Communication Specialist Seaman T'ara Tripp)

## Protect eyes around machine tool operations, stations

By Lt. Cmdr. Michael Overton

Machine tools such as lathes, drill presses, and grinding wheels are found regularly on naval vessels and invoke several safety programs. These include sight conservation, Personal Protective Equipment (PPE) requirements, training/certification programs, guards/hoods, as well as measures for specific pieces of equipment. These requirements are directed by law per 29 CFR 1910.133 and for fleet application in OPNAVINST 5100.19F with equipment specifics provided in technical and operational manuals.

During the assessments of 19 submarines over the last nine months, the most significant deficiency of machine tool safety observed was within the sight conservation program. All submarines demonstrated deficiencies that included missing or inadequate deck markings, damaged postings, missing temporary signs, and in several cases, lack of knowledge of the requirements.

Deck marking requirements are described in OPNAVINST 5100.19F with consistent expectations throughout. The area around machines posing an eye hazard “must have those boundaries outlined in black and yellow strips or checkerboard paint or tape”. This boundary must

encompass the entire area where the eye hazard exists as noted by observation of debris being thrown or splashing of chemicals. OPNAVINST 5100.19F Section B, Chapter 5 provides the National Stock Number (NSN) for tape available through the navy supply system. In addition to the deck markings there are signs that must be posted stating, “CAUTION, Eye Protection Required in This Area” in white lettering on a red background.

Federal law, specifically 29 CFR 1910.133, mandates that “each affected employee uses appropriate eye or face protection” that is ANSI approved and shown to be adequate for hazards in the area. Per OPNAVINST 5100.19F, the government must provide all PPE that meets CFR and ANSI requirements for Sailors at their expense. In several instances, the Sailors in the sight conservation area were unaware of these requirements.

OPNAVINST 5100.19F Section C, Chapter 13 and Section D, Chapter 8 provide general machinery precautions, requirements, and best practices. The following specific items are relevant to the topic at hand. All machine tool operators must be properly qualified through demonstration of a practical knowledge of operations

*See Eye protection, page 15*



# Plan, Brief, Execute, Debrief interactive process

By Senior Chief Operations Specialist Luke McKenzie

Plan, brief, execute, and debrief (PBED) is an interactive continuous improvement cycle that exists as part of the Navy Safety Management System framework, and supports sound shipboard operating principles, as noted in COMNAVSURFORINST 3500.5, Commander, Naval Surface Forces Watch Stander's Guide. The PBED is a fundamental principle in how commands implement risk management.

To plan is to completely outline the mission. What are the mission objectives? Who is responsible for what? What tools and resources are at my disposal? What could go wrong?

Good leaders are good planners. Most people initially feel uncomfortable as planners; but it is best to have a structured, standardized planning format so the process becomes muscle memory.

The brief ensures all team members understand the plan. The leader conveys the plan covering the whole mission. This is the opportunity for the team to ask questions or weigh in on the plan. The brief sets the tone for the whole effort.

To execute is to complete all expected tasks. Leaders should ensure the team executes in accordance with established guidelines, procedures and command policies. Develop and use checklists to standardize processes. When deviations occur, use time critical risk management principles and record for debrief.

Debriefing is arguably the most important step of the PBED

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**Commands and watch teams should use the proven technique of encouraging feedback from the deck plates to improve and not repeat old mistakes.**  
.....

process and possibly the most neglected, especially if the mission or evolution was deemed a success. Debrief should be conducted as soon as practicable following mission completion.

Reconstruct the entire event to avoid repeat mistakes and to clone success. Debriefs normally focus solely on the "execute" step. You should debrief planning and briefing as well. Did our planning process support a good brief and smooth execution? If not, fix it or you will repeat the same mistakes. The entire team should participate in debrief. Rank is a non-factor! Remember to own up to your mistakes and leave ego and self-preservation at the door. It is all about self-assessing and self-correcting.

Commands and watch teams should use the proven technique of encouraging feedback from the deck plates to improve and not repeat old mistakes. Leadership must ensure shipboard evolutions are executed using the PBED methodology and follow through with the debrief results to develop process improvements and lessons learned.

## Eye Protection

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*Continued from page 14*

and repair including all applicable safety precautions. The department head having cognizance over such machinery must certify this qualification. All proper protective clothing and equipment must be worn and all operators must maintain proper housekeeping when tasks are completed.

The above specific requirements are but a few of the many requirements found in OPNAVINST 5100.19F and 29 CFR 1910.133 and are intended to highlight the most common deficiencies. Safety is an all-hands evolution and a key aspect of that is proper communication through signage and markings where hazards exist to allow all Sailors to keep themselves and others safe.

### Recommendations

- The best way to protect machine tool operators' sight is to ensure the protective gear is readily available and all hazard areas are clearly marked. This is neither limited to just the operators nor just machine tools.

Sailor safety is an all-hands effort, all the time.

- Conduct periodic inspection of all hazard areas to ensure that deck markings and signage are in good repair and correct, per OPNAVINST 5100.19F. Details of deck marking requirements are in Section B, Chapter 5 paragraph 3a and postings are detailed in paragraph 3b. Temporary signs for submarines are described in Section D, Chapter 1 paragraph 3d (1).
- Ensure your supply department maintains appropriate stock of eye protection gear for a range of operations that call for using eye protection, as required in OPNAVINST 5100.19F, Section B, Chapter 5, with guidance for appropriate gear in Appendix A.
- Review and validate your machine tool operator qualification process to ensure it meets the requirements listed in OPNAVINST 5100.19F, Section C, Chapter 13 and Section D, Chapter 8.

# MHE, forklift licensing, safety go hand-in-hand

By Senior Chief Gunner's Mate Paul Fahrenbach

Material handling equipment (MHE) is a leading cause of afloat Class C and D mishaps due to equipment damage and personnel injury, particularly during pierside availabilities and supply replenishments. During local area assessments, Naval Safety Command (NAVSAFECOM) continues to witness Sailors, Marines and civilians operating MHE unsafely.

In two MHE-related instances within the past several years in Norfolk, Virginia, a chief petty officer was struck and killed by a forklift operating on a pier in 2020; in another, pier operations were halted due to multiple equipment operators driving at excessive speed, without safety observers and without proper qualifications in 2022. Similar unsafe operations were also observed on piers in Mayport, Florida; Everett/Bremerton, Washington; and Pearl Harbor, Hawaii, just last year.

See references for material handling equipment licensing, operation requirements and guidance. Standardized procedures for safe operation and a crew who proactively and vigorously monitors and fixes their own program are common to all units. Yet, during our assessments, we routinely observed non-compliance in shipboard forklift, pallet trucks, JLG and crane operations. Discrepancies included the lack of safety observers during operations; operator and crew errors to include speed, clearance and safety calls; maintenance checks of equipment before and after operations; and lack of training and qualifications for operators and safety observers. Each of these non-compliances unnecessarily adds to our risk; yet each of them is well within the submarines' and ships' ability to self-assess and self-correct.

The best way to avert MHE mishaps is to have an aggressive

and proactive program, which goes beyond just the handling/operating crew. Material handling is an all-hands effort, all of the time.

## Recommendations

- Develop a licensing and recurring training program to ensure conformance with references (a) section C chapter 2 and appendix B, (c) para 4-4 and para 5-3 and (e) section (I)(3).
- While operating MHE, ensure operators, safety observers, riggers, handlers and other personnel are monitoring and periodically assessing the area, load and speed of equipment involved aboard your ship and pier, per references (a) section C chapter 2 and (d) enclosure 13.
- Use required safety observers, as the lack of these key personnel is the top cause of shipboard MHE mishaps. Observers must use visual and audible communication while covering *all* blind spots. This action alone can reduce MHE mishaps.

## References

- a) OPNAVINST 5100.19F, Navy Safety and Occupational Health Program Manual Forces Afloat
- b) OPNAV M-5100.23
- c) NAVSUP Publication 538
- d) NAVSTATNORVAINST 5090.31B
- e) Occupational Safety and Health Standards (OSHA) 1910.178, Powered Industrial Trucks

Logistics Specialist Seaman Chad McNair drives a forklift during an ammunition offload in the hangar bay aboard USS Carl Vinson (CVN 70), May 5, 2022. (Photo by Mass Communication Specialist 3rd Class Terrin Hartman)





## Want more?

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The Naval Safety Command located on Naval Station Norfolk, provides resources and guidance to develop a Navy safety culture in which everyone is trained and motivated to manage risk, and to ensure the combat readiness of our forces and the Navy's global warfighting abilities.

We provide policy, doctrine and guidance; safety surveys and assessment visits, training and education, multimedia products, marketing and outreach campaigns, and recognition and awards programs.

Our magazines, current and archived, can be found at <https://issuu.com/navalsafetycommand/stacks>



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