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Guide to Safety in an Availability

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GUIDE TO SAFETY IN AN AVAILABILITY

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I. INTRODUCTION

Repair availabilities, from extended overhauls to intermediate maintenance availabilities (IMAVs), are among the most dangerous periods in a ship's employment cycle. Proper planning and preparation beforehand, especially in occupational safety and health, can prevent mishaps and costly material damage.

The shipyard is a busy place to work in each day. Historically, ships and submarines report more fires, flooding, and personal injury mishaps during availabilities than any other period. Arduous and difficult living and working arrangements may adversely affect crew morale. Dust, vapors, heat, and noise compound occupational safety and health risks. Loud noise, extreme temperatures, and interrupted work schedules can lead to high levels of stress.

Pre-planning for the availability is critical. The safety officer organization should be involved in the entire planning process. The ship must be prepared to address and resolve safety issues during the pre-planning conferences, perhaps months in advance. Safety issues may include:

- Obtaining required personal protective equipment
- Scheduling medical surveillance screenings
- Conducting respirator user certifications
- Organizing and providing a pre-availability safety stand-down that include operational risk management training.
- Addressing fire watch responsibilities between the shipyard and the ship.
- Electrical safety and tag-out requirements and training.
- Daily safety walk-thru by SupShip, shipyard, and ship's force personnel.
- Perform asbestos and lead paint sampling (if required).

An availability will test the effectiveness of the ship's existing Navy Safety and Occupational Health (NAVSOH) programs. If the Hazard Abatement Plan, Respiratory Protection Program, Occupational Medical Screenings, Tag-Out, Hazardous Material Control, and other programs are non-existent or marginally effective, they will undoubtedly

fail during an availability and likely increase the risk of a mishap. The Safety Officer and Department Heads must assess these and other programs prior to the start of an availability.

The following three principles are emphasized for a successful availability:

1) Early and daily communication between the ship's safety officer, SupShip, shipyard safety representatives, and their civilian safety counterpart.

2) Implementation and use of a Hazard Abatement Plan with particular emphasis on those hazards representing an occupational safety and health concern.

3) Preparation of the crew by training and command support to prepare for the industrial environment and the added mandatory safety precaution.

II. SAFETY STANDARDS

Private shipyards and contractors working on Navy ships follow federal Occupational Safety and Health Administration (OSHA) regulations. Department of Defense (DoD) civilian employees follow Navy safety standards based on OSHA regulations. Ship's forces follow the safety standards in OPNAVINST 5100.19E: Navy Safety and Occupational Health Program Manual for Forces Afloat. Many of the commonly referenced instructions are:

DoD 6050.5L/LR: Hazardous Material Information System(HMIS)
OPNAVINST 5100.28 -- Hazardous Material User's Guide
www.safetycenter.navy.mil/instructions/osh/5100.28.htm

OPNAVINST 3120.32C: Standard Organization and Regulations of the U.S. Navy

OPNAVINST 5090.1C: Environmental and Natural Resource Program Manual (INSTRUCTION)
<http://doni.daps.dla.mil/OPNAV.aspx>

OPNAVINST 5100.19E: Navy Occupational Safety and Health Program Manual for Forces Afloat
<http://www.safetycenter.navy.mil/acquisition/ventilation/resources.htm>

OPNAVINST 9640.1A: Shipboard Habitability Program
<http://www.safetycenter.navy.mil/acquisition/ventilation/resources.htm>

Naval Ships' Technical Manuals (NSTMs)
CHAPTER 074 VOL 1 (S9086-CH-STM-010/CH-074R4) - WELDING AND ALLIED PROCESSES

CHAPTER 074 VOL 3 (S9086-CH-STM-030/CH-074V3R4) - GAS FREE ENGINEERING

CHAPTER 262 (S9086-H7-STM-010-CH-262R6) - LUBRICATING OILS, GREASES, SPECIALTY LUBRICANTS, AND LUBRICATING SYSTEMS

CHAPTER 300 (S9086-KC-STM-010) - ELECTRICAL PLANT GENERAL

CHAPTER 330 (S9086-K9-STM-010) - LIGHTING

CHAPTER 505 (S9086-RK-STM-010) - PIPING SYSTEMS

CHAPTER 510 (S9086-RQ-STM-010) VENTILATION, HEATING, AND AIR CONDITIONING SYSTEMS FOR SURFACE SHIPS

CHAPTER 593 (S9086-T8-STM-010/CH-593R4) POLLUTION CONTROL

CHAPTER 670 (S9086-WK-STM-010/CH-670R6) STOWAGE, HANDLING, AND DISPOSAL OF HAZARDOUS GENERAL USE CONSUMABLES

Provisioning Technical Documentation
<http://www.supship.navy.mil/> POC Simmons, Charles R CIV
NSWCCD Philadelphia, 9450 email charles.r.simmons@navy.mil

NAVAL MARITIME CONFINED SPACE PROGRAM S6470-AA-SAF-010
<http://www.dcfp.navy.mil/gfe-fm/pubs/S6470-AA-SAF-010.pdf>

General Specifications for Overhaul of Surface Ships (GSO)
NAVSEA S9AA0-AB-GOS-010/GSO dtd 2004
<https://fleetreadiness.jdsr.navy.mil/maintenance/Sea04M/04m2Home.asp>

COMFLTFORCOMINST 4790.3 (Rev A Chg 6): Joint Fleet Maintenance Manual
<http://www.submepp.navy.mil/jfmm/>

MISCELLANEOUS PUBLICATIONS

Code of Federal Regulations (CFR), Title 29 (Labor),
Chapter XVII (Occupational Safety and Health
Administration, Department of Labor)
www.gpoaccess.gov/ecfr/

29 CFR 1910.134. Specification Grade "D" Breathing Air
www.gpoaccess.gov/ecfr/

Code of Federal Regulations (CFR), Title 29 (Labor),
Chapter XVII (Occupational Safety and Health
Administration, Department of Labor)
www.gpoaccess.gov/ecfr/

American National Standards Institute (ANSI)
<http://www.ansi.org/>

- ASTM F2412-05, F2413-05, Standard Specification for
Performance Requirements for Foot Protection.
- ANSI Z53.1-2002: Safety Color Code for Marking Physical
Hazards
- ANSI Z89.1-2003: Protective Headwear for Industrial
Workers
- ANSI Z358.1-2004: Emergency Eyewash and Shower Equipment

The Navy cannot impose Navy safety standards on the civilian shipyard employees. Because of the differences between Navy and civilian safety regulations, the Navy has limited control over shipyard and contract workers, their equipment, or their work area preparations. The Navy does however, control some aspects of the shipyard work practices usually through provisions in Navy contracts. Involvement with shipyard workers usually consists of ensuring hazards are not created that could injure the ship's crew or cause material damage to the ship. If the ship's force or shipyard employees create a hazardous condition, a communication system must be in place to resolve this conflict. The full support and involvement of ship's force, especially the Safety Officer, plays a crucial role in establishing and maintaining this cooperative effort.

A. THE SUPERVISOR

The Navy is full of different levels of supervisors. The way the supervisor operates determines whether or not personnel performing the work produce the desired results.

In the context of this article, concerning mishap prevention, the first-line supervisor is the most important person. Why are they so important? Because, their supervisor has charged them with the responsibility of making sure specific work is being accomplished.

Mishap prevention is a continuing program in every activity - some say it's everyone's business - then it behooves the petty officer, the first-line supervisor, to be aware constantly. They must remember that the right number of qualified people, the right tools to do the job, and the proper maintenance instructions, should be available to do the work.

There are all sorts of statistics about causes of accidents. So, we'll oversimplify and state that hazardous conditions cause about 10 percent, but unsafe acts cause about 90 percent of all accidents. Let's look at the 90 percent category, unsafe acts. These are people-caused when supervision fails. If we cause them, we can prevent them.

Many safety rules and regulations, operating and maintenance practices, and standard operating procedures have been developed as a result of past accidents. One has heard many times that there are no new accidents, just the same old accidents being caused by new people. Investigations usually tell us what went wrong and why. So, obviously, we have to get the word out. For example, it seems self-evident that anyone disconnecting a line under pressure would relieve the pressure first. However, an MM3 was beginning some maintenance on the main hydraulic root stop valve, which had developed a leak. It was a small job and he didn't expect it to take too long.

As MM3 began to disassemble the valve bonnet, the packing was blown out and hydraulic oil sprayed, soaking several motors and electrical distribution panels. Fortunately, no fire broke out but many hours were wasted in cleaning up the mess.

It was estimated that it would have taken about six minutes to isolate and vent the piping after all tag out and administrative requirements were met. That's why it's so important to clearly explain to a Sailor how to do a new job and why it specifically should be done that way.

In no way is it to be inferred that preventing mishaps is hopeless. It isn't. There are far more positive forces than negative ones available to get work done without mishap. Operational risk management (ORM) teaches to accept risk when benefits outweigh the cost. However, this is only after risk have been anticipated and managed at the right level. Never accept unnecessary risk.

Operational risk management is an ongoing mishap prevention, education, and training program throughout the Navy. It is the process of broadening and adding to one's knowledge by developing a vivid awareness and mental alertness to recognize and correct conditions and practices that could lead to accidents. This is done by following the five-step ORM process.

- Identify hazards
- Assess hazards
- Make risk decisions
- Implement Controls
- Supervise (watch for changes)

In the process, the Sailor should consider all possible hazards. What is the probability of the hazard occurring and if it does happen, what's the worst thing that could happen? This is called "Brainstorming."

Every situation, evolution, job, is different and must always be examined using ORM. We all know that when an individual is taught the right way to do something, it is almost impossible not to teach them the safe way to do it also. Understand that training is part of an activities mishap prevention program. All training is conducted to increase skills, and coincidentally, safety awareness. Applying the ORM process can help assist in raising safety awareness.

The following are some ways you, the supervisor, can prevent mishaps by proper supervision:

- **ORM.** Apply and train your personnel on ORM principles. This process can be implemented at work and at home.

- **By example.** If you are aware of accident prevention in what you do and what you insist on, your personnel will operate the same way.
- **By demonstrating.** A popular grammar school diversion, show and tell, is one of the best ways to help your personnel do a job right. You show 'em how, tell 'em why, show 'em the maintenance instructions, let them turn to, and you've accomplished good OJT. Lead by example.
- **By communicating.** After you have demonstrated and bothered to explain, you've opened the communication channels and your sailors will ask questions or suggest alternatives when doubt exists.
- **By insisting on teamwork.** A good supervisor in leading, guiding, and directing their personnel will instill in them a help-your-buddy attitude.
- **By being interested.** You know what your Sailors are faced with (you've been there before); you work with them daily; you speak their language. This enables you to tell whether any job is "over their head".
- **By being available.** This is the most important duty in supervising work. Your presence indicates to your sailors that you want the job done right and that you're available to provide guidance if needed. It will discourage the tendency to take shortcuts or disregard procedure.

Good supervisors usually have a strong, personal commitment to avoid mishaps. This trait along with the others discussed will serve to motivate properly your Sailors. Insist on safe practices at all times; recognize and take action on hazardous conditions or work methods; and make it easy on yourself by increasing the knowledge and skills of your Sailors.

III. PRE-AVAILABILITY PREPARATIONS

An availability is a time where many very different operations happen at the same time. Heavy rigging can take place alongside hot work, sandblasting, and the installation of delicate instrumentation or cabinetry. Along with this, shipyard workers and subcontractors must have access to the ship along with the ship's crew who still must carry-on normal duties. The ship's crew may also have to deal with entering and exiting through a major shipyard. With all of this activity, there is a great

potential for injuries. So it's important to take the time to anticipate work activities and to plan how to safely manage each challenge. Preparations may include:

1. Visit the Naval Safety Center's (NSC) website (<http://www.safetycenter.navy.mil>). There are many safety related articles/lessons learned that may address a specific concern. Or, contact the center directly: (757) 444-3520, Ext 7834 or DSN: 564-3520, Ext 7834.
2. Conduct a self-assessment of the ship's safety programs. Self assessment checklists are available at NSC's website. (<http://www.safetycenter.navy.mil/afloat/checklists/default.htm>)
3. Survey crew-parking areas; get information on parking lot crime prevention and other concerns particular to the shipyard. Command traffic safety officer establish liaison with shipyard security and safety departments.
4. Command Recreation, Athletic and Home Safety Officer determine recreation resources in and around the shipyard.
5. Determine safety requirements for personnel transiting the industrial area to and from the ship in civilian attire. Some shipyards require everyone to wear safety shoes, hard hats, and safety glasses at all times while on shipyard property. Check with SupShip or the shipyard safety manager for protective equipment requirements.
6. The risk of personnel falling is greatly increased for ships in dry dock. Determine areas where safety nets and additional lighting should be rigged: rig safety nets under brows and additional lighting at the quarterdeck.
7. Review CSMP Option D. Document items properly and ensure they are included in the shipyard's or ship's force work package.
8. Review ship's force work package for hazardous jobs such as working aloft. Use operational risk management to assess the risks and to identify controls to lessen or eliminate hazards. For extensive work aloft, the repair officer may decide to rig scaffolding.
9. Review and assign fire watch PQS to division personnel.
10. HAZMAT stowage arrangements. Where will you store extra HAZMAT? What will be the operating hours of HAZMAT Issue Rooms? Ensure you have an MSDS for every item and off-load excess HAZMAT.
11. Establish policy on how personnel protective equipment

- (PPE) will be issued during the availability. Ensure adequate supplies of PPE are on-board.
12. Establish with shipyard safety department a daily time for a safety walk through of the ship.
 13. Review the ship's heat stress monitoring program. Temperature concerns for laundry and galley spaces could expand to cover other spaces in a shipyard environment.
 14. Safety officer, evaluate the Gas Free Engineering Program.
 15. Schedule a safety stand down prior to the availability. Invite the shipyard safety department on board.

A. HAZARDOUS MATERIAL IN OVERHAUL

The industrial environment in a shipyard dictates that we minimize the use, storage, and purchase of hazardous material. Below list some suggestions that may assist in this effort.

1. Consider locating the paint locker off the ship during overhaul.
2. Have all 55-gallon drums of flammable liquid removed from the ship.
3. Conduct a complete offload of hazardous material and only reintroduce those items mandatory for maintenance, cleanliness and preservation. This could also serve to assimilate the crew in performing task with minimal hazardous material.
4. Establish a system to minimize the purchase of HAZMAT from civilian vendors.
5. Familiarize divisional safety representatives with the SHML that list the valid HAZMAT requirements for the ship.
6. During daily safety inspections, check for HAZMAT.
7. Hold HAZMAT training with the crew prior to entering overhaul. Establish required rules for introducing new HAZMAT on board the ship.
8. Evaluate the condition of the flammable storage room. Inspect the condition of the alarms, warning lights, ventilation systems, heat sensors, warning placards, cableways, and storage racks.
9. Ensure that there is a place to stow offloaded HAZMAT. Make arrangements for a disposal facility to pick up HAZMAT.

OPNAVINST 5090.1C, Environmental and Natural Resources Program Manual, Chapter 19 - Environmental Compliance Afloat, requires all ships entering a shipyard to off-load all unnecessary hazardous materials (not to be used during the yard period). A Hazardous Material Officer must be designated and coordinates hazardous waste removal with SupShip. The yard contract will specify hazardous waste requirements and responsibilities. The local base Public Works Center will pick-up hazardous waste with advance notice. For PWC to transport the hazardous waste from a civilian shipyard to base, they must get a temporary EPA number. Contact your shipyard Navy Supervisor of Shipbuilding (SupShip) for details.

IV. ELECTRICAL SAFETY IN OVERHAUL

Permanently dead-ended cables should be removed during overhaul. However, temporary dead ended cables cased by equipment removal and dead-ended cables that cannot be removed due to circumstances beyond your control can be end sealed. Recommend contacting the IMA for assistance from someone that has attended the cableway inspection course.

Tag-out in availability is very important to the safety of ship's force personnel as well as shipyard personnel. All Tag-outs should be conducted strictly according to S0400-AD-URM-010/TUM REVISION 3 TAG OUT USERS MANUAL.

Some important things to remember are:

- For ships that are in overhaul, conversion, or restricted availability, conduct audits of the propulsion plant tag-out log(s) weekly.
- Ship's force is responsible for ensuring the adequacy and accuracy of all tag-outs, including those proposed by the RA. They shall also verify that tags, which are no longer needed, are removed as soon as possible after the operation/work item(s) has been cleared from the Tag-out Record Sheet (TORS). Ship's force is responsible for system restoration (e.g., valve/switch lineups) after tags are cleared.
- Use enough tags to prevent injury or damage to personnel and equipment by completely isolating the work area.

- The use of tags is not a substitute for other safety measures such as chaining or locking valves, removing fuses, or racking out circuit breakers. However, tags shall be attached to the fuse panel, racked out circuit breaker cabinet, or locked valve to indicate such action.
- Minimize the number of TORS and tags used through careful work planning in an effort to maintain better control of the tag-out process.

V. DAILY WALK-THROUGH SAFETY INSPECTIONS:

A daily walk-through of the ship by the ship's safety officer, department head, division officer, and division safety petty officer is absolutely necessary. This is when the line of communication between the safety officer and the civilian safety manager becomes increasingly critical.

Arrange the walk-through safety inspections with the shipyard safety manager during the arrival conference, if not before. Agree to meet at a certain time and place on a daily basis. Give the shipyard safety department a weekly watch bill for the ship's duty safety representative. If availability work is to continue over the weekends and holidays, appoint the CDO to conduct the walk-through with the IMA, shipyard, or contract representative, and decide how to handle hazards identified after normal working hours. Mishaps don't take holiday or weekend time off.

During walk-through safety inspections, look for signs of unauthorized entry. Cigarette butts and other trash in fan rooms and other out of the way places are indications that unauthorized personnel are visiting the space. Ensure personnel are not using scaffolding as a pull up bar or for mountain climbing. Personnel using HAZMAT have a tendency to stow it at the work site at the end of the day.

Decide how, and to whom, to report hazards as well as shipyard and ship's force safety concerns. Establish a mutual understanding of how to report hazards to the shipyard. Part of the process should be discussions on who "owns" the hazard. The IMA, shipyard, or SupShip may have it's own hazard report form. Regardless, document findings

of your walk-throughs as part of your Hazard Abatement Plan.

When occupational safety and health concerns arise, the instruct the ship's crew to contact the ship's safety officer. The safety officer can bring the matter up to their shipyard safety counterpart. When cases of imminent danger are identified, the senior person on the scene must be notified and must stop all work immediately except in an operational emergency. The commanding officer shall be notified of the situation, and action taken as soon as possible. Imminent danger is defined as a shipboard condition that immediately threatens the loss of life, bodily injury, illness to personnel, or loss of equipment. If a crewmember has an occupational safety and health concern or perceives an imminent danger situation, then the concerns should be communicated to the ship's safety officer. The ship's safety officer and the shipyard safety manager should then respond with a predetermined mutually agreed process to correct the problem.

Everyone has a job to do and conflicts can become common. Cooperation is essential to the safety of the ship's force as well as the shipyard. A mutual atmosphere of respect and an understanding that everyone is here to do a job and to do it safety must exist. Conflicts between shipyard personnel and ship's force typically arise due to poor communication, poor supervision, or lack of training.

VI. DURING AN AVAILABILITY:

During the availability, the safety officer is concerned about the safety of ship's force personnel, the industrial environment, and with the hazards that may be generated by the IMA or shipyard. The safety department must counter these new hazards with an increase in effort, training, and expanded safety programs. This may include:

1. Fire watch division personnel PQS spot check. Personnel rotating in and out of the division may leave the division short of qualified fire watches.
2. Are policies put in place before the availability still effective? (Are HAZMAT stowage areas creeping into work centers?)
3. Is the daily safety walk-through effective in keeping the ship free of trash and other potential mishaps?

4. Review the ship's force work package for hazards associated with on going work and growth work.
5. Temporary safety measures put in place early on should be routinely inspected. Safety nets under the brow and temporary lighting fixtures may not be covered by PMS.
6. Inspect the ship's gym equipment. Are exercise areas being maintained? If exercise equipment been moved from its normal area and temporarily set up elsewhere, inspect those compartments.
7. Inspect the ship's vehicles.
8. Conduct a safety zone inspection.

A. SHIPYARD AND NAVY REQUIREMENTS

Whenever a ship enters a shipyard for repair or overhaul, unauthorized arc welding and flame cutting can cause extensive fire damage. To prevent this, personnel must be familiar with shipyard procedures and navy requirements when hot work has been authorized.

Shipyard Responsibilities. Safety and health standards govern welding in confined or enclosed spaces for Shipyard Employment (29 CFR 1915). It is the shipyard's responsibility to provide a marine chemist certified by the National Fire Prevention Association (NFPA), or another competent person, to inspect and certify confined or enclosed spaces. A "competent" person is a person capable of recognizing and evaluating employees' exposure to hazardous substances or other unsafe conditions and capable of specifying the necessary protection and precautions to take.

Before cutting or arc welding operations begin, the supervisor responsible for assigning the work should inspect the area. The marine chemist or competent person then inspects the space and specifies precautions to be followed prior to granting permission to proceed with the hot work.

29 CFR 1915 further states that employees shall not do hot work until a certificate has been issued and posted. If the tank or space environment changes after a certificate has been issued, a competent person shall re-test the area to make sure the gas-free condition is maintained. When conditions have altered, stop work until the area again is safe to work and a new certificate obtained.

According to the Gas Free Safety Manual, S670-AA-SAF-010, where Navy and shipyard personnel occupy the same space at the same time, both the Navy gas-free engineer and the designated competent person shall ensure the space is gas-free. The shipyard retains legal obligation for inspections and tests and for the safety of shipyard employees. These requirements can also be found in NSTM 074 Volume 3, Gas Free Engineering.

Basic shipyard requirements are:

1. Provide the commanding officer or equivalent a written notice of each job involving hot work at least 30 minutes prior to beginning work. Notice may be a shipyard work request or job order.
2. Provide a detailed written notice for each job or separate area of hot work aboard ship. This notice shall include a description of the work, specific location, the time work will begin, gas-free status, action taken to protect against fire, fire watch assignments and supervisor's signature.
3. Ensure proper ventilation of the space, either natural or mechanical.
4. Test for atmospheric conditions of a confined or enclosed space prior to entry to determine that flammables are less than 10 percent of the lower explosive limit (LEL), oxygen content is a minimum of 16.5 percent (Navy requires 20-22 percent) and toxic contamination is not dangerous to life or health.
5. Have a certified marine chemist or a designated competent person certify the area safe.
6. Post certificates in a minimum of two locations within or on the boundaries of the hot work area.
7. Exhausted or contaminated air must be discharged into open air away from the source of intake air.

Compliance with all occupational safety and health standards is the employer's responsibility. Inspections and test shall be recorded on Department of Labor form OSHA-74 (Log of Inspections and Tests by Competent Person).

A copy shall be posted in the immediate vicinity of operations. A record or copy shall be kept on file for at least three months after completion of the job as will a copy of the hot-work certificate issued by the NFPA certified marine chemist.

Shipyard shall test for entry into confined or enclosed spaces and test for flammable, toxic, and oxygen deficient atmospheres. Flammable atmospheres greater than 10 percent of the lower explosive limit (LEL) shall be ventilated to reduce the concentration below 10 percent.

A marine chemist, industrial hygienist, or competent person shall test for toxic contaminants. If tests indicate contaminants above the level that is immediately dangerous to life or health, the space shall be ventilated to a safe level. If the concentration of toxic contaminate is below this level but above the threshold, employees shall wear approved respiratory protection. Before employees are permitted to enter a space initially, the atmosphere shall be tested to ensure that it contains at least 16.5 percent oxygen.

Navy Requirements. The commanding officer solely is responsible for the safety and health of personnel within the command and it is the commanding officer who requires the shipyards to comply with applicable laws and standards. In addition, all commands should comply with the current Gas Free Program policies according to JFMM and NSTM 074. The current policies limit ship force personnel from conducting gas free operations on IDLH spaces and directs utilization of naval maintenance facility personnel to perform ship gas free functions when in port. However, each command should continue to maintain as directed in NSTM 074 and have one person trained and certified as a gas-free engineer and have sufficient personnel trained and qualified as gas-free engineering petty officers. The gas-free engineer tests and inspects spaces aboard ship prior to entry, logs the test in the gas-free engineering log and issues a gas-free certificate for each confined or enclosed space. Certificates shall be kept on file for one year. Certificates shall be posted at the main entrance of the space; one copy in the gas-free engineer's files one copy to the department or division requesting work, one copy to damage control central and one copy to the officer of the deck.

Prior to authorizing entry or work by Navy personnel, the gas-free engineer shall test the space. Initial testing shall be performed from outside the space by the drop test method. The sequence of these shall be oxygen, flammables, and toxics. Oxygen content shall be 20 to 22 percent. If flammables are present, the reading shall be 10 percent or less of the lower explosive limit. Toxics shall be no less than the minimum threshold limit value to support life. An atmosphere immediately dangerous to life or health requires permission from the commanding officer to enter.

Navy gas-free personnel shall not certify spaces for shipyard operations. Where Navy personnel and shipyard personnel are to occupy the same space at the same time, both the Navy engineer and shipyard representative shall declare the space safe. The shipyard shall retain legal liability for inspections and tests and for the safety of shipyard personnel.

We cannot overemphasize the importance of preventing fires aboard ship. A majority of such fires are a direct result of unauthorized hot work conducted during a yard period, or the result of incorrect communication between shipyard workers and the ship's crews. A little information and training on basic safety procedures and requirements will prevent loss of life and thousands of dollars in damages to our ships.

VII. COMING OUT OF AN AVAILABILITY:

The completion of the availability does not mean the safety officer can let down his or her guard. It simple means the availability is in a different phase and the safety department will need to adapt to meet these new challenges. It is critical to manage carefully the ship's post-availability work-up ready-for-sea status. This may include:

1. After major SHIPALTS and other repair work the baseline industrial hygiene survey may have to be updated.
2. Conduct a safety zone inspection. Focus on work centers.
3. Determine watch bill requirements for the shake down cruise. Some personnel will be needed to conduct equipment inspections with shipyard personnel and may not be available to stand watch.

4. Schedule a fast cruise. Exercise the watch bill for the shake down cruise and emergency parties.

VIII. POST AVAILABILITY:

As the shipyard workers remove their equipment, and ship's force puts on the final coat of paint, there are safety considerations for completion of the availability. The safety officer, along with the DSPOs, should conduct a ship-wide safety evaluation. The evaluation should include not only inspecting the ship to determine its safety posture, but also conducting a review of the ship's NAVSOH programs and training status. Things to consider during the evaluation include:

1. Replacing safety precaution placards, warning signs, and hazardous noise labels.
2. Installing non-skid at the top and bottom of ladders, on either side of coamings, and in front of machinery.
3. Restocking personal protective equipment in workspaces.
4. Conducting a hazardous materials inventory and ensuring proper stowage.
5. Replacing safety chains, machine guards, and vent access covers, and removing temporary vent filters.
6. All hands training in emergency egress and SCBA/OBA/EEBD use.
7. EEBD training for engineering personnel.
8. Performing electrical safety checks on personal gear brought back after the availability, and reestablishing the periodicity of work center electrical safety checks. This includes verifying EGLs for new and removed equipment.
9. Scheduling a follow-on industrial hygiene survey. These surveys can be arranged by contacting the cognizant Navy Environmental and Preventative Medicine Unit or medical treatment facility.